The Higher Technological Institute (HTI)	
Department: Department of Chemical Engineering	
Course Specification	
CHM 001: Engineering Chemistry	

A – Affiliation	
Program(s) on which this course is given	Chemical Engineering
Department offering the program	Chemical Engineering& Basic Science
Department offering the course	Chemical Engineering

B – Basic information								
Course Title:	Engineering Chemistry			**Course Code:**		CHM 001		
Program / level	Chemical Engineering			Fresh man				
Academic year:	2023 – 2024			**Credit Hours:**		3		
Contact Hours:	5	**Lecture:**	2	**Tutorial:**	1	**Practical:**	2	
Pre-Requisite	-							
Academic standards	(NARS 2018)							
Bylaw Approval	2016							

1- Course Subject Area:

% Humanities and Social Sciences	% Math. and Basic Sciences	% Basic Eng. Sciences	% Applied Eng.	% Computer application and ICT	% Design, Projects and practice	% Discretionary subjects	Total
	100%						100%

2- Course Aims:

By the end of this course the student must be taught:

- The properties of the matter different states mainly gases, liquids and also solutions.
- The Chemical Equilibrium definition, conditions and calcuation.
- Mass and energy balance fundamentals.
- Applications of electrochemistry, corrosion prevention methods and Thermodynamics.
- The engineering basics for some of the most important Chemical industries from a chemical Engineering point of view.

3- Course Learning Objectives:

At the end of this course, student should be able to

Obj.1. Apply different gas and liquid laws.

Obj. 2. Differentiate between the types of solutions and know the colligative properties.

Obj. 3. Define "chemical equilibrium" and distinguish the factors affecting it in reversible reactions.

Obj.4. Carryout heat and mass balance in both physical and chemical cases.

Obj.5. Recognize electrochemical cells design and methods for controlling corrosion of metals.

Obj.6. Apply laws of thermodynamics in chemical engineering.

Obj.7. Explain the process of manufacturing of some important chemical products

4- Relationship between the course and the program:

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CHE
Program Academic Standards that the course contributes in achieving	A1, A2	--

5- Mapping Course Los to NARS

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A1.** Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics	**LO1**. Calculate different parameters of gases, liquids and solutions **LO2.** Apply the fundamentals of mass and energy balances for chemical equipment in case of physical or chemical changes. **LO3**. Identify the main parameters affecting the electro-chemical cells, corrosion of metals, dynamic equilibrium, chemical engineering thermodynamics, Liquefaction of gases and others **LO4**. Understand a chemical process industry with its applications, different process diagram parameters and processing steps

	A2. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO5.** Estimate the solution concentration (different concentration definitions) from either given theoretical data or from experimental results obtained (acid/base, redox, etc.) by titration reactions and/or pH measurements

No. of Weeks	Topics
2.5	**Chapter1:** Gases: States of matter - Gas laws – Partial pressues - Ideal and Real gases – Liquefaction of gases (principles and applications) – Joule-Thompson effect - liquefaction cycles (Linde, Claude).
2	**Chapter 2**: Solutions (General properties, different types and concentration definitions) - Colligative properties of solutions.
1.5	**Chapter 3**: Dynamic Equilibrium in Physical and Chemical Processes – Equilibrium contants - Le Chatelier principles and factors affecting equilibrium – Effect of temperature on equilibrium constant.
2	**Chapter 4:** Mass and energy balances for both: physical and chemical processes – Combustion reactions – Application of different methods for heat of reaction calculations at standard conditions (Hess law- bond dissociation -...etc.)
1	**Chapter 5 :** Electro chemistry - Redox reactions – Electro-chemical cells - Nernest equation – Corrosion Engineering: types and methods of protection
1	**Chapter 6:** Introduction to Chemical Thermodynamics - First law of thermodynamics-Second law of thermodynamics – Thermodynamic Applications in the Chemical Engineering field.
2	**Chapter-7:** Chemical Engineering industries – Block diagram- Selected topics including some of the most important and updated chemical engineering industries in different fields (organic, inorganic, petrochemicals and natural gas industries)

6- Course Content:

7.1. Course Description (As indicated in program Bylaw):

Equations of State - Introduction to Chemical Thermodynamics - Material & Energy Balance in Fuel Combustion and Chemical Processes - General Properties of Solutions - Dynamic Equilibrium in Physical and Chemical Processes - Basic Principles in Electrochemistry - Introduction to Corrosion Engineering - Selected topics in process Chemical Industries (Industry & Chemistry of Cement - Chemical Fertilizer Industries - Sugar Industry - Dyes & Dyeing Industry - Petrochemical Industries - Sulfuric acid Industry).

7.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs.*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	**Chapter1:** Gases: States of matter – Gas laws – Units and dimensions - Ideal gas and Kinetic theory – gas mixture - Dalton's law for partial pressures. **Lab**: week (1)	5	3	-	2	**LO1 – LO5**
Week -2	**Chapter1:** Gases: Ideal and Real gases – Deviation from ideality – Critical states – Compressibility chart – Introduction to real gases and equations of states – Van Der Waals Equation - Liquefaction of gases (basics and applications) – Joule-Thompson effect **Lab**: week (2)	5	3	-	2	**LO1, LO3 – LO5**
Week-3	**Chapter1:** Performance of external work - liquefaction cycles **Chapter 2**: Solutions (Types of solutions – concentration calculations – Solubility – Factors affecting solubility - Henry's law) **Lab**: week (3)	5	2	1	2	**LO1, LO3 - LO5**
Week-4	**Chapter 2, (cont.):** Solutions (Types of solutions – concentration calculations – Solubility – Factors affecting solubility - Henry's law - Colligative properties of non-electrolytic solutions **Lab**: week (4)	5	3	-	2	**LO1, LO3 - LO5**
Week- 5	**Chapter 2, (cont.):** Colligative properties of electrolytic solutions, Van't' Hoff coefficient **Chapter 3**: Dynamic Equilibrium in Physical and Chemical Processes – Equilibrium Constant - Factors affecting equilibrium. **Lab**: week (5)	5	3	-	2	**LO1, LO3 – LO5**
Week-6	**Chapter 3, (cont.)**: Dynamic Equilibrium in Physical and Chemical Processes – Factors affecting equilibrium (cont.) – Le Chatelier's principles, Effect of temperature on equilibrium constant, Van't' Hoff equation, Dynamic equilibrium applications. **Lab**: Lab. Midterm exam	5	2	1	2	**LO1, LO3 – LO5**

Week-7	**Midterm Exam**					
Week – 8	**Chapter 4:** Mass and energy balances for both: physical and chemical processes Combustion reactions – Application of different methods for heat of reaction calculations at standard conditions (Hess law- bond dissociation method -...etc.) **Lab**: week 8	5	3	-	2	**LO2 – LO5**
Week – 9	**Chapter 4:** Mass and energy balances for chemical processes, Combustion reactions, Application of different methods for heat of reaction calculations at standard conditions (Hess law- bond dissociation method -...etc.) **Lab**: week 9	5	2	1	2	**LO2 – LO5**
Week-10	**Chapter 5 :** Electro chemistry - Redox reactions – Electro-chemical cells - Nernest equation – Corrosion Engineering: types and methods of protection. **Lab**: week 10	5	3	--	2	**LO3 – LO5**
Week-11	**Chapter 6:** Introduction to Chemical Thermodynamics - First law of thermodynamics-Second law of thermodynamics – Thermodynamic Applications in the Chemical Engineering field **Lab**: week 11	5	2	1	2	**LO3 – LO5**
Week-12	**Chapter-7:** Chemical Engineering industries – Block diagram - Selected topics in process chemical industries with applications including some of the most updated chemical engineering industries in important various fields (Cement industry) **Lab**: week 12	5	3	--	2	**LO4 – LO5**
Week-13	**Chapter-7:** Chemical Engineering industries – Block diagram - Selected topics in process chemical industries with applications including some of the most updated chemical engineering industries in important various fields (organic, inorganic, petrochemicals and natural gas industries) **Lab**: Final lab exam	5	2	1	2	**LO4 – LO5**
Week – 14	**Final Exam.**					

7.3. Experiment Topics:

Serial	Experiment	Laboratory hrs.
1st	Safety instructions – Introduction to Volumetric Analysis	2
2nd	Solution - Ways of expressing concentrations of solutions	2
3rd	Concentration units – Dilution – Neutralization reactions	2
4th	Acid / Base Titration (S A/WB – SA/SB)	
5th	Titration Curves	2
6th	pH measurement and application in acid - base titration	2
7th	Midterm	2
8th	Cooling curves	2
9th	Heating curves – quiz 1	2
10th	Redox Titration ($KMnO_4$ and $FeSO_4$)	2
11th	Redox Titration (I_2 and $Na_2S_2O_3$) – quiz 2	2
12th	Determination of the total hardness of water as $CaCo_3$	
13th	Final Exam	2

7- Matrix of Course Objective and Los

Course Learning Objectives	Learning Outcomes (LOs)				
	LO 1	LO 2	LO 3	LO 4	LO 5
Obj 1	*		*		
Obj 2	*				*
Obj 3			*		
Obj 4		*			*
Obj 5			*		
Obj 6			*		
Obj 7				*	

9- *Course Teaching and Learning Methods:*

Competencies Based Education **(CBEs)**		**Online learning**								**On-ground learning**									
		Lecture	**PPT and Movies**	**Discussion**	**Tutorial**	**Brain storming**	**observation**	**Report**	**Case study**	**Lecture**	**PPT and Movies**	**Discussion**	**Tutorial**	**Problem solving**	**Brain storming**	**Practical /lab.**	**Cooperative**	**Discovering**	**Site visit**	**Case study**
COMPETENCIES of ENGINEERING	**LO 1**	Depends on the Instructor in the case of need								*	*		*							
	LO 2									*	*		*							
	LO 3									*	*		*							
	LO 4									*	*		*							
	LO5									*	*		*			*				

10- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

11- Assessment

11.1 Course Assessment Methods:

Competencies Based Education **(CBEs)**		**On ground assessment**										**Online assessment**						
		Written Exam	**Oral Exam**	**Tutorial Assessment**	**Project Assessment**	**Model Assessment**	**Report & Discussion Assessment**	**Quiz assessment**	**Presentation Assessment**	**Case study**	**Laboratory Test**	**Online Exam**	**Tutorial Assessment**	**Project Assessment**	**Report & Discussion Assessment**	**Quiz assessment**	**Presentation Assessment**	**Case study**
COMPETENCIES OF ENGINEERING	**LO1**	*		*				*				Depend on the Instructor in the case of need						
	LO2	*		*				*										
	LO3	*		*				*										
	LO4	*		*				*										
	LO 5	*		*				*			*							

11.2 Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	8TH	90 min.
Midterm written Exam (*Term Work*)	**20**	5th	60 min.
End of term laboratory exam (*Lab*)	**30**	6th	Committee
End of term Oral exam	**--**	NA	Committee
Tutorial and report assessment (*Term Work*)	**--**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**10**	According to the schedule	---
Total Mark	**100**		

12- Facilities Required:

A- Data show, laptop

B- laboratory Usage:

Students are expected to prepare and conduct some laboratory experiments on the testing.

C- Library Usage:

Students should be encouraged to use library resources in the preparation of reports and presentation. At least one oral presentation should involve a component of library research to encourage this component of study.

D- Microsoft Teams

E- Egyptian Knowledge Bank (EKB)

13- List of References:

13.1 Course Notes:

- Printed lectures
- Sheets

13.2 Required Text Books and Additional References:

- Theodore L. Brown, et al, " Chemistry the Central Science", Prentice Hall Int. (Pearson International latest edition), 2009.
- Shriver and Atkins', " Inorganic Chemistry", Oxford University Press, 2010.

13.3 Recommended Books:

- David M. Bastidas, **Corrosion and Protection of Metals**, Mdpi AG, 2020
- Yatish T Shah, **Chemical Energy from Natural and Synthetic Gas**, 1st edition, CRC Press, 2017
- Dr. Robert Reining, Titration Handbook, Theory and Practice of Titration, 2018

Course Directors	Name	Signature
Teaching staff	Ass.Prof. Soad Abd El.aziz El Metwally Dr. Noha Fawzy Dr. Nora Yehia Dr.Samah Hawash	
Course coordinator	Ass.Prof. Soad Abd El.aziz El Metwally	
Program coordinator	Dr. Noha Fawzy M. El Husseiny	
Head of the Department	Prof. Dr. / Maha Hassan Abdel Kereem	
Date of approval	**October 2023**	

The Higher Technological Institute (HTI)	
Department: Department of Electrical Engineering	

Course Specification

CSC 001: COMPUTER SKILLS

Program(s) on which this course is given	Electrical Engineering (Electronics and Communication Engineering)
Department offering the program:	Electrical Engineering
Department offering the course:	Electrical Engineering (Electronics and Communication Engineering)

A– Basic information

Course Title:	Computer Skills			**Course Code:**		CSC 001	
Program	Electrical Engineering (Electronics and Communication Engineering)			**Level**		Freshmen	
Term/ Academic year:	Feb23			**Credit Hours:**		0	
Contact Hours:	5	**Lecture:**	1	**Tutorial:**	0	**Laboratory:**	4
Pre-Request							
Academic standards	(ARS)						
Bylaw Approval	2016						

1- Course Aims:

- Enrich students' knowledge of the basic understanding of computer system concepts and operations.
- Train the student to create, edit, save and delete files using different programs (e.g. word, excel),thus Creating professional documents.
- Dealing with spreadsheets for calculations and drawing charts.
- Presenting subjects in a professional way using power point.

2- *Course Learning Objectives (CLO):*

At the end of this course, student should be able to:	
CLO 1.	On successful completion of the course, the student should demonstrate knowledge and understanding of how to
CLO 2.	Identify Elements of a Computer System.
CLO 3.	Identify the Evolution of computer generation, Programming Languages and Programming Methodologies.
CLO 4.	Identify the network and its classifications.
CLO 5.	Identify the generations of network.

3- *Relationship between the course and the Competencies :*

Field	Academic Reference Standard (ARS)		
	Competencies for Engineering Graduates (level "A")	**Competencies for Electrical Engineering Specializations (level "B")**	**Competencies for Electronics and Communication Engineering Specializations (level "C")**
Program Academic Standards that the course contributes to achieving	**A2, A4, A10**		

4- *Mapping Course Los to ARS*

Field	Program Academic Standards that the course contribute in achieving	Learning Outcomes(LOs)
Competencies for Engineering Graduates (level "A")	A.2 **Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess, and evaluate findings, and use statistical analyses and objective**	LO 1. Study the different data types by means of different applications. LO4. Edit the data types for future applications

	engineering judgment to draw conclusions.	
	A.4 **Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.**	LO 2. Apply gained design skills to solve real applications which related to electrical department. Lo5. Study the last types of computer peripherals
	A.10 Acquire and apply new knowledge and practice self, lifelong and other learning strategies.	LO 3. Handle the principles of network fundamentals to troubleshoot simple network connections.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

The goal of this course is to teach and assess basic computer concepts and skills so that students can use computer technology in everyday life to develop new social and economic opportunities for themselves, their families, and their communities. This curriculum will help students to develop a fundamental understanding of computers; from using the Internet, to sending e - mail, to creating a resume. This curriculum helps in developing the essential skills the student needs to begin computing with confidence. The course consists of five modules: 1) Computer Basics (Introduction to Computers - Common Computer Terminology - Computer Performance and Features - Computer Operating Systems - Career Opportunities); 2) The Internet and the World Wide Web (The Internet - The World Wide Web - Using e - mail - Other Methods of Communicating on the Internet); 3) Productivity Programs (Introduction to Productivity Programs - Common Features and Commands - Introduction to Word Processing - Introduction to Spreadsheet Programs - Introduction to Presentation Programs - Introduction Database Programs); 4) Computer Security and Privacy (Introduction to Computer Securityand Privacy - Protecting Your Computer - Protecting Your Family from Security Threats - Keeping Your Computer Secure and Updated - Computer Ethics); 5) Digital Lifestyles (The Digital Experience, Introduction to Digital Audio - Introduction to Digital Video - Introduction to Digital Photography - Digital Technology and Career Opportunities)

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Computer Basics (Introduction to Computers - Common Computer Terminology - Computer	5	1	0	4	LO 1.
Week-2	Performance and Features - Computer Operating Systems - Career Opportunities);	5	1	0	4	LO 1, LO4.
Week-3	The Internet and the World Wide Web (The Internet - The World Wide Web	5	1	0	4	LO 2.
Week-4	Using e - mail - Other Methods of Communicating on the Internet);	5	1	0	4	LO 2, LO5.
Week5	3) Productivity Programs (Introduction to Productivity Programs - Common Features and Commands	5	1	0	4	LO 2.
Week-6	Introduction to Word Processing - Introduction to Spreadsheet Programs - Introduction to Presentation Programs -	5	1	0	4	LO 2, LO3.
Week-7	- Introduction Database Programs);	5	1	0	4	LO 2, LO4.
Week-8	**Midterm Exam.**					
Week-9	Computer Security and Privacy (Introduction to Computer Security and Privacy - Protecting Your Computer	5	1	0	4	LO 5.
Week-10	Protecting Your Family from Security Threats - Keeping Your Computer Secure and Updated - Computer Ethics);	5	1	0	4	LO 3.

Week-11	Digital Lifestyles (The Digital Experience	5	1	0	4	LO 2.
Week-12	Introduction to Digital Audio - Introduction to Digital Video -	5	1	0	4	LO 3.
Week-13	Introduction to Digital Photography - Digital Technology and Career Opportunities).	5	1	0	4	LO 4.
Week-14	**Final Exam.s**					

5.3. Experiment Topics:

Serial	Experiment	Laboratory hrs.
1	**Word Processing:** • Understand the key concepts of word processing. • Identify the different file formats and how to save them. • Recognize good practice applying formatting options. • Understand the different elements, objects, and data that can be added to a document. • Know how to finalize a document and prepare it for printing. • Prepare and create documents using mail merge.	3
2	**Excel (Spreadsheets):** • Understand the key concepts of spreadsheets. • Use available help resources and shortcuts to enhance productivity. • Recognize good practice in inserting, editing, and deleting data. • Apply a range of mathematical and logical formulas and functions. • Know how to communicate information using charts and graphs.	3
3	**Power Point (Presentation):** • Understand the key concepts of using presentation software. • Identify the options available in built- in layouts, designs, and themes. • Developing presentations views for slides and master slides.	3

	• Recognize good practice in formatting text and tables. • How to add charts, pictures, and drawn objects to enhance presentations. • Enhancing presentations through animations and slide transition. • Prepare a presentation to be used for presenting or printing.	

6- *Matrix of Course Objective and LOs*

Course Learning Objectives	Learning Outcomes (LOs)				
	LO 1	LO 2	LO 3	LO4	LO5
CLO 1	*				*
CLO 2		*		*	
CLO 3		*			
CLO 4			*	*	
CLO 5		*			*

7- *Course Teaching and Learning Methods:*

Teaching and Learning Methods	*Learning Outcomes* (LOs)				
	General (A)				
	LO 1	LO 2	LO 3	LO4	LO5
Face-to-Face Lecture	*				
Online Education	*				*
Tutorial/ Exercise		*		*	
Group Discussion			*		
Laboratory		*			
Site Visit					
Presentation	*				
Mini Project			*		*
Research and Reporting	*				
Brain Storming		*			
Self-Learning			*	*	

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcomes* (LOs)				
	General	Electrical Engineering Specializations			
	LO 1	LO 2	LO 3	LO4	LO5
Written Exam	*		*	*	
Online Exam					*
Oral Exam	*				*
Quiz		*		*	
Lab Exam			*	*	*
Take-Home Exam	*				
Research Assignment		*		*	
Reporting Assignment	*			*	
Project Assignment			*		*
In-Class Questions			*		*

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)			
Mini projects (*Term Work*)	**10**	12th	
Quizzes/reports/presentation (*Term Work*)	**30**	3rd, 5th ,10th	
Total Marks	**100**		

9 - Facilities Required for Teaching and Learning:

1	White board and Projector.
2	
3	
4	

10 - List of References:

10 -1 Course Notes:

.	Available Presentation (handed to students part by part).
10-2 Required Text Books and Additional References:	
1-	**Introduction to Computers.**
10-3 Recommended Books:	
1	

Course Directors	Name	Signature
Teaching staff	**DR: Taghreed Saeed DR: Noura Ali DR: Nehad Salah DR: May Nouh DR: Amaal Ashraf DR: Mohamed Awny**	**Examiner committee**
Course coordinator	**Dr. Mohamed A. Torad**	**DR. Torad**
Program coordinator	**ASS.PROF.DR. Mohamed Torad**	**DR. Torad**
Head of the Department	**ASS.Prof.Dr. Mohamed Torad**	
Date of approval	**12-6-2023**	

The Higher Technological Institute (HTI)	
Department: Department of Mechanical Engineering	

Course Specification

Engineering Mechanics (1) : ENG 001

Program(s) on which this course is given	Al Engineering programs
Department offering the program:	Mechanical Engineering
Department offering the course:	Mechanical Engineering

A– Basic information

Course Title:	Engineering Mechanics (1)			**Course Code:**		ENG 001	
Program / level	Preparatory			Level 000			
Term/ Academic year:	Oct. Jan. 2023 - 2024			**Credit Hours:**		3	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	-----
Pre-Requisite	None						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

Recognize the principles of the mechanics and statics of particles, moments, Equilibrium's equations and solve any problem in a simple and logical manner.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Define the fundamental concepts used in engineering mechanics such as vectors, forces, moments, static equilibrium, structures, center of mass, center of gravity, and centroids.

CLO 2. Identify the appropriate tools and analytical methods in solving engineering mechanics problems.

CLO 3. Explain, describe and apply principles and components of Engineering Mechanics including vectors, forces, moments, mass and inertia in two and three dimensions, and equilibrium conditions.

CLO 4. Perform free-body diagrams of bodies, calculate forces, and do equilibrium analysis for a mechanical system in static rest.

CLO 5. Develop logical and creative thinking by defining their own methodologies for problem solution.

*3- **Relationship between the course and the Competencies :***

Field	National Academic Reference Standard (NARS)
	COMPETENCIES of ENGINEERING
Program Academic Standards that the course contributes in achieving	A1, A8&A9

4- ***Mapping Course Los to NARS***

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes (LOs)
COMPETENCIES of ENGINEERING	**A1.** Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	**LO1.** Recognize the types of forces, moments and the equilibrium of Rigid Body. **LO2.** Identify support reactions and subjects of centroids.
	A8. Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	**LO3**. Evaluate the characteristics of complete free-body diagrams. **LO4**. Communicate effectively in writing.
	A9. Use creative, innovative, and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	**LO5**. Select appropriate solutions to simplify systems of forces and moments to equivalent systems. **LO6**. Apply knowledge of mathematics to write appropriate equilibrium equations from the free-body diagram, including the support reactions on a structure. **LO7**.Use computational facilities to analyse simple structures frames, and machines.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

1- Knowledge concerning force in space, direction angles, unit vectors, rectangular components.

2- Introducing basic concepts of force and equilibrium and draw the free body diagram.

3- Studying the concepts of couple, reduction of a system of forces to a force and a couple at point.

4- Giving an introduction to the rigid body, beams, reaction and supports.

5- Introducing basic concepts of centroid and moments of inertia of an area.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			LOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Force in space, direction angles, unit vectors, rectangular components.	3	2	1	-	**LO1**
Week-2	Position vector, force defined by magnitude and two points on line of action.	3	2	1	-	**LO1**
Week-3	Resultant of concurrent forces, conditions of equilibrium free body diagram.	3	2	1	-	**LO3**
Week-4	Examples illustrating equilibrium of a particles' linear elastic springs.	3	2	1	-	**LO3, LO4**
Week5	Force transmissibility, vector product, moment of a force about a point.	3	2	1	-	**LO5, LO6**
Week-6	Couple, reduction of a system of forces to a force and a couple at point.	3	2	1	-	**LO6**
Week-7	Rigid body, reaction and supports, examples.	3	2	1	-	**LO6, LO7**
Week-8	**Midterm Exam**					
Week-9	Rigid body equilibrium, examples.	3	2	1	-	**LO4, LO6**
Week-10	Beams, types of loads, concentrated and uniform loads, equilibrium.	3	2	1	-	**LO7**
Week-11	Beams, equilibrium.	3	2	1	-	**LO5, LO7**
Week-12	Properties of an area, centroid.	3	2	1	-	**LO2, LO7**
Week-13	Moments of Inertia of an area.	3	2	1	-	**LO2, LO6**
Week-14	Mechanism, two and three force bodies, force diagram.	3	2	1	-	**LO3, LO6**
Week 15	**Final Exam.**					

5.3. Experiment Topics:

Serial	Experiment	Laboratory hrs.
1st	NA	NA
2nd	NA	NA

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)						
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
CLO 1	√		√				√
CLO 2	√	√					
CLO 3				√	√	√	
CLO 4				√		√	
CLO 5		√		√	√		√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)						
	General						
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
Face-to-Face Lecture	√	√	√	√	√	√	√
Online Education							
Tutorial/ Exercise	√	√	√	√	√	√	√
Group Discussion			√	√			√
Laboratory							
Site Visit							
Presentation			√	√			
Mini Project							
Research and Reporting			√	√			
Brain Storming	√	√			√		
Self-Learning							

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)						
	General						
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
Written Exam	√	√	√	√	√	√	√
Online Exam	√	√					
Quiz	√	√	√	√	√	√	√
Take-Home Exam							
Research Assignment			√	√		√	
Reporting Assignment		√	√	√			
Project Assignment	√				√		
In-Class Questions	√	√			√		

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- Data show
B- Smart Classrooms
C- Computers
D- Laboratory equipped with student experiments

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Text Books and Additional References:

- HTI Book (Engineering Mechanics (1)
- J. L. Meriam, and L. G. Kraige, "Engineering Mechanics: Statics, 8th Edition", John Wiley, New York, 2016.
- J. L. Meriam, L. G. Kraige, 2014, Engineering Mechanics, Statics, 8th Edition, John Wiley Publisher.
- R. C. Hibbeler, Kai Beng Yap, 2013, Engineering Mechanics, Statics, 13th Edition, Pearson Education South Asia Ltd.

10.3. Recommended Books:

- R. C. Hibbeler, "Engineering Mechanics: Statics and Dynamics, 14th Edition", Prentice-Hall, New Jersey, 2016.

10.4. Web Sites:

- http://ocw.mit.edu
- http://www.sciencedirect.com

Course Directors	Name	Signature
Teaching staff	**Prof. Dr. Adel Fathy**	
Course coordinator	**Dr. Ahmed Abd-Elbadie**	
Program coordinator	**Prof. Dr. Hesham M. Mostafa**	
Head of the Department	**Prof. Dr. Adel Fathy**	
Date of approval	**1-10-2023**	

The Higher Technological Institute (HTI)	
Department: Department of Mechanical Engineering	
Course Specification	
Engineering Mechanics (2) : ENG 002	

Program(s) on which this course is given	Al Engineering Programs
Department offering the program:	Mechanical Engineering
Department offering the course:	Mechanical Engineering

A– Basic information							
Course Title:	Engineering Mechanics (2)			**Course Code:**		ENG 002	
Program / level	Mechanical Engineering			Level 000			
Term/ Academic year:	Oct. Jan. 2023 - 2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	-----
Pre-Requisite	Engineering Mechanics (1)						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

Identify the principles of dynamics, Rectilinear and Curvilinear motion, the Linear momentum, Angular momentum of particles, and solve any problem in a simple and logical manner.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Identify the principles of dynamics.

CLO 2. Obtain the equation of motion of particle.

CLO 3. Define the linear momentum of particles.

CLO 4. Study the general curvilinear motion, and motion of projectiles.

CLO 5. Recognize the principles of work and energy.

*3- **Relationship between the course and the Competencies :***

Field	National Academic Reference Standard (NARS)
	COMPETENCIES of ENGINEERING
Program Academic Standards that the course contributes in achieving	A1, A2&A9

4- ***Mapping Course Los to NARS***

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes (LOs)
COMPETENCIES of ENGINEERING	**A1.** Identify the appropriate tools and analytical methods in solving engineering mechanics problems.	**LO1.** Recognize the Rectilinear and the Curvilinear motion of particles (Position, Velocity, and acceleration). **LO2**. Define the Linear Momentum of particles, rate of change of Linear Momentum. **LO3**. Identify the equations of motion.
	A2. Develop and conduct appropriate experimentation and/or simulation, analyse and interpret data, assess, and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO4**. Resolve the equations of motion in different coordinates. **LO5**. Apply to the Central Impact of two Spheres. **LO6**. Solve the loss of Kinetic Energy during the Impact of two Spheres.
	A9. Use creative, innovative, and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	**LO7**. Study the general curvilinear motion, and motion of projectiles. **LO8.** Demonstrate the concepts of Kinematics of a particle, Equations of motion in different coordinates.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

1- Displacement, velocity and acceleration of a particle- [Cartesian - tangent and normal - cylindrical] coordinates.

2- Projectile.

3- Force and acceleration.

4- Work and energy.

5- Impulse, momentum and impact.

5.2. Course Topics/hours/Los Matrix

Week No.	***Topic***	***Total Hours***	***Contact hrs.***			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	- Kinematics of particles.	3	2	1	-	**LO1**
Week-2	- Rectilinear motion of particles. - Curvilinear motion of a particles.	3	2	1	-	**LO1, LO4**
Week-3	- Kinetics of particles.	3	2	1	-	**LO4**
Week-4	- Newton's Second law of motion	3	2	1	-	**LO7**
Week5	- Equations of motion in different coordinates.	3	2	1	-	**LO8**
Week-6	Projectiles	3	2	1	-	**LO3**
Week-7		3	2	1	-	**LO7**
Week-8	**Midterm Exam.**					
Week-9	Force and acceleration	3	2	1	-	**LO3**
Week-10		3	2	1	-	**LO4**
Week-11	Work and energy	3	2	1	-	**LO2, LO6**
Week-12		3	2	1	-	**LO8**
Week-13	Impulse, momentum and impact	3	2	1	-	**LO2, LO6**
Week-14		3	2	1	-	**LO5**
Week 15	**Final Exam.**					

5.3. Experiment Topics:

Serial	Experiment	Laboratory hrs.
1st	NA	NA
2nd	NA	NA

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)							
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8
CLO 1	√	√						
CLO 2			√	√				√
CLO 3		√			√			
CLO 4	√						√	
CLO 5		√				√		

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)							
	General							
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8
Face-to-Face Lecture	√	√	√	√	√	√	√	√
Online Education		√						√
Tutorial/ Exercise	√	√	√	√	√	√	√	
Group Discussion			√	√				√
Laboratory								
Site Visit								
Presentation			√	√		√	√	
Mini Project								
Research and Reporting			√	√				
Brain Storming	√	√						
Self-Learning		√						√

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome* (LOs)							
	General							
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8
Written Exam	√	√	√	√	√	√	√	√
Online Exam								
Quiz	√	√	√	√	√	√	√	√
Take-Home Exam								
Research Assignment			√	√		√		
Reporting Assignment					√		√	
Project Assignment								
In-Class Questions	√	√			√			

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- Data show
B- Smart Classrooms
C- Computers
D- Laboratory equipped with student experiments

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Text Books and Additional References:

- HTI Book Engineering Mechanics (2)

10.3. Recommended Books:

- J. L. Meriam, L. G. Kraige, 2014, Engineering Mechanics, Dynamics, 8th Edition, John Wiley Publisher.
- R. C. Hibbeler, "Engineering Mechanics: Statics and Dynamics, 14th Edition", Prentice-Hall, New Jersey, 2016.
- J. L. Meriam, and L. G. Kraige, "Engineering Mechanics: Statics, 8th Edition", John Wiley, New York, 2016.
- R. C. Hibbeler, Kai Beng Yap, 2013, Engineering Mechanics, Dynamics , 13th Edition, Pearson Education South Asia Ltd.

10.4. Web Sites:

- http://ocw.mit.edu
- http://www.sciencedirect.com

Course Directors	Name	Signature
Teaching staff	**Prof. Dr. Adel Fathy** **Dr. Ahmed Abd-Elbadie**	
Course coordinator	**Dr. Ahmed Abd-Elbadie**	
Program coordinator	**Prof. Dr. Hesham M. Mostafa**	
Head of the Department	**Prof. Dr. Adel Fathy**	
Date of approval	**1-10-2023**	

The Higher Technological Institute (HTI)	
Department: Mechanical Engineering	

Course Specification

Course Code: ENG 003 **Course:** Engineering Drawing and Projection (1)

Program(s) on which this course is given	Mechanical Engineering
Department offering the program:	Mechanical Engineering
Department offering the course:	Mechanical Engineering

A– Basic information

Course Title:	Power plants.			**Course Code:**		ENG 003	
Program / Level	Mechanical Engineering			Freshman			
Term/ Academic year:	Feb.2021			**Credit Hours:**		2	
Contact Hours:	4	**Lecture:**	1	**Tutorial:**	-	**Laboratories:**	3
Pre-Requisite	-						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1 – Course Aims:

The course is a part of the engineering foundation that aims to:

- Enable students to visualize the basics of engineering drawings.
- Analyze and distinguish various engineering drawings by applying different techniques and standards.
- Introduce fundamental knowledge and skills for constructing various types of technical drawings such as line work, polygons, curves, lettering, and scale use
- Create accurate technical drawings with orthographic and isometric projections.
- Visualize and represent the 3D objects in 2D planes with proper dimensioning, scaling, etc.

2- Course Learning Objectives (CLO):

At the end of this course, students should be able to:

CLO 1.	Acquire basic techniques and skills in engineering drawing
CLO 2.	Identify different types of lines, basic geometries, and dimensions of engineering sketches
CLO 3.	Illustrate 3D solid bodies using normal and auxiliary projections.
CLO 4.	Show the interaction between the plan and the 3D solid bodies.

3- Relationship between the course and the Competencies:	
Field	**National Academic Reference Standard (NARS)** **COMPETENCIES of ENGINEERING**
Program Academic Standards that the course contributes to achieving	A3, A4, A8

4- Mapping Course Los to NARS		
Field	Program (MEC) that the course contributes to achieving	Learning Outcomes (LOs)
COMPETENCIES of ENGINEERING	**A3.** Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical, and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development	**LO1.** Sketch different types of engineering 2D and 3D drawings.
		LO2. Use engineering dimensions and lettering techniques to provide different sketch details.
	A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements ,environmental issues, and risk management principles	**LO3**. Construct different engineering drawings using standard lines and shapes.
		LO4. Create geometric 3D bodies applying an isometric view.
	A8. Communicate effectively – graphically, verbally, and in writing – with a range of audiences using contemporary tools.	**LO5**. Demonstrate different 3D sketches using orthographical projection.
		LO6. Distinguish the different interactions between projection plans and solid bodies.

5- Course Content:

5.1 Course Description (As indicated in the program Bylaw):

Techniques and skills of engineering drawing, normal and auxiliary projections. Solid geometry.

Intersections between planes and solids.

5.2 Course Topics/hours/LOs Matrix

Course Contents		Total Hours	Contact hrs			LOs Covered by Course
Week	**Topics**		**Lec.**	**Tut.**	**Lab.**	
1	Introduction to Engineering Drawing + Essential Drafting Supplies, Drawing Tools & Equipment	4	1	-	3	LO1, LO3
2	Features of Drawing and Line types + Lettering	4	1	-	3	LO2, LO3

3	Different types of engineering curves + Constructing engineering curves	4	1	-	3	LO1, LO3
4	Constructing methods of Ellipse and Hexagon drawing + Basics of 2D technical drawing	4	1	-	3	LO1, LO3
5	2D technical drawing for various geometries + Sheet layout, Dimensions, and Scale use	4	1	-	3	LO1, LO2, LO3
6	Introduction to Axonometric Projections + Isometric Projections	4	1	-	3	LO1, LO4
7	Midterm	-	-	-	-	-
8						
9						
10	Drawing methods of cylinders and holes for Isometric Projections + Drawing methods of holes for Isometric Projections	4	1	-	3	LO4, LO5, LO6
11	Introduction to Orthographical Projections + Orthographic Projections of Solids	4	1	-	3	LO1, LO5, LO6
12	2D views for a given geometrical solid. + Basic of Deducing orthographic projections	4	1	-	3	LO1, LO5, LO6
13	Final Exam	-	-	-	-	

6- Matrix of Course Objectives and LOs

Course Learning Objectives	**Learning Outcomes (LOs)**					
	LO 1	**LO 2**	**LO 3**	**LO 4**	**LO 5**	**LO 6**
CLO 1	✓		✓	✓	✓	✓
CLO 2		✓	✓			
CLO 3				✓	✓	
CLO 4					✓	✓

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	***Learning Outcome* (LOs)**					
	General					
	LO 1	**LO 2**	**LO 3**	**LO 4**	**LO 5**	**LO 6**
Face-to-Face Lecture	✓	✓	✓	✓	✓	✓
Online Education						
Tutorial/ Exercise						
Group Discussion	✓	✓				
Laboratory	✓	✓	✓	✓	✓	✓
Site Visit						
Presentation						
Mini Project						
Research and Reporting						
Brainstorming	✓	✓			✓	
Self-Learning						

8- Assessment

8.1. Course Assessment Methods

Assessment Methods	*Learning Outcome* (LOs)					
	General					
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
Written Exam						
Online Exam						
Oral Exam						
Quiz	✓	✓				
Lab Exam	✓	✓	✓	✓	✓	✓
Take-Home Exam						
Research Assignment						
Reporting Assignment	✓	✓			✓	✓
Project Assignment						
In-Class Questions	✓	✓	✓	✓	✓	✓

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**30**	13th	120 min.
Midterm written Exam (*Term Work*)	**30**	9th	120 min.
End of term laboratory exam (*Lab*)	**-**	-	-
End of term Oral exam	**-**	-	-
Tutorial and report assessment (*Term Work*)	**40**	According to the schedule	-
Quizzes/reports/presentation (*Term Work*)	**-**	-	-
Total Mark	**100**	**-**	**-**

9- Facilities Required:

A. Data-show and computer.
B. Library
C. Microsoft Teams
D. Egyptian Knowledge Bank (EKB)

10- List of References:

10-1 Course Notes:

1	Course notes are available to the students on the copy center of the Institute and Microsoft teams.

10-2 Required Textbooks and Additional References:

1	Morling, K., & Danjou, S. (2022). *Geometric and engineering drawing*. Routledge, Taylor & Francis Group.
2	Morling, K., & Danjou, S. (2022). *Geometric and engineering drawing*. Routledge, Taylor & Francis Group.
3	Singh, L. P., & Singh, H. (2021). *Engineering drawing: Principles and applications*. Cambridge University Press.

Course Directors	Name	Signature
Teaching staff	Dr. Ahmed Hussien	
	Dr. Ahmed Shabban	
	Dr. Ahmed Samy	
Course coordinator	Dr. Ahmed Shabban	
Program Coordinator	Prof. Dr. Hesham M. Mostafa	
Head of the Department	Prof. Dr. Adel Fathy	
Date of approval	Oct. 2023	

The Higher Technological Institute (HTI)	
Department: Department of Mechanical Engineering	

Course Specification

Course Code: ENG 004 Course name: Engineering Drawing& Projection (2)

Program(s) on which this course is given	All Engineering Programs
Department offering the program:	Mechanical Engineering
Department offering the course:	Mechanical Engineering

A– Basic information

Course Title:	Engineering Drawing			**Course Code:**		ENG 004	
Program /level	Preparing year – Second semester			**SENIOR (1)**			
Term/ Academic year:	Oct.-Jan. 2023 - 2024			**Credit Hours:**		2	
Contact Hours:4		**Lecture:**	1	**Tutorial:**	0	**Laboratories:**	--3---
Pre-Requisite	ENG 003						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

Provide the student with the basic knowledge and skills related to and the concepts and principles of orthographical projection and fundamental of sectioning engineering drawing and projections. Also, to identify the basics of assembly of mechanical parts in addition to drawing and joining steel frames.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Outline concepts and theories of Intersections of Engineering Solids and Developments.

CLO 2. Drive the missing views.

CLO 3. Assess different ideas, views, and knowledge from a range of examples related to orthographical projection and sectioning.

CLO 4. Use knowledge and skills with engineering assembly drawing of some mechanical parts.

CLO 5. Introduce the basics of drawing and joining different steel frames.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of MEC
Program Academic Standards that the course contributes in achieving	A1, A3&A10	

4- *Mapping Course Los to NARS*

Field	Program (Prap.) that the course contribute in achieving	Learning Outcomes (LOs)
COMPETENCIES of ENGINEERING	**A1.** Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics	**LO1.** Identify the concepts and theories of related to orthographical projections. **LO2**. Analyze different engineering designs using engineering drawing.
	A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical, and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	**LO3**. Apply the basics of orthographical projections on different engineering drawing. **LO4**. Use the basics of sectioning on engineering drawing applications.
	A10. Acquire and apply new knowledge, and practice self, lifelong and other learning strategies.	**LO5**. Study the characteristics and processes related to the different machines and symbol drawing. **LO6**. Use engineering drawing basics to assembly of some mechanical parts.

		LO7. Acquire the basics of drawing and joining steel frames.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Development. Sectioning. Drawing and joining steel frames. Assembly drawing of some mechanical parts, Reading drawings.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Review on the drawing of the third projector with the knowledge of the other projections.	4	1	-	3	**LO 1**
Week-2	Drawing of some exercise for third projector.	4	1	-	3	**LO 2**
Week-3	Drawing of some exercise for third projector	4	1	-	3	**LO 3**
Week-4	How to make a section in the engineering drawing.	4	1	-	3	**LO 4**
Week5	Drawing of some exercise on simple section geometrics.	4	1	-	3	**LO 4**
Week-6	Drawing of some exercise on simple section geometrics.	4	1	-	3	**LO 4**
Week-7	Definition of the different types in section bodies.	4	1	-	3	**LO 5**
Week-8	**Midterm Exam.**					
Week-9	Intersections of bodies and surfaces and development of surfaces.	4	1	-	3	**LO 5**
Week-10	Exercise on the intersections of bodies.	4	1	-	3	**LO 5**

Week-11	Identification for different of steel sections.	4	1	-	3	**LO 7**
Week-12	Steel construction, Symbols of electrical circuits, fasteners	4	1	-	3	**LO 7**
Week-13	Assembly of some mechanical components.	4	1	-	3	**LO 6**
Week 14	**Final Exam.**					

5.3. Experiment Topics:

Serial	Experiment	Laboratory hrs.
1st	NA	
2nd		

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)							
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8
CLO 1				*				
CLO 2	*	*	*					
CLO 3				*	*			
CLO 4						*		
CLO 5							*	

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)							
	General	Prap.						
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8
Face-to-Face Lecture	*	*	*	*	*	*	*	
Online Education								
Tutorial/ Exercise	*	*	*	*	*	*	*	
Group Discussion	*	*		*		*	*	
Laboratory	*	*	*	*	*	*	*	
Site Visit								
Presentation		*		*		*	*	
Mini Project						*	*	
Research and Reporting								
Brain Storming	*	*		*		*	*	
Self-Learning								

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome* (LOs)											
	Prap.							MEC				
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10	LO 11	LO 12
Written Exam	*	*	*	*	*	*	*					
Online Exam												
Oral Exam	*	*	*	*	*	*	*					
Quiz	*	*		*		*	*					
Lab Exam	*	*	*	*	*	*	*					
Take-Home Exam												
Research Assignment		*		*		*	*					
Reporting Assignment	*	*	*	*	*	*	*					
Project Assignment												
In-Class Questions	*	*	*	*	*	*	*					

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**30**	15th	90 min.
Midterm written Exam (*Term Work*)	**30**	8th	60 min.
End of term laboratory exam (*Lab*)	**40**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**-**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**-**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- A. Data- show, laptop.
B- B. Library
C- C. Microsoft teams
D- D. Egyptian Knowledge Bank (EKB)

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Text Books and Additional References:

- F.E. Giesecke, A.E. Mitchell, "Technical Drawing with Engineering Graphics", 15th Edition, Peachpit Press, 2016.
- Dennis K. Lieu, Sheryl A. Sorby, "Visualization, Modeling, and Graphics for Engineering Design", 2nd Edition, Cengage Learning Publisher, 2016.
- David E. Goetsch, Raymond L. Rickman, William S. Chalk , "Technical Drawing for Engineering Communication", 7th Edition, Cengage Learning Publisher, 2015.
- McGraw Hill, "Mechanical Drawing Board & CAD Techniques", Student Edition, McGraw-Hill Education, 2011.

10.3. Recommended Books:

- - F. El-Sharif, S. El-Sharif;" Engineering Drawing", Helwan University Press, 1995.

10.4. Web Sites:

-

Course Directors	Name	Signature
Teaching staff	Dr. Ahmed Shabban Dr.Ahmed hussien Dr Ahmed Samy	
Course coordinator	Dr. Ahmed Shabban Mohamed	
Program coordinator	Prof. Dr. Hesham Mostafa.	
Head of the Department	Prof. Dr. Adel Fathy.	
Date of approval	Oct.2023	

The Higher Technological Institute (HTI)	
Department: Mechanical Engineering Dept.	

Course Specification

Course name: Principles of Production Technology and Workshop
Course code: ENG005

Program(s) on which this course is given	**Mechanical Engineering**
Department offering the program:	**Mechanical Engineering**
Department offering the course:	**Mechanical Engineering**

A– Basic information

Course Title:	**Principle of Production Technology and Workshop**			**Course Code:**		ENG 005	
Program /level	Mechanical Engineering			**SENIOR (1)**			
Term/ Academic year:	Oct.-Jan./ 2023 - 2024			**Credit Hours:**		3	
Contact Hours:	6	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	3
Pre-Requisite	-----						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1.*Course Subject Area*:

Humanities, Language, Physical Education and Activities. %	Basic Sciences. %	Basic Eng. Subjects. %	Applied Eng. Sciences. %	Discretionary subjects. %	Computer application and ICT. %	Projects and practice. %	Total %
			80 %			20 %	100 %

2.*Course Aims:*

By the end of this course the student must be taught:

- **Define** Engineering materials and their properties
- **Explain** various machining, forming, joining processes.
- **Demonstrate** quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues related to different cutting and forming processes.
- **Analyze** behavior of engineering materials.
- **Evaluate** different cutting and forming processes.
- **Assess** metal joining processes

- **Use** lathes, milling machines, planers, and other workshop equipment.
- **Collaborate**, communicate effectively with individuals and within multidisciplinary team and lead and motivate others..

3. Course Learning Objectives (LO):

At the end of this course, the student should be able to:

LO1	Introducing the basic knowledge in manufacturing processes and identify the various materials and equipment used in forming and machining processes.
LO2	Identifying the engineering materials and their application in production technology.
LO3	introducing the basic knowledge in bench work, casting, welding, machining, and forming processes. Learn basic workshop skills, such as operating manual and power tools, machining, welding, and fabrication techniques.
LO4	Develop in the students an understanding of the basic workshop skills, such as operating manual and power tools, machining, welding, and fabrication techniques well enough to transfer from one machine or job shop to another in an industrial setting.
LO5	Develop in the students the proper safety habits and attitudes needed in an industrial atmosphere.

4. Relationship between the course and the program:

Field	National Academic Reference Standard (NARS 2018)	
	Competencies of Engineering	Competencies of Mechanical Engineering
Program Academic Standards that the course contributes to achieving.	**A1 & A3 and A10**	**NA**

5. *Mapping Course LOs to NARs 2018:*

Field	Program (CBEs) that the course contributes to achieving	Learning Outcomes (LOs)
Competencies of Engineering.	**A1.** Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	**LO1.** Explain the concepts of production engineering and basics of industrial safety.
		LO2. Identify types and properties of engineering materials.
	A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical, and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	**LO3.** Learn basics of benchmarking and apply workshop safety.

	A10. Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.	**LO4.** Create an effective technique to state the difference between metal casting and forming. **LO5.** Use the suitable method to state the differences between the methods of metal machining. **LO6.** Understand the basic concepts of welding.

6. Course Topics:

No. of Weeks	Topics
1	**Basics of industrial safety**
2	**Types and properties of engineering materials**
1	**Bench working**
2	**Metal casting**
2	**Metal forming**
2	**Machining**
2	**Welding**

7. Course Content:

7.1 Course Description (As indicated in program Bylaw):

Engineering Materials, Manufacturing Processes: Casting and molding processes, metal forming, forming of plastics, powder metallurgy; Material Joining processes: welding, soldering, brazing, riveting, joining by mechanical elements; Material removal processes, metal cutting and finishing processes; Practical training.

Laboratory:

1. Practice on standard machining operations.
2. Practice on standard welding operations.
3. Practice on standard Soldering operations.
4. Practice on standard Brazing operations.
5. Practice on standard riveting operations.

7.2 Course Topics / hours / LOs Matrix:

Week No.	Topic	Total Hours	Contact hours			LOs covered by the course
			Lec.	Tut.	Lab.	
Week 1	The concepts of production engineering and basics of industrial safety	**6**	**2**	**1**	**3**	**LO1, LO2**
Week 2	Types and properties of engineering materials	**6**	**2**	**1**	**3**	**LO1, LO2**

Week 3	Types and properties of engineering materials	**6**	**2**	**1**	**3**	**LO1, LO2**
Week 4	Bench working	**6**	**2**	**1**	**3**	**LO3**
Week 5	Metal casting	**6**	**2**	**1**	**3**	**LO4**
Week 6	Metal casting	**6**	**2**	**1**	**3**	**LO4**
Week 7	Revision for part 1.	**6**	**2**	**1**	**3**	**LO1, LO2, LO3, LO4**
Week 8	Mid Term Exam.					
Week 9	Metal forming	**6**	**2**	**1**	**3**	**LO4**
Week 10	Metal forming	**6**	**2**	**1**	**3**	**LO4**
Week 11	Machining	**6**	**2**	**1**	**3**	**LO5**
Week 12	Machining	**6**	**2**	**1**	**3**	**LO5**
Week 13	Welding	**6**	**2**	**1**	**3**	**LO6**
Week 14	Welding	**6**	**2**	**1**	**3**	**LO6**
Week 15	Final Exam.					

8. Matrix of Course Objectives and LOs:

Course Learning Objectives	**Learning outcomes (LOs)**					
	LO 1	**LO 2**	**LO 3**	**LO 4**	**LO 5**	**LO 6**
Obj. 1	*				*	
Obj. 2		*				
Obj. 3				*	*	*
Obj. 4			*		*	
Obj. 5	*		*	*	*	

9-Course Teaching and Learning Methods:

Competencies Based Education		**Teaching and Learning Methods**									
		Lecture.	**Tutorial/ Exercise.**	**Presentation.**	**Research and Reporting.**	**Group Discussions.**	**Brain Storming.**	**Self-Learning.**	**Cooperative learning.**	**Mini Project.**	**Online Education.**
Competencies of Engineering.	**LO 1**	*	*		*						
	LO 2	*	*		*					*	
	LO 3	*	*		*		*	*			
	LO 4	*	*		*				*		
	LO 5	*	*		*	*	*				
	LO 6	*	*	*	*						

10-Teaching and Learning Methods for low capacity and outstanding students:

For low-capacity students.	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorial
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding students.	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentations.
	Encourage them to take parts in the running research projects.

11- Assessment:

11- Course Assessment Methods:

Competencies Based Education		**Written Exam.**	**Quiz.**	**Reporting Assignment.**	**Online Exam.**	**Take-Home Exam.**
Competencies of Engineering. Competencies	**LO 1**	*	*	*		
	LO 2	*	*	*		
	LO 3	*	*	*		
	LO 4	*	*	*		
	LO 5	*	*	*		
	LO 6	*	*	*		

11.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
Two Quizzes (*Term Work*)	**20**	6th & 10th	60 min.
Reports/presentation	**20**	According to the schedule.	--
Total Mark	**100**		

12. Facilities Required:

A. Data- show, laptop.
B. Library
C. Microsoft teams
D. Egyptian Knowledge Bank (EKB)

13- List of References:

13-1 Course Notes:

1. Course notes are available to the students on copy center of the Institute.

13-2 Required Textbooks and Additional References:

Kalpakjian, S. and Schmid, S.R. (2009) *Manufacturing Engineering and Technology*. Upper Saddle River: Prentice-Hall.

Singh, R. (2010) *Introduction to basic manufacturing processes and Workshop Technology*. New Delhi: New Age Internation Publishers.

13-3 Recommended Books:

B. J. Black, (2015). *Workshop processes, practices and materials*. Routledge

13-4 Periodic Journals:

Course Directors	Name	Signature
Teaching staff	**Prof. Dr. Ibrahim Mousa** **Assoc. Prof. Dr. Ahmed Nabhan** **Dr. mohamed Ali**	
Course coordinator	**Dr. Hossam Ramadan**	
Program coordinator	**Prof. Dr. Hesham Mostafa**	
Head of the Department	**Prof. Dr. Adel Fathi**	
Date of approval	Oct.-Jan./ 2023 - 2024	

المعهد التكنولوجي العالي (HTI)

القسم: قسم العلوم الأساسية

توصيف مقرر

تاريخ الهندسة والتكنولوجيا : ENG 006

أ – الانتماء (انتساب المقرر)

البرنامج ذو الصلة:	جميع البرامج الهندسية
القسم الذي يقدم البرنامج:	جميع الأقسام الهندسية
القسم الذي يقوم بتدريس المقرر:	قسم العلوم الأساسية

ب – المعلومات الأساسية

عنوان المقرر	تاريخ الهندسة والتكنولوجيا			كود المقرر	ENG 006		
الفصل الدراسي	أكتوبر-يناير 2023- 2024			الساعات المعتمدة	1		
ساعات الاتصال الكلية	1	محاضرة	1	سيكشن	0	مختبر	0
المقررات اللازمة لتسجيل هذا المقرر	لا يوجد						
المعيار الأكاديمي	(NARS 2018)						
اللائحة المعتمدة	2016						

1- أهداف المقرر:

يهدف المقرر إلى معرفة الطالب بالعلاقة بين الهندسة التكنولوجية والعلم والتعرف على دور الهندسة في الحضارات القديمة والوسطي، والتطور التكنولوجي، والتعليم الهندسي، وتخصصاته. ويهدف المقرر إلى ان يكون الطالب قادرا على:

- معرفة وإدراك المفاهيم والمعارف المتنوعة بالهندسة والتكنولوجيا
- الشعور بأهمية التفكير العلمي ومنهجياته.
- المقارنة بين دور الهندسة والتكنولوجيا في العصور القديمة والوسطي.
- المقدرة على تحليل الخبرات والتجارب الحياتية خاصة في مجال العمل.
- توظيف المعارف والمهارات التي حصل عليها في مجال العمل.

2- الأهداف التعلمية المقرر (CLO):

في نهاية هذا المقرر، يجب أن يكون الطالب قادرا على:

CLO 1	معرفة المسميات المتعلقة بالهندسة والتكنولوجيا وفهم دور الهندسة والتكنولوجيا في العصور القديمة والعصور الوسطي والحديثة وكيفية انتقال التكنولوجيا حديثاً.
CLO 2	معرفة المعايير الأساسية الواجب اتباعها من جانب المهندس ومعرفة منهجيات العمل الهندسي. وإدراك تطور التعليم الهندسي في مصر من عصر الحملة الفرنسية إلى عصر الاحتلال البريطاني.
CLO 3	يقارن بين دور الهندسة والتكنولوجيا في العصور القديمة والوسطي ويكتسب القدرة على التفكير بطريقة علمية وهندسية.

3- العلاقة بين المقرر والجدارات (الكفاءات) الهندسية:

نطاق الارتباط	المعيار المرجعي الأكاديمي الوطني (NARS) الكفاءات الهندسية الأساسية (As)
المعايير الأكاديمية للبرنامج التي يساهم المقرر في تحقيقها	A3, A4, A5, A6, A10

1-4 - مخرجات التعلم (LOs) :

عند الانتهاء من دراسة المقرر، يجب أن يكون لدى الطالب القدرة على

LO 1	معرفة المسميات المتعلقة بالهندسة والتكنولوجيا.
LO 2	فهم دور الهندسة والتكنولوجيا في العصور القديمة والعصور الوسطي والحديثة وكيفية انتقال التكنولوجيا حديثاً.
LO 3	معرفة المعايير الأساسية الواجب اتباعها من جانب المهندس ومعرفة منهجيات العمل الهندسي.
LO 4	إدراك تطور التعليم الهندسي في مصر من عصر الحملة الفرنسية إلى عصر الاحتلال البريطاني.
LO 5	يقارن بين دور الهندسة والتكنولوجيا في العصور القديمة و الوسطي.
LO 6	القدرة على التفكير بطريقة علمية وهندسية.
LO 7	توظيف المعارف والمهارات التي حصل عليها فى مجال العمل
LO 8	العمل بحب واتقان داخل فريق
LO 9	القدرة على تحليل الخبرات والتجارب الحياتية خاصة فى مجال العمل
LO10	التمتع بمهارة حل المشكلات بطريقة هندسي.

2-4 - ارتباط نواتج التعلم للمقرر (LOs) والمعايير القياسية المرجعية الوطنية (NARS)

نطاق الارتباط	نواتج التعلم	مخرجات التعلم للمقرر (LOs)									
		LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9	LO10
الجدارات الهندسية الأساسية	A1										
	A2										
	A3	✓	✓				✓				
	A4			✓	✓	✓		✓			
	A5				✓			✓			
	A6										
	A7										✓
	A8								✓		✓
	A9						✓			✓	
	A10										✓

5- محتوى المقرر:

توصيف المقرر (كما هو موضح في لائحة البرنامج):

يتكون المقرر من تعريف الطالب بتاريخ الهندسة في الصور المختلفة (القديمة والوسطى والحديثة) كما يبرز دور الهندسة والتكنولوجيا في خدمة المجتمع والبيئة. كما يستعرض أهمية دراسة التاريخ وماهي مقومات المهندس والعمل الهندسي كما يبرز أهمية دور الهندسة في المجتمع المصري حديثاً

موضوعات المقرر

رقم الأسبوع	المواضيع	مجموع الساعات	ساعات الاتصال			LOs التي يحققها المقرر
			محاضرة	سيكشن	المختبر	
1	تعريف بالمقرر الدراسي ومقدمة عامه	1	1	0	0	LO 1,2
2	العلاقة بين الهندسة التكنولوجية والعلم	1	1	0	0	LO 1,2
3	تعريف الفن والفنان	1	1	0	0	LO 3
4	دور الهندسة والتكنولوجيا في العصور القديمة	1	1	0	0	LO 4
5	استغلال المواد الطبيعية	1	1	0	0	LO 5,6
6	دور الهندسة والتكنولوجيا خلال العصور الوسطي	1	1	0	0	LO 7
7	دور علماء المسلمين في الهندسة والتكنولوجيا	1	1	0	0	LO 2,3
8	إمتحان منتصف الفصل الدراسي					
9	انتقال تكنولوجيا العصر الحديث بين الدول	1	1	0	0	LO 4
10	مشاكل نقل التكنولوجيا بين الدول	1	1	0	0	LO 5,1
11	مجال العمل الهندسي ومسؤولية المهندس	1	1	0	0	LO 4, 2
12	تطور تاريخ التعليم الهندسي في مصر من عصر الحملة الفرنسية وحتى عصر الاحتلال البريطاني	1	1	0	0	LO 2, 8
13	مراجعة عامة	1	1	0	0	LO 3,10
14	إمتحان الفصل الدراسي النهائي					

6- مصفوفة توافق أهداف المقرر الدراسي ونواتج (مخرجات) التعلم

أهداف تعلم المقرر	مخرجات التعلم (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
CLO 1	✓	✓							✓	
CLO 2			✓	✓			✓		✓	✓
CLO 3	✓		✓		✓	✓		✓		

7- طرق التدريس والتعلم:

طرق التعليم والتعلم	نتائج التعلم (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
محاضرة وجها لوجه	✓	✓	✓	✓	✓	✓				
التعليم عبر الإنترنت	✓	✓			✓					
واجبات منزلية		✓		✓		✓				
مناقشة جماعية	✓		✓		✓		✓	✓		
مختبر										
زيارة الموقع										
عروض تقديمية بالبوربوينت	✓		✓							
مشروع صغير										
أبحاث وإعداد التقارير							✓	✓		
العصف الذهني	✓	✓			✓	✓				
التعلم الذاتي			✓	✓						

8- التقييم

8.1 طرق تقييم المقرر:

طرق التقييم	نتائج التعلم (LOs)									
	مخرجات التعلم للمقرر (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
الامتحان التحريري	✓	✓				✓	✓	✓		
امتحان عبر الإنترنت										
الامتحان الشفوي			✓	✓						
مسابقات تنافسية									✓	✓
الامتحانات المعملية										
واجبات منزلية	✓		✓		✓					
مهمة بحثية				✓			✓	✓		
مهمة إعداد التقارير	✓		✓	✓		✓			✓	
تعيين المشروع										
الأسئلة داخل المحاضرة	✓	✓	✓	✓	✓	✓				

8-2. جدول التقييم وتوزيع الدرجات:

طريقة التقييم	الدرجة	التوقيت	وقت الامتحان

الامتحان النهائي	40	الاسبوع 14	60 دقيقة.
الامتحان التحريري لنصف الترم الدراسي	20	الاسبوع 8	60 دقيقة.
امتحانات تقييمية وتحريرية قصيرة (خلال الترم الدراسي)	20	وفقا للجدول الزمني	--- دقيقة
اختبارات/تقارير/عرض تقديمي (خلال الترم)	20	وفقا للجدول الزمني	---
مجموع الدرجات	100		

9- المرافقات المطلوبة للتعليم والتعلم:

A- قاعة محاضرات مجهزة .
B- المكتبات المركزية والفرعية.
C- الوسائل التعليمية (داتا شو) وجهاز حاسوب محمول.
D- مّذكرة لتدريس المقرر وكشوف متابعة للطلاب

10- قائمة المراجع:

10-1. كتاب المقرر:

1- تاريخ الهندسة والتكنولوجيا + مذكرات المقرر
2- عروض تقديمية (بوربوبينت) يعطى للطلاب جزء بجزء

10-2. الكتب المرجعية المطلوبة والمراجع الإضافية:

1- د. مصطفي محمود سليمان: تاريخ العلوم والتكنولوجيا في العصور القديمة والوسطى، الهيئة العامة للكتاب، القاهرة 2017.
2- برتران جيل: موسوعة تاريخ التكنولوجيا ترجمة هيثم اللمع 2019.
3- د. أحمد محمد العريان تاريخ العلوم والتكنولوجيا الهندسية. عالم الكتب، القاهرة 1999.

10.3. الكتب الموصي بها:

1- عباس محمود العقاد: أثر العرب في الحضارة الأوربية، دار المعارف، القاهرة 1960.
2- د. مصطفي عبد المنعم شعبان: تاريخ الهندسة والتكنولوجيا، القاهرة 1998.
3- سمير عرابي: موسوعة اختراعات واكتشافات للعلوم البيولوجية والطبية `دور علماء العرب والمسلمين في تاريخ الحضارة الإنسانية دار الكتاب الحديث 2011.

10.4. المواقع الإلكترونية:

- https://ar.wikipedia.org/wiki
- http://www.du.edu.eg/
- https://www.youtube.com/watch?v=bnCua19M_EA

القائمين على مراجعة وتقيم المقرر	الإسم	توقيع
أعضاء هيئة التدريس	1. د/ محمد عبد العزيز 2. د / مصطفى فاضل	
منسق المقرر	د/ محمد عبدالعزيز	
رئيس القسم	أ.د. عيد عبدالباسط عيد	
تاريخ الموافقة	1-10-2023	

Higher Technological Institute (HTI)	
Department: b a s i c s c i e n c e freshman year	

Course Specification

FTR 031: Introduction to Field Training

Program(s) on which this course is given	**All Programs of Engineering**
Department offering the program:	**All departments of Engineering**
Department offering the course:	**Basic science engineering**

Basic information

Course Title:	Introduction to Field Training			**Course Code:**		FTR 031	
Program	All Programs			**Level**		Preparatory Level	
Term/ Academic year:	Third Term/First Year			**Credit Hours:**		3	
Contact Hours:	20	**Lecture:**	0	**Tutorial:**	0	**Laboratories:**	20
Pre-Requisite	-----						
Academic standards	Academic reference standards						
Bylaw Approval	2016						

1- Course Description:

Field training involves a set of skills and experiences presented to the student within an engineering framework, or within an area of practice, with the aim of helping the student to acquire various areas of technical skills, in addition to modifying personal features and personal behaviors. This will greatly contribute to the student's professional growth, by linking theoretical knowledge with practical application, and provide the opportunity for students to discover their capabilities, desires, and needs. of the labor market. Moreover, field training also involves a group of practical experiences that depend on theoretical references. One of the distinctive features of field training is that it has no specific area of engineering applications; it could be conducted almost anywhere. Furthermore, it depends on the guidance of the trainees or individuals participating in the field training by a practically qualified person in this field, who possesses sufficient skills that help them succeed in implementing the objective of field training.

2- Course Aims

2.1- Course Aims:

The first field training is of great importance for the preparatory students in the engineering faculty. The course is composed of four items that are engineering drawing, workshop, computer Lab. and language. the following points are the main aims of the course:

No.	Course Aims
1	Field training represents the student's initial field of expertise, in which they apply what has been learned in the real environment.
2	It helps the student to develop their understanding of the educational process procedures. and enhances his individual learning skills.
3	It is learning the student how to improve his skills by drawing and distinguishing production parts with different types of machines.
4	It's also Develops communication skills (computer and language skills) for students.

3- Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1.	Have a mix of skills in engineering drawing, workshop, computer Lab. and language.
CLO 2.	Acquire the construction of different mechanical systems, Evaluation of the missed view and dimensions
CLO 3.	Enhance students' abilities in skills of engineering drawing, main tools in workshop, MATLAB programming.
CLO 4.	Identify the geometric construction of different components, imagination the projections and dimension of a component.
CLO 5.	Practice the real work in in engineering drawing, workshop, computer Lab. and language.

4- Relationship between the course and the Competencies:

Field	National Academic Reference Standard (NARS)
	Engineering Competences (As)
Program academic Standards that the course contributes to achieving	A1, A2, A4, A9, A10

5.1- Learning Outcomes (LOs):

On successful completion of the course, the student should have the ability to

LO 1	**Identify the geometric construction of different components, main parts of workshop, hand tools, workspace in MATLAB program, four skills in English language.**
LO 2	**Acquire the essential practical experience in tuning a whole mechanical system to satisfy certain specific needs, practical training in workshop, computer labs, and language labs.**
LO 3	**Analysis the theories, equations, and applications relating to the training in engineering drawing, workshop, computer Lab. and language**
LO 4	**Implement the scientific reports depending on the scientific foundations of his study and appraise virtual labs results and simulation projects.**
LO 5	**Transfer the gained knowledge orally, in writing, and graphically.**

5.2- Mapping Course LOs to NARS

Field		Learning Outcomes (LOs)				
NARS 2018 Competencies		LO1	LO2	LO3	LO4	LO5
Basic Engineering Competencies (As)	A1	✓				
	A2		✓			
	A4			✓		
	A9				✓	
	A10					✓

6- Course Content:

6.1- Catalogue Course Description (As indicated in program Bylaw):

The student learns to improve his skills: Drawing and identifying various production pieces and operating th`e various pieces of machinery, communication skills* Computer skills, language

6.2- Course Topics / Hours / LOs Matrix:

Week No.	Topic		*Total Hours*	Contact hrs			LOs Covered by Course
				Lec.	Tut	Lab.	
1	E.D	Orthographic Projections	20	0	0	20	LO 1
	E.W	Introduction-Safety- Central Lathe					
	C.S.	Introduction to Microsoft words					
	LNG	Unit 9: Back to the future					
2	E.D	Orthographic Projections	20	0	0	20	LO 1
	E.W	Milling - Shaper - wilding					
	C.S.	Introduction to Microsoft power point					
	LNG	Unit 10: I don't like working on weekends					
3	E.D	Isometric &Missed view	20	0	0	20	LO 2
	E.W	Sheet metal					
	C.S.	Introduction to Microsoft excel					
	LNG	Unit 11: It's really worth seeing					
4	Midterm Exam.						
5	E.D	Isometric &Missed view	20	0	0	20	LO 2, LO 3,
	E.W	Wood Working					
	C.S.	Main MATLAB windows - Variables.					
	LNG	Unit 12: It's been a long time					
6	E.D	Sections	20	0	0	20	LO3, LO 4
	E.W	Measurements-Casting					
	C.S.	Create arrays and matrices- Solving linear equations using MATLAB.					
	LNG	Unit 13: A terrific book, but a terrible movie					
7	E.D	Sections	20	0	0	20	LO4, LO5
	E.W	Forging - Hand Working					
	C.S.	Plotting graphs using MATLAB.					
	LNG	Unit 14: So that's what it means					
8	Final Exam.						

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	Learning Outcomes (LOs)				
	General (A)				
	LO 1	LO 2	LO 3	LO 4	LO 5
Face-to-Face Lecture	√		√		√
Online Education					
Tutorial/ Exercise		√		√	
Group Discussion			√		√
Laboratory		√	√		
Site Visit					
Presentation				√	
Mini Project				√	
Research &Reporting				√	
Brain Storming	√		√		√
Self-Learning				√	√

8- Assessment Methods:

8.1- Course Assessment Methods:

Assessment Methods	Learning Outcomes (LOs)				
	General (A)				
	LO 1	LO 2	LO 3	LO 4	LO5
Written Exam			√	√	√
Online Exam					
Oral Exam					√
Quiz	√				√
Lab Exam		√	√		
Take-Home Exam					
Research Assignment				√	
Reporting Assignment				√	
Project Assignment				√	√

8.2- Assessment Schedule and Grades Distribution:				
Assessment Method		**Mark**	**Week**	**Exam Time**
Final Exam	Written	**20**	8th	60 min.
	Oral	**20**	8th	60 min.
Midterm Report or Exam (*Term Work*)	Written	**10**	4th	45 min.
	Oral	**10**	4th	45 min.
Mini projects/ Attendance (*Term Work*)		**20**	weekly	15 min.
Quizzes/reports/presentation (*Term Work*)		**20**	weekly	15 min.
Total Mark		**100**		

9- Facilities Required for Teaching and Learning:	
No.	**Required Facilities**
1	White board.
2	Data show.
3	Computer lab.
4	Drawing class.
5	Educational workshop classes

10- List of References:	
10.1- Course Notes:	
1	Available Presentation (handed to students' part by part).
10.2- Required Textbooks and Additional References:	
	Interchange 3rd edition, Cambridge University Press, 2014
	Interchange Workbook 3rd edition, Cambridge University Press, 2014
10.3- Recommended Books:	
	English Vocabulary Builder Collection; Jackie Bolen, 2022 **English Vocabulary in Use Pre-intermediate and Intermediate Book with Answers: Vocabulary Reference and Practice; Stuart Redman, 2017** **English Vocabulary in Use. Cambridge University Press, 2015**

Course Directors	Name	Signature
Teaching staff	**DR M.AWNY, HASSAN GASSOR**	
Program coordinator	**DR MAI ABO-ZEID**	
Course coordinator	**DR. AHMED SHAABAN**	
Head of the Department	**DR. AHMED MAAROUF**	
Date of approval	**7/10/2023**	

The Higher Technological Institute (HTI)	
Department: **Basic Sciences**	

Course Specification

LNG 001: English (1)

Program(s) on which this course is given	*All Programs of Engineering*
Department offering the program:	*All departments of Engineering*
Department offering the course:	*Basic Science*

Basic information

Course Title:	English (1)			**Course Code:**		LNG 001	
Program	*All Programs of Engineering*			**Level**		Preparatory Level	
Term/ Academic year:	OCT-JAN 2023-2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	1	**Tutorial:**	0	**Laboratories:**	2
Pre-Requisite							
Academic standards	Academic reference standards (ARS)						
Bylaw Approval	2016						

1. Course Description:

The course aims to integrate the four language skills and helping students to communicate in English well. On successful completion of the course, the students should demonstrate knowledge and understanding of the four skills, expressing themselves effectively, and have critical thinking skills.

2. Course Aims and its Mapping with Program Aims:

2.1. Course Aims:

No.	Course Aims
1	• Building an understanding of concepts and ideas explicitly in terms of previous learning.
2	• Integrating the four language skills and communicate in English well.
3	• Emphasizing the relationship between conceptual understanding and problem-solving approaches.
4	• Providing students with a strong critical thinking skill.

2.2. Mapping Course Aims with Program Aims

Program Aims	Course Aims
Applying basic concepts in English to provide students and help them to gain knowledge of general vocabulary that would help the students in various topics.	Apply the principle of grammatical rules in their usage of English.
	Enhance the degree of awareness to participate using English words professionally in their life.
	Upgrade the capability of usage of the English language in various topics.

3. Learning Outcomes (LOs):

3.1. Course Learning Outcomes (CLOs):

LO 1.	Have a mix of skills in English Language.
LO 2.	Study different grammatical Rules.
LO 3.	Enhance students' abilities in expressing themselves.
LO 4.	Understand English and respond correctly.
LO 5.	Work effectively in team of multi-disciplinary or multi-culture.
LO 6	Apply the four skills of language freely.
LO 7	Express themselves in English with confidence.

3.2. Relationship Between the Course and the Program Competencies:

Field	Academic Reference Standard (ARS)
	Engineering Competences (As)
Program Academic Standards that the course contributes to achieving	**A1, A2, A8, A10**

3.3. Mapping Course LOs to Program Competencies:

Field	Program Academic Standards that the course contributes in achieving	Learning Outcomes (LOs)
Competencies for Engineering Graduates (level "A")	**A1.** Identify, formulate, and solve complex engineering problems by applying the correct English vocabulary and grammatical rules.	**LO 1.** Have a mix of skills in English Language.
		LO 3. Enhance students' abilities in expressing themselves
		LO 4. Understand English and respond correctly.
	A2. Enhance and Develop the students' abilities and awareness for appropriate analysis and interpretation to all the scientific topics written in English words. **A8**. Communicate effectively, verbally and in writing with a range of audiences.	**LO 2.** Study different grammatical Rules.
		LO 5. Work effectively in team of multi-disciplinary or multi-culture.
	A10. Acquire and apply new knowledge and practice through English language.	**LO 6.** Apply the four skills of language freely.
		LO 7. Express themselves in English with confidence.

4. Course Contents:

4.1. Course Topics / Hours / LOs Matrix:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			LOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	**Unit 1: That's What Friends are for!**	3	1	0	2	**LO 1**
Week-2	**Unit 2: Career Moves**	3	1	0	2	**LO 1**
Week-3	**Unit 3: Could you do me a Favor?**	3	1	0	2	**LO 1**
Week-4	**Unit 4 What a Story!**	3	1	0	2	**LO 1**
Week5	**Unit 5: Crossing Cultures**	3	1	0	2	**LO 2, LO 7**
Week-6	**Unit 6: What's wrong with it ?**	3	1	0	2	**LO 2, LO 5**
Week-7	**Midterm Exam.**					
Week-8	**Unit 7: The World we live in**	3	1	0	2	**LO 3, LO 4, LO 5**
Week-9	**Unit 8: Learning to Learn**	3	1	0	2	**LO5**
Week-10	**Supplementary Material and Quiz**	3	1	0	2	**LO 5, LO 6**
Week-11	**Supplementary Material and Quiz**	3	1	0	2	**LO 5**
Week-12	**Presentations**	3	1	0	2	**LO 5**
Week-13	**Project**	3	1	0	2	**LO 5**
Week-14	**Revision and Quiz**	3	1	0	2	**LO 6, LO7**
Week 15	**Final Exam.**					

5. Course Teaching and Learning Methods:

Teaching and Learning Methods	Learning Outcomes (LOs) General (A)						
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
Face-to-Face Lecture	√		√		√		√
Online Education							
Tutorial/ Exercise		√		√		√	
Group Discussion			√		√		
Laboratory							
Site Visit							
Presentation							
Mini Project							
Research & Reporting							√
Brain Storming	√		√			√	
Self-Learning					√		

6. Assessment Methods:

6.1. Course Assessment Methods:

Assessment Methods	Learning Outcomes (LOs) General (A)						
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
Written Exam			√	√		√	√
Online Exam							
Oral Exam							
Quiz	√				√		
Lab Exam							
Take-Home Exam							
Research Assignment				√			
Reporting Assignment		√	√			√	
Project Assignment			√	√		√	√

6.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	7th	60 min.
End of term laboratory exam (*Lab*)	**-**		
End of term Oral exam	**-**		
Mini projects (*Term Work*)	**-**	-	---
Quizzes/reports/presentation (*Term Work*)	**40**	Quiz: 6^{th} , 11^{th}	15 min.
Total Mark	**100**		

7. Facilities Required for Teaching and Learning:

No.	Required Facilities
1	White board.
2	Data show.

8. List of References:

8.1 Course Notes:

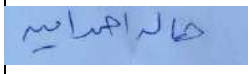
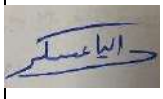
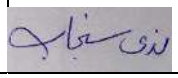
1. Available Presentation (handed to students part by part).
2. "English 3"; HTI; Available Hard copy.

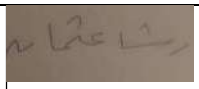
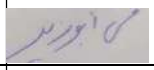
8.2 Required Text Books and Additional References:

1. **Interchange 3rd edition, Cambridge University Press, 2019**
2. **Interchange Workbook 3rd edition, Cambridge University Press, 2019**

8.3. Recommended Books:

1. **English Grammar in Use. Cambridge University Press, 2020**
2. **English Vocabulary in Use. Cambridge University Press, 2021**

Course Directors	Name	Signature
Teaching staff	**Hala Ameen**	
	Dalia Askar	
	Nada Singab	

Course coordinator	**Dr. Rasha Osman** **Dr. Mai Abouzaid**	 
Head of the Department	**Prof. Dr. Eid Abdel Basset**	
Date of approval	OCT-JAN 2023-2024	

The Higher Technological Institute (HTI) Department: **Basic Sciences**	

Course Specification

LNG 002: English (2)

Program(s) on which this course is given	*All Programs of Engineering*
Department offering the program:	*All departments of Engineering*
Department offering the course:	*Basic Science*

Basic information

Course Title:	English (2)			**Course Code:**		LNG 002	
Program	*All Programs of Engineering*			**Level**		Preparatory Level	
Term/ Academic year:	OCT-JAN 2023-2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	1	**Tutorial:**	0	**Laboratories:**	2
Pre-Requisite	LNG 001						
Academic standards	Academic reference standards (ARS)						
Bylaw Approval	2016						

1. Course Description:

The course aims to integrate the four language skills and helping students to communicate in English well. On successful completion of the course, the students should demonstrate knowledge and understanding of the four skills, expressing themselves effectively, and have critical thinking skills.

2. Course Aims and its Mapping with Program Aims:

2.1. Course Aims:

No.	Course Aims
1	• Building an understanding of concepts and ideas explicitly in terms of previous learning.
2	• Integrating the four language skills and communicate in English well.
3	• Emphasizing the relationship between conceptual understanding and problem-solving approaches.
4	• Providing students with a strong critical thinking skill.

2.2. Mapping Course Aims with Program Aims

Program Aims	Course Aims
Applying basic concepts in English to provide students and help them to gain knowledge of general vocabulary that would help the students in various topics.	Apply the principle of grammatical rules in their usage of English.
	Enhance the degree of awareness to participate using English words professionally in their life.
	Upgrade the capability of usage of the English language in various topics.

3. Learning Outcomes (LOs):

3.1. Course Learning Outcomes (CLOs):

LO 1.	Have a mix of skills in English Language.
LO 2.	Study different grammatical Rules.
LO 3.	Enhance students' abilities in expressing themselves.
LO 4.	Apply the four skills of language freely.
LO 5.	Work effectively in team of multi-disciplinary or multi-culture.
LO 6	Understand English and respond correctly.
LO 7	Express themselves in English with confidence.

3.2. Relationship Between the Course and the Program Competencies:

Field	Academic Reference Standard (ARS)
	Engineering Competences (As)
Program Academic Standards that the course contributes to achieving	**A1, A2, A8, A10**

3.3. Mapping Course LOs to Program Competencies:

Field	Program Academic Standards that the course contributes in achieving	Learning Outcomes (LOs)
Competencies for Engineering Graduates (level "A")	**A1.** Identify, formulate, and solve complex engineering problems by applying the correct English vocabulary and grammatical rules.	**LO 1.** Have a mix of skills in English Language.
		LO 3. Enhance students' abilities in expressing themselves
		LO 4. Understand English and respond correctly.
	A2. Enhance and Develop the students' abilities and awareness for appropriate analysis and interpretation to all the scientific topics written in English words.	**LO 2.** Study different grammatical Rules.
	A8. Communicate effectively, verbally and in writing with a range of audiences.	**LO 5.** Work effectively in team of multi-disciplinary or multi-culture.
	A10. Acquire and apply new knowledge and practice through English language.	**LO 6.** Apply the four skills of language freely.
		LO 7. Express themselves in English with confidence.

4. Course Contents:

4.1. Course Topics / Hours / LOs Matrix:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			LOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	**Unit 9: Self- Improvement**	3	1	0	2	**LO 1**
Week-2	**Unit 10: The Past and The Future**	3	1	0	2	**LO 1**
Week-3	**Unit 11: Life's Little Lessons**	3	1	0	2	**LO 1**
Week-4	**Unit 12: The Right Stuff**	3	1	0	2	**LO 1**
Week5	**Unit 13: That's Impossibility.**	3	1	0	2	**LO 2, LO 7**
Week-6	**Unit 14: Behind the Scenes**	3	1	0	2	**LO 2, LO 5**
Week-7	**Midterm Exam.**					
Week-8	**Unit 15: There should be a law!**	3	1	0	2	**LO 3, LO 4, LO 5**
Week-9	**Unit 16: Challenges and Accomplishments**	3	1	0	2	**LO5**
Week-10	**Supplementary Material and Quiz**	3	1	0	2	**LO 5, LO 6**
Week-11	**Supplementary Material and Quiz**	3	1	0	2	**LO 5**
Week-12	**Presentations**	3	1	0	2	**LO 5**
Week-13	**Project**	3	1	0	2	**LO 5**
Week-14	**Revision and Quiz**	3	1	0	2	**LO 6, LO7**
Week 15	**Final Exam.**					

5. Course Teaching and Learning Methods:

Teaching and Learning Methods	Learning Outcomes (LOs) General (A)						
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
Face-to-Face Lecture	√		√		√		√
Online Education							
Tutorial/ Exercise		√		√		√	
Group Discussion			√		√		
Laboratory							
Site Visit							
Presentation							
Mini Project							
Research & Reporting							√
Brain Storming	√		√			√	
Self-Learning					√		

6. Assessment Methods:

6.1. Course Assessment Methods:

Assessment Methods	Learning Outcomes (LOs) General (A)						
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
Written Exam			√	√		√	√
Online Exam							
Oral Exam							
Quiz	√				√		
Lab Exam							
Take-Home Exam							
Research Assignment				√			
Reporting Assignment		√	√			√	
Project Assignment			√	√		√	√

6.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	60 min.
Midterm written Exam (*Term Work*)	**20**	7th	60 min.
End of term laboratory exam (*Lab*)	**-**		
End of term Oral exam	**-**		
Mini projects (*Term Work*)	**-**	-	---
Quizzes/reports/presentation (*Term Work*)	**40**	Quiz: 6th , 11th	15 min.
Total Mark	**100**		

7. Facilities Required for Teaching and Learning:

No.	Required Facilities
1	White board.
2	Data show.

8. List of References:

8.1 Course Notes:

1. Available Presentation (handed to students part by part).
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8.2 Required Text Books and Additional References:

1. **Interchange 3rd edition, Cambridge University Press, 2019**
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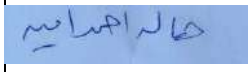
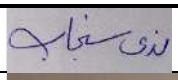
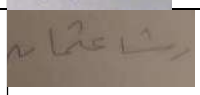
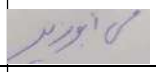
8.3. Recommended Books:

1. **English Grammar in Use. Cambridge University Press, 2020**
2. **English Vocabulary in Use. Cambridge University Press, 2021**

Course Directors	Name	Signature
Teaching staff	**Hala Ameen**	
	Dalia Askar	

	Nada Singab	
Course coordinator	**Dr. Rasha Osman**	
	Dr. Mai Abouzaid	
Head of the Department	**Prof. Dr. Eid Abdel Basset**	
Date of approval	OCT-JAN 2023-2024	

المعهد التكنولوجي العالي (HTI)

القسم: قسم العلوم الأساسية

توصيف مقرر

اللغة العربية: LNG 003

أ – الانتماء (إنتساب المقرر)

البرنامج المانح :	جميع البرامج الهندسية
القسم الذي يقدم البرنامج:	جميع الأقسام الهندسية
القسم الذي يقوم بتدريس المقرر:	قسم العلوم الأساسية

ب – المعلومات الأساسية

عنوان المقرر	اللغة العربية			كود المقرر		LNG 003	
المستوي الدراسي	إعدادي			الساعات المعتمدة		2	
ساعات الإتصال الكلية	2	محاضرة	2	تمارين	0	مختبر	0
المتطلب السابق	لا يوجد						

2- أهداف المقرر:

يهدف المقرر إلي تنمية قدرات الطالب اللغوية التواصلية (الكتابية والشفاهية والتداولية) ، وبناء قدراته للربط بين عمليات تركيب اللغة والمعنى المقصود وتحديد الإجراءات المعرفية لإنتاج الأقوال.

3- الأهداف التعلمية المقرر (CLO):

في نهاية هذا المقرر، يجب أن يكون الطالب قادرا على:

CLO1	نسج البعد الوظيفي للغة العربية في الحياة العملية وتوظيف قدراته اللغوية في إيجاز المعلومات وإعادة صياغتها
CLO 2	الكفاءة اللغوية العامة والكفاءة اللغوية الأكاديمية.
CLO 3	استخدام الكفايات اللغوية الاجتماعية والاستراتيجية في التواصل الكتابي والشفاهي واستيفاء الشروط الشكلية والموضوعية للكتابة الإدارية وللكتابة الفنية.

3- العلاقة بين المقرر و الجدارات (الكفاءات) الهندسية :

نطاق الإرتباط	المعيار المرجعي الأكاديمي الوطني (NARS)
	الكفاءات الهندسيةالأساسية (As)
المعايير الأكاديمية للبرنامج التي يساهم المقرر في تحقيقها	A5, A7, A10

4.1 - مخرجات التعلم (LOs) :

عند الانتهاء من دراسة المقرر يجب أن يكون لدى الطالب القدرة على:

LO 1	إستخدام المفاهيم اللغوية والنحوية الأساسية للغة العربية في الحياة العملية .
LO 2	إستيفاء الشروط الشكلية والموضوعية للكتابة الإدارية والفنية.
LO 3	إستعمال القواعد اللغوية الأساسية (الصوتية والصرفية والنحوية).
LO 4	توظيف القدرات اللغوية في إيجاز المعلومات وإعادة صياغتها .
LO 5	تحقيق الكفاءة اللغوية (الاجتماعية والاستراتيجية والنحوية).
LO 6	تحليل العلاقة الترابطية بين الفكر، واللغة، والثقافة، والكلام.
LO 7	تطبيق القواعد العربية الصرفية والنحوية والصوتية في الاستعمال الكتابي والشفاهي.
LO 8	توظيف الكفاءة اللغوية الأكاديمية في البحث والكتابة العلمية.
LO 9	توظيف الكفاءة اللغوية التداولية في تشارك المعلومات وتداول مصادر المعرفة
LO10	توظيف القواعد العربية في ممارسة التذوق اللغوي العام .

4.2خريطة ارتباط نواتج التعلم للمقرر (LOs) والمعايير القياسية المرجعية الوطنية (NARS)

نطاق الإرتباط	نواتج التعلم لبرنامج الهندسية الميكانيكية	مخرجات التعلم للمقرر (LOs)
الجدارات الهندسية الأساسية		
الجدارات الهندسية الأساسية لبرنامج الهندسية الميكانيكية		

5- محتوى المقرر:

توصيف المقرر (كما هو موضح في لائحة البرنامج):

يتناول المحتوى محاضرات في اللغة العربية من منظور وظيفي بهدف تمكين الطلاب من الأنظمة اللغوية الصحيحة كسلوك إنساني ، وليست كقواعد عربية نظامية مستقلة، ويتكون المقرر من ستة فصول تُعرّف الطالب بجدول تلخيص النحو، والقواعد العربية الأساسية، وتعرض لأهم الشروط الشكلية والموضوعية في الاتصال الكتابي الإداري، مع الاهتمام بلامات الترقيم وكيفية وضع خطة لبحث علمي، مع الاهتمام بتطبيق القواعد النحوية والإملائية عليها.

موضوعات المقرر

رقم الأسبوع	المواضيع	مجموع الساعات	ساعات الاتصال			LOs التي يحققها المقرر
			محاضرة	سكشن	المختبر	
1	توطئة عن قضايا اللغة العربية من منظور وظيفي، وأهمية دراسة اللغة العربية، وبيان وحدات اللغة الأساسية.	2	2	0	0	LO1
2	علامات الإعراب، والبناء.	2	2	0	0	LO1, LO2
3	علامات الرفع الأصلية والفرعية، علامات النصب الأصلية والفرعية.	2	2	0	0	LO1, LO2
4	الأسماء المرفوعة. توابع الأسماء المرفوعة.	2	2	0	0	LO2, LO3
5	الأسماء المنصوبة.	2	2	0	0	LO3
6	توابع الأسماء المنصوبة.	2	2	0	0	LO3
7	إمتحان منتصف الفصل الدراسي					
8	الأسماء المجرورة توابع الأسماء المجرورة.	2	2	0	0	LO3, LO4
9	همزة الوصل وهمزة القطع مواضع همزة القطع مواضع همزة الوصل	2	2			LO3, 4
10	الأعداد: الأعداد من حيث اللفظ العدد باعتبار المعدود العدد باعتبار العلامة الإعرابية العدد باعتبار التذكير والتأنيث	2	2	0	0	LO6,7,8
11	علامات الترقيم.	2	2	0	0	LO6, 7,8,9,10
12	كيف تصنع خطة لبحث علمي؟ نموذج لهيكل بحث علمي.	2	2	0	0	LO6,7,8,9,10
13	مراجعة عامة	2	2	0	0	LO1,2,3,4,5,6,7,8,9,10
14	إمتحان الفصل الدراسي النهائي					

6- مصفوفة توافق أهداف المقرر الدراسي ونواتج (مخرجات) التعلم

أهداف تعلم المقرر	مخرجات التعلم (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
CLO 1	✓	✓							✓	
CLO 2			✓	✓			✓		✓	✓
CLO 3	✓		✓		✓	✓		✓		

7- طرق التدريس والتعلم :

طرق التعليم والتعلم	نتائج التعلم (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
محاضرة وجها لوجه	✓	✓	✓	✓	✓	✓				
التعليم عبر الإنترنت	✓	✓			✓					
واجبات منزلية		✓		✓		✓				
مناقشة جماعية	✓		✓		✓		✓	✓		
مختبر										
زيارة الموقع										
عروض تقديمية بالبوربوينت	✓		✓							
مشروع صغير										
أبحاث وإعداد التقارير							✓	✓		
العصف الذهني	✓	✓			✓	✓				
التعلم الذاتي			✓	✓						

8- التقييم

8.1 طرق تقييم المقرر:

طرق التقييم	نتائج التعلم (LOs)									
	مخرجات التعلم للمقرر (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
الإمتحان التحريري	✓	✓				✓	✓	✓		
إمتحان عبر الإنترنت										
الامتحان الشفوي			✓	✓						
مسابقات تنافسية									✓	✓
الامتحانات المعملية										
واجبات منزلية	✓		✓		✓					
مهمة بحثية				✓			✓	✓		
مهمة إعداد التقارير	✓		✓	✓		✓			✓	
تعيين المشروع										
الأسئلة داخل المحاضرة	✓	✓	✓	✓	✓	✓				

8.2. جدول التقييم وتوزيع الدرجات:

طريقة التقييم	الدرجة	التوقيت	وقت الامتحان
الامتحان النهائي	40	الاسبوع 14	90 دقيقة.

الامتحان التحريري لنصف الترم الدراسي	20	الاسبوع 8	60 دقيقة.
إمتحانات تقيمية و تحريرة قصيرة(خلال الترم الدراسي)	20	وفقا للجدول الزمني	---
اختبارات/تقارير/عرض تقديمي (خلال الترم)	20	وفقا للجدول الزمني	---
مجموع الدراجات	100		

9- المرفقات المطلوبة للتعليم والتعلم:

A- قاعة محاضرات مجهزة .

B- المكتبات المركزية والفرعية .

C- الوسائل التعليمية (داتا شو) وجهاز كمبيوتر محمول.

D- مّذكرة لتدريس المقرر وكشوف متابعة للطلاب

10- قائمة المراجع:

10.1. كتاب المقرر:

1- مذكرة المقرر " القواعد اللغوية الأساسية للكتابة العلمية"
2- عروض تقديمية (بوربوبينت) يعطى للطلاب جزء بجزء

10.2. الكتب المرجعية المطلوبة والمراجع الإضافية:

1- النحو الوافي، عباس حسن، دار المعارف

2- الإملاء والترقيم في الكتابة العربية، لعبد العليم إبراهيم، مكتبة غريب .

3- النحو المصفى، د. محمد عيد، مكتبة الشباب.

4- النحو الواضح في قواعد اللغة العربية، علي الجارم، ومصطفى أمين، الدارالمصرية السعودية للطباعة والنشر والتوزيع.

5- المهارات اللغوية ومعايير جودتها : ا.د جاسم علي جاسم ، دار أمجاد حنين –السعودية ، دار إبصار – القاهرة مصر ، ط1 ، 2015م.

6- تحفة النبهاء في قواعد الإملاء: محمد عثمان ،الدار المصرية للكتاب ، 2013م.

7- من الدروس النحوية :تأليف: حفني ناصف- محمد دياب – مصطفى طموم – محمد صالح –محمود عمر، دار إيلاف الدولية، ط 1 ،2006م.

8- العربية لغة حياة تقرير لجنة تحديث تعليم اللغة العربية : تقرير لجنة تحديث تعليم اللغة العربية، مكتبة لسان العرب ، الإمارات العربية المتحدة.

10.3. الكتب الموصى بها:

1- العربية لغة حياة تقرير لجنة تحديث تعليم اللغة العربية : تقرير لجنة تحديث تعليم اللغة العربية، مكتبة لسان العرب ، الإمارات العربية المتحدة.

10.4. المواقع الإلكترونية:

•

القائمين علي مراجعة وتقيم المقرر	الإسم	توقيع
أعضاء هيئة التدريس	1. ناجي عبد العال حجازي	د. ناجي عبد العال
منسق المقرر	**د/ ناجي عبد العال حجازي**	د. ناجي عبد العال

رئيس القسم	**أ.د. عيد عبدالباسط**	
تاريخ الموافقة	أكتوبر 2023 -2024	

The Higher Technological Institute (HTI)

Department: Basic Science Department

Course Specification

MTH 001: Mathematics (1)

A – Affiliation

Relevant program:	**All programs of Engineering**
Department offering the program:	**All programs of Engineering**
Department offering the course:	**Basic Science**
Term	**Oct./Jan. 2023**

B – Basic information

Title:	**Mathematics (1)**			**Code:**		**MTH 001**	
Academic year/level:	**Preparatory level**			**Credit Hours:**		**3**	
Contact Hours:	**4**	**Lecture:**	**2**	**Lecture Tutorial :**	**2**	**Laboratory:**	**0**
Prerequisite:	**----------**						

1- Course Aims:

This course aim to

- **The student should have the knowledge and skills to apply the operations and rules of the matrices to solve the $n \times n$ linear system of equations.**
- **The student should have the knowledge and skills to differentiate any continuous functions for one variable.**
- **The student should have applied the techniques of integrations to evaluate several integrals for differentiation functions in one variable.**
- **The student should have applied the integration to calculate the area and volume for specific applications.**
- **The student should have applied the limit skills calculations to evaluate the proper and improper integrals.**

2 – Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1.	**Apply the rules and operations of matrices to solve the linear system of $n \times n$ variables.**
CLO 2.	**Determine the derivative for continuous functions in one variable.**
CLO 3.	**Emphasize the techniques of integration to evaluate the integration problems.**
CLO 4.	**Apply axioms of limit to calculate the limit for different functions.**
CLO 5.	**Distinguish between proper and improper integrals.**

3- Relationship between the course and the Competencies:

Field	National Academic Reference Standard (NARS 2018)
	Engineering Competences (As)
Program academic Standards that the course contributes to achieving	A1,A2,A3, A7,A10

4.1 - Learning Outcomes (LOs) :

On successful completion of the course, the student should have the ability to

LO 1	Apply the matrix operations as: multiply, adding, transpose, and determent to solve the linear systems of equations.
LO 2	Identify the domain and range of the logarithmic, exponential, trigonometric, hyperbolic functions.
LO 3	Assess the derivative actions to compute the differentiations for exponential and logarithmic functions.
LO 4	Assess the derivative actions to compute the differentiations for trigonometric, inverse trigonometric, hyperbolic, and inverse hyperbolic functions.
LO 5	Evaluate the integration for exponential and logarithmic functions.
LO 6	Evaluate the integration for trigonometric, inverse trigonometric, hyperbolic, and inverse hyperbolic
LO 7	Apply the integration techniques as integration by parts and substitution to evaluate the integration problems.
LO 8	Describe the integration to determine the area and the volume bounded and generated by graph function.
LO 9	Assess the L'Hopital's rule to calculate the limits for undetermined functions.
LO 10	Distinguish convergence and divergence for the different kinds of improper integral problems.
LO 11	Sketch the function in one variable, and identify the domain and range of many functions

4.2 Mapping Course LOs to NARS

Field	Program (CBEs) that the course contributes to achieving	Learning Outcomes (LOs)
Basic Engineering Competencies (As)	A1, A2, A4, A5, A6	LO 1, LO 2, LO 3, LO 4, LO 5, LO 6, LO 9, LO 11
	A7, A8, A10	LO 1, LO 7, LO 8, LO 10
Competencies of mechanical Engineering program (Bs)		

5- Course Content:

5.1 – Catalogue Course Description (As indicated in program Bylaw):

Matrices, solving Linear system of $n \times n$ equation, Derivative of Exponential and Logarithmic functions, Trigonometric and Inverse trigonometric functions, Hyperbolic and inverse hyperbolic functions, Integrate Exponential and Logarithmic functions, Trigonometric and Inverse trigonometric functions, Hyperbolic and inverse hyperbolic functions, Techniques of integration, Application of integration as: Area, volume Arc length, surface area, limit of functions, L'Hopital's Rule, proper and Improper integrals.

5.1. Course Topics/hours/Los Matrix

Week No.	Topics	Credit hours	Contact hours			LOs Covered by Course
			Lect.	Tut.	Lab.	
1	Physical units – dimensions analysis	5	3	1	1	LO1, LO10
2	Elasticity	5	3	1	1	LO2, LO6
3	Density – pressure in fluids	5	3	1	1	LO3 & LO1
4	Archimedes principle – force against the dam	5	3	1	1	LO4, L6, LO9
5	Bernoulli's equation and its application	5	3	1	1	LO5, LO8
6	Viscosity and application – Poiseuille's law	5	3	1	1	LO1& LO3,
7	Stock's law- Waves and oscillations- Wave speed in stretching string – energy and power of waves	5	3	1	1	LO2, LO6
8	Mid Term Exam					
9	Dispersion and resonance of waves – standing waves - Mid Term Exam	5	3	1	1	LO2& LO7
10	Sound waves – intensity and sound level – source of musical sound - beats	5	3	1	1	LO2 &LO6, LO8
11	Doppler effect – Concept of temperature	5	3	1	1	LO7&LO4
12	Thermometers – Temperature scale - Thermal expansion – thermal stress	5	3	1	1	LO3&LO9
13	Heat capacity and specific heat – latent heat work and heat in thermodynamic process	5	3	1	1	LO1& LO3& LO10
14	The first law of thermodynamic and its application – heat transfer by conduction	5	3	1	1	LO1&LO5, LO3
15	Final term exam					

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)										
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10	LO 11
CLO 1	√	√									
CLO 2			√	√	√	√					√
CLO 3			√	√	√	√	√	√			√
CLO 4			√	√				√	√		√
CLO 5					√	√	√		√	√	

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome* (LOs)										
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10	LO 11
Face-to-Face Lecture	√	√	√	√	√	√	√	√	√	√	
Online Education	√		√	√	√						
Tutorial/ Exercise		√		√	√	√		√	√	√	√
Group Discussion		√						√			
Laboratory											
Site Visit	√		√	√							√
Presentation		√		√	√	√		√	√	√	
Mini Project						√					
Research and Reporting	√		√	√	√	√				√	√
Brain Storming		√						√			
Self-Learning	√		√						√		

8- Assessment

8.1 Course Assessment Methods:

Assessment Methods	Learning Outcome (LOs)										
	General										
	LO 1	LO 2	LO3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10	LO 11
Written Exam	√	√	√	√	√	√	√	√	√	√	√
Online Exam											
Oral Exam				√	√	√	√			√	√
Quiz	√	√	√	√	√	√	√	√	√	√	

Lab Exam											
Home Exam	√			√	√		√		√		√
Research Assignment		√			√		√			√	
Reporting Assignment		√				√		√			
Project Assignment	√			√					√	√	√
In-Class Questions	√		√			√			√		√

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week		Exam Time
Final Exam (*written*)	**40**	**15th**		**90 min.**
Midterm written Exam (Term Work)	**20**	**8th**		**60 min.**
Tutorial and report assessment (Term Work)	**20**	**Every two weeks**		**---**
Quizzes/reports/presentation (Term Work)	**20**	**According to the schedule**		**---**
Total Mark	**100**			

9- Facilities Required for Teaching and Learning:

A- Notebook and data show equipped lecture room.

B- Teaching aids.

10- List of References:

10.1. Course Notes:

1- **Lecture notes or book "Math 1 (Available: Soft copy handed to students).**

10.2. Required Textbooks and Additional References:

1- **G. B. Thomas, J. Hass, C. Heil, P. Bogacki, M. D. Weir, J. L. Z. Estrugo, *Thomas' Calculus. Early Transcendentals*, 15th edition, Pearson, 2024.**
2- R. Larson, B. Edwards, *Calculus*, 12th edition, Cengage Learning, 2023.
3- E. Mendelson, *SCHAUM'S outlines Calculus,* 7th edition, McGraw-Hill, 2022.
4- G. Strang; Edwin "Jed" Herman, *Calculus Volume 1,* OpenStax, 2021.
5- G. Strang; Edwin "Jed" Herman, *Calculus Volume 2,* OpenStax, 2021.

10.3. Recommended Books:

1- **G. B. Thomas, J. Hass, C. Heil, P. Bogacki, M. D. Weir, J. L. Z. Estrugo, *Thomas' Calculus. Early Transcendentals*, 15th edition, Pearson, 2024.**
2- R. Larson, B. Edwards, *Calculus*, 12th edition, Cengage Learning, 2023.

10.4. Web Sites:

- **https://math.fandom.com/wiki/Math_Wiki**
- **https://www.mathtutordvd.com/**
- **https://www.khanacademy.org/math/**

Course Directors	Name	Signature
Teaching staff	1. Dr. Mahmoud Abu zied 2. Dr. Sabry Mohamed 3. Dr. Ahmed Abdel-Aal 4. Prof. Dr. Yasser Abdelaziz	
Course coordinator	Dr. Sabry Mohamed	
Head of the Department	Prof. Dr. Eid Abdelbaset	
Date of approval	10/2023	

The Higher Technological Institute (HTI)

Department: Basic Science Department

Course Specification

MTH 002: Mathematics (2)

A – Affiliation

Relevant program:	All Programs of Engineering
Department offering the program:	All Programs of Engineering
Department offering the course:	Basic Science Department

B – Basic information

Title:	Mathematic 2		Code:		MTH 002		
Academic year/level	Preparatory		Credit Hours:		3		
Contact Hours:	4	lecture	2	Lecture Tutorial	2	Lab.	0
Prerequisite:	MTH 001						

1- Course Aims:

- The student should have the knowledge and skills that enable him to analyze and solve the problems about Conic sections, Parametric and Polar equations, and Integral on polar functions.
- The student should have learned techniques to estimate the function of several variables, partial and directional derivatives.
- The student should be able to distinguish between the methods to study the series with the positive term: Techniques of convergence and divergence series. Power series and Taylor and Maclaurin series.

2 – Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1. Understanding how to solve the problems on the conic sections
CLO 2. Determine the problems on parametric equations and polar coordinates
CLO 3. Learn how to get the partial derivatives and its applications.
CLO 4. Distinguish between the problems of sequences and series

3- Relationship between the course and the Competencies:

Field	National Academic Reference Standard (NARS)
	Engineering Competences (As)
Program academic Standards that the course contributes to achieving	A1,A2,A4,A5, A7,A10

4.1 - Learning Outcomes (LOs):

On successful completion of the course, the student should have the ability to	
LO 1	Describe the main concept of the conic sections, Prepare technical reports for problems in the conic sections
LO 2	Explain the principles of parametric equations and polar coordinates
LO 3	Define the main items of partial differentiation and study its applications.
LO 4	Discuss the principles of sequences and series
LO 5	Analyze the system of problems in the conic sections
LO 6	Solve problems regarding parametric equations and polar coordinates
LO 7	Apply problems regarding sequences and series
LO 8	Demonstrate skills regarding problems on parametric equations and polar coordinates
LO 9	Proceed with test steps of the problems on partial differentiation and sequences and series
LO 10	Cooperate and communicate effectively

4.2 Mapping Course LOs to NARS

Field	Program (CBEs) that the course contributes to achieving	Learning Outcomes (LOs)
Basic Engineering Competencies (As)	A1, A2, A4, A5	LO 1, LO 2, LO 3, LO 5, LO 7
	A7, A8, A9	LO 4, LO 6, LO 8, LO 9, LO 10
Competencies of Mechanical Engineering program (Bs)		

5- Course Content:

5.1. Catalogue Course Description(As indicated in program Bylaw):

Conic sections, Parametric, and Polar equations. Integral on polar functions. The function of several variables, partial and directional derivatives. Series with the positive term: Techniques of Convergence and Divergence series. Power series and Taylor and McLaurin series.

5.2. Course Topics/hours/Los Matrix

Week No	Topics	Total hrs.	Contact hours			LOs Covered by Course
			Lect.	Tut	Lab	
1	Conic section	4	2	2	0	LO 1, LO 5, LO 10

2	Parametric equations (slope, second derivative)	4	2	2	0	LO 2, LO 6, LO 8, LO 10
3	Arc length and surface area for the parametric curve	4	2	2	0	LO 2, LO 6, LO 8, LO 10
4	Polar coordinates (sketch the curve)	4	2	2	0	LO 2, LO 6, LO 8, LO 10
5	Slope, the arc length, and the surface area for the polar coordinates.	4	2	2	0	LO 2, LO 6, LO 8, LO 10
6	The conic section in polar coordinates.	4	2	2	0	LO 2, LO 6, LO 8, LO 10
7	Limits in two-dimension, partial differentiation.	4	2	2	0	LO 3, LO 9, LO 10
8	Mid Term Exam					
9	Equation of a tangent plane and normal vector for a surface	4	2	2	0	LO 3, ,LO 9, LO 10
10	Lagrange multipliers	4	2	2	0	LO 3, ,LO9, LO 10
11	Application on partial derivatives	4	2	2	0	LO 3, ,LO 9, LO 10
12	Sequences and series(introduction)	4	2	2	0	LO 4, LO 7, LO 10
13	Positive term series	4	2	2	0	LO 4, LO 7, LO 10
14	Alternating series and power series, and Taylor and McLaurin	4	2	2	0	LO 4, LO 7, LO 10
15	FINAL EXAM					

6- Matrix of Course Objective and Los

Course Learning Objectives	Learning Outcomes (LOs)									
	LO 1	LO 2	LO3	LO 4	LO 5	LO 6	LO7	LO 8	LO9	LO 10
CLO 1	√				√					√
CLO 2		√				√		√		√
CLO 3			√						√	√

CLO 4				√			√		√	√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome* (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
Face-to-Face Lecture		√	√	√	√	√	√	√	√	√
Online Education	√					√				
Tutorial/ Exercise		√	√	√	√	√	√	√	√	√
Group Discussion	√		√							√
Laboratory										
Site Visit										
Presentation	√	√								
Mini Project										
Research and Reporting	√	√								
Brain Storming		√			√				√	
Self-Learning	√		√			√	√	√	√	√

8- Assessment

8.1 Course Assessment Methods:

Assessment Methods	Learning Outcome (LOs)									
	General									
	LO 1	LO 2	LO3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
Written Exam		√	√	√	√	√	√	√	√	
Online Exam		√		√	√	√	√	√	√	
Oral Exam		√		√	√	√	√	√	√	
Quiz		√	√	√	√	√	√	√	√	

Lab Exam										
Home Exam	√	√	√	√	√	√	√	√	√	
Research Assignment		√	√	√	√	√	√	√	√	
Reporting Assignment	√	√								
Project Assignment										
In-Class Questions	√		√							√

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	**15th**	**90 min.**
Midterm written Exam (Term Work)	**20**	**8th**	**60 min.**
Tutorial and report assessment (Term Work)	**20**	**weekly**	**---**
Quizzes/reports/presentation (Term Work)	**20**	**According to the schedule**	**30 min.**
Total Mark	**100**		

9- Facilities Required for Teaching and Learning:

A- Notebook and data show equipped lecture room.

B- Teaching aids.

10- List of References:

10.1. Course Notes:

Lecture notes or book "Math 1 (Available: Soft copy handed to students).

10.2. Required Textbooks and Additional References:

1- **G. B. Thomas, J. Hass, C. Heil, P. Bogacki, M. D. Weir, J. L. Z. Estrugo, *Thomas' Calculus. Early Transcendentals*, 15th edition, Pearson, 2024.**
2- **R. Larson, B. Edwards, *Calculus*, 12th edition, Cengage Learning, 2023.**
3- **E. Mendelson, *SCHAUM'S outlines Calculus*, 7th edition, McGraw-Hill, 2022.**
4- **G. Strang; Edwin "Jed" Herman, *Calculus Volume 2*, OpenStax, 2021.**

10.3. Recommended Books:

1- **G. B. Thomas, J. Hass, C. Heil, P. Bogacki, M. D. Weir, J. L. Z. Estrugo, *Thomas' Calculus. Early Transcendentals*, 15th edition, Pearson, 2024.**
2- **R. Larson, B. Edwards, *Calculus*, 12th edition, Cengage Learning, 2023.**

Course Directors	Name	Signature
Teaching staff	1. Dr. Mahmoud Abu zeid 2. Dr. Ebtisam Elemam 3. Dr. Hanaa Eldidamony	
Course coordinator	Dr. Hanaa Eldidamony	
Program Coordinator		
Head of the Department	Prof. Dr. Eid Abdelbaset	
Date of approval	11/2023	

المعهد التكنولوجي العالي(HTI)	
القسم :قسم العلوم الأساسية	
توصيف مقرر تربية رياضية :PHE 001 (1)	

أ – الانتماء) إنتساب المقرر(

البرنامج المانح :	جميع البرامج الهندسية
القسم الذي يقدم البرنامج:	جميع الأقسام الهندسية
القسم الذي يقوم بتدريس المقرر:	قسم العلوم الأساسية

ب – المعلومات الأساسية

عنوان المقرر	مدخل في التربية الرياضية 1			كود المقرر		PHE 001	
المستوي الدراسي	إعدادي			الساعات المعتمدة		0	
ساعات الإتصال الكلية	2	محاضرة	1	سكشن	0	جيم	1
المتطلب السابق	لا يوجد						

-2أهداف المقرر:

يهدف المقرر الي:

- تنمية المعرفة والثقافة الرياضية وخاصة الجانب الجانب الترويحي للرياضة وكيفية شغل اوقات
- إدراك المفاهيم والمعارف المتنوعة عن فوائد ممارسه الرياضة وشغل وقت الفراغ.
- الشعور بأهمية التفكير العلمي في المجال الرياضي

-3الأهداف التعلمية المقرر :(CLO)

في نهاية هذا المقرر، يجب أن يكون الطالب قادرا على:

CLO 1	شرح مفهوم العلمي لمفاهيم التربية الرياضية الأساسية
CLO 2	معرفة العلاقة بين التربية البدنية ومجالات الترويح وصحة العامة للجسم
CLO 3	توضيح مفاهيم الهندسة الرياضية وتطبيقاتها والتعامل مع إصابات الملاعب وطرق علاجها

- **العلاقة بين المقرر و الجدارات) الكفاءات (الهندسية:**

نطاق الإرتباط	المعيار المرجعي الأكاديمي الوطني(NARS) الكفاءات الهندسية الأساسية(As)
المعايير الأكاديمية للبرنامج التي	A1, A2, A5, ,A7, A10

يساهم المقرر في تحقيقها	

4.1 - مخرجات التعلم: (LOs)

عند الانتهاء من دراسة المقرر ، يجب أن يكون لدى الطالب القدرة على

LO 1	شرح مفاهيم التربية والهندسة الرياضية ونظرياتها
LO 2	توظيف معارف ومهارات التربية الرياضية **للتعامل مع إصابات الملاعب وطرق علاجها**
LO 3	ربط التربية البدنية والرياضية بمجالات الترويح والصحة
LO 4	ممارسة نشاط التربية الرياضية لتأثيره الهام على صحة العامة للجسم
LO 5	تنمية المهارات الحركية ورفع مستوى اللياقة البدنية للطالب
LO 6	التعرف على مستويات وقت الفراغ والانشطة الترويحية داخل وخارج المؤسسات الترويحية
LO 7	تطوير المعارف والمعلومات حول طبيعة ونطاق شغل اوقات الفراغ في التعلم الذاتي
LO 8	إنماء الثقافة الرياضية وارتباطها بالثقافة العامة
LO 9	العمل على نقل الثقافة الرياضية و كيفيه شغل اوقات الفراغ بعد ساعات العمل.
LO10	**نقل المفاهيم الرياضية شفاهياً وعمليا كفرد او كفريق متكامل جمعياً**

- **إرتباط نواتج التعلم للمقرر (LOs) والمعايير القياسية المرجعية الوطنية(NARS)**

نطاق الارتباط	نواتج التعلم لبرنامج الهندسية	مخرجات التعلم للمقرر(LOs)									
		LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9	LO10
الجدارات الهندسية الأساسية	A1	✓									
	A2				✓						
	A3	✓	✓				✓				
	A4			✓	✓	✓		✓			
	A5				✓			✓			
	A6										
	A7										✓
	A8								✓		
	A9						✓			✓	
	A10										✓

5-محتوى المقرر:

توصيف المقرر) كما هو موضح في لائحة البرنامج:(

تعليم التربية البدنية ونظرياتها تأثير المقرر على إشغال وقت الفراغ وأنشطة الترفيه ، وبناء أنشطة ترفيهية في الصناعة وإصابات الملاعب وطرق العلاج

موضوعات المقرر

رقم الأسبوع	المواضيع	مجموع الساعات	ساعات الاتصال			LOs التي يحققها المقرر
			محاضرة	سكشن	جيم	
1	معنى ومفهوم التربية البدنية -اغراض التربية البدنية- نشاط رياضي	2	1	0	1	LO 1, 4
2	المصطلحات الشائعة الاستخدام في التربية البدنية – الحاجة الى التربية البدنية في عصر العولمة - نشاط رياضي	2	1	0	1	LO 2, 4
3	علاقة التربية البدنية والرياضية بمجالات عمليات الترويح والصحة–نظريات اللعب وممارسة الرياضة- نشاط رياضي	2	1	0	1	LO 3
4	مفهوم وقت الفراغ – اهميته – مستوياته- نشاط رياضي	2	1	0	1	LO 5, 4
5	معنى الترويح – ومفهومه والانشطة الترويحية والفراغية) التعريف–انواع-الاهداف–دور المجتمع نشاط رياضي	2	1	0	1	LO 5, 6, 4
6	المؤسسات الترويحية في المجتمع – تنظيم وادارة النشاط الترويحي نشاط رياضي	2	1	0	1	LO 1, 7
7	العلاقات العامة والعلاقات الانسانية – نشاط رياضي	2	1	0	1	LO 8 , 2
8	**إمتحان منتصف الفصل الدراسي**					
9	ما هي الهندسة الرياضية–تعريفها–اهميتها – نشاط رياضي	2	1	0	1	LO 1,2,4
10	الهدف العام من دراسة الهندسة الرياضية ومكونات اللياقة البدنية وعلاقتها بالهندسة الرياضية – نشاط رياضي	2	1	0	1	LO 9, 4
11	**مراجعه عامه وتقارير وابحاث**	2	1	0	1	LO 10, 6,
12	تقارير وابحاث	2	1	0	1	LO, 10,5
13	تقارير وابحاث	2	1	0	1	LO 9, 8
14	**إمتحان الفصل الدراسي النهائي**					

6-مصفوفة توافق أهداف المقرر الدراسي و نواتج (التعلم) مخرجات

أهداف تعلم المقرر	مخرجات التعلم(LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
CLO 1	✓	✓							✓	
CLO 2			✓	✓			✓		✓	✓
CLO 3	✓		✓		✓	✓		✓		

7-طرق التدريس والتعلم:

طرق التعليم والتعلم	نتائج التعلم(LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
محاضرة وجها لوجه	✓	✓	✓	✓	✓	✓				
التعليم عبر الإنترنت	✓	✓			✓					
واجبات منزلية		✓		✓		✓				
مناقشة جماعية	✓		✓		✓		✓	✓		
جيم		✓	✓	✓	✓	✓	✓	✓		
زيارة الموقع										
عروض بالبوربوينت	✓		✓							
مشروع صغير										
أبحاث وإعداد التقارير							✓	✓		
العصف الذهني	✓	✓				✓				
التعلم الذاتي			✓	✓						

8-التقييم

8.1طرق تقييم المقرر:

طرق التقييم	نتائج التعلم(LOs)									
	مخرجات التعلم للمقرر(LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
الإمتحان التحريري	✓	✓				✓	✓	✓		
إمتحان عبر الإنترنت										
الامتحان الشفوي			✓	✓						
مسابقات تنافسية									✓	✓
الامتحانات المعملية										
واجبات منزلية	✓		✓		✓					
مهمة بحثية				✓			✓	✓		
مهمة إعداد التقارير	✓		✓	✓		✓			✓	
تعيين المشروع										
الأسئلة داخل المحاضرة	✓	✓	✓	✓	✓	✓				

8.2.جدول التقييم وتوزيع الدرجات:

طريقة التقييم	الدرجة	التوقيت	وقت الامتحان

الامتحان النهائي	30	الاسبوع14	60دقيقة.
الامتحان التحريري لنصف الترم الدراسي	20	الاسبوع 7	60دقيقة.
إمتحانات تقيمية و ابحاث	20	وفقا للجدول الزمني	---
اختبارات/تقارير و ابحاث	30	وفقا للجدول الزمني	---
مجموع الدراجات	100		

- **المرافقات المطلوبة للتعليم والتعلم:**

- قاعة محاضرات مجهزة والجيم.
- المكتبات المركزية والفرعية .
- الوسائل التعليمية) داتا شو (وجهاز كمبيوتر محمول.
- مّذكرة لتدريس المقرر وكشوف متابعة للطلاب

- **قائمة المراجع:**

10.1.كتاب المقرر:

- مدخل في التربية الرياضية1

10.2.الكتب المرجعية المطلوبة والمراجع الإضافية:

- الترويح و اوقات الفراغ : دار الفكر العربي ؛ يناير 2022
- استراتيجيه للترويح الرياضي لاستثمار اوقات الفراغ- مؤسسه عالم الرياضه للنشر – يناير 2020
- الاداره الاقتصاديه في الرياضه و الترويح – دار الكتاب الحديث – يناير 2022

- **الكتب الموصي بها:**

- مذكرات فى مدخل التربيه الرياضيه و الترويح الرياضى 2023

القائمين علي مراجعة وتقيم المقرر	الإسم	توقيع
أعضاء هيئة التدريس	د \ ايهاب جوده	
منسق المقرر	د \ ايهاب جوده	
رئيس القسم	أ.د /عيد عبد الباسط	
تاريخ الموافقة	يناير 2024	

The Higher Technological Institute (HTI)

Department: Basic Science Department

Course Specification

PHY 001: PHYSICS (1)

A – Affiliation

Relevant program:	All programs of Engineering
Department offering the program:	All programs of Engineering
Department offering the course:	Basic Science
Term	Oct./Jan. 2023

B – Basic information

Title:	Physics (1)			Code:		PHY 001	
Academic year/level:	Preparatory level			Credit Hours:		3	
Contact Hours:	5	Lecture:	2	Lecture Tutorial :	1	Laboratory:	2
Prerequisite:	----------						

1- Course Aims:

This course aim to

- Learn the basic concepts of physical quantities.
- Study the fundamental of elasticity.
- Analysis the mechanics of fluids and waves.
- Apply the principal rules of thermodynamics.
- perform some of experiments in different fields of physics in lab.

2 – Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1.	Acquire the basic concepts of units& dimensional analysis of physical quantities, elasticity of solids, fluids, waves & sound, heat& thermodynamics.
CLO 2.	Solve the problems of all topics of physics 1
CLO 3.	Derive the basic rules in engineering physics 1.
CLO 4.	Perform experiments of Physics 1

3- Relationship between the course and the Competencies:

Field	National Academic Reference Standard (NARS 2018)
	Engineering Competences (As)
Program academic Standards that the course contributes to	A1, A2, A7, A10

achieving	

4.1 - Learning Outcomes (LOs) :

On successful completion of the course, the student should have the ability to

LO 1	**Define the physical laws of the course.**
LO 2	**Explain the concepts and physical phenomena of the course.**
LO 3	**Solve the problems of the course.**
LO 4	**Derive the basic rules in engineering physics 1.**
LO 5	**Interpret the physical theories, equations, applications of some physical phenomena.**
LO 6	**Perform some physical experiments.**
LO 7	**Implement the scientific reports depending on the scientific foundations of the course.**
LO 8	**Understand the concept of self- learning in different fields of physics.**
LO 9	**Control the time planning and team integration.**
LO 10	**Transfer the gained knowledge orally, written, and graphically.**

4.2 Mapping Course LOs to NARS

Field		**Learning Outcomes (LOs)**									
NARS 2018 Competencies		**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**LO6**	**LO7**	**LO8**	**LO9**	**LO10**
Basic Engineering Competencies (As)	**A1**	✓				✓					
	A2			✓	✓		✓				
	A3			✓			✓				
	A4		✓								
	A5				✓	✓		✓	✓		
	A6									✓	
	A7									✓	
	A8										✓
	A9		✓							✓	
	A10								✓		

5- Course Content:

5.1 – Catalogue Course Description (As indicated in program Bylaw):

The "Physics (1)" is a fundamental course for preparatory level student. After completion of this course the student should have the knowledge and skills that enable him to determine the units and dimension of any physical quantities. In addition, he uses the fundamental of fluid physics to solve and analysis the fluid problems. Moreover he/she study the basics of waves, sound, heat physics and carry out some of experiments in different fields of physics in lab.

5.1. Course Topics/hours/Los Matrix

Week No.	Topics	Credit hours	Contact hours			LOs Covered by Course
			Lect.	Tut.	Lab.	
1	Physical units – dimensions analysis	5	3	1	1	LO1, LO10
2	Elasticity	5	3	1	1	LO2, LO6
3	Density – pressure in fluids	5	3	1	1	LO3 & LO1
4	Archimedes principle – force against the dam	5	3	1	1	LO4, L6, LO9
5	Bernoulli's equation and its application	5	3	1	1	LO5, LO8
6	Viscosity and application – Poiseuille's law	5	3	1	1	LO1& LO3,
7	Stock's law- Waves and oscillations- Wave speed in stretching string – energy and power of waves	5	3	1	1	LO2, LO6
8	Mid Term Exam					
9	Dispersion and resonance of waves – standing waves - Mid Term Exam	5	3	1	1	LO2& LO7
10	Sound waves – intensity and sound level – source of musical sound - beats	5	3	1	1	LO2 &LO6, LO8
11	Doppler effect – Concept of temperature	5	3	1	1	LO7&LO4
12	Thermometers – Temperature scale - Thermal expansion – thermal stress	5	3	1	1	LO3&LO9
13	Heat capacity and specific heat – latent heat work and heat in thermodynamic process	5	3	1	1	LO1& LO3& LO10
14	The first law of thermodynamic and its application – heat transfer by conduction	5	3	1	1	LO1&LO5, LO3
15	Final term exam					

5.2. Experiments Topics:

Serial	Experiment	Laboratory hrs.

1st	Simple pendulum [measured the gravity acceleration, g]	2
2nd	Stock's law of viscosity, [measured the viscosity coefficient of viscus transparent fluid]	2
3rd	Hook's law [measured the force constant of elastic spring]	2
4th	The fusion Latent heat [measured the fusion latent heat of ice]	2
5th	Floating Archimedes' law [measured the density of solid and liquid substances]	2

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
CLO 1	✓	✓			✓					✓
CLO 2			✓				✓			✓
CLO 3				✓				✓		
CLO 4						✓		✓	✓	

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome* (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO10
Face-to-Face Lecture	✓	✓		✓	✓		✓			✓
Online Education							✓		✓	
Tutorial/ Exercise			✓			✓		✓		✓
Group Discussion						✓				✓
Laboratory	✓					✓	✓		✓	✓
Site Visit										
Presentation						✓	✓			✓
Mini Project										
Research and Reporting	✓						✓			
Brain Storming			✓		✓					
Self-Learning					✓		✓	✓		

8- Assessment

8.1 Course Assessment Methods:

Assessment Methods	Learning Outcome (LOs)														
	General										------Engineering Department				
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10	B1	B2	B3	B4	B5
Written Exam	✓	✓	✓	✓	✓			✓							
Online Exam															
Oral Exam	✓		✓							✓					
Quiz	✓		✓	✓					✓						
Lab Exam	✓			✓		✓			✓						
Home Exam	✓		✓	✓				✓							
Research Assignment	✓	✓													
Reporting Assignment							✓	✓							
Project Assignment															
In-Class Questions	✓		✓			✓									

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	40	15Th	90 min.
Midterm written Exam (Term Work)	20	8th	60 min.
End of term laboratory exam (Lab)	15	13th	Committee
Tutorial and report assessment (Term Work)	10	weekly	---
Quizzes/reports/presentation (Term Work)	15	According to the schedule	---
Total Mark	100		

9- Facilities Required for Teaching and Learning:

A- Notebook and data show equipped lecture room.

B- Physics lab room.

C- Teaching aids and computers.
D- Notebook and data show equipped lecture room.

10- List of References:

10.1. Course Notes:

1- Enas EL Khwas &Ahmed Abd El Ghaffar &Mohamed Ragab& Mustafa Fadel, " Physics 1"; HTI; Available Hard copy

10.2. Required Textbooks and Additional References:

1- "Fundamental of physics", David Halliday, Robert Resnick and Jearl Walker Extend 11th edition, John Willy &Sons In. New York.

2- "Physics for scientists and Engineers", Raymond A. Serway, 10th edition, Saunders collage publishing, Philadelphia.

10.3. Recommended Books:

1- " University Physics " W. Sears Richards, Mark W. Zemansky, and Hung D. Young, 10th edition, Addison – Wesley

10.4. Web Sites:

- http://hyperphysics.phy-astr.gsu.edu/hbase/index.html
- https://www.physicsclassroom.com/
- https://en.wikipedia.org/wiki/Physics
- https://physicsworld.com/

Course Directors	Name	Signature
Teaching staff	1- Prof .Eid Abdelbaset Eid 2- Asst. Prof. Ahmed Abdelghafar khedr 3- Dr . Abdelmoneim Saleh 4- Dr. Mohmad Abdelaziz 5- Dr Ahmad Marof	
Course coordinator	Asst. Prof. Ahmed Abdelghafar khedr	
Head of the Department	Prof .Eid Abdelbaset Eid	
Date of approval	Oct. 2023	

Higher Technological Institute (HTI)

Department: Basic Science Department

Course Specification

PHY 002: PHYSICS (2)

A – Affiliation

Relevant program:	**All programs of Engineering**
Department offering the program:	**All programs of Engineering**
Department offering the course:	**Basic Science**

B – Basic information

Title:	**Physics (2)**			**Code:**		**PHY 002**	
Academic year/level:	**Preparatory**			**Credit Hours:**		**3**	
Academic year	**2023/2024**			**Term**		**1ST Term**	
Contact Hours:	**5**	**Lecture:**	**2**	**Lecture Tutorial:**	**1**	**Laboratory:**	**2**
Approval Bylaw	**2016**						
Prerequisite:	**PHY 001**						

1- Course Aims:

This course aim to

- **Understand and apply the basic concepts of static, dynamic electricity, and magnetism to solve and analyze their problems.**
- **Implement experiments in different fields of static, dynamic electricity, and magnetism.**

2 – Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1.	**Comprehend the physical concepts of electrostatic, electrodynamic, and electromagnetism.**
CLO 2.	**Apply physical concepts of electrostatic, electrodynamic, and electromagnetism to solve problems and questions.**
CLO 3.	**Derive some laws of electrostatic, electrodynamic, and electrodynamic.**
CLO 4.	**Implement experiments in different fields of static, dynamic electricity, and magnetism.**

3- Relationship between the course and the Competencies:

Field	**National Academic Reference Standard (NARS)**
	Engineering Competences (As)
Program academic Standards that the course contributes to achieving	**A1, A2, A5, A9**

4.1 - Learning Outcomes (LOs) :

On successful completion of the course, the student should have the ability to	
LO 1	Define the physical concepts of electrostatic, electrodynamics, and electromagnetism.
LO 2	Express the physical concepts of electrostatic, electrodynamics, and electromagnetism.
LO 3	Analysis of the issues of electrostatic, electrodynamics, and electromagnetism.
LO 4	Solve the theoretical problems of electrostatic, electrodynamics, and electromagnetism.
LO 5	Derive the main rule of electrostatic, electrodynamics, and electromagnetism.
LO 6	Explain the physical phenomena correlated to electrostatic, electrodynamics, and electromagnetism.
LO 7	Implement experiments and scientific reports in different fields of static, dynamic electricity, and magnetism.
LO 8	Acquire the ability to self-learn in electrostatic, electrodynamics, and electromagnetism fields.
LO 9	Manage the scheduling and harmonious synchronization of the team.
LO 10	Transfer the gained knowledge orally, in writing, and graphically.

4.2 Mapping Course LOs to NARS

Field		Learning Outcomes (LOs)									
NARS 2018 Competencies		LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9	LO10
Basic Engineering Competencies (As)	A1	✓	✓	✓	✓	✓	✓		✓		
	A2							✓			
	A3										
	A4								✓		
	A5								✓		
	A6										
	A7									✓	
	A8										✓
	A9				✓						
	A10							✓	✓		

5- Course Content:

5.1 – Catalogue Course Description (As indicated in program Bylaw):

The "Physics (2)" is a fundamental course for the preparatory level students. After completion of this course, the student should have the knowledge and skills that enable them to determine the electrostatic force and electric field of any shapes of electric charges. In addition, they use the fundamental rules to solve the problems of the electric force, electric field. Also, they analyze the electrostatic voltage and its relation to capacitors. Moreover, they study the basics of electromagnetism and carry out some experiments in electric circuits in the lab.

5.1. Course Topics/hours/Los Matrix

Week No.	Topics	Total hours	Contact hours			LOs Covered by Course
			Lect.	Tut.	Lab.	
1	Characteristics of electric charge, electric force between multi-electric charges	5	3	0	2	LO1, LO2, LO3
2	Electric filed – Electric field due to dipole, charged ring, equatorial line	5	3	2	0	LO1, LO2, LO4, LO5,
3	Gauss's law and electric flux – Apply the Gauss law on spherical symmetry	5	3	0	2	LO1, LO3 & LO5
4	Apply the Gauss law on cylindrical, spherical, planner symmetry, applications	5	3	2	0	LO3, LO4, L6
5	The electric potential, equipotential surface, calculating the potential due to point and group of point charges	5	3	0	2	LO5, LO8
6	Electric potential of dipole, electric potential energy of points charge- Capacitance, Applications	5	3	2	0	LO1, LO2, LO4,LO7
7	Mid Term Exam					
8	Capacitors and Capacitance and Calculating the capacitance parallel plate capacitors, Applications - Calculating the capacitance of spherical and cylindrical capacitors, connection of capacitors, applications- storing energy in an electric field, capacitors with dielectric materials, applications	5	3	0	2	LO1, LO2, LO4, LO7
9		5	3	2	0	
10	Dynamic electricity, Electric current, current density - electric resistivity Ohm's law, electric power in electric circuit - Electromotive force, calculate the current in electric circuit using energy method, Kirchhoff method, potential loop rule applications -	5	3	0	2	LO1, LO2, LO3, LO4, LO7
11		5	3	2	0	
12	Magnetic field, Lorentz force, circular motion of charge in uniform magnetic field	5	3	0	2	LO1, LO3, LO5
13, 14	Hall effect, the magnetic force affected on wire carrying electric current, applications- Final lab	5	3	2	0	LO1, LO, LO3
15	Final term exam					

5.2. Experiments Topics:

Serial	Experiment	Laboratory hrs.
1st	Ohm's law (measured the value of resistance)	2
2nd	Connection of resistance (verify the series and parallel connection of electric resistance)	2
3rd	Charging and discharge of electric capacitors (measure the time constant of discharging capacitor)	2
4th	Meter bridge (measure unknown resistance using meter bridge)	2

5th	Magnetic Deflection	2

6- Matrix of Course Objective and Los

Course Learning Objectives	Learning Outcomes (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
CLO 1	✓	✓	✓	✓	✓	✓	✓	✓		✓
CLO 2				✓						
CLO 3					✓					
CLO 4							✓		✓	✓

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome* (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO10
Face-to-Face Lecture	✓	✓		✓	✓		✓			✓
Online Education							✓		✓	
Tutorial/ Exercise			✓			✓		✓		✓
Group Discussion						✓				✓
Laboratory	✓					✓	✓		✓	✓
Site Visit										
Presentation						✓	✓			✓
Mini Project										
Research and Reporting	✓						✓			
Brain Storming			✓		✓					
Self-Learning					✓		✓	✓		

8- Assessment

8.1 Course Assessment Methods:

Assessment Methods	Learning Outcome (LOs)														
	General										Engineering Department				
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10	B1	B2	B3	B4	B5
Written	✓	✓	✓	✓	✓			✓							

Exam															
Online Exam															
Oral Exam	✓		✓							✓					
Quiz	✓		✓	✓					✓						
Lab Exam	✓			✓		✓			✓						
Home Exam	✓		✓	✓				✓							
Research Assignment	✓	✓													
Reporting Assignment							✓	✓							
Project Assignment															
In-Class Questions	✓		✓			✓									

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	40	15th	90 min.
Midterm written Exam (Term Work)	20	8th	60 min.
End of term laboratory exam (Lab)	15	13th	Committee
Tutorial and report assessment (Term Work)	10	weekly	---
Quizzes/reports/presentation (Term Work)	15	According to the schedule	---
Total Mark	100		

9- Facilities Required for Teaching and Learning:

A- Notebook and data show equipped lecture room.

B- Physics lab room.

C- Teaching aids and computers.

D- Notebook and data show equipped lecture room.

10- List of References:

10.1. Course Notes:

1- Eid A. El-Sayed &Ahmed Marouf & Mohamed Abd Elaziz & Mostafa Fadel, " Physics 2"; HTI; 2019, Available Hard copy.

10.2. Required Textbooks and Additional References:

1. **I. Lyublinskaya et al., College Physics for AP Courses OpenStax. XanEdu Publishing Inc, 2022.**
2. **J. Raymond A. Serway, John W. Jewett, Physics for Scientists and Engineers with Modern Physics, 9th ed. Boston, MA 02210 USA: Physical Sciences: Mary Finch, Physics and Astronomy: Charlie Hartford, 2014.**
3. **Raymond A. Serway, Chris Vuille, J. Hughes. College Physics Global Edition, 11th ed. Cengage Learning, 2018.**
4. **D. Halliday, R. Resnick, and J. Walker, Fundamentals of Physics, 12th ed. Wiley, 2022.**

10.3. Recommended Books:

Raymond A. Serway, Chris Vuille, J. Hughes. College Physics Global Edition, 11th ed. Cengage Learning, 2018.

10.4. Web Sites:

- **http://hyperphysics.phy-astr.gsu.edu/hbase/index.html**
- **https://www.physicsclassroom.com/**
- **https://en.wikipedia.org/wiki/Physics**
- **https://physicsworld.com/**

Course Directors	Name	Signature
Teaching staff	**1- Dr. Ahmad Abd El-Ghaffar** **2- Dr. Ahmad Maarouf** **3- Dr. Mostafa Fadel**	
Course coordinator	**Dr. Ahmad Maarouf**	
Head of the Department	**Prof. Eid Abd El-Baset Eid**	
Date of approval	**Oct-Jan. 2023/2024**	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

ENG 105: Solid Mechanics

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Solid Mechanics			**Course Code:**		ENG 105	
Program / level	Civil Engineering			**Sophomore year**			
Term/ Academic year:	Oct.-Jan. 2023 - 2024			**Credit Hours:**		3	
Contact Hours:	4	**Lecture:**	2	**Tutorial:**	2	**Laboratories:**	-----
Pre-Requisite	ENG 002						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- To analyze a given problem in a simple and logical manner.
- To solve problems with a few fundamental and well understood principles.
- To predict through calculation the behavior of engineering components and system.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. To evaluate the center of gravity, center of mass and centroid area and first and second moment characteristics for any rigid body.

CLO 2. To develop in the concept of analysis and problem Identification.

CLO 3. To solve mechanics problems considering load and support reaction.

CLO 4. To identify the concept of internal forces.

CLO 5. To evaluate the vibration characteristics of single degree of freedomsystems.

CLO 6. To develop the sense of engineering and feeling of result ranges with different units.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of ENG 105
Program Academic Standards that the course contributes in achieving	A1,A2	B1

4- Mapping Course Los to NARS

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A1.** Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics	**LO 1.** Describe engineering problems by applying engineering fundamentals and basic science of civil engineering.
	A2. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess, and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 2**. Associate appropriate simulation and objective civil engineering judgment. **LO 3**. Classify data by applying civil engineering judgment. **LO 4**. Interpret data and assess by using statical analyses to draw conclusions of structure elements.

COMPETENCIES of ENG 105	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics	**LO 5.** Discover appropriate technologies for construction of buildings using either numerical techniques or physical measurements **LO 6.** Applying a full range of civil engineering concepts and techniques by Structural Analysis **LO 7.** Distinguish appropriate technologies for construction by Structural Analysis.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Centroid. Area moment of inertia. Parallel axes theorem. Polar moment of inertia. Mass moment of inertia. Radius of gyration. Moment of inertia about inclined axes. Product of inertia about inclined axes. Principal axes of inertia (analytical & graphical). Loads, supports and reactions. Motion of Rigid Body, Newton's second law. Energy and momentum methods. Introduction to vibrations

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Introduction of center of gravity - center of mass and centroid.	4	2	2	---	**LO1**
Week-2	Computing area moment characteristics of composite area.	4	2	2	----	**LO1, LO6**
Week-3	Introduction to parallel axes theorem	4	2	2	---	**LO2, LO5, LO3**
Week-4	Introduction to polar moment of area.	4	2	2	---	**LO2, LO5, LO3**
Week5	Radius of gyration.	4	2	2	---	**LO2 ,LO5, LO3**
Week-6	Product moment of area	4	2	2	---	**LO4, LO6, LO7**

Week-7	Moment area characteristics about inclined axes.	4	2	2	---	**LO4, LO6, LO7**
Week-8	**Midterm Exam.**					
Week-9	Principal moment area characteristics	4	2	2	----	**LO4, LO6, LO7**
Week-10	Loads – support and reaction.	4	2	2	----	**LO4, LO6, LO7**
Week-11	Introduction of internal forces	4	2	2	---	**LO4, LO6, LO7**
Week-12	Motion of rigid bodies	4	2	2	----	**LO4, LO6, LO7**
Week-13	Newton second law	4	2	2	---	**LO4, LO6, LO7**
Week-14	Introduction to vibration characteristics	4	2	2	---	**LO4, LO6, LO7**
Week 15	**Final Exam.**					

6- Matrix of Course Objective and LOs

Course Learning Objectives	**Learning Outcomes (LOs)**						
	General				**ENG 105**		
	LO 1	**LO 2**	**LO 3**	**LO 4**	**LO 5**	**LO 6**	**LO 7**
CLO 1	✓						✓
CLO 2				✓		✓	✓
CLO 3				✓		✓	✓
CLO 4				✓		✓	✓
CLO 5		✓	✓		✓		
CLO 6	✓	✓	✓				✓

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)						
	General				ENG 105		
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
Face-to-Face Lecture	✓	✓	✓	✓	✓	✓	✓
Online Education	✓	✓	✓	✓	✓	✓	✓
Tutorial/ Exercise				✓		✓	✓
Group Discussion					✓		
Laboratory							
Site Visit							
Presentation	✓						✓
Mini Project							
Research and Reporting							
Brain Storming	✓						✓
Self-Learning							

8- Assessment

8.1. Course Assessment Methods:

AssessmentMethods	*Learning Outcome*(LOs)						
	General				ENG 105		
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
WrittenExam	✓	✓	✓	✓	✓	✓	✓
OnlineExam	✓	✓	✓	✓	✓	✓	
Oral Exam							
Quiz		✓	✓	✓		✓	✓
Lab Exam							
Take-HomeExam							
Research Assignment	✓						✓
Reporting Assignment							
Project Assignment							
In-Class Questions	✓		✓				✓

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- White Board.
B- Data Show.
C- MS Teams.

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Text Books and Additional References:

- Theory of structures Vol. 1, El-Dakhakhni, Dar El-Maaref, Cairo - 2018
- Engineering Mechanics – Hibbler – 2016 – New Jersey.
- Dynamics of structures – Patrick paultr – 2010 – Newdelhi.

Course Directors	Name	Signature
Teaching staff	Dr. Shady Khairy & Dr. Mohamed Fahmy	M. Fahmy
Course coordinator	Dr. Morcos Farid Samaan	
Program coordinator	Ass. Prof. Sherif Hussein	
Head of the Department	Ass. Prof. Sherif Hussein	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 101: Principles of Construction and Building Engineering

Program(s) on which this course is given	General Programs
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	**Principles of Construction and Building Engineering**			**Course Code:**		CIV 101	
Academic year / level	Civil engineering			**Sophomore**			
				Credit hours		**2**	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	-----
Pre-Requisite	NA						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- To describe the different types of loads that the building deals with.
- To recognize the different types of buildings systems and materials.
- To discuss the techniques for constructing different building elements.
- To know and understand the different types of foundations, isolations, and stairs.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1. Discuss the various types of loads.

CLO 2. Overlook a general idea about construction methods.

CLO 3. Understand the execution of forms for different elements.

CLO 4. Compare between different types of foundations.

CLO 5. Learn about the different types of slabs and loads distributions.

CLO 6. Identify the different types of building materials, bricks, and compute the needed quantities of materials.

CLO 7. Discuss the different types of stairs and the suitable architictural design process.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV101
Program Academic Standards that the course contributes in achieving	A1,A4,A9,A10	---

4- *Mapping Course Los to NARS*

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes (LOs)
COMPETENCIES of ENGINEERING	**A1.** Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	**LO 1**. Identify different building types, components and architectural drawings. **LO 2**. Recognize the roles played by shallow and deep foundations in buildings, observe and understand civil Methods of soil investigation and the disposal of ground water. **LO 3**. Describe the types and shapes of steel bars, steel sections **LO 4** Define different types of bricks and calculating materials quantities required for building. **LO 5**. Solve formulas for load distribution on slabs and calculate the slab thickness. **LO 6**. Select the suitable types of water, thermal isolations and structural separators

	A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	**LO 7**. Utilize codes of practice for the choice of type of foundation according to loads and soil type. **LO8**. Utilize quality and architectural guidelines for the choice of stairs according to materials and available areas.
COMPETENCIES of CIV101	**A9** Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations	**LO 9.** Planning and preparing the site for the execution process, and erection of wooden and steel forms for reinforced concrete elements.
	A10 Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.	**LO10.** Deal with bidding, contracts and financial issues of projects.

5- Course Content:

5.1 Course Description (As indicated in program Bylaw):

An Overview of the Building Delivery Process, Loads on Buildings, Load Resistance—The Structural Properties of Materials, Structural systems, Thermal Properties of Materials, Fire - Related Properties, Principles of Sustainable Construction. Materials and systems of construction: The Material Steel and Structural Steel Construction, Lime, Portland Cement and Concrete, Concrete Construction, Soils; Foundation and basement Construction, Masonry Materials, Roofing, Stairs, Floors Coverings.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Introduction	3	2	1	-	**LO1, LO3**
Week-2	Steps for building construction	3	2	1	-	**LO1**
Week-3	Steps for building construction	3	2	1	-	**LO1, LO9, LO10**
Week-4	Bill of Quantity and different kinds of engineering drawing	3	2	1	-	**LO1, LO10**
Week5	different methods of soil investigation, Foundation I	3	2	1	-	**LO2, LO7, LO8**
Week-6	Foundation2	3	2	1	-	**LO2, LO7, LO8**
Week-7	dispose of ground water	3	2	1	-	**LO2, LO7**
Week-8	**Midterm Exam.**					
Week-9	Forms	3	2	1	-	**LO9**
Week-10	Load distribution and Slabs systems	3	2	1	-	**LO5**
Week-11	Types of water, thermal isolations and structural separators.	3	2	1	-	**LO6**
Week-12	Building materials and Bricks	3	2	1	-	**LO4**
Week-13	Diffirante types of stairs	3	2	1	-	**LO8**
Week-14	Design of Stair Case	3	2	1	-	**LO8**
Week 15	**Final Exam.**					

5.3. Experiment Topics:

Serial	**Experiment**	**Laboratory hrs.**
1st	N/A	

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)									
	General CIV 101									
	LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9	LO10
CLO 1	√						√			
CLO 2		√	√							
CLO 3		√								
CLO 4				√	√					√
CLO 5							√			
CLO 6						√		√	√	
CLO 7								√		

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	Learning Outcomes (LOs)									
	General CIV 101									
	LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9	LO10
Face-to-Face Lecture	√	√	√	√	√	√	√	√	√	√
Online Education										
Tutorial/ Exercise				√	√		√	√		
Group Discussion										
Laboratory										
Site Visit										
Presentation										
Mini Project										
Research and Reporting			√			√				
Brain Storming										
Self-Learning										

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	Learning Outcomes (LOs)									
	General CIV 101									
	LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9	LO10
Written Exam	√	√	√	√	√	√	√	√	√	√
Online Exam										
Oral Exam										
Quiz	√			√	√		√	√		
Lab Exam										
Take-Home Exam										
Research Assignment										
Reporting Assignment						√				
Project Assignment										
In-Class Questions										

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- White board
B- Data shows
C- MS teams

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Text Books:

- *أ د محمد أحمد عبد الله , إنشاء مبنى* , دار النجاح للنشر و الطباعة

10.3. Recommended Books:

- Construction equipment and its management, S.C. Sharma, Khanna Publishing House (January 1, 2016)
- التربة- م. محمد ماجد عباس مطبعة النهضة العربية, 1991 استطلاع الموقع وفحص التربة
- الكود المصري لميكانيكا التربة
- الكود المصرى لتصميم وتنفيذ المنشآت
- دار الكتب للعلمية للنشر والتوزيع،1993, حساب كميات الاعمال السيد عبد الفتاح القصبى

web sites 10.2

www.researchgate.net

www.engineeringcivil.com

www.eng-tips.com

http://ocw.mit.edu/

Course Directors	Name	Signature
Teaching staff	Dr. Sahar Zakey	
Course coordinator	Ass. Prof. Sherif Hussein	
Program coordinator	Ass. Prof. Sherif Hussein	
Head of the Department	Ass. Prof. Sherif Hussein	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	
Course Specification	
CIV 111: Engineering Geology	

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Engineering Geology			**Course Code:**		CIV 111	
Program / level	Civil Engineering			Sophomore year			
Term/ Academic year:	OCT-Jan2023-2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	0	**Laboratories:**	1
Pre-Requisite							
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- *Course Aims:*

To build an understanding of concepts the earth's crust from chemical and mineralogical composition

To emphasize the relationship between conceptual the physical, chemical and mechanical properties of soil

To provide the students with engineering practice cases in predicting the deformation and stresses of soil under load.

2- *Course Learning Objectives (CLO):*

At the end of this course, student should be able to:

CLO1:, Study the materials forming the earth's crust from chemical and mineralogical composition from standpoint of view.

CLO2: Understand the difference between the physical, chemical and mechanical properties of soil. its behaviour under load and uses of soil as a construction material.

CLO3: Study the behavior of soil under external loads according to Egyptian code.

CLO4: Use the data gained from laboratory and field test to investigate the soil relative compaction.

3- ***Relationship between the course and the Competencies :***

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of Civil
Program Academic Standards that the course contributes in achieving	A1,A2	B1

4- ***Mapping Course Los to NARS***

Field	Program (CBEs) that the course contribute in	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A1.** Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.	**LO 1.** Discover all the information on the geology of the earth's crust from the engineering standpoint of view.
	A2. Develop and conduct appropriate experimentation and/or simulation, Analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 2**. Conduct laboratory tests on different soil samples and evaluate the gained data to get The physical properties of the soil. **LO 3.** Relate the relation between t h e physical and mechanical properties of soil.

COMPETENCIES of Civil	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 4**. Use the physical measurement to identify Stress distribution in soil mass under different types of surface loading. **Lo 5.** Infer foundation settlement under the isolated footing. **LO 6.** Predict the relative compaction of soil using the results of the proctor test and sand cone test .

5-Course Content:

5.1. Course Description (As indicated in program Bylaw):

Sources and processing for both natural and synthetic aggregates needed for construction, minerals and rock types. Structural geology and influence of geological features on engineering works. Soil Formation, Physical properties; Hydraulic properties and permeability, Stress Distribution; Consolidation; Shear strength; Soil Exploration and Soil Testing.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*total hour*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Introduction to soil formation	3	2		1	**LO 1**
Week -2	Index properties of soil as Water content, specific gravity, , -	3	2		1	**LO 2**
Week -3	Index properties of soil as particle size distribution	3	2		1	**LO 2**
Week-4	Consistency of soil, in. situ density, and examples.	3	2		1	**LO 2**
Week-5	Preliminary definitions and relations of soil like the phase definitions, functional and examples.	3	2		1	**LO 2**
Week-6	Continue of topic in week-5	3	2		1	**LO 2**
Week-7	**Midterm Exam.**					
Week-8	Types of water in soil and examples	3	2		1	**LO2, LO3**
Week-9	Stresses in soil	3	2		1	**LO3, LO4**
Week-10	Stresses due to concentrated load, Stresses due to line load, vertical stresses under uniformly loaded circular area	3	2		1	**LO3, LO4**
Week-11	Consolidation of soil: compression characteristics, coefficient of compressibility, coefficient of volume change, the relation e- log σ, Tterzaghi,s theory of consolidation , consolidation test, consolidation settlement	3	2		1	**LO 5**
Week-12	Continue of topic in week-11	3	2		1	**LO5**

Week-13	Soil Compaction: Definition, Factors affecting soil compaction,	3	2		1	**LO6**
Week-14	Proctor test, Modified Proctor test.	3	2		1	**LO6**
Week-15	**Final Exam.**					

5.3. Experiment Topics

Serial	Experiment	Laboratory hrs.
1st	Sieve Analysis	1
2nd	Water content- specific gravity	1
3rd	Relative density	1
4th	Liquid limit-plastic limit	1
5th	Odometer test	1
6th	Proctor test	1

6- ***Matrix of Course Objective and Los***

Course Learning Objectives	Learning Outcomes (LOs)					
	General			CIV 111		
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
CLO1	√					
CLO2		√	√			
CLO3				√	√	
CLO4						√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	Learning Outcome(LOs)					
	General			CIV 111		
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
Face-to-Face Lecture	√	√	√	√	√	√
Online Education						
Tutorial/ Exercise	√	√	√	√	√	√
Group Discussion						
Laboratory		√		√		√
Site Visit						
Presentation						
Mini Project						
Research and Reporting						
Brain Storming	√		√		√	
Self-Learning	√					

8-*Assessment*

8.1.*Course Assessment Methods:*

Assessment Methods	*Learning Outcome*(LOs)					
	General			CIV 111		
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
Written Exam	√	√	√	√	√	√
Online Exam						
Oral Exam						
Quiz	√	√	√	√	√	√
Lab Exam		√		√		√
Take-Home Exam						
Research Assignment						
Reporting Assignment						
Mini Project						
In-Class Questions	√	√	√	√	√	√

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	50 min.
End of term laboratory exam (*Lab*)	**20**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**10**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**10**	According to the schedule	---
Total Mark	**100**		

9- *Facilities Required:*

A- White board
B- Projector
C- Egyptian code

10- *List of References:*

10.1. Course Notes:

Lecture notes

10.2. Required Text Books and Additional References:

Amer Radwan. "A course in Soil; Mechanics",Dar El-Maarf, 2007

10.3. Recommended Books:

1. R. E. CRAIG," SOIL MECHANICS", BRITAIN, ISBN 64, 1992
2. N.C.BRADY, "THE NATURE AND PROPERTIES OF SOILS", ISBN 14653, 2001
3. EGYPTION CODE.
4. V.N.S.MURTHY, "PRINCIPLES OF SOIL MECHANICS AND FOUNDATION", DELHI, ISBN 6400, 2001

10.4. Web Sites:

- https://www.issmge.org/

Course Directors	Name	Signature
Teaching staff	Dr. Ahmed Nabil & Dr. Ahmed Abd Latif	
Course coordinator	Dr. Ahmed Nabil	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 112 : Surveying I

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Surveying I			**Course Code:**		CIV 112	
Program / level	Civil Engineering			Sophomore			
Term/ Academic year:	Oct-Jan (2023-2024)			**Credit Hours:**		3	
Contact Hours:	4	**Lecture:**	2	**Tutorial:**	0	**Laboratories:**	2
Pre-Requisite	MTH 002						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- To provide an introduction to surveying engineering.
- To emphasize the relationship between conceptual understanding and problem solving approaches.
- To provide students with a strong foretaste of engineering practice.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Study the using of scales and mapping.
CLO 2. Study the Compass surveying and Traverse computation.
CLO 3. Study the using of level and contour lines and volume computations.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 112
Program Academic Standards that the course contributes in achieving	A1,A2, A6	B1

3- *Mapping Course Los to NARS*

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES OF ENGINEERING	**A1.** Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.	**LO 1.** Knowledge of mapping, units, scales and create the scale of mapping. **LO 2.** Provide the student how to draw scale, linear and area measurement. **LO 3.** Knowledge of measurements, compass, area of cross-section and calculation of linear measurements, horizontal angles.
	A2. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 4.** Training the student how to measuring horizontal vertical angles and calculation of area of different sections.
	A6. Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	**LO 5.** Definition of bearing using compass. **LO 6.** Knowledge of traversing computation, omitted observation and calculation of traverse computations.

COMPETENCIES OF CIV 112	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO7.** Knowledge of leveling, contour lines, cross-section and volume of earthwork. **LO 8.** Transform sets of constraints and requirements into useful quantities Representations. **LO 9.** Provide the students with the use of ICT programs to solve problems

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Build an introduction to surveying engineering including introduction of mapping, finition of surveying science, scales and measurements units, sources and kinds of errors, direct d indirect methods of distance measurement, traverse observations compass (calculation and justment), calculation area, application of leveling, longitudinal and cross-section leveling, ntour lines and volume computations.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			LOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction to surveying, mapping using linear measurement.	4	2	0	2	**LO 1, LO 2,**
Week-2	Different type of scale.	4	2	0	2	**LO 1, LO 2,**
Week-3	Compass surveying Prismatic and surveying compass, true and magnetic north, bearing.	4	2	0	2	**LO 3, LO 4**
Week-4	Compass surveying Prismatic and surveying compass, true and magnetic north, bearing.	4	2	0	2	**LO 3, LO 4**
Week5	Local attraction.	4	2	0	2	**LO 3, LO 4**

Week-6	Traverse computation.	4	2	0	2	**LO 5, LO 6**
Week-7	Traverse computation	4	2	0	2	**LO 5, LO 6**
Week-8	**Midterm Exam.**					
Week-9	Area determination.	4	2	0	2	**LO 7, LO 8, LO 9**
Week-10	Leveling: Type of level, Basic principle of the level and its parts.	4	2	0	2	**LO 7, LO 8, LO 9**
Week-11	Instrument height, Rise and Fall method.	4	2	0	2	**LO 7, LO 8, LO 9**
Week-12	Contour map	4	2	0	2	**LO 7, LO 8, LO 9**
Week-13	Vertical Section: Profile and Cross-section.	4	2	0	2	**LO 7, LO 8, LO 9**
Week-14	Final Practical exam.	4	2	0	2	
Week 15	**Final Exam.**					

5.3. Experiment Topics:

Serial	Experiment	Laboratory hrs.
1st	Plan the student in how to use tools and tape.	2
2nd	Plan the student in how to use compass.	2
3th	Plan the student in how to use level.	2
4th	Plan the student in how to calculate level for different point.	2
5th	Training the student in how to measure angle by level insturment.	2

6- Matrix of Course Objective and Los

Course Learning Objectives	*Learning Outcome*(LOs)								
	General						CIV 112		
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9
CLO 1.	√	√	√	√				√	√
CLO 2.					√	√		√	√
CLO 3.							√	√	√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)								
	General						CIV 112		
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9
Face-to-Face Lecture	√	√	√	√	√	√	√	√	√
Online Education									
Tutorial/ Exercise	√	√	√	√	√	√	√	√	√
Group Discussion			√			√			
Laboratory	√	√	√						
Site Visit									
Presentation									
Mini Project	√	√	√						
Research and Reporting									
Brain Storming							√	√	√
Self-Learning									

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)								
	General						CIV 112		
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9
Written Exam	√	√	√	√	√	√	√	√	√
Online Exam									
Oral Exam	√	√	√						
Quiz	√	√							
Lab Exam	√	√	√						
Take-Home									

Exam									
Research Assignment				√	√				
Reporting Assignment					√	√	√		
Project Assignment	√	√	√					√	√
In-Class Questions					√	√	√		

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**30**	15th	90 min.
Midterm written Exam (*Term Work*)	**30**	8th	60 min.
End of term laboratory exam (*Lab*)	**10**	14th	Committee
End of term Oral exam	**-**	14th	Committee
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**10**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- Laboratory
B- level device
C- data show

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Recommended Books:

- Duggal, S.K., "Surveying", Volume 2, ISBN-10 : 9353167523, MC Graw Hill India, 2018.0
- Duggal, S.K., "Surveying", Volume 1, ISBN-10 : 9353167507, MC GRAW HILL INDIA (January 1, 2019).

10.3. Web Site

- Arthurr. B., "Elements of Plane Surveying", ISBN-10 : 0070048843, McGraw-Hill College (February 1, 1991)

Course Directors	Name	Signature
Teaching staff	Dr. Yasser hassan	
Course coordinator	Dr. Amr Nada	
Program coordinator	Ass. Prof. Sherief Hussein	
Head of the Department	Ass. Prof. Sherief Hussein	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 113: Civil Engineering Drawing I

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Civil Engineering Drawing I			**Course Code:**		CIV 113	
Program / level	Civil Engineering			sophomore			
Term/ Academic year:	OCT-Jan2023-2024			**Credit Hours:**		**1**	
Contact Hours:	**4**	**Lecture:**	**0**	**Tutorial:**	**0**	**Laboratories:**	**4**
Pre-Requisite	ENG 003						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- Offers a rather comprehensive introduction to structural details for construction engineering projects (both Steel and Reinforced concrete).
- Abaility to understand the blue-prints for structural details
- Providing an introduction for Computer Aided Drawing software (AutoCAD)

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1. Understanding the structural engineering drawing.
CLO 2. Establish all projections engineering for execution.
CLO 3. Cablable to draw engineering drawing via software.
CLO 4. Develop engineering drawing for quantity surveying, for cost estimation and execution.

3- ***Relationship between the course and the Competencies :***

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 113
Program Academic Standards that the course contributes in achieving	A5, A7, A8	B2

4- ***Mapping Course Los to NARS***

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A5.** Practice research techniques and methods of investigation as an inherent part of learning.	**LO 1.** Distinguish different views of a model **LO 2.** Identify types of steel elements, connections, and sections. **LO 3**. Create projections of steel connection. **LO 4.** Mange steel connections erection sequence.
	A7. Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.	**LO 5**. Discover engineering drawing regulations. **LO 6.** Establish all projections to illustration for execution.
	A8. Communication effectively-graphically, verbally and in writing-with a range of audiences using contemporary tools.	**LO 7.** Express the structural details of engineering drawing. **LO 8.** Applying engineering drawings using CAD software.
COMPETENCIES of CIV 113	**B2.** Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbours; or any other emerging field relevant to the discipline.	**LO 9**. Compose optimum illustration for engineering drawing via software. **LO 10**. Produce detailing engineering drawing necessary for quantity surveying, cost estimation and execution.

5- Course Content:

5.2 Course Description (As indicated in program Bylaw):

Structural Detail Drawing for:
Steel Structures; Columns and Bases, Trusses, Connections, and Built-up Sections.
Concrete Structures; Concrete, and Reinforcement details.

Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			LOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction for Structural drawing for Steel construction projects.	4	1	0	3	**LO 5, LO6, LO7**
Week-2	Steel Structure; Connections Sections, and built-up Sections.	4	1	0	3	**LO 1, LO2 LO3, LO4, LO6, LO7**
Week-3	Steel Structure; Connections Sections, and built-up Sections.	4	1	0	3	**LO 1, LO2 LO3, LO4, LO6, LO7**
Week-4	Steel Structure; Connections Sections, and built-up Sections.	4	1	0	3	**LO 1, LO2 LO3, LO4, LO8, LO9, LO10**
Week5	Steel Structure; Connections Sections, and built-up Sections.	4	1	0	3	**LO 1, LO2, LO3, LO4, LO8, LO9, LO10**
Week-6	Steel Structure; Connections Sections, and built-up Sections.	4	1	0	3	**LO 1, LO2 LO3, LO4, LO8, LO9, LO10**
Week-7	Self-Learning Revision					**LO2, LO3, LO4, LO8, LO9, LO10**
Week-8	Self-Learning Revision					**LO2, LO3, LO4, LO8, LO9, LO10**
Week-9	**Midterm Exam.**					**LO2 LO3, LO4, LO8, LO9, LO10**
Week-10	Introduction for Reinforcement and Concrete drawings.	4	1	0	3	**LO2, LO3, LO 5, LO6, LO7, LO8, LO9, LO10**
Week-11	RC structure: Beams and RFT details	4	1	0	3	**LO2, LO3, LO8, LO9, LO10**
Week-12	RC structure: Base and RFT details	4	1	0	3	**LO2, LO3, LO8, LO9, LO10**
Week-13	RC structure: Columns and RFT details	4	1	0	3	**LO2, LO3, LO8, LO9, LO10**
Week-14	**Final Exam.**					

5.4 Experiment Topics:

Serial	Experiment	Laboratory hrs.
1st	NA	

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)									
	General								CIV 113	
	LO 1	LO 2	LO 3	LO 4	LO 5	LO6	LO7	LO8	LO 9	LO 10
CLO 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CLO 2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CLO 3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
CLO 4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome* (LOs)									
	General								CIV 113	
	LO 1	LO 2	LO 3	LO 4	LO 5	LO6	LO 7	LO 8	LO 9	LO 10
Face-to-Face Lecture	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Online Education		✓	✓	✓	✓	✓	✓	✓	✓	✓
Tutorial/ Exercise	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Group Discussion	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Laboratory		✓	✓	✓	✓	✓	✓	✓	✓	✓
Site Visit										
Presentation	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mini Project	✓									
Research and Reporting	✓									
Brain Storming	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Self-Learning	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

8- Assessment

8.1. Course Assessment *Methods:*

Assessment Methods			*Learning Outcome* (LOs)							
			General						CIV 113	
	LO 1	LO 2	LO 3	LO 4	LO 5	LO6	LO7	LO8	LO 9	LO 10
Written Exam		✓	✓	✓	✓	✓	✓	✓	✓	✓
Online Exam		✓								
Oral Exam										
Quiz		✓	✓	✓	✓	✓	✓	✓	✓	✓
Lab Exam		✓	✓	✓	✓	✓	✓	✓	✓	✓
Take-Home Exam	✓									
Research Assignment	✓									
Reporting Assignment	✓									
Project Assignment	✓									
In-Class Questions		✓	✓	✓	✓	✓	✓	✓	✓	✓

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**30**	15th	120 min.
Midterm written Exam (*Term Work*)	**30**	8th	120 min.
Tutorial and report assessment (*Term Work*)	**40**	weekly	---
Total Mark	**100**		

9- Facilities Required:

A- Videos with Audio Presenter
B- Computer
C- Data show

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Textbooks and Additional References:

- Civil Drawing I, Ain Shams Univeristy, Faculty of Engineering; By Ass.Dr. Youssef El Alfy.
- Civil Drawing for steel connections, Azhar Univeristy, Faculty of Engineering; By Prof. Ans Almola and Prof. Amir Mobasher.
- الكود المصرى لتصميم وتنفيذ المنشآت الخرسانية - الملحق الثانى - دليل الاشتراطات الفنية

10.3. Recommended Books:

10.4 Web Sites:

- **Housing and Building National Research Center**; https://www.hbrc.edu.eg/en/
- **AutoCad Offical Site**; https://www.autodesk.com

Course Directors	Name	Signature
Teaching staff	Dr. Mahmoud Malek Olwan	
Course coordinator	Prof. Essam Abd-Alati Amoush	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 114: Properties and Testing of Materials (I)

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Properties and Testing of Materials (I)			**Course Code:**		CIV 114	
Program / level	Civil Engineering						
Term/ Academic year:	Oct- Jan 2023 - 2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	0	**Laboratories:**	1
Pre-Requisite	MTH 002						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- To teach the students the various kinds of materials, classification of materials, its properties, it's characteristics. Also to emphasize the relationship between conceptual understanding and problem solving approaches.
- The various kinds of testing machines and load application as well as load measuring, calibration of testing machines and the various kinds of strain gauges. Also, the different kinds of tests made on materials.
- The static tension, hardness and fatigue of metals and the static compression, bending and shear of materials.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Characterize materials from both physical and mechanical points of view.

CLO 2. Characterize the various types of testing machines according to usage and application.

CLO 3. Know the different types of load, strain measures, and understand the methods of calibration made for testing machines.

CLO 4. The static properties of metals in tension and it's applications related to civil work

CLO 5. The static properties of materials in compression and it's applications related to civil work

CLO 6. The static properties of materials in bending and it's applications related to civil work

CLO 7. The static properties of materials in shear and it's applications related to civil work

CLO 8. The static properties of metals in hardness and fatigue.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 112
Program Academic Standards that the course contributes in achieving	A2, A4, A10	B1

3- ***Mapping Course Los to NARS***

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A2.** Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 1.** Characterize materials from both physical and mechanical points of view. **LO 2.** Characterize the various types of testing machines according to usage and application. **LO 3.** Identify the different types of load, strain measures, and understand the methods of calibration made for testing machines.
		LO 4. Estimate the static properties of metals in tension, it's applications related to Civil work and calculation of mechanical properties of metals in tension test. **LO 5.** Estimate the static properties of materials in compression, its applications related to civil work and calculation of mechanical properties of metals in compression test.
	A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	**LO 6.** Utilize codes to determine the static properties of materials in bending, its applications related to civil work and Calculation of mechanical properties of metals in bending test. **LO 7.** Utilize codes to determine the static properties of materials in shear, its applications related to civil work and calculation of mechanical properties of metals in shear test. **LO 8.** Utilize codes to determine the static properties of metals in hardness, fatigue, and calculation of mechanical properties of metals in hardness, and fatigue tests.
COMPETENCIES of CIV	**A10.** Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.	**LO 9.** Choose the suitable kind of testing machine and strain gauges according to the kind of test to be performed, practice the calibration methods for testing machines and differentiate between instruments according to the sensitivity and accuracy.

	B1. Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 10.** Compute the mechanical properties of metals and skills considering making charts and other schematic figures.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Build a various kinds of materials, classification of materials, its properties, its characteristics. The various kinds of testing machines and load application as well as load measuring and calibration of testing machines. The various kinds of strain gauges. Also, the different kinds of tests made on materials. The static tension of metals. The static compression of materials. The bending of materials. The shear of materials. The Hardness of metals. The fatigue of metals.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			LOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Types of materials, it's characteristics	3	2	0	1	**LO 1**
Week-2	Types of testing machines according to usage and application.	3	2	0	1	**LO 2, LO 9, LO 10**
Week-3	Methods loads Application and measurement, strain measures, and methods of calibration of testing machines	3	2	0	1	**LO 3, LO 9, LO 10**
Week-4	Static properties of metals in tension	3	2	0	1	**LO 4, LO 9, LO 10**
Week5	Static properties of metals in tension + Tutorial	3	2	0	1	**LO 4, LO 9, LO 10**
Week-6	Static properties of metals in tension + Tutorial	3	2	0	1	**LO 4, LO 9, LO 10**
Week-7	Static properties of metals in Compression + Tutorial	3	2	0	1	**LO 5, LO 9, LO 10**
Week-8	**Midterm Exam.**					
Week-9	Static properties of metals in Bending + Tutorial	3	2	0	1	**LO 6, LO 9, LO 10**

Week-10	Static properties of metals in Shear	3	2	0	1	**LO 7, LO 9, LO10**
Week-11	Static properties of metals in Shear (Tutorial)	3	2	0	1	**LO 7, LO 9, LO 10**
Week-12	Hardness of metals	3	2	0	1	**LO 8, LO 9, LO 10**
Week-13	Fatigue of metals	3	2	0	1	**LO 8, LO 9, LO 10**
Week-14	Final Practical exam.	1	2	0	1	
Week 15	**Final Exam.**					

5.3. Experiment Topics:

Serial	Experiment	Laboratory hrs.
4th	Tensile test in the laboratory	1
6th	Compressive test in the laboratory	1
9th	Bending test in the laboratory	1
11th	Sheare test in the laboratory	1
12h	Hardness test in the laboratory	1

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)									
	General								CIV 114	
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
CLO 1	√								√	√
CLO 2		√							√	√
CLO 3			√						√	√
CLO 4				√					√	√
CLO 5					√				√	√
CLO 6						√			√	√

CLO 7							√		√	√
CLO 8								√	√	√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	***Learning Outcome*(LOs)**									
	General								**CIV 114**	
	LO 1	**LO 2**	**LO 3**	**LO 4**	**LO 5**	**LO 6**	**LO 7**	**LO 8**	**LO 9**	**LO 10**
Face-to-Face Lecture	√	√	√	√	√	√	√	√	√	√
Online Education										
Tutorial/ Exercise	√	√	√	√	√	√	√	√		
Group Discussion										
Laboratory				√	√	√	√	√		
Site Visit										
Presentation										
Mini Project				√	√	√				
Research and Reporting										
Brain Storming										
Self-Learning										

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	***Learning Outcome*(LOs)**									
	General								**CIV 114**	
	LO 1	**LO 2**	**LO 3**	**LO 4**	**LO 5**	**LO 6**	**LO 7**	**LO 8**	**LO 9**	**LO 10**
Written Exam	√	√	√	√	√	√	√	√	√	√
Online Exam										
Oral Exam				√	√	√	√	√		
Quiz				√	√					
Lab Exam				√	√	√				
Take-Home Exam										
Research Assignment										

Reporting Assignment										
Project Assignment				√	√	√				
In-Class Questions										

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**5**	14th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**15**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- Laboratory
B- Power point
C- data show

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Text Books:

- Er.R.K. Rajput, „Strength of Materials“, 7th edition, 2018
- Arthur and Richard, „ Advanced Mechanics of Materials“, 6th edition, 2018

10.3. Recommended Books:

- Mechanical Behavior of Materials, Norman E. Dowling, International Edition

Course Directors	Name	Signature
Teaching staff	Dr. Ahmed Mohamed Abdu El-Nopy	
Course coordinator	Prof. Ass. Sherif H. AL-Tersawy	
Program coordinator	Prof. Ass. Sherif H. AL-Tersawy	
Head of the Department	Prof. Ass. Sherif H. AL-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 121: Fluid Mechanics

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Fluid Mechanics			**Course Code:**		CIV 121	
Program / level	Civil Engineering			Sophomore			
Term/ Academic year:	OCT-Jan2023-2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	0	**Laboratories:**	1
Pre-Requisite	MTH 002, ENG 105						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- Build an understanding of concepts, principles and theories relevant to fluid mechanics.
- Emphasize the relationship between conceptual understanding and problem solving approaches.
- Provide students with a strong foretaste of engineering practice.
- Determine the different application problems related to civil engineering.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Understanding the principles of the Fluid properties

CLO 2. Illustrate the equilibrium of sumberged bodies on the fluid

CLO 3. Acheive the applying of Bernoulli's Equation

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV121
Program Academic Standards that the course contributes in achieving	A1,A2, A5	B1

4- ***Mapping Course Los to NARS***

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A1.** Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics	**LO 1. Describe the properties of fluid mechanics and solve engineering problems**
	A2. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 2**. conduct appropriate experimentation of Notch and venture-meter
	A5. Practice research techniques and methods of investigation as an inherent part of learning.	**LO 3**. Practice research techniques
COMPETENCIES of CIV121	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 4**. Study the physical measurements.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Identify fluid mechanics , Calculate the pressure force on submerged surfaces, and apply Bernoulli's equation and its measurements.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			LOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	**Introduction to fluid mechanics**)	3	2	0	1	**LO 1**
Week-2	Fluid properties of matter **+Quiz**	3	2	0	1	**LO1**
Week-3	Fluid pressure and its measurements **+Quiz**	3	2	0	1	**LO2**
Week-4	Total pressure on a horizontally immersed surface –an inclined immersed surface –**+Quiz**	3	2	0	1	**LO2, LO3**
Week5	Hydrostatic forces on Horizontal and vertical plates**+ Quiz**	3	2	0	1	**LO2, LO3**
Week-6	Hydrostatic forces on curved plates**+ Quiz**	3	2	0	1	**LO2, LO3**
Week-7	Equilibrium of Floating Bodies (Introduction – Buoyancy – Center of buoyancy – Meta-centre – Meta-centric height–Conditions of equilibrium of a floating body **)**	3	2	0	1	**LO4**
Week-8	**Midterm Exam.**					
Week-9	Fluid masses subjected to Acceleration +Quiz	3	2	0	1	**LO1, LO2, LO4**
Week-10	Vortex Flow (introduction – Forced vortex flow – Equation of forced vortex flow x flow) **+Quiz**	3	2	0	1	**LO1, LO4**
Week-11	Hydro-kinematics (introduction – rate of discharge – equation of continuity of a liquid flow – motion of fluid particle – types of flow lines –	3	2	0	1	**LO1, LO4**

	path lines – stream lines – types of flow in motion) **+Quiz**					
Week-12	Bernoulli's Equation and its–**+Quiz**	3	2	0	1	**LO1, LO4**
Week-13	Momentum Equations and its applications. +**Quiz**	3	2	0	1	**LO1, LO4**
Week-14	Revision	3	2	0	1	**LO1, LO4**
Week 15	**Final Exam.**					

5.3. Experiment Topics:

Serial	Experiment	Laboratory hrs.
1st	Notch and venturi-meter	1

6- Matrix of Course Objective and Los

Course Learning Objectives	Learning Outcomes (LOs)			
	General			CIV121
	LO 1	LO 2	LO 3	LO 4
CLO 1	√	√	√	√
CLO 2	√	√		
CLO 3	√	√		√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)			
	General			CIV 121
	LO 1	LO 2	LO 3	LO 4
Face-to-Face Lecture	√	√	√	√
Online Education	√			
Tutorial/ Exercise	√	√	√	√
Group Discussion			√	
Laboratory		√		
Site Visit				
Presentation		√		
Mini Project				√
Research and Reporting			√	√
Brain Storming			√	
Self-Learning			√	√

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)			
	General			CIV 121
	LO 1	LO 2	LO3	LO 4
Written Exam	√	√	√	√
Online Exam	√			
Oral Exam				
Quiz	√	√	√	√
Lab Exam				√
Take-Home Exam				
Research Assignment				√
Reporting Assignment	√	√	√	√
Project Assignment				√
In-Class Questions	√			√

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**5**	13th	15 min
End of term Oral exam	**0**	15th	Committee
Tutorial and report assessment (*Term Work*)	**10**	Weekly	---
Quizzes/reports/presentation (*Term Work*)	**25**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- White board
B- MS teams
C- Data show

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Text Books and Additional References:

Fluid Mechanics with Engineering Applications, Joseph B. Franzini , E. John Finnemor An Introduction to Fluid Mechanics-School of Civil Engineering, University of Leeds.CIVE1400 FLUID MECHANICS.Dr Andrew Sleigh_May 2001

A Text Book of Fluid Mechanics Dr. Amir Mobashe rDepartment of Civil Engineering Faculty of Engineering – Al-Azhar University, 2014

ELEMENTARY FLUID MECHANICS (1st Edition) by Tsutomu Kambe, Published 2007

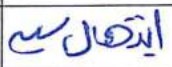
IRRIGATION ENGINEERING AND HYDRAULIC, by DR S.K. SHARMA (S. Chand PUBLISHING), ISBN, 9352533771, 9789352533779, 2016

10.3. Recommended Books:

- A Text Book of Hydraulics and Fluid Mechanics, R.S. Khurmi

10.4. Web Sites:

- www.U.S. corps of engineering1. Amer Radwan. "A course in Soil; Mechanics

Course Directors	Name	Signature
Teaching staff	Dr. Ebtehal sayed	
Course coordinator	Ass. Prof. Samah Hassan	
Program coordinator	Ass.Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass.Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)
Department: Department of Civil Engineering

Course Specification

CIV 122: Civil Engineering Drawing II

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Civil Drawing II			**Course Code:**		CIV 122	
Program / level	Civil Engineering Drawing II			**Junior**			
Term/ Academic year:	Oct.-Jan. 2023 - 2024			**Credit Hours:**		1	
Contact Hours:	4	**Lecture:**	0	**Tutorial:**	0	**Laboratories:**	4
Pre-Requisite	CIV 113						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- ✓ Build an introduction to civil drawing this includes:
- ✓ Canal cross section, Change in levels, Upstream wing walls, Down Stream wing walls, Bricks and concrete wing walls, drawing of bridge structure on streams, Drawing of Culverts structures on streams.
- ✓ Drawing of Syphons structures on streams, Drawing of Regulators structures on streams, drawing of weirs structures on streams, Drawing of Locks Structures on streams.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1. Mention the Introduction for irrigation structures drawing, define the Canal cross section, define the Change in levels, and define the upstream wing walls,

CLO 2. Define the down Stream wing walls, Define the Bricks and concrete wing walls, Mention the Drawing of bridge structure on streams, Mention the Drawing of Culverts structures on streams,

CLO 3. Mention the Drawing of Syphon structures on streams, Mention the Drawing of Regulators structures on streams, Mention the Drawing of weirs structures on streams, and

CLO 4. Mention the Drawing of Locks Structures on streams.

3- Relationship between the course and the Competencies:

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 122
Program Academic Standards that the course contributes to achieving	A2, A8	B1, B2

4- Mapping Course Los to NARS

Field	Program (CBEs) that the course contributes to achieving	Learning Outcomes (LOs)
COMPETENCIES of ENGINEERING	**A2.** Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 1.** Identify earth works. **LO 2.** Classify different water structures. **LO 3.** Develop simulation using civil engineering drawing.

COMPETENCIES of CIV 122	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures, and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics. **B2.** Achieve an optimum design of irrigation Structures and the following civil engineering topics such as Water relevant to the discipline.	**LO 4**. Simulate water structures using AutoCAD program.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Build an introduction to civil drawing this includes:
Canal cross section, Change in levels, Upstream wing walls, Down Stream wing walls, Bricks and concrete wing walls, drawing of bridge structure on streams, Drawing of Culverts structures on streams, Drawing of Syphon structures on streams, Drawing of Regulators structures on streams, Drawing of weirs structures on streams, and Drawing of Locks Structures on streams.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Introduction for irrigation structures drawing	4	0	0	4	**LO 1**
Week-2	Canal cross section	4	0	0	4	**LO 1,3**
Week-3	Change in levels	4	0	0	4	**LO 2,3**
Week-4	Upstream wing walls	4	0	0	4	**LO 2,3**
Week5	Down Stream wing walls	4	0	0	4	**LO 2,3**
Week-6	Quiz	4	0	0	4	
Week-7	Drawing of bridge structure on streams	4	0	0	4	**LO 4**

Week-8	**Midterm Exam.**					
Week-9	Drawing of Culverts structures on streams	4	0	0	4	**LO 3, 4**
Week-10	Drawing of Syphons structures on streams	4	0	0	4	**LO 3, 4**
Week-11	Quiz	4	0	0	4	
Week-12	Drawing of weirs structures on streams	4	0	0	4	**LO 3, 4**
Week-13	Drawing of Locks Structures on streams	4	0	0	4	**LO 3,4**
Week-14	Quiz	4	0	0	4	
Week 15	**Final Exam.**					

5.3. Experiment Topics:

Serial	Experiment	Laboratory hrs.
1st	Lab drawing using ACAD for all the contents.	26

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)			
	General			CIV 122
	LO 1	LO 2	LO 3	LO 4
CLO 1	✓	✓	✓	
CLO 2			✓	✓
CLO 3				✓

7. *Course Teaching and Learning Methods:*

Teaching and Learning Methods	*Learning Outcome*(LOs)			
	General			CIV 122
	LO 1	LO 2	LO 3	LO 4
Face-to-Face Lecture	✓	✓	✓	✓
Online Education				
Tutorial/ Exercise	✓	✓	✓	✓
Group Discussion	✓		✓	
Laboratory			✓	✓
Site Visit				
Presentation				
Mini Project				
Research and Reporting	✓			
Brain Storming	✓	✓	✓	
Self-Learning				

7- Assessment

7.1. *Course Assessment Methods:*

Assessment Methods	*Learning Outcome*(LOs)			
	General			CIV 122
	LO 1	LO 2	LO 3	LO 4
Written Exam	✓	✓	✓	✓
Online Exam				
Oral Exam				
Quiz	✓	✓	✓	✓
Lab Exam	✓	✓	✓	✓
Take-Home Exam				
Research Assignment				
Reporting Assignment				
Project Assignment	✓	✓	✓	✓
In-Class Questions	✓	✓	✓	✓

7.2. ***Assessment Schedule and Grades Distribution:***

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	...	15th	90 min.
Midterm written Exam (*Term Work*)	**30**	8th	60 min.
End of term laboratory exam (*Lab*)	**30**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	25	weekly	---
Quizzes/reports/presentation (*Term Work*)	**15**	According to the schedule	---
Total Mark	**100**		

8. Facilities Required:

A- Drawing room hall.
B- Drawing boards.
C- Lab room and Data show.

9. List of References:

9.1 Course Notes:

- Lecture notes

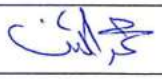
9.2 web sites

www.researchgate.net

www.engineeringcivil.com

www.eng-tips.com

http://ocw.mit.edu/

Course Directors	Name	Signature
Teaching staff	Dr. Mohammad Anas	
Course coordinator	Ass. Prof. Dr. Samah Hassan	
Program coordinator	Ass.Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass.Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 123: Properties and Testing of Materials (II)

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Properties and Testing of Materials (II)			**Course Code:**		CIV 123	
Program / level	Civil Engineering			sophomore			
Term/ Academic year:	OCT-Jan2023-2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	0	**Laboratories:**	1
Pre-Requisite	CIV 114						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- To impart an understanding of engineering materials related to civil Eng.
- Examinations of the characteristics of concrete ingredients and concrete materials.
- The physical, chemical, and mechanical properties of each material will be studied relative to actual in-service behavior.
- The different kinds of tests made on both Fresh and Hard concrete including tests made for structural elements.
- The application of statistical analysis in quality control and mix design of concrete and the most used methods of mix design of concrete.
- Special concretes, causes and effect of shrinkage, creep on long term concrete properties.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Understand the role of aggregate, cement, and water in concrete as a composite material.

CLO 2. Practicing and understanding the experimental tests for concrete ingredients

CLO 3. Practicing and understanding the experimental tests for fresh concrete mixes.

CLO 4. Practicing and understanding the experimental tests for hard concrete samples.

CLO 5. To learn and use of specs, codes, and standards in the choise of concrete materials.

CLO 6. Effect of design requirements and field conditions on the choise of concrete materials and concrete properties.

CLO 7. To assess the acceptance of concrete materials acording to the acceptance limits of standards.

CLO 8. To assess the acceptance of fresh concrete mixes acording to the acceptance limits of standards.

CLO 9. To assess the acceptance of hard concrete samples acording to the acceptance limits of standards.

CLO 10. To understand the effect of statistical analysis on the quality control and the design of concrete mixes..

CLO 11. Use absolute volume, ACI formulas in mix design of concrete mixes.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV
Program Academic Standards that the course contributes in achieving	A2, A4, A10	B1

4- ***Mapping Course Los to NARS***

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(Los)
COMPETENCIES of ENGINEERING	**A2.** Develop and conduct appropriate experimentation and/or simulation, analyse and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions	**LO 1.** Identify basic fundamentals **LO 2**. Formulate and understand mix design equations **LO 3**. Conduct experiments for Aggregates, cement, and concrete. **LO 4**. Use statistical analysis to a asses mix design for concrete.
	A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles	**LO 5**. Utilize codes and standards in the choice of concrete ingredients and concrete manufacturing process.
	A10. Acquire and apply new knowledge; and practice self, lifelong and other learning strategies	**LO 6.** Select material properties according to design requirements and field conditions
COMPETENCIES of CIV123	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	. **LO** 7. Use testing of aggregates, cement, fresh concrete, and hard concrete as a requirement of properties and testing of materials

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Aggregates for concrete: types, properties, grading tests. Cement: manufacturing, properties, special types of cement, tests. Concrete: constituents, admixtures, proportioning, manufacturing-fresh concrete, hardening, stage-hardening concrete, tests, special concrete, concrete mix design.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*total Hours*	*Contact hrs*			**Los Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Types of materials, it's characteristics.	3	2	0	1	**LO1**
Week-2	Physical and mechanical properties of aggregates.	3	2	0	1	**LO 1**
Week-3	Testing of physical and mechanical properties of aggregates.	3	2	0	1	**LO 3**
Week-4	Manufacturing and composition of Ordinary Portland Cement.	3	2	0	1	**LO**6
Week5	Types of cement and tests of cement	3	2	0	1	**LO 3, LO 5**
Week-6	Mixing water, quality and quantity.	3	2	0	1	**LO 5**
Week-7	Concrete Admixtures.	3	2	0	1	**LO6**
Week-8	**midterm exam.**					
Week-9	Manufacturing of concrete (I)	3	2	0	1	**LO**7
Week-10	Manufacturing of concrete (II)	3	2	0	1	**LO**7
Week-11	Fresh concrete and tests.	3	2	0	1	**LO 1, LO 3**
Week-12	Hard concrete and tests.	3	2	0	1	**LO 1, LO 3**
Week-13	Statistical analysis, target strength, and absolute volume.	3	2	0	1	**LO 4**
Week-14	ACI method for mix design.	3	2	0	1	**LO 2, LO6**
Week 15	**Final Exam.**					

5.3. Experiment Topics:

Serial	Experiment	Laboratory hrs.
1st	Sieve analysis, physical , and mechanical tests of aggregates.	1
2nd	Tests of cements.	1
3ed	Effect of admixtures, fresh concrete tests, and compressive strength test sampling.	1
4th	Hard concrete testing (compresion, indirec tention, flexture)	1

6- Matrix of Course Objective and Los

Course Learning Objectives	Learning Outcomes (Los)						
	General					CI 123	
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
CLO 1	√						
CLO 2			√				
CLO 3			√				
CLO 4			√				
CLO 5					√		
CLO 6						√	
CLO 7							√
CLO 8							√
CLO 9							√
CLO 10				√			
CLO 11		√					

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome* (LOs)						
	General					CIV 123	
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
Face-to-Face Lecture	√	√		√	√	√	√
electronic Education					√		
Tutorial/ Exercise							√
Group Discussion							√
Laboratory			√				√
Site Visit							
Presentation							
Mini Project							
Research and Reporting			√				
Brain Storming							
Self-Learning			√				

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome* (LOs)						
	General					CIV 123	
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
Written Exam	√	√	√	√	√	√	√
electronic Exam			√				√
Oral Exam							
Quiz			√				√
Lab Exam			√				√
Take-Home Exam							
Research Assignment							
Reporting Assignment			√				√
Project Assignment							
In-Class Questions			√				√

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**5**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Reports/presentation (*Term Work*)	**15**	---	---
Quizzes (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- White board
B- Data Show
C- Materials Lab
D- MS teams

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Text Books and Additional References:

- أ. د. محمود امام. تكنولوجيا الخرسانة ج1
- أ. د. محمود امام. تكنولوجيا الخرسانة ج2

10.3. Recommended Books:

- Design and Control of ConcreteMixtures; fourteenth edition; Steven H. Kosmatka, Beatrix Kerkhoff, and William C. Panarese, 5420 Old Orchar.
- Properties of Concrete, A. M. Neville.
- Concrete For Construction: Facts and Practice; V. K. Raina.
- Advanced Concrete Technology, John Newman, Ban Seng Choo, Butterworth-Heinemann, First published 2003

- BUILDING CONSTRUCTION, Principles, Materials, and Systems, Madan Mehta, Walter Scarborough, Diane Armpriest, Boston Columbus Indianapolis ,2013

10.4. Web Sites:

- How Cement Is Made

Course Directors	Name	Signature
Teaching staff	Dr. Sahar Zakey	
Course coordinator	Ass.Prof. Sherif H. Al-Tersawy	
Program coordinator	Ass.Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass.Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 124: Theory of Structures (I)

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Theory of Structures (1)			**Course Code:**	CIV 124		
Program / level	Civil Engineering			Sophomore year			
Term/ Academic year:	Oct-Jan. 2023 - 2024			**Credit Hours:**	2		
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	-----
Pre-Requisite	ENG 199 (ENG105) & MTH 002 (MTH 001)						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- To illustrate the concept of structural equilibrium including the evaluation of reactions at support for any type of structures under different loadings.

- To introduce the meaning of internal forces in structural elements and practice the students to identify, compute, and apply by means of calculations and diagrams the forces distributions at all internal section within the structure.

- To discribe the concept of mechanical proprties such as stresses and strains including their types, features, combinations, and apply methods of calculations and drawing their distributions for any section.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Define all kinds of loads, members, and supports and evaluate all reactions.
CLO 2. Identify internal forces directions and convention and draw internal forces diagrams for simple structures as beams.
CLO 3. Extract infinitesimal stress prisms from structural elements.
CLO 4. Identify stress-strain relationships and draw the distribution for complicated cases.
CLO 5. Perform stress transformation at any direction and obtain maximum values.
CLO 6. Develop sense of engineering & feeling of result ranges for different units.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV124
Program Academic Standards that the course contributes in achieving	A1,A2	B1

4- *Mapping Course Los to NARS*

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A1.** Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics	**LO1.** Describe structural problems by applying engineering fundamentals for loads, members, and supports.
	A2. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess, and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO2**. Apply structural model simulation. **LO3**. Classify supports to identify reaction types. **LO4**. Interpret equilibrium equations to obtain reactions, and assess the results by using check equation.

COMPETENCIES of CIV124	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics	**LO5.** Discover appropriate technique to develop infinitesimal prism out of model. **LO6.** Apply structural principles to obtain stress components. **LO7.** Distinguish appropriate transformation method to seek maximum stresses either analytically or graphically.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Stress, strain, Hook's law. Modulus of elasticity, modulus of rigidity and Poisson's ratio. Statical determination of axial force, shear force, bending moment and torque in bars, beams and circular shafts. Load-shear-moment relationship in beams. Section Kinematics; strain and stress distribution and their resultants. Normal and shear stress distributions in beams of different shapes. Transformation of stress and strain, Mohr's circle. Spherical and cylindrical pressure vessels. Elastic buckling of columns.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Identify Stress, strain, Hook's law. Modulus of elasticity, modulus of rigidity and Poisson's ratio.	3	2	1	---	**LO1**
Week-2	Kinds of loads, supports, and reaction	3	2	1	----	**LO1, LO6**
Week-3	Determination of normal forces at any section of structural element.	3	2	1	---	**LO2, LO5, LO3**
Week-4	Determination of shear forces at any section of structural element.	3	2	1	---	**LO2, LO5, LO3**

Week5	Determination of bending moments at any section of structural element.	3	2	1	---	**LO2 ,LO5, LO3**
Week-6	Load-shear-moment relationship in beams.	3	2	1	---	**LO4, LO6, LO7**
Week-7	Strain and stress distribution and their resultants.	3	2	1	---	**LO4, LO6, LO7**
Week-8	**Midterm Exam.**					
Week-9	Normal stress distribution in beams of different shapes.	3	2	1	----	**LO4, LO6, LO7**
Week-10	Special cases of Normal stress distribution in beams.	3	2	1	----	**LO4, LO6, LO7**
Week-11	shear stress distribution in beams of different shapes	3	2	1	---	**LO4, LO6, LO7**
Week-12	Special cases of shear stress distribution in beams.	3	2	1	----	**LO4, LO6, LO7**
Week-13	Transformation of stress and strain, Mohr's circle	3	2	1	---	**LO4, LO6, LO7**
Week-14	Spherical and cylindrical pressure vessels. Elastic buckling of columns.	3	2	1	---	**LO4, LO6, LO7**
Week 15	**Final Exam.**					

6- Matrix of Course Objective and LOs

Course Learning Objectives	**Learning Outcomes (LOs)**						
	General				**CIV 124**		
	LO 1	**LO 2**	**LO 3**	**LO 4**	**LO 5**	**LO 6**	**LO 7**
CLO 1	✓						✓
CLO 2				✓		✓	✓
CLO 3				✓		✓	✓
CLO 4				✓		✓	✓
CLO 5		✓	✓		✓		
CLO 6	✓	✓	✓				✓

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)						
	General				CIV 124		
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
Face-to-Face Lecture	✓	✓	✓	✓	✓	✓	✓
Online Education	✓	✓	✓	✓	✓	✓	✓
Tutorial/ Exercise				✓		✓	✓
Group Discussion					✓		
Laboratory							
Site Visit							
Presentation	✓						✓
Mini Project							
Research and Reporting							
Brain Storming	✓						✓
Self-Learning							

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)						
	General				CIV 124		
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
Written Exam	✓	✓	✓	✓	✓	✓	✓
Online Exam	✓	✓	✓	✓	✓	✓	
Oral Exam							
Quiz		✓	✓	✓		✓	✓
Lab Exam							
Take-Home Exam							
Research Assignment	✓						✓
Reporting Assignment							
Project Assignment							
In-Class Questions	✓		✓				✓

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**	---	---
End of term Oral exam	**-**	14th	Committee
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- White Board.
B- Data Show.
C- MS Teams.

10- List of References:

10.1. Course Notes:

- Lecture notes available (handed to students part by part).

10.2. Required Text Books and Additional References:

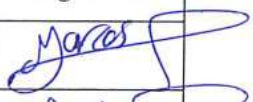
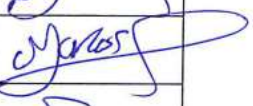
1. Carpinteri, A. (1997). Structural Mechanics: A unified approach (1st ed.). CRC Press, ISBN 9781315274454.

2. Ghali, A., Neville, A., & Brown, T. (2003). Structural Analysis: A Unified Classical and Matrix Approach (5th ed.). CRC Press. ISBN 9780367807672.

10.3. Recommended Books:

10.4. Web Sites:

https://courses.structure.education/collections

Course Directors	Name	Signature
Teaching staff	Dr. Morcos Farid Samaan	
Course coordinator	Dr. Morcos Farid Samaan	
Program coordinator	Ass. Prof. Sheriff Al-Tersawy	
Head of the Department	Ass. Prof. Sheriff Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

FTR 131 : Field Training (1)

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	**Field Training (1)**			**Course Code:**		FTR 131	
Academic year / level	2023						
Contact Hours:	3	**Lecture:**	---	**Tutorial:**	---	**Laboratories:**	18
Pre-Requisite	FTR 031 - EEC 101						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- Understanding the concept and ideas the explicitly in terms of pervious learning.
- To focus on the construction of various elements in the site made with different materials and construction methods.
- To achieve training on all construction methods.
- To use the different surveying devices that were studied in previous courses to align axis of the building.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Focuses on the traditional works on the site with various elements using different materials and construction methods.

CLO 2. Training on all construction methods.

CLO 3. Using the different surveying devices that he studied in theoretical courses to prepare and raise the site.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of FTR 131
Program Academic Standards that the course contributes in achieving	A2,A9	B1

4- Mapping Course Los to NARS

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING		
	A2. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 1.** Uses different materials and construction methods.
	A9. Use creative innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	**LO 2.** Chooses the creative solution for constructing structures with different surveying devices.

COMPETENCIES of FTR 131	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 3.** Detects many construction methods.to apply a full range of civil engineering concept and techniques **LO 4.** Distinguishes properties technology for construction analysis by construction methods.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Training shall concentrate on traditional site works, using different types of material sand different techniques. The student shall try to apply such techniques manually if possible. The student shall be trained to use the surveying equipment, which he studied at the in-situ tutorial, to prepare and plan the site.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			LOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Ability of using different materials and construction methods.	18	-	-	18	**LO 1.**
Week-2	Choose the creative solution for constructing structures with different surveying devices.	18	-	-	18	**LO 1. , LO 2.**
Week-3	**Midterm Exam.**					
Week-4	Applying a full range of civil engineering concept and techniques by construction methods.	18	-	-	18	**LO 1. , LO 2. , LO 3. , LO 4.**
Week-5	Preparing and planning the site.	18	-	-	18	**LO 1. , LO 2. , LO 3. , LO 4.**
Week-6	**Final Exam.**					

5.3. Experiment Topics: (NA)

Serial	Experiment	Laboratory hrs.
1st	NA	---

6- Matrix of Course Objective and Los

Course Learning Objectives	Learning Outcomes (LOs)			
	LO1	LO2	LO3	LO4
CLO 1	√		√	√
CLO 2		√	√	√
CLO 3	√	√	√	√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)			
	General		ITR 131	
	LO 1	LO 2	LO 3	LO 4
Face-to-Face Lecture				
Electronic Education				
Tutorial/ Exercise				
Group Discussion	√	√	√	√
Laboratory				
Site Visit	√	√	√	√
Presentation	√	√	√	√
Mini Project	√	√	√	√
Research and Reporting	√	√	√	√
Brain Storming		√	√	√
Self-Learning			√	√

8-Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)			
	General		FTR 131	
	LO 1	LO 2	LO 3	LO 4
Written Exam				
Electronic Exam				
Oral Exam	√	√	√	√
Quiz				
Lab Exam				
Take-Home Exam				
Research Assignment	√	√	√	√
Reporting Assignment	√	√	√	√
Project Assignment	√	√	√	√
In-Class Questions				

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**---**	---	---
Midterm Oral Exam (*Term Work*)	**20**	3th	30 min.
End of term laboratory exam (*Lab*)	**---**	---	---
End of term Oral exam	**30**	5^{th}	60 min.
Tutorial and report assessment (*Term Work*)	**25**	Weekly	---
Quizzes/ Electronic exams (*Term Work*)	**---**	---	---
Report	**25**	5th	---
Total Mark	**100**		

8- Facilities Required:

A- Field site.
B- MS Teams.

9- List of References:

10.1. Course Notes:

- Instructions of supervisor of Field Training (handed to students part by part).

10.2. Required Text Books and Additional References:

- ----------

10.3. Recommended Books:

- ----------

10.4. Web Sites:

- -------

Course Directors	Name	Signature
Teaching staff		
Course coordinator	Dr. Shymaa Mohamed Mukhtar	
Program coordinator	Dr. Ahmed Nabil Dr. Ghada Nashat	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023-2024	

المعهد التكنولوجي العالي (HTI)

القسم: قسم العلوم الأساسية

توصيف مقرر

تربية رياضية و أنشطة (2) :PHE 101

أ – الانتماء (إنتساب المقرر)

البرنامج المانح:	جميع البرامج الهندسية
القسم المقدم للبرنامج:	جميع الأقسام الهندسية
القسم الذي يقوم بتدريس المقرر:	قسم العلوم الأساسية

ب – المعلومات الأساسية

عنوان المقرر	تربية رياضية وأنشطة			كود المقرر			PHE 101
المستوي الدراسي	مرحلة الدبلوم			الساعات المعتمدة			0
ساعات الإتصال الكلية	2	محاضرة	1	سكشن	0	خيمانيزيم	1
المتطلب السابق	لا يوجد						

2- أهداف المقرر:

يهدف المقرر إلي إكساب الطالب المعرفة الكافية فيما يلي:

- تمييز بين الاجهزة الحيوية داخل الجسم (عضلي – عظمى – مفصلي – عصبي)
- التعرف على مبادئ الاسعافات الأولية والوسائل المستخدمة اتجاه الإصابات الرياضية.
- إكتساب الثقافة الرياضية وارتباطها بالثقافة العامة للطالب

3- الأهداف التعلمية المقرر (CLO):

في نهاية هذا المقرر، يجب أن يكون الطالب قادرا على:

CLO 1	التميز بين الاجهزة الحيوية داخل الجسم (عضلي – عظمى – مفصلي – عصبي)
CLO 2	إكتساب المعرفة والمعلومات حول الاصابات الرياضية
CLO 3	التعرف على اسباب انحرافات القوامة وتقوس العظام وتجنب حدوثها

3- العلاقة بين المقرر و الجدارات (الكفاءات) الهندسية :

نطاق الارتباط	المعيار المرجعي الأكاديمي الوطني (NARS)	
	الكفاءات الهندسية الأساسية (As)	كفاءات الهندسية لبرنامج الهندسة -- ----
المعايير الأكاديمية للبرنامج التي يساهم المقرر في تحقيقها	A3, A4, A5, A6, A10	Bs or Cs

4.1 - مخرجات التعلم (LOs) :

عند الانتهاء من دراسة المقرر ، يجب أن يكون لدى الطالب القدرة على

LO 1	التميز بين الاجهزة الحيوية داخل الجسم (عضلي – عظمى – مفصلي – عصبي)
LO 2	ممارسة الانشطة الرياضية ومعرفة تأثيرها على اجهزة الجسم
LO 3	معرفة مبادئ الاسعافات الاولية واهدافها والوسائل المستخدمة
LO 4	المقارنة بين الاصابات التي يتعرض لها اللاعبين والافراد العاديين واهم طرق العلاج
LO 5	التعرف على اسباب انحرافات القوام وتقوس العظام وتجنب حدوثها
LO 6	إكتساب المعرفة والمعلومات حول الاصابات الرياضية
LO 7	التعرف على مبادئ الاسعافات الأولية والوسائل المستخدمة اتجاه الإصابات الرياضية.
LO 8	توظيف المعارف والمهارات التي حصل عليها في مجال العمل
LO 9	زيادة الثقافة الرياضية وارتباطها بالثقافة العامة للطالب
LO10	تنمية المهارات الحركية ورفع مستوى اللياقة البدنية للطالب

4.2 إرتباط نواتج التعلم للمقرر (LOs) والمعايير القياسية المرجعية الوطنية (NARS)

نطاق الإرتباط	نواتج التعلم لبرنامج الهندسية الميكانيكية	مخرجات التعلم للمقرر (LOs)									
		LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9	LO10
الجدارات الهندسية الأساسية	A1										
	A2										
	A3	✓	✓				✓				
	A4			✓	✓	✓		✓			
	A5				✓			✓			
	A6										
	A7										✓
	A8								✓		✓
	A9						✓			✓	
	A10										✓
الجدارات الهندسية الأساسية لبرنامج الهندسية الميكانيكية	B1										
	B2										
	B3										
	B4										
	B5										

5- محتوى المقرر:

توصيف المقرر (كما هو موضح في لائحة البرنامج):

المقرر يحتوى علي موضوعات علمية عن الصحة وانواع الاصابات وخطوات الاسعافات الاولية و تنمية المعرفة والثقافة الرياضية وخاصة في مجال الاصابات الرياضية داخل الملاعب وخارجها والانحرافات القوامية وكيفيه علاجها

موضوعات المقرر

رقم الأسبوع	المواضيع	مجموع الساعات	ساعات الاتصال			LOs التي يحققها المقرر
			محاضرة	سكشن	جيم	
1	اهم المصطلحات المستخدمه في مجال الرياضه والصحه + تدريبات لياقة بدنية	2	1	0	1	LO 1
2	اهداف الصحه والتربية الصحيه+ تدريبات لياقة بدنية	2	1	0	1	LO 2
3	العادات والاتجاهات المرتبطه بالمهارات الصحيه+ تدريبات لياقة بدنية	2	1	0	1	LO 1
4	اهم المشاكل الصحيه التي تواجه العالم + تدريبات لياقة بدنية	2	1	0	1	LO
5	ماهو القوام_تعريفه_مبادئ المحافظه علي القوام + تدريبات لياقة بدنية	2	1	0	1	LO
6	اهداف واغراض الاسعافات الاوليه + تدريبات لياقة بدنية + مراجعه عامه	2	1	0	1	LO
7	إمتحان منتصف الفصل الدراسي					
8	جسم الانسان (عظمي _عضلي _مفصلي_عصبي)وماهو تاثير الرياضه عليه + تدريبات لياقة بدنية	2	1	0	1	LO
9	تعريف الاصابه_اسبابها_اعراضها_الاسعافات الاوليه ومبادئها + تدريبات لياقة بدنية	2	1	0	1	LO
10	اصابات الجلد(الجروح_الحروق_كدمات الجلد) + تدريبات لياقة بدنية	2	1	0	1	LO
11	اصابات العضلات (الاجهاد العضلي _التقلص العضلي_التمزق العضلي) + تدريبات لياقة بدنية	2	1	0	1	LO
12	اصابات العظام(الكسور_كدمات العظام) + تدريبات لياقة بدنية	2	1	0	1	LO
13	الامتحان النهائي " عملي "	2	1	0	1	LO
14	الامتحان النهائي					

6- مصفوفة توافق أهداف المقرر الدراسي و نواتج (مخرجات) التعلم

أهداف تعلم المقرر	مخرجات التعلم (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
CLO 1	✓	✓							✓	
CLO 2			✓	✓			✓		✓	✓
CLO 3	✓		✓		✓	✓		✓		

7- طرق التدريس والتعلم :

طرق التعليم والتعلم	نتائج التعلم (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
محاضرة وجها لوجه	✓	✓	✓	✓	✓	✓				
التعليم عبر الإنترنت	✓	✓			✓					
واجبات منزلية		✓		✓		✓				
مناقشة جماعية	✓		✓		✓		✓	✓		

مختبر										
زيارة الموقع										
عروض تقديمية بالبوربوينت	✓		✓							
مشروع صغير										
أبحاث وإعداد التقارير							✓	✓		
العصف الذهني	✓	✓			✓	✓				
التعلم الذاتي			✓	✓						

8- التقييم

8.1 طرق تقييم المقرر:

طرق التقييم	نتائج التعلم (LOs)									
	مخرجات التعلم للمقرر (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
الامتحان التحريري	✓	✓				✓	✓	✓		
امتحان عبر الإنترنت										
الامتحان الشفوي			✓	✓						
مسابقات تنافسية									✓	✓
الامتحانات المعملية										
واجبات منزلية	✓		✓		✓					
مهمة بحثية				✓			✓	✓		
مهمة إعداد التقارير	✓		✓	✓		✓			✓	
تعيين المشروع										
الأسئلة داخل المحاضرة	✓	✓	✓	✓	✓	✓				

8.2. جدول التقييم وتوزيع الدرجات:

طريقة التقييم	الدرجة	التوقيت	وقت الامتحان
الامتحان النهائي	30	الاسبوع 14	60 دقيقة.
الامتحان التحريري لنصف الترم الدراسي	20	الاسبوع 7	60 دقيقة.
الامتحان النهائي العملي	30	الاسبوع 13	
اختبارات/تقارير/عرض تقديمي (خلال الفصل الدراسي)	20	وفقا للجدول الزمني	---
مجموع الدراجات	100		

9- المرافقات المطلوبة للتعليم والتعلم:

A- قاعة محاضرات مجهزة .

B- المكتبات المركزية والفرعية .

C- الوسائل التعليمية (داتا شو) وجهاز الحاسوب محمول.

D- مّذكرة لتدريس المقرر وكشوف متابعة للطلاب
10- قائمة المراجع:
10.1. كتاب المقرر:
1- مذكرات المقرر - الاصابات الرياضية 2- عروض تقديمية (بوربوينت) يعطى للطلاب جزء بجزء
10.2. الكتب المرجعية المطلوبة والمراجع الإضافية:
1- ابو العلا عبد الفتاح: الرياضة و انقاص الوزن ، دار الفكر العربي 1994
2- الهام شلبي: بانوراما الصحة العامة للرياضيين القاهرة 2004
a. الكتب الموصي بها:
1- الهام شلبي: بانوراما الصحة العامة للرياضيين القاهرة 2004
b. المواقع الإلكترونية: • https://ar.wikipedia.org/wiki •

القائمين على مراجعة وتقيم المقرر	الاسم	توقيع
أعضاء هيئة التدريس	1. محسن محمد عبد الرحيم 2. محمد عمرو مطاوع 3. عصماء علي الشحات	
منسق المقرر	د/محسن محمد عبد الرحيم	
رئيس القسم	أ.د. محمد عبد العاطي	
تاريخ الموافقة	فبراير 2023	

The Higher Technological Institute (HTI)	
Department: Basic Science	

Course Specification
MTH 102: Mathematics (4)

A – Affiliation

Relevant program:	**All Programs of Engineering except for architectural engineering**
Department offering the program:	**All Programs of Engineering except for architectural engineering**
Department offering the course:	**Basic Science**

B – Basic information

Title:		**Mathematics (4)**		**Code**		**MTH 102**	
Academic year/level		**Diploma level**		**Credit Hours**		**3**	
Contact Hours	**4**	**Lecture**	**2**	**Tutorial**	**2**	**Lab.**	**0**
Prerequisite		**MTH 102**					

1- Course Aims:

- **The student should have the knowledge and skills that enable him to apply rules of math 4.**
- **The student should have the skills to apply the methods of the solution of the differential equations for first and higher order and use the Laplace transform to solve these equations.**
- **The student should have the skills to apply Beta and Gamma functions to solve the differential equations**
- **The student should have distinguished between the orders of the differential equations.**

2 – Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1.	**Describe the concepts of the differential equations in engineering applications**
CLO 2.	**Applying the methods of the solution of the differential equations for first and higher orders.**
CLO	**Using the Laplace transform to solve these equations.**
CLO	**Applying Beta and Gamma functions to solve the differential equations**

3- Relationship between the course and the Competencies:

Field	National Academic Reference Standard (NARS)	
	Engineering Competences (As)	Engineering Competences of Mechanical engineering program
Program academic Standards that the course contributes to achieving	A1, A2; A3,A7,A10	Bs or Cs

4.1 - Learning Outcomes (LOs):

On successful completion of the course, the student should have the ability to

LO 1	Define the main items of the types and order of the differential equations.
LO 2	Describe the different methods of the solutions of the first differential equations.
LO 3	Describe the different methods of the solutions of the higher differential equations with constant and variable coefficients.
LO 4	Define the differential system of differential equations and methods of the solutions.
LO 5	Implement Laplace transform to estimate some mathematical systems.
LO 6	Analyze the life problem to create the mathematical problem
LO 7	Classify the problems according to the suitable differential equations.
LO 8	Define Beta and Gamma functions .
LO 9	Evaluate and apply Beta and Gamma functions for different differential equations.
LO 10	Discuss some of the applications of the functions and differential equations.

4.2 Mapping Course LOs to NARS

Field		Learning Outcomes (LOs)									
NARS 2018 Competencies		LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9	LO10
Basic Engineering Competencies (As)	A1	✓	✓	✓	✓	✓		✓		✓	
	A2					✓	✓		✓		
	A3			✓			✓				
	A4										
	A5										
	A6										
	A7										
	A8										
	A9										
	A10					✓	✓				✓
Competencies of mechanical Engineering program (Bs)	B1										
	B2										
	B3										
	B4										
	B5										

5- Course Content:

5.1 – Catalogue Course Description(As indicated in program Bylaw):

Math 4 course introduces the different methods of the solutions of the first differential order equations. Also, It discussed the different methods of the solutions of the higher order differential equations. Laplace transform with applications is introduced to solve the first and higher order differential equations. Lastly, Beta and Gamma functions for different differential equations are applied.

5.1. Course Topics/hours/Los Matrix

Week No.	Topics	Total hrs.	Contact hours			LOs Covered by Course
			Lect.	Tut	Lab	
1	Types and order of the differential equations (D.Es)	4	2	2	0	LO1
2	First D.Es	4	2	2	0	LO1, LO8
3	Separation and Homogenous D.Es	4	2	2	0	LO1, LO8
4	Exact and not Exact D.Es	4	2	2	0	LO3
5	Linear and Bernoulli D.Es	4	2	2	0	LO3
6	Homogenous Higher order D.Es	4	2	2	0	LO1,LO3, LO8
7	Non Homogenous Higher order D.Es	4	2	2	0	LO3
8	Mid Term Exam					
9	Lagrange method for D.Es	4	2	2	0	LO9
10	Cauchy Euler for D.Es with Variable coefficients	4	2	2	0	LO10
11	Laplace transform for D.Es	4	2	2	0	LO4
12	Gamma function	4	2	2	0	LO4
13	Betta function	4	2	2	0	LO4
14	Applications of Gamma function and Betta function	4	2	2	0	LO4
15	Final term exam					

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10

CLO 1	✓									
CLO 2			✓							
CLO 3									✓	
CLO 4							✓			

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
Face-to-Face Lecture	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Online Education										
Tutorial/ Exercise	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Group Discussion										
Laboratory										
Site Visit										
Presentation									✓	
Mini Project										
Research and Reporting	✓				✓					✓
Brain Storming										
Self-Learning										

8- Assessment

8.1 Course Assessment Methods:

Assessment Methods	Learning Outcome (LOs)									
	General									
	LO 1	LO 2	LO3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
Written Exam	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Online Exam										
Oral Exam		✓			✓					✓
Quiz	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Lab Exam										
Home Exam	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Research Assignment										
Reporting Assignment	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Project Assignment										

In-Class Questions	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	40	15th	90 min.
Midterm written Exam (Term Work)	20	7th	60 min.
Tutorial and report assessment (Term Work)	20	5^{th} ,10^{th} week	---
Quizzes/reports/presentation(Term Work)	20	According to the schedule	---
Total Mark	100		

9- Facilities Required for Teaching and Learning:

A- Notebook and data show equipped lecture room.

B- Teaching aids and computers.

10- List of References:

10.1. Course Notes:

1- " Engineering Math 4"; HTI; Available Hard copy.
2- Available Presentation (handed to students' part by part).

10.2. Required Textbooks and Additional References:

1- Erwin Kreyszig, Advanced Engineering Mathematics, Edition 10 (2011), Wiley.
2- Earl W. Swokowski, "Calculus".
3- Thomas' Calculus: Early Transcendentals
4- Richard Bronson (Author), Gabriel B. Costa, Schaum's Outline of Differential Equations, Fifth Edition
5- *Lawrence Perkom* ' Differential Equations and Dynamical Systems', Third Edition

10.3. Recommended Books:

1. Erwin Kreyszig, Advanced Engineering Mathematics
2. Richard Bronson, Schaum's Outline of Differential Equations

a. Web Sites:

- https://math.fandom.com/wiki/Hypermathematics
- https://github.com/AlexCharlton/hypermath
- https://www.britannica.com/science/mathematics
- https://www.khanacademy.org/math
- https://animated-mathematics.net/
- https://www-users.cse.umn.edu/~scheel/teaching/8501-fall18/perko.pdf
- https://www.accessengineeringlibrary.com/content/book/9781264258826

Course Directors	Name	Signature
Teaching staff	1- Prof. Dr Mohmad Abd El-Aty 2- Dr Mahmoud Abo Zied 3- Dr Hanan	
Course coordinator	Prof. Dr Mohamed Abd El-Aty	
Head of theDepartment	Prof. Dr Mohamed Abd El-Aty	
Date of approval	Feb. 2023	

The Higher Technological Institute (HTI)

Department: Basic Science

Course Specification

MTH 101: Mathematics (3)

A – Affiliation

Relevant program:	**All Programs of Engineering except for architectural engineering**
Department offering the program:	**All Programs of Engineering except for architectural engineering**
Department offering the course:	**Basic Science**

B – Basic information

Title:		**Mathematics (3)**		**Code**		**MTH 101**	
Academic year/level		**Diploma level**		**Credit Hours**		**3**	
Contact Hours	**4**	**Lecture**	**2**	**Tutorial**	**2**	**Lab.**	**0**
Prerequisite		**MTH 002**					

1- Course Aims:

- **The student should have the knowledge that enables him to know properties of lines, planes and vectors in engineering applications.**
- **The student should have the skills to apply the type of coordinate systems that suit the problem and know the concept of Jacobian transformation.**
- **The student should have the skills to apply triple integration techniques**
- **The student should have distinguished between line integral, surface integral and volume integral.**
- **The student should have the skills to apply vector calculus theorems in engineering applications**

2 – Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1.	**Describe the concepts of the plane and space vectors in engineering applications**
CLO 2.	**Distinguish the type of coordinate systems and Jacobian transformation between them.**
CLO 3.	**Integrate all problems which are contain double and triple integration relating life application as mathematical problem.**
CLO 4.	**Design vectors and integration studies for interpreting and calculating the line and Gauss (divergence) theorem**

3- Relationship between the course and the Competencies:

Field	National Academic Reference Standard (NARS)	
	Engineering Competences (As)	Engineering Competences of Mechanical engineering program
Program academic Standards that the course contributes to achieving	A1, A2; A3,A7,A10	Bs or Cs

4.1 - Learning Outcomes (LOs):

On successful completion of the course, the student should have the ability to

LO 1	Define the main items of the vectors, lines and planes in space
LO 2	Describe the main concepts of vectors and integral operations
LO 3	Explain coordinate systems and the principals of Jacobian transformation and double and triple integrations and surfaces in space
LO 4	Analyze the Green, Gauss, and Stokes theorems to evaluate the applications.
LO 5	Implement the skills of vectors to estimate some mathematical modeling
LO 6	Analyze the life problem to create the mathematical problem
LO 7	Classify the problems according to the suitable integral's method (line integral, surface integral and volume integral).
LO 8	Describe and contrast between different lines and planes with sketching solids and planes
LO 9	Evaluate and assess the suitable method of the double and triple integrals in cylindrical and spherical coordinates.
LO 10	Manage time and apply the skills of Gradient field, divergence and curl of vector field

4.2 Mapping Course LOs to NARS

Field		Learning Outcomes (LOs)									
NARS 2018 Competencies		LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9	LO10
Basic Engineering Competencies (As)	A1	✓	✓	✓	✓	✓		✓		✓	
	A2					✓	✓		✓		
	A3			✓			✓				
	A4										
	A5										
	A6										
	A7										
	A8										
	A9										
	A10					✓	✓				✓

Competencies of mechanical Engineering program (Bs)	B1										
	B2										
	B3										
	B4										
	B5										

5- Course Content:

5.1 – Catalogue Course Description(As indicated in program Bylaw):

Math 3 course introduces Vectors with applications (The dot product- cross product- triple product- lines and planes in the plane and space). This is followed by an introduction of Coordinate system (Cartesians, Polar, Spherical, and Cylindrical) and change between them. Then, the course gives an introduction for Multiple integrals (double, Triple) and their applications on its. Finally, the Vector calculus, Gradient field, divergence and curl of vector field, Line-integrals, Green's theorem, and Gauss and Stokes theorem are introduced.

5.1. Course Topics/hours/Los Matrix

Week No.	Topics	Total hrs.	Contact hours			LOs Covered by Course
			Lect.	Tut	Lab	
1	Vectors (The dot product- cross product- triple product)	4	2	2	0	LO1
2	The lines in the space	4	2	2	0	LO1, LO8
3	The plane in the space	4	2	2	0	LO1, LO8
4	Surface in the space	4	2	2	0	LO3
5	Coordinate in different systems	4	2	2	0	LO3
6	Operating Console and Quiz	4	2	2	0	LO1,LO 3,LO8
7	Mid Term Exam					
8	Multiple integrals(double and triple integral)	4	2	2	0	LO3
9	Triple integral in cylindrical and spherical coordinates	4	2	2	0	LO9
10	Gradient field, divergence and curl of vector field	4	2	2	0	LO10
11	Line integrals	4	2	2	0	LO7
12	Green theorem	4	2	2	0	LO4
13	Gauss theorem	4	2	2	0	LO4
14	Stokes theorem	4	2	2	0	LO4

15	**Final term exam**

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
CLO 1	✓									
CLO 2			✓							
CLO 3									✓	
CLO 4							✓			

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
Face-to-Face Lecture	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Online Education										
Tutorial/ Exercise	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Group Discussion										
Laboratory										
Site Visit										
Presentation									✓	
Mini Project										
Research and Reporting	✓				✓					✓
Brain Storming										
Self-Learning										

8- Assessment

8.1 Course Assessment Methods:

Assessment Methods	Learning Outcome (LOs)									
	General									
	LO 1	LO 2	LO3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
Written Exam	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Online Exam										
Oral Exam		✓			✓					✓

Quiz	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Lab Exam										
Home Exam	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Research Assignment										
Reporting Assignment	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Project Assignment										
In-Class Questions	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	**15th**	**90 min.**
Midterm written Exam (Term Work)	**20**	**7th**	**60 min.**
Tutorial and report assessment (Term Work)	**20**	**5^{th} ,10^{th} week**	**---**
Quizzes/reports/presentation(Term Work)	**20**	**According to the schedule**	**---**
Total Mark	**100**		

9- Facilities Required for Teaching and Learning:

A- Notebook and data show equipped lecture room.

B- Teaching aids and computers.

10-List of References:

10.1. Course Notes:

1- **" Engineering Math 3"; HTI; Available Hard copy.**
2- **Available Presentation (handed to students' part by part).**

10.2. Required Textbooks and Additional References:

1- **Erwin Kreyszig, Advanced Engineering Mathematics**
2- **Advanced Calculus Theory and Practice, John Petrovic 2020**
3- **Advanced Calculus Fundamentals of Mathematics, Carlos Polanco**

10.3. Recommended Books:

1. **Erwin Kreyszig, Advanced Engineering Mathematics**

a. Web Sites:

- https://math.fandom.com/wiki/Hypermathematics
- https://github.com/AlexCharlton/hypermath
- https://www.britannica.com/science/mathematics
- https://www.khanacademy.org/math
- https://animated-mathematics.net/

Course Directors	Name	Signature
Teaching staff	1- Dr Mahmoud Abu Zeid 2- Dr Hanan Ahmed 3- Dr Safinaz 4- Dr Tarek Nassar	
Course coordinator	Dr Mahmoud Abu Zeid	
Head of theDepartment	Prof. Dr Mohmad Abd El-Aty	
Date of approval	Jan 2023	

The Higher Technological Institute (HTI)

Department: Basic Science Department

Course Specification

MTH 105: Statistics and Probability theory

A – Affiliation

Relevant program:	**All Programs of Engineering**
Department offering the program:	**All Programs of Engineering**
Department offering the course:	**Basic Science Department**

B – Basic information

Title:	**Statistics and Probability theory**		**Code:**			**MTH 105**	
Academic year/level:	**Diploma level**		**Credit Hours:**			**3**	
Contact Hours:	**4**	**lecture**	**2**	**Lecture Tutorial**	**2**	**Laboratory**	**0**
Prerequisite:	**MTH 002**						

1- Course Aims:

- **The student should have the knowledge, hypotheses, and skills to represent the data graphically, analyze the data and distinguish between different statistical measures of location, error, dispersion, and others to give describing for data.**
- **The student should have learned ways and techniques to determine the strength of correlation and estimate the regression equation between two or more variables.**
- **The student should have studied the axioms of probability, to apply and use the probability rules for solving engineering problems such as system probability etc.**
- **The student should have the ability to distinguish between discrete and continuous probability distributions to examine and enhance engineering problems.**
- **The student should be able to analyze a random sample selected from a normal population to make a decision for a population mean by confidence interval or test of hypothesis.**

2 – Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1. Organize and represent data graphically, analyze the data and distinguish between different statistical measures to make describing for data.

CLO 2. Determine coefficient correlation and predict regression equation for two variables

CLO 3. Use the axioms of probability rules for solving engineering problems such as: additive, and multiplicative laws and conditional probability etc.…

CLO 4. Distinguish between discrete and continuous probability distributions to examine and enhance engineering problems.

CLO 5. Apply statistical analysis for sampling to examine and make a decision for engineering problems (confidence interval &test of hypothesis).

3- Relationship between the course and the Competencies:

Field	National Academic Reference Standard (NARS)	
	Engineering Competences (As)	Engineering Competences of Mechanical engineering program
Program academic Standards that the course contributes to achieving	As,	Bs or Cs

4.1 - Learning Outcomes (LOs):

On successful completion of the course, the student should have the ability to	
LO 1	Apply the different statistical measurements for analyzing grouped and ungrouped data.
LO 2	Recognize the axioms of the probability to calculate the probability for any event.
LO 3	Apply several techniques of counting and calculus to calculate probabilities, mean, and variance for random variable.
LO 4	Compute the relation strength between two variables, and predict one variable by anther with the regression equation.
LO 5	Apply different type of probability distributions to solve probability problem with related engineering application.
LO 6	Represent the data as box plot, stem and leaf, histogram, frequency polygon, and scatter diagram.
LO 7	Compare between two samples of data, to get on reasonable description.
LO 8	Connect between a random variable and the corresponding density function for any probability distribution.
LO 9	Use the confidence interval method to compute the mean interval using random sample selected from normal distributions.
LO 10	Use the test of hypothesis method to predict the mean interval using random sample selected from normal distributions.

4.2 Mapping Course LOs to NARS

Field	Program (CBEs) that the course contributes to achieving	Learning Outcomes (LOs)
Basic Engineering Competencies (As)	A1, A2, A4, A5	LO 1, LO 2, LO 3, LO 5, LO 7
	A7, A8, A10	LO 4, LO 6, LO 8, LO 9, LO 10
Competencies of mechanical Engineering program (Bs)		

5- Course Content:

5.1. Catalogue Course Description (As indicated in program Bylaw):

Organized and representing of grouped and ungrouped data, coefficient correlation and regression equation for two variables, probability axioms, random variable and probability distribution for one variable and bivariate variables, discrete and continuous probability distributions, confidence interval and test of hypothesis method to calculate mean of population with and without known variance.

5.2. Course Topics/hours/Los Matrix

Week No	Topics	Total hrs.	Contact hours			LOs Covered by Course
			Lect.	Tut	Lab	
1	Introduction of statistics - Organization and representation of ungrouped data	4	2	2	0	LO1
2	Organization and representation of ungrouped data (Mean, Median, and Mode, etc.	4	2	2	0	LO1, LO6
3	Organization and representation of grouped data (Mean, Median, and Mode, etc.	4	2	2	0	LO1, LO6
4	Determine the Spearman's and Pearson's coefficient correlation and compute the regression equation	4	2	2	0	LO4, LO6
5	Sample space and Events –Counting Techniques (Fundamental basics etc.)	4	2	2	0	LO2
6	Independence of events and its applications	4	2	2	0	LO2, LO3
7	Discrete and continuous probability distributions	4	2	2	0	LO3, LO5
8	Mid Term Exam					
9	Random variables and their probability distribution, expected values	4	2	2	0	LO5
10	Probability distribution, expected values of random variable	4	2	2	0	LO8
11	Binomial distribution, Poisson distribution, hypergeometric distribution	4	2	2	0	LO5, LO8
12	Exponential normal, standard, student, probability distributions	4	2	2	0	LO5, LO8
13	Confidence interval to find the mean interval of the mean population	4	2	2	0	LO7, LO9
14	Hypothesis Testing (The structure of a hypothesis test and testing the mean of population)	4	2	2	0	LO7, LO10
15	FINAL EXAM					

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
CLO 1	√					√	√			
CLO 2				√		√				
CLO 3		√	√		√					
CLO 4	√		√		√			√	√	√
CLO 5	√				√				√	√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome* (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
Face-to-Face Lecture		√	√	√			√	√	√	√
Online Education	√					√				
Tutorial/ Exercise	√	√	√	√	√		√	√	√	√
Group Discussion	√		√							
Laboratory										
Site Visit	√				√					
Presentation	√	√		√		√	√	√	√	√
Mini Project			√			√				
Research and Reporting	√		√		√			√		
Brain Storming		√							√	
Self-Learning	√			√		√			√	√

8- Assessment

8.1 Course Assessment Methods:

Assessment Methods	Learning Outcome (LOs)									
	General									
	LO 1	LO 2	LO3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
Written Exam	√	√	√	√	√	√	√	√	√	√
Online Exam		√	√		√			√	√	√
Oral Exam										
Quiz	√	√	√	√	√	√	√	√	√	√

Lab Exam										
Home Exam	√			√	√		√		√	√
Research Assignment		√		√	√		√			
Reporting Assignment		√		√		√		√		
Project Assignment	√	√		√		√	√		√	√
In-Class Questions	√		√			√			√	

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	**8th**	**90 min.**
Midterm written Exam (Term Work)	**20**	**4th**	**60 min.**
Tutorial and report assessment (Term Work)	**10**	**weekly**	**---**
Quizzes/reports/presentation (Term Work)	**30**	**According to the schedule**	**30 min.**
Total Mark	**100**		

9- Facilities Required for Teaching and Learning:

A- Notebook and data show equipped lecture room.

B- Teaching aids and computers.

C- Notebook and data show equipped lecture room.

10- List of References:

10.1. Course Notes:

1- **Lecture notes or book "Statistics & Probability theory (Available: handed to students). Available Hard copy.**
2- **Available Presentation (handed to students' part by part).**

10.2. Required Textbooks and Additional References:

1- **Introduction to Probability and Statistics for Engineers and Scientists, By Sheldon M. Ross, 2021 Elsevier, ISN: 978-0-12-824346-6, 6th edition.**
2- **Probability and Statistics for STEM: A Course in One Semester, By E.N. Barron, J.G. Del Greco, 2022 Springer series, ISN: 978-3-031-02427-6**
3- **Introduction to Probability, By Charles M. Grinstead and J. Laurie Snell, Swarthmore College.**

10.3. Recommended Books:

1- Introduction to Probability and Statistics for Engineers and Scientists, By Sheldon M. Ross, 2021 Elsevier, ISN: 978-0-12-824346-6, **6th edition**

10.4. Web Sites:

www.khanacademy.org/math/statistics-probability
www.coursera.org/browse/data-science/probability-and-statistics
www.udemy.com/course/introduction-to-probability-and-statistics

Course Directors	Name	Signature
Teaching staff	1. Asst. Prof. Dr. Eman Sharaf 2. Asst. Prof. Dr. Tarek Nassar 3. Dr. Ebtisam Elamam	
Course coordinator	Asst. Prof. Dr. Tarek Nassar	
Head of the Department	Prof. Dr Mohmad Abd El-Aty	
Date of approval	1/2/2023	

The Higher Technological Institute (HTI)	
Department: Department of Electrical Engineering	

Course Specification

EEC 101 : Principles of electrical engineering

Program(s) on which this course is given	All Engineering programs
Department offering the program:	Electrical Engineering (Electronics and Communication Engineering)
Department offering the course:	Electrical Engineering (Electronics and Communication Engineering)

A– Basic information

Course Title:	Principles of electrical engineering			**Course Code:**		EEC 101	
Program	Electrical Engineering (Electronics and Communication Engineering)			**Level**		Diploma	
Term/ Academic year:	2nd –2022/2023			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratory:**	0
Pre-Request	PHY 002						
Academic standards	(ARS)						
Bylaw Approval	2016						

1- Course Aims:

- **Earning the knowledge and understanding the basic concepts of electrical engineering circuits elements and analysis techniques.**
- **Understanding the difference between DC and AC circuits and its analysis techniques.**
- **Relating of the applied mathematical and physical concepts via online simulation projects.**

2- *Course Learning Objectives (CLO):*

At the end of this course, student should be able to:	
CLO 1.	Calculate the equivalent impedance of different circuits.
CLO 2.	Estimate the voltage difference and current intensity across any circuit element.
CLO 3.	Calculate the dissipated power in any circuit element.
CLO 4.	Represent any two-terminal electrical circuit by its simple equivalent.

3- *Relationship between the course and the Competencies :*

Field	Academic Reference Standard (ARS)		
	Competencies for Engineering Graduates (level "A")	**Competencies for Electrical Engineering Specializations (level "B")**	**Competencies for Electronics and Communication Engineering Specializations (level "C")**
Program Academic Standards that the course contributes to achieving	**A1, A2, A3**	----------	----------

4- *Mapping Course Los to ARS*

Field	**Program Academic Standards that the course contribute in achieving**	**Learning Outcomes(LOs)**
Competencies for Engineering Graduates (level "A")	**A1.** Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	**LO 1.** Calculate the voltage difference and current intensity through any device in a complex circuit.
	A2. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess, and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 2.** Ability to use Spice simulator to calculate the current and voltage drop through any element.

	A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical, and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	**LO3**. Determine the optimal load of a two-terminal circuit (that absorbs the maximum power). **LO4.** Choose the suitable load for a predefined phase shift between the AC voltage and current. **LO5.** Check the ability of a circuit component to be connected in a circuit without be overheated.
Competencies for Electrical Engineering Specializations (level "B")	----------	----------
Competencies for Electronics and Communication Engineering Specializations (level "C")	----------	----------

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Basic Concepts: Voltage, current, power, and energy, Independent and dependent voltage, and current sources. DC Circuits Analysis: Ohms law, Kirchhoff's current and voltage laws. Series and parallel DC circuit's analysis, nodal analysis, and mesh analysis. Superposition, source transformation, and maximum power transfer theorems, Thevenin's and Norton's theorems. Capacitance and Inductance: series and parallel connections of capacitors and inductors. AC Circuits Analysis: Sinusoidal sources, r.m.s. value, phasor representation, complex impedances, Kirchhoff's laws in the phasor domain, parallel and series AC circuits. Experiments will be conducted to support the course including the use of computer software for circuit analysis.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			LOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Basic Concepts: Voltage, current, power, and energy, Independent and dependent voltage, and current sources.	3	2	1		**LO 1**
Week-2	Ohms law, Kirchhoff's current and voltage laws. Series and parallel DC circuit's analysis.	3	2	1		**LO 1**
Week-3	Nodal analysis, and mesh analysis.	3	2	1		**LO 1 and LO 5**
Week-4	Superposition, and source transformation.	3	2	1		**LO 2**
Week5	Maximum power transfer theorems, Thevenin's and Norton's theorems.	3	2	1		**LO 3**
Week-6	Capacitance and Inductance: series and parallel connections of capacitors and inductors.	3	2	1		**LO 4**
Week-7	AC Circuits Analysis: Sinusoidal sources, r.m.s. value.	3	2	1		**LO 5**
Week-8	**Midterm Exam.**					
Week-9	Phasor representation, complex impedances.	3	2	1		**LO 4**
Week-10	Kirchhoff's laws in the phasor domain.	3	2	1		**LO 1**
Week-11	Parallel and series AC circuits.	3	2	1		**LO 4**
Week-12	General Revision.	3	2	1		**LO 2**
Week-13,14	**Final Exam.**					

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)				
	LO 1	LO 2	LO 3	LO 4	LO 5
CLO 1	*			*	
CLO 2	*	*		*	
CLO 3		*	*		*
CLO 4			*		

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcomes* (LOs)				
	General (A)				
	LO 1	LO 2	LO 3	LO 4	LO 5
Face-to-Face Lecture	*		*	*	*
Online Education	*	*	*	*	*
Tutorial/ Exercise	*		*	*	*
Group Discussion	*		*		
Laboratory					
Site Visit					
Presentation	*		*	*	*
Mini Project		*			
Research and Reporting		*			
Brain Storming	*		*		
Self-Learning					

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcomes* (LOs)				
	Competencies for Engineering Graduates (level "A")				
	LO 1	LO 2	LO 3	LO 4	LO 5
Written Exam	*		*	*	*
Online Exam		*			
Oral Exam					
Quiz	*		*	*	*
Lab Exam					
Take-Home Exam	*		*	*	*
Research Assignment					
Reporting Assignment					
Project Assignment			*	*	*
In-Class Questions	*		*	*	*

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)			
Mini projects (*Term Work*)			
Quizzes/reports/presentation (*Term Work*)	**40**	6th &11th/ during the semester	
Total Marks	**100**		

9 - Facilities Required for Teaching and Learning:

1	White board, digitizer, and Data show.

10 - List of References:

10 -1 Course Notes:

	Available Presentation (handed to students part by part).
10-2 Required Text Books and Additional References:	
1-	"Electric Circuits", James W. Nilsson, Susan Riedel, Eleventh edition, Global Edition-Pearson 2019
2-	" Fundamentals of electric circuits", Charles K. Alexander, Matthew N. O. Sadiku, fifth edition, McGRAW-HILL, 2013.
10-3 Recommended Books:	
1	"Theory and Problems of Electric Circuits", Mahmood Nahvi, Joseph A. Edminister, Fourth Edition, Schaum's Outline Series McGRAW-HILL, 2003.

Course Directors	Name	Signature
Teaching staff	**Dr. Nehad Salah El-dean Dr. Radwa Adel Dr. Eslam Mansour Dr. Mohamed Awni**	
Course coordinator	**Dr. Nehad Salah El-dean**	
Program coordinator	**Ass. Prof. Dr. Mohamed Torad**	
Head of the Department	**Ass. Prof. Dr. Mohamed Torad**	
Date of approval	**Feb. 2023**	

The Higher Technological Institute (HTI)	
Department: Department of Architectural Engineering	

Course Specification

ARE 101: Art and Architecture

Program(s) on which this course is given	All Programs
Department offering the program:	Architectural Engineering
Department offering the course:	Architectural Engineering

A– Basic information

Course Title:	Art and Architecture			**Course Code:**		ARE 101	
Program /level	Architectural Engineering			**Sophomore/Junior**			
Term/ Academic year:	Oct–Jan 2023–2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	0
Pre-Requisite	---						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- Learn about art and architecture with their concepts throughout the ages
- Link the arts to architecture
- Discuss about the various art schools of architecture and arts
- Access to valid design foundations to achieve aesthetics and creativity of architectural art formations

2- Course Learning Objectives (CLO):

At the end of this course, the student should be able to:

CLO 1. Recognize the impact of fine arts such as the painting-sculpture-photography-interior design on architecture during various historical eras.

CLO 2. Link architectural art supplements to the architectural design of the project

CLO 3. Influence of modern schools and their impact on architectural art formations

CLO 4. Identify the aesthetics and creativity of contemporary and future architecture.

3- ***Relationship between the course and the Competencies***:

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of ARE
Program Academic Standards that the course contributes in achieving	A1, A5, A9, A10	-----

4- ***Mapping Course Los to NARS***

Field	Program that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A1.** Identify, formulate, and solve complex engineering problems by applying basic science and mathematics engineering fundamentals.	**LO1.** Identify art and architecture with their concepts throughout the ages **LO2** Solve complex problems in art forms in buildings.
	A5. Practice research techniques and methods of investigation as an inherent part of learning .	**LO3.** Practice research techniques in painting-sculpture-photography-interior design related to architecture .
	A9. Communicate effectively using different modes, tools, and languages with various audiences; to deal with academic/professional challenges in a critical and creative manner.	**LO4.** Communicate effectively with audiences by different techniques of art direction in various buildings.
	A10. Acquire and apply new knowledge, and practice self, lifelong and other learning strategies	**LO5.** Acquire new knowledge from various art schools of architecture and arts. **LO6.** Practice design ideas by special application of art forms in different architectural styles.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

History of fine arts (ornamental - sculpture - drawing.....) Art movements in the twentieth century: cubism, expressionism, surrealism, art collections such as De Steele and Bauhaus and their new ideas on the interconnectedness of arts, architecture, design, art education and art trends across historical times and architectural and parallel trends, contemporary artistic

trends and their effects on architecture, structural values in artwork (contrast, balance, color, rhythm, movement.....) Artistic metrics and design foundations in architecture.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Credit Hours*	*Contact hrs*			**LOs Covered by Course**
			Let	**Tut.**	**Lab.**	
Week -1	Trends of art and architecture across different historical eras.	2	2	1	0	**LO 1, LO 4**
Week-2	Fine Arts (Sculpture - Drawing - Photography - Interior Design.....) Its relationship to architecture	2	2	1	0	**LO 3, LO 5**
Week-3	Artistic movements of the twentieth century and their influence on architecture art	2	2	1	0	**LO 4, LO 5**
Week-4	Modern School Trends (De Steel - Bauhaus _ and Their Impact on Architecture Arts).	2	2	1	0	**LO 1, LO 3 LO 5**
Week5	**Quiz 1**					
Week-6	Aesthetic features in architectural art formations that complement different design ideas	2	2	1	0	**LO1, LO 5**
Week-7	The foundations of the aesthetics of artistic architectural formations of (variation, poise, rhythm.....)	2	2	1	0	**LO1, LO 5**
Week-8	**Mid Term**					
Week-9	Analyze horizontal projection of formations of architectural forms that fulfill the principle of design	2	2	1	0	**LO 4, LO 6**
We-10	The relationship between creativity in arts and architectural design	2	2	1	0	**LO 2, LO 6**
Week-11	Aesthetic features in contemporary and future architecture arts	2	2	1	0	**LO1, LO 5**
Week-12	**Quiz 2:** semi final					
Week-13	Final project	2	2	1	0	**LO 1: LO 6**
Week-14	Revision.	2	2	1	0	----
Week 15	**Final Exam.**					

5.3. Experiment Topics:

Serial	Experiment	Laboratory hrs.
1st	----------	------
2nd	----------	------

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)						
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	
CLO 1	●					●	
CLO 2		●	●	●	●		
CLO 3			●		●		
CLO 4		●		●		●	

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)					
	Architectural Engineering					
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
Face-to-Face Lecture	●		●	●	●	●
Online Education	●	●	●	●	●	●
Tutorial/ Exercise	●	●	●	●	●	●
Group Discussion	●	●	●	●	●	●
Laboratory						
Site Visit	●		●		●	
Presentation	●	●	●	●	●	●
Mini Project	●	●	●	●	●	●
Research and Reporting		●			●	
Brain Storming	●	●		●	●	●
Self-Learning			●	●		●

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)					
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
Written Exam	●	●	●		●	●
Online Exam						
Oral Exam	●	●	●	●	●	
Quiz	●	●	●		●	●
Lab Exam						
Take-Home Exam						
Research Assignment	●				●	●
Reporting Assignment	●	●	●	●	●	●
Project Assignment	●	●	●	●	●	●
In-Class Questions	●	●	●	●	●	●

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End-of-term laboratory exam (*Lab*)	**-**	15th	---
End of term Oral exam	**5**	15th	---
Tutorial and report assessment (*Term Work*)	**15**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- Whiteboard
B- Projector
C- Computer

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Text Books and Additional References:

10.3. Recommended Books:

- **White, Edward T (1975):** A Vocabulary of Architectural Forms, Architectural Media.
- **William (Author) (2010):**The Art of Drowings, Madison Books; Revised ed. Edition.
- Architecture, Form, Space, and Order by Frank Ching
- **Linton, Harold(1985):** Color Model Environments: Color and Light in Three Dimensional Design, Harold Linton.
- **White, Edward T(1975),** A Vocabulary of Architectural Forms, Architectural Media.
- **Francis D.K. Ching (2007)**: Architecture: Form. Space & Order, Van Nostrand
- **Reinhold, New York. Paul Zelenski, Mary Pat Fisher (2006):** Shaping Space: The Dynamics of Three-Dimensional Design, (3rd edition). www.amazon.com
- **Stephen Luecking (2002)** :Principles of Three-Dimensional Design: Objects, Space and Meaning, www.amazon.com
- **Wucius Wong (1977)** :Principles of Three Dimensional Design, Van Nostrand Reinhold Company, New York
- **The Architecture of Happiness" by Alain de Botton (2006):** Examines the relationship between architecture and human well-being, combining philosophy and design.
- **The Future of Architecture in 100 Buildings" by Marc Kushner (2015)**: Explores innovative and groundbreaking architectural designs from around the world.

- **Bauhaus: A Conceptual Model" by Boris Friedewald (2019):** A comprehensive look at the Bauhaus movement and its impact on architecture and design
- **The Art of Looking Up" by Catherine McCormack (2019)**: A visual feast exploring the diverse world of ceilings in significant buildings worldwide.
- **The Hare with Amber Eyes" by Edmund de Waal (2010):** Though not the latest, it's a notable work exploring the history of a collection of Japanese netsuke through generations.
- **Bjone, Christian. Art and Architecture(2009):** Strategies in Collaboration. Basel.
- **British Pavilion(2018**): 50th Venice Biennale of Art." Colin Ledwith. Accessed April 18, 2018.

10.4. Web Sites:

- https://www.asla.org/
- http://www.ekb.eg/ar
- http://www.architectmagazine.com/
- http://en.wikipedia.org/wiki/Intelligent _design
- https://www.fosterandpartners.com/
- http://www.sagradafamilia.org/en/
- https://www.skyscrapercity.com/
- http://www.design-theory.com/
- http://www.usask.ca/education/ coursework/skaalid/theory/code/design ntheory.htm Nathan Shedroff (1994) Information Interaction Design: A unified field theory of design, Page 1-2. Retrieved November 2003 from

Course Directors	Name	Signature
Teaching staff	**Assoc. Prof. Sahar Ezz El Arab Ramadan**	
Course coordinator	**Assoc. Prof. Sahar Ezz El Arab Ramadan**	
Program Coordinator	**Dr. Mohamed Nabil El Sbaie**	
Head of Department	**Dr .Prof. Essam Kalifa**	
Date of approval	**Oct -Jan 2023 – 2024**	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 141: Surveying II

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Surveying II			**Course Code:**		CIV 141	
Program / level	Civil Engineering			Junior			
Term/ Academic year:	OCT-Jan2023-2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	0	**Laboratories:**	1
Pre-Requisite	Surveying I - CIV 112						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- To build an understanding of concepts and ideas explicitly in terms of previous learning.
- To emphasize the relationship between conceptual understanding and problem solving approaches.
- To provide students with a strong foretaste of engineering practice.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Study the using of theodolite, measuring horizontal and vertical angles.

CLO 2. How to obtain the distances between two points by indirect methods of distance and difference of height measurements (tachometric).

CLO 3. Obtain the theodolite traversing computation and adjustment of the connected

traverse.

CLO 4. Design the different types of curves and curve geometry (Horizontal and vertical curves).

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 141
Program Academic Standards that the course contributes in achieving	A1,A2, A6	B1

4- *Mapping Course Los to NARS*

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES OF ENGINEERING	**A1.** Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.	**LO 1.** Identify the using of theodolite, measuring horizontal and vertical angles. **LO 2**. Solve the equations of the indirect method of distance and difference of height measurements (tachometric).
	A2. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 3**. Conduct appropriate experimentation for theodolite traversing computation and adjustment of the connected traverse.
	A6. Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	**LO 4**. Apply the design processes of setting out the different types of curves and curve geometry (Horizontal and vertical curves).

COMPETENCIES OF CIV 141	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 5**. Select appropriate type of traverse; open traverse or connected traverse, and the appropriate type of horizontal curves; simple, compound and reverse curve.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Theodolite: temporary setting up, measuring of horizontal and vertical angles, permanent adjustment of theodolite, errors in measuring horizontal and vertical angles. Indirect Methods for Distance Measurement: stadia Method, tangent Methods, substance bar. Setting out of Horizontal and Vertical Curves.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			LOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Theodolite: Parts of theodolite, Temporary and permeant adjustment.	3	2	0	1	**LO 1, LO 2**
Week-2	Horizontal Angle measurements; single method.	3	2	0	1	**LO 1, LO 3**
Week-3	Horizontal Angle measurements; repetition method.	3	2	0	1	**LO 1, LO 3**
Week-4	Horizontal Angle measurements; direction method.	3	2	0	1	**LO 1, LO 3**
Week5	Vertical Angle Measurements.	3	2	0	1	**LO 1, LO 3**
Week-6	Tachometric Surveying, Principle and definition.	3	2	0	1	**LO 1, LO 2**

Week-7	Tachometric Surveying, Principle and definition; stadia method.	3	2	0	1	**LO 2 , LO 3**
Week-8	**Midterm Exam.**					
Week-9	Tangential Method.	3	2	0	1	**LO 2 , LO 3**
Week-10	Traversing: Omitted observation.	3	2	0	1	**LO 1, LO 2 , LO 5**
Week-11	Adjustment of connected traverse.	3	2	0	1	**LO 1, LO 2 , LO 5**
Week-12	Types of curves and curve geometry. Horizontal curve and method for setting out.	3	2	0	1	**LO 4, LO 5**
Week-13	Vertical curve and method or setting out.	3	2	0	1	**LO 4, LO 5**
Week-14	Final Practical exam.	3	2	0	1	
Week 15	**Final Exam.**					

5.3. Experiment Topics:

Serial	Experiment	Laboratory hrs.
1st	Single method	1
2nd	Repetition method	1
3th	Direction method	1
4th	Vertical Angle Measurements	1
5th	Stadia method	1
6th	Tangential Method	1
7th	Traversing	3

6- Matrix of Course Objective and LOs

Course Learning Objectives	**Learning Outcomes (LOs)**				
	General				**CIV 141**
	LO 1	**LO 2**	**LO 3**	**LO 4**	**LO 5**
Objective #1: Study the using of theodolite, measuring horizontal and vertical angles.	√		√		
Objective #2: How to obtain the distances between two point by indirect methods of distance and difference of height measurements (tachometric).	√	√	√		
Objective #3: Obtain of theodolite traversing computation, adjustment of connected traverse.	√	√	√	√	√
Objective #4: Design the different types of curve and curve geometry (Horizontal and vertical curves).	√		√		√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)				
	General				CIV 141
	LO 1	LO 2	LO 3	LO 4	LO 5
Face-to-Face Lecture	√	√	√	√	√
Online Education					
Tutorial/ Exercise		√	√		√
Group Discussion			√	√	
Laboratory	√	√	√		√
Site Visit				√	
Presentation				√	
Mini Project	√	√	√		√
Research and Reporting				√	
Brain Storming				√	
Self-Learning			√		√

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)				
	General				CIV 141
	LO 1	LO 2	LO 3	LO 4	LO 5
Written Exam	√	√	√	√	√
Online Exam					
Oral Exam	√	√	√		√
Quiz	√	√			
Lab Exam	√	√			√
Take-Home Exam			√		
Research Assignment				√	
Reporting Assignment				√	
Project Assignment			√		√
In-Class Questions	√			√	

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**30**	15th	90 min.
Midterm written Exam (*Term Work*)	**30**	8th	60 min.
End of term laboratory exam (*Lab*)	**10**	14th	Committee
End of term Oral exam	**-**	14th	Committee
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**10**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- Laboratory
B- Theodolite device
C- Projector

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Recommended Books:

- Bannister, A., Raymond, S. and Baker, R., "Surveying", 6th Edition, ISBN 10: 0582302498, Prentice Hall, 1998.
- Duggal, S.K., "Surveying", Volume 2, ISBN-10 : 9353167523, MC Graw Hill India, 2018.
- Dr. B. C. Punmia , Ashok, K. J. , Arun, K. J. | Laxmi "Surveying Volume 2", 8th Edition, National Institute of Technology Goa Farmagudi, Ponda, Goa - 403 401, 2018.
- A., M., Chandra, "Plane Surveying", New Age International Publishers, 2nd Edition, 2007.

Course Directors	Name	Signature
Teaching staff	Dr. Ramy Mostafa	
Course coordinator	Dr. Amr Nada	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	
Course Specification	
CIV 142: Hydraulics (1)	

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Hydraulics (1)			**Course Code:**		CIV 142	
Program / level	Civil Engineering			**Junior (1)**			
Term/ Academic year:	OCT-Jan2023-2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	0	**Laboratories:**	1
Pre-Requisite	CIV 121						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- To provide an introduction to open channel hydraulics, this includes: understanding of the hydraulic phenomenon in open channel, design different shapes of canals, studying the velocity and shear distribution, and studying the hydraulic effect of water structures existence in open channels.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Describe the the hydraulic phenomenon in open channel

CLO 2. Design different shapes of canals

CLO 3. Studying the velocity and shear distribution, and the hydraulic effect of water structures existence in open channels.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV142
Program Academic Standards that the course contributes in achieving	A1,A2,A3,A10	B1, B2

4- Mapping Course Los to NARS

Field	Program (CBEs) that the course contribute in achieving	Learning Out comes (LOs)
COMPETENCIES ofENGINEERING	**A1.** Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic Science and mathematics.	**LO 1**. Identify Canal cross section properties and design.
	A2. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 2**. Develop the problem-solving techniques and analysis for the students and using creative thinking. **LO 3**. Analysis the problem-solving techniques and analysis for the students and using Creative thinking.
	A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	**LO 4** Apply engineering design processes to develop the problem-solving techniques and analysis for the students and using creative thinking.

	A10. Acquire and apply new knowledge, and practice self, lifelong and other learning strategies.	**LO 5**. Calculate Velocity and shear distribution.
COMPETENCIES of CIV 142	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts	**LO 6**. Study the hydraulic jump and how to use it as an energy dissipater downstream the hydraulic structures.

	and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	
	B2. Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbors; or any other emerging field relevant to the discipline.	**LO 7**. Achieve an optimum design of the velocity and shear distribution for any type of flow by using real data, and the velocity and shear distribution for any type of flow by using real data.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Understanding of the hydraulic phenomenon in open channel, design different shapes of canals, studying the velocity and shear distribution

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs.*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Studying the basic principles of open channel hydraulics such as fluid properties and different types of flow, and the energy equation and pressure distribution for open channel	3	2	0	1	**LO 1**
Week-2	Studying the different canal cross section properties, and the most common shapes for canals and the basic equations of flow	3	2	0	1	**LO 2**
Week-3	Studying the different canal cross section properties, and the most common shapes for canals and the basic equations of flow, and Studying the water depth for maximum velocity and discharge, deep and shallow sections.	3	2	0	1	**LO 4**

Week-4	Studying the compound section.	3	2	0	1	**LO 5**
Week5	Velocity distribution in Laminar flow.	3	2	0	1	**LO 4**
Week-6	Velocity distribution in turbulent flow and introduction to shear distribution.	3	2	0	1	**LO 3**
Week-7	Shear distribution and design of stable section)**+Quiz**.	3	2	0	1	**LO 1, LO 5**
Week-8	Midterm Exam.					
Week-9	Introduction to non-uniform flow and its equations. Application for non-uniform flow, and Introduction to Rapidly varied flow.	3	2	0	1	**LO 1, LO 6**
Week-10	Studying of the hydraulic jump properties and introduction of gradually varied flow and its equations.	3	2	0	1	**LO 3, LO 7**
Week-11	Studying the different profiles for GVF.)**+Quiz**	3	2	0	1	**LO 1, LO3**
Week-12	Computing the lengths of GVF profiles.	3	2	0	1	**LO 4**
Week-13	Introduction to dimensional analysis and modeling in open channel flow	3	2	0	1	**LO 4, LO 5**
Week-14	Studying flow measurements techniques+ Revision	3	2	0	1	**LO 6**
Week 15	**Final Exam.**					

5.3. Experiment Topics:

Serial	Experiment	Laboratory hrs.
1st	Experimental work for open channel hydraulics	14

6- *Matrix of Course Objective and LOs*

Course Learning Objectives	Learning Outcomes (LOs)						
	General				CIV 142		
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
CLO 1	*	*	*	*		*	
CLO 2			*		*		*
CLO 3	*				*	*	*

7- *Course Teaching and Learning Methods:*

Teaching and Learning Methods	*Learning Outcome*(LOs)						
	General				CIV 142		
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
Face-to-Face Lecture	*	*	*	*	*	*	*
Online Education						*	*
Tutorial/ Exercise	*	*	*	*	*	*	*
Group Discussion						*	*
Laboratory	*		*	*			*
Site Visit							
Presentation						*	*
Mini Project					*		
Research and Reporting	*		*			*	*
Brain Storming					*	*	
Self-Learning					*		

8- *Assessment*

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome(LOs)*						
	General				CIV 142		
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
Written Exam	*	*	*			*	*
Online Exam							
Oral Exam							
Quiz	*	*	*				
Lab Exam	*		*	*			*
Take-Home Exam							

Research Assignment	*				*	*	*
Reporting Assignment	*	*	*	*	*		
Project Assignment						*	*
In-Class Questions							

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**5**	13th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	1**0**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**25**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- White board
B- Data show
C- MS Teams

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Text Books and Additional References:

- C. Nalluri, Martin Marriott, Civil Engineering Hydraulics, Wiley – Blackwell, 5th. Ed., 2009.
- Civil Engineering Hydraulics: Essential Theory with Worked Examples, Martin Marriott | May 2, 2016.

10.3. Recommended Books:

IRRIGATION ENGINEERING AND HYDRAULIC, by DR S.K. SHARMA (Chand PUBLISHING), ISBN, 9352533771,9789352533779, 2016.

10.4. Web sites:

WWW. Engineering Hydraulic.

Course Directors	Name	Signature
Teaching staff	Ass. Prof. Samah Hassan	
Course coordinator	Ass. Prof. Samah Hassan	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 143: Theory of Structures (II)

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	**Theory of Structures (2)**			**Course Code:**		CIV 143	
Academic year / level	Oct. – Jan. 2023-2024			junior			
				Credit Hours:		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	-----
Pre-Requisite	CIV 124						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- To understand concept and ideas explicitly in terms of pervious learning.
- To classify structures according to their stability and determinacy and calculate reactions for different kinds of structures.
- To illustrate the concept of internal forces in structural elements and practice the students to identify, compute and draw these forces in different types of determinate structures.
- Understanding and calculating normal forces in trusses, normal forces, shear forces, and bending moments in beams, frames and arches.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Define of internal forces equations for determinate beams under different kinds of loadings.

CLO 2. Locate the various types of loads.

CLO 3. Recognize the reactions, normal force; shear force, and bending moment diagrams for statically determinate beams.

CLO 4. Recognize the reactions normal force; shear force, and bending moment diagrams for statically determinate frames.

CLO 5. Recognize the reactions and Normal force for statically determinate trusses.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 143
Program Academic Standards that the course contributes in achieving	A1,A2,A9	B1

4- *Mapping Course Los to NARS*

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A1.** Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.	**LO 1.** Visualize a rather comprehensive introduction of evaluation of internal forces equations for determinate beams under different kinds of loadings.
	A2. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 2.** Develop the suitable technique to calculate the reactions, normal force, shear force and bending moment diagrams for statically determinate structures.
	A9. Use creative innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	**LO 3.** Examine the creative solution for evaluation of internal forces equations for determinate structures under different kinds.

COMPETENCIES of CIV 143	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 4.** Identify a full range of civil engineering concept and techniques by structure analysis. **LO 5.** Define properties technology for construction analysis by structural analysis.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Types of structures, supports and loads. Idealization of structures and loads. Geometric stability and determinacy, analysis of determinate trusses, beams, plane frames and arches; reaction computation; axial force, shear force and bending moment diagrams. Internal force releases. Load-shear-moment relationships. Differential equation of elastic curve. Deflections by integration, moment-area, conjugate-beam and virtual work methods. Influence lines of determinate structures.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Stability and determinacy of structures.	3	2	1	-	**LO 1.**
Week-2	Evaluation of internal forces equations for determinate beams under different kinds of loadings.	3	2	1	-	**LO 1. , LO 2.**
Week-3	Reactions, normal force and shear force diagrams for statically determinate beams.	3	2	1	-	**LO 2. , LO 3.**
Week-4	Reactions and bending moment diagram for statically determinate beams.	3	2	1	-	**LO 2. , LO 3.**
Week-5	Reactions, normal force, shear force and bending moment diagrams for statically determinate beams under different kinds of loadings.	3	2	1	-	**LO 2. , LO 3. , LO 4.**

Week-6	Normal force, shear force, and bending moment diagrams for statically determinate frames.	3	2	1	-	**LO 3. , LO 4.**
Week-7	Bending moment diagrams for statically determinate frames under different kinds of loadings.	3	2	1	-	**LO 4. , LO 5.**
Week-8	**Midterm Exam.**					
Week-9	Solution and internal force diagrams for trussed-beams, frames with links or ties, and for closed frames.	3	2	1	-	**LO 4. , LO 5.**
Week-10	Solution and internal force diagrams for trussed-beams and closed frames.	3	2	1	-	**LO 4. , LO 5.**
Week-11	Reactions and Normal force for statically determinate trusses by method of joints.	3	2	1	-	**LO 1. , LO 2.**
Week-12	Normal force for statically determinate trusses by method of sections.	3	2	1	-	**LO 1. , LO 2. , LO 3.**
Week-13	Reactions, normal force, shear force, and bending moment for statically determinate parabolic arches.	3	2	1	-	**LO 4. , LO 5.**
Week-14	Reactions, Normal force, shear force, and bending moment for statically determinate circular arches.	3	2	1	-	**LO 4. , LO 5.**
Week 15	**Final Exam.**					

5.3. Experiment Topics: (NA)

Serial	Experiment	Laboratory hrs.
1st	NA	

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)				
	General			CIV 143	
	LO1	LO2	LO3	LO4	LO5
CLO 1	√		√		
CLO 2		√		√	
CLO 3	√	√	√		
CLO 4			√	√	√
CLO 5		√	√		√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)				
	General			CIV 143	
	LO 1	LO 2	LO 3	LO 4	LO 5
Face-to-Face Lecture	√	√	√	√	√
Electronic Education	√	√	√	√	√
Tutorial/ Exercise	√	√	√	√	√
Group Discussion		√	√		√
Laboratory					
Site Visit					
Presentation					
Mini Project					
Research and Reporting					√
Brain Storming			√	√	
Self-Learning			√		√

8-Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)				
	General			CIV 143	
	LO 1	LO 2	LO 3	LO 4	LO 5
Written Exam	√	√	√	√	√
Electronic Exam	√	√	√	√	√
Oral Exam	√	√	√	√	√
Quiz	√	√	√	√	√
Lab Exam					
Take-Home Exam					

Research Assignment			√	√	√
Reporting Assignment			√	√	√
Project Assignment					
In-Class Questions		√	√	√	√

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**---**	---	---
End of term Oral exam	**---**	---	---
Tutorial and report assessment (*Term Work*)	**15**	weekly	---
Quizzes/ Electronic exams (*Term Work*)	**20**	According to the schedule	---
Report	**5**	12th	---
Total Mark	**100**		

8- Facilities Required:

A- White Board.
B- Data Show.
C- MS Teams.

9- List of References:

10.1. Course Notes:

- Lecture notes available (handed to students part by part).

10.2. Required Text Books and Additional References:

Reference name	*Author*	*ISBN*	*Library Ref.*
ANALYSIS OF STRUCTURES V1, V2	**V.N.VAZIRANI**	**9788174091406**	**1179 & 8343**
ADVANCED STRUCTURAL ANALYSIS	**JAN J. TUMA**	**0070654263**	**8322**
THEORY OF STRUCTURES	**R.S. KHURMI**	**9788121905206**	**8385**

10.3. Web Sites:

- **https://courses.structure.education/collections**
- **http://www.experiencefestival.com/structural_analysis_-_mechanics_of_materials_methods**

Course Directors	Name	Signature
Teaching staff	Dr.Mohamed Fahmy Mostafa	
Course coordinator	Dr. Morcos Farid Samaan	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 151: Hydraulics 2

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information								
Course Title:	Hydraulics 2			**Course Code:**		CIV 151		
Program / level	Civil Engineering			Junior year				
Term/ Academic year:	OCT-Jan2023-2024			**Credit Hours:**		2		
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	0	**Laboratories:**	1	
Pre-Requisite	Hydraulic 1							
Academic standards	(NARS 2018)							
Bylaw Approval	2016							

1- Course Aims:

- provide an introduction to flow through pipes and hydraulic machinery including the following:
- Understanding of the basic flow equations for different states of flow.
- studying the hydraulic machinery (pumps and turbines) including their properties, selection, connection, and design
- Determine the different application problems related to civil engineering.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Understand the concept of the flow through pipes

CLO2.To calculate the appropriate discharge in the network pipe system.

CLO3. To achieve the optimum use of the pump system.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 151
Program Academic Standards that the course contributes in achieving	A1	B1,B2

4- ***Mapping Course Los to NARS***

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A1.** Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics	**LO 1.** Define the flow through pipes **LO 2.** Mention the velocity and shear distribution for laminar flow.
COMPETENCIES of CIV151	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics **B2.** Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbors; or any other emerging field relevant to the discipline.	**LO 3**. Writing the Excel sheet to solve the pipe network problems **LO 4**. Identify and select of economical pipe diameter and pump **LO 5**. Design of hydraulic pump system.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Provide an introduction to flow through pipes and hydraulic machinery including the following:

Understanding of the basic flow equations for different states of flow, studying the hydraulic machinery (pumps and turbines) including their properties, selection, connection, and design.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Introduction to flow through pipes, describing different types of flow and flow regimes	3	2	0	1	**LO 1**
Week-2	Studying the basic flow equations	3	2	0	1	**LO1**
Week-3	Studying the different types of losses.	3	2	0	1	**LO2**
Week-4	Studying different equations for laminar flow	3	2	0	1	**LO2, LO3**
Week5	Studying different equations for turbulent flow	3	2	0	1	**LO2, LO3**
Week-6	pipe connection	3	2	0	1	**LO2, LO3**
Week-7	Three tank problem, and four tanks provided with pump	3	2	0	1	**LO3**
Week-8	**Midterm Exam.**					
Week-9	Pipe network	3	2	0	1	**LO1, LO2, LO3**
Week-10	introduction to hydraulic machinery	3	2	0	1	**LO1, LO4, LO5**
Week-11	Economical pipe diameter, and different uses of pumps	3	2	0	1	**LO1, LO4, LO5**
Week-12	Connection of pumps and velocity diagrams for pumps	3	2	0	1	**LO1, LO4, LO5**
Week-13	Connection of pumps and velocity diagrams for pumps (cont.)	3	2	0	1	**LO1, LO4,LO5**
Week-14	Revision	3	2	0	1	**LO1, LO4, LO5**
Week 15	**Final Exam.**					

5.3. Experiment Topics:

Serial		Laboratory hrs.
1st	Venturi-meter	1

6- Matrix of Course Objective and Los

Course Learning Objectives	Learning Outcomes (LOs)				
	General		CIV 151		
	LO 1	LO 2	LO 3	LO 4	LO5
CLO 1	√	√	√	√	√
CLO 2	√	√			
CLO 3		`	√	√	√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)				
	General		CIV 151		
	LO 1	LO 2	LO 3	LO 4	LO5
Face-to-Face Lecture	√	√	√	√	√
Online Education		√			
Tutorial/ Exercise	√	√	√	√	√
Group Discussion					√
Laboratory	√				
Site Visit					
Presentation					√
Mini Project					√
Research and Reporting					√
Brain Storming					√
Self-Learning	√				

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)				
	General		CIV 151		
	LO 1	LO 2	LO3	LO 4	LO5
Written Exam	√	√	√	√	√

Online Exam	√				√
Oral Exam					
Quiz	√	√	√	√	√
Lab Exam	√				
Take-Home Exam					
Research Assignment					√
Reporting Assignment	√	√	√	√	√
Project Assignment					√
In-Class Questions		√	√		√

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	7th	60 min.
End of term laboratory exam (*Lab*)	**5**	13th	15 min
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**10**	Weekly	---
Quizzes/reports/presentation (*Term Work*)	**25**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- Hydraulic laboratory provided with pipe connections and different types of gauge pressure and flow measurement tools. Tutorial pump and turbines demonstrating the performance curves for pumps and flow behavior through pumps and turbines.

10- List of References:

10.1. Course Notes:

Available (handed to students part by part).

10.2. Required Text Books and Additional References:

- Lecturer Notes in Hydraulics (Dr. Osama Khairy, Dr. Yasser Khairy)
- IRRIGATION ENGINEERING AND HYDRAULIC, by DR S.K. SHARMA (S. Chand PUBLISHING), ISBN, 9352533771, 9789352533779, **2016**

10.3. Recommended Books:

A Text Book of Hydraulics and Fluid Mechanics, R.S. Khurmi1987, ISBN:978-81-219-0162-8

10.4. Web Sites:

- www.U.S. corps of engineering1. Amer Radwan. "A course in Soil; Mechanics

Course Directors	Name	Signature
Teaching staff	Dr. Ebtehal Sayed	
Course coordinator	Ass.prof..Samah Hassan	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 152: Diploma Project

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Diploma Project			**Course Code:**		CIV 152	
Program / level	Civil Engineering			junior			
Term/ Academic year:	1st 2023/2024			**Credit Hours:**		1	
Contact Hours:	4	**Lecture:**	0	**Tutorial:**	0	**Laboratories:**	4
Pre-Requisite	CIV 122						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- Knowing the basic elements of the structural building.
- Design structure buildings.
- How to combine between Revit and AutoCAD.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. **study REVIT program.**

CLO 2. **Design foundation, columns, beams, slabs, and walls.**

CLO 3. **How to import any file from AutoCAD.**

CLO 4. **Obtain the final project as 3D project.**

3- ***Relationship between the course and the Competencies :***

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 152
Program Academic Standards that the course contributes in achieving	A3, A5, A9	B1

4- ***Mapping Course Los to NARS***

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A3.** Apply engineering design processes to meet structure needs with consideration for global, cultural, social, economic, environmental, ethical, and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	**LO 1.** Employ the Revit Program **LO 2.** Apply engineering design processes to obtain suitable design of building..
	A5. Practice design techniques and methods of investigation as an inherent part of learning	**LO 3.** Practice design techniques of Revit program **LO 4**. Use the correct design rules to reach the best result
	A9. Use creative, innovative, and flexible thinking to anticipate and respond to new situations.	**LO 5**. Use creative, innovative, and flexible thinking to achieve full structure design.
COMPETENCIES of CIV152	**B1.** Select appropriate technologies for construction of buildings, infrastructures using techniques of civil engineering concepts	**LO 6**. Choose AutoCAD and Revit program for construction of buildings, and infrastructures using civil engineering concepts

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

The student selects one of several subjects offered including computer aided drafting, quantity take-off for engineering projects, etc….

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*contact Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Introduction of REVIT	4	0	0	4	**LO 1**
Week-2	Draw levels and grid	4	0	0	4	**LO1, LO2**
Week-3	Design foundation part 1	4	0	0	4	**LO 2, LO3, LO4**
Week-4	Design foundation part 2	4	0	0	4	**LO 2, LO3, LO4**
Week5	Design columns	4	0	0	4	**LO 2, LO3, LO4**
Week-6	Design beams and introduction for slabs	4	0	0	4	**LO 2, LO3, LO4**
Week-7	Continue design of slab	4	0	0	4	**LO 2, LO3, LO4**
Week-8	**Midterm Exam.**					
Week-9	How to import from AutoCAD	4	0	0	4	**LO 6**
Week-10	Design walls	4	0	0	4	**LO5, LO6**
Week-11	structure Project	4	0	0	4	**LO5, LO6**
Week-12	continue structure Project	4	0	0	4	**LO5, LO6**
Week-13	finish structure Project	4	0	0	4	**LO5, LO6**
Week 14	Final Exam.					

6- Matrix of Course Objective and Los

Course Learning Objectives	Learning Outcomes (LOs)					
	General					CIV 152
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
CLO 1	☑		☑			
CLO 2		☑	☑	☑	☑	
CLO 3						☑
CLO 4				☑	☑	

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)					
	General					CIV 152
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
Face-to-Face Lecture						
electronic Education	☑	☑	☑	☑	☑	☑
Tutorial/ Exercise	☑	☑	☑	☑	☑	☑
Group Discussion						
Laboratory	☑	☑	☑	☑	☑	☑
Site Visit						
Presentation		☑	☑			
Mini Project					☑	☑
Research and Reporting						
Brain Storming						
Self-Learning				☑		

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome* (LOs)					
	General					CIV 152
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
Written Exam						
electronic Exam						
Oral Exam						
Quiz				☑	☑	☑
Lab Exam	☑	☑	☑	☑	☑	☑

Take-Home Exam						
Research Assignment						
Reporting Assignment						
Project Assignment		☑	☑	☑	☑	☑
In-Class Questions						

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**-**	14th	-
Midterm written Exam (*Term Work*)	**30**	8th	50 min.
End of term laboratory exam (*Lab*)	**30**	14th	70 min.
End of term Oral exam	**-**	-	Committee
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- Laboratory
B- Computers
C- REVIT program.
D- AutoCAD program
E- Projector

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Recommended Books:

- ASCENT.," Autodesk Revit 2023 Structure Fundamentals".,ISBN: 978-1-63057-518-2., Published November 17, 2022.

Course Directors	Name	Signature
Teaching staff	Dr. Mai Moaz Dr. Yasser Hassan Helal Dr. Amr Mokhtar	
Course coordinator	Dr. Mai Moaz Dr. Yasser Hassan Helal	
Program coordinator	Ass. Prof. Sherief Hussein	
Head of the Department	Ass. Prof. Sherief Hussein	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 153 : Reinforced Concrete 1

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

	A– Basic information							
	Course Title:	Reinforced Concrete 1			**Course Code:**		CIV 153	
	Program / Level	Civil Engineering			**JYNIOR (1)**			
OCT-Jan2023-2024	**Term/ Academic year:**	OCT-Jan2023-2024			**Credit Hours:**		3	
	Contact Hours:	4	**Lecture:**	2	**Tutorial:**	2	**Laboratories:**	-----
	Pre-Requisite	CIV 101, CIV 113, CIV 123 & CIV 143						
	Academic standards	(NARS 2018)						
	Bylaw Approval	2016						

1- Course Aims:

- Understanding the concept and ideas explicitly in terms of previous learning.
- Emphasize the relationship between conceptual understanding and design-solving approach.
- Provide students with strong forecasts of engineering-design practice.
- The students will be able to act professionally in the design of flexure members, the load applied on reinforced concrete beams, design for shear, analysis and design of solid slabs and beams, development length, and details by using the ultimate limit-state design method (ULDM).

2- Course Learning Objectives (CLO):

At the end of this course, students should be able to :

CLO 1. Contract the essential items to evaluate the design of solid slab structural system and beam elements and its practical application for reinforced concrete structures.

CLO 2. Achieve optimum design method of solid slab structural system.

CLO 3. Study the behavior of reinforced concrete slab systems.

CLO 4. Prepare the structure design drawings and calculation sheet.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 153
Program Academic Standards that the course contributes in achieving	A1,A2,A3,A4,A10	B1, B2

4- *Mapping Course Los to NARS*

Field	Program (CBEs) that the course contributes in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A1.** Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	**LO 1.** Identify the concrete properties of flexure members to solve engineering-based design problems by applying design formulas.
	A2. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 2.** Conduct design parameters of flexure members. **LO 3.** Employ the Egyptian code in the design of flexure members.
	A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical, and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	**LO 4.** Apply the design process of reinforced concrete solid slab systems to produce a cost-effective design.

	A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.	**LO 5.** Utilize code practices and standards to design appropriate solid slab systems.
	A10. Acquire and apply new knowledge; and practice self, lifelong, and other learning strategies	**LO 6.** Applying new knowledge in solid slab design and construction involves utilizing advanced techniques, such as reinforced concrete, post-tensioning, and precast elements.
COMPETENCIES of CIV 153	**B1.** Select appropriate and sustainable technologies for the construction of buildings, infrastructures, and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of Structural Analysis and Mechanics, Properties, and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 7**. Calculate the shear capacity of concrete. **LO 8**. Utilize the Egyptian code in the design and construction of reinforced concrete structures. **LO 9**. Select the appropriate structural system.
	B2. Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources, and Harbors; or any other emerging field relevant to the discipline.	**LO 10.** Achieve optimum design of solid slab-system and flexure members. **LO 11**. Analysis of the shear strength of concrete and the safe design of beam element.

5- Course Content:

Fundamentals and principles required for the design of reinforced concrete structures. Planning of solid slab systems, loading (dead, live loads). Egyptian and American codes. Concrete properties, design of flexure members, reinforced concrete beams subjected to shear force, analysis and design of solid slabs and beams, development length, and detailing by using the ultimate limit-state design method (ULDM).

5.1. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Introduction to building material and structure straining actions.	4	2	2	---	**LO 1**
Week-2	Analysis of uncracked section.	4	2	2	---	**LO 1, LO 2**
Week-3	Check of stresses on existing concrete section.	4	2	2	---	**LO 2**
Week-4	Ultimate flexure capacity of the existing section.	4	2	2	---	**LO 3, LO 7**
Week5	Design of flexure members using the ultimate limit-state design method.	4	2	2	---	**LO 4, LO 5, LO 7**
Week-6	Achieve ductile design members.	4	2	2	---	**LO 2, LO 3, LO 4, LO 5, LO 9**
Week-7	Using design aids.	4	2	2	---	**LO 3, LO 7**
Week-8	**Midterm Exam.**					
Week-9	Adopt a suitable solid slab system for one-way and two ways slabs.	4	2	2	---	**LO 8, LO9, LO 6**
Week-10	Loads applied on reinforced concrete flexure beams.	4	2	2	---	**LO 5, LO 7**
Week-11	Analysis and design of solid slabs.	4	2	2	---	**LO 3, LO7**
Week-12	Analysis and design of flexure beams.	4	2	2	---	**LO 7, LO 10**
Week-13	Shear design theory of reinforced concrete section.	4	2	2	---	**LO 4, LO 11**
Week-14	Splice and development length of steel bars.	4	2	2	---	**LO 9**
Week 15	**Final Exam.**					

5.2. Experiment Topics:

Serial	Experiment	Laboratory hrs.
1st	NA	---

6- Matrix of Course Objective and LOs

Course Learning Objectives		Learning Outcomes (LOs)										
		General						CIV 153				
		LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO10	LO11
CLO 1	*	*	*	*			*				*	
CLO 2					*			*	*	*		
CLO 3					*		*	*				
CLO 4						*		*	*	*	*	

7- Course Teaching and Learning Methods:

Teaching and Learning Methods		*Learning Outcome*(LOs)										
		General						CIV 153				
		LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10	LO 11
Face-to-Face Lecture	*	*	*	*	*	*	*	*	*	*	*	*
Online Education							*	*				
Tutorial/ Exercise	*	*	*	*	*		*	*	*	*	*	
Group Discussion							*	*				
Laboratory												
Site Visit												
Presentation							*	*	*	*		
Mini Project							*	*	*	*	*	
Research and Reporting	*		*				*	*	*	*		
Brain Storming						*	*		*			
Self-Learning												

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods		*Learning Outcome*(LOs)									
		General					CIV 153				
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10	LO 11
Written Exam	*	*	*				*	*		*	*
Online Exam											
Oral Exam											
Quiz		*	*							*	*
Lab Exam											
Take-Home Exam											
Research Assignment	*				*	*	*	*			
Reporting Assignment	*	*	*	*	*				*		
Project Assignment							*	*	*	*	*
In-Class Questions			*	*				*	*		

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End-of-term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**25**	weekly	---

Quizzes/reports/presentation (*Term Work*)	**15**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- Whiteboard
B- Data show
C- MS Teams

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Text Books and Additional References:

- DESIGN OF CONCRETE STRUCTURES DAVID DARWIN 2016
- Design of reinforced concrete structures: Dr. M. Goneem 2019
- Reinforced Concrete: Park and Puly
- Design and construction of reinforced concrete structures ECP-203-2018
- Loads applied on building ECP-208

10.3. Recommended Books:

- ACI-318: American concrete institute (American code for design of reinforced concrete structures.
- ASCE: American society of civil Engineering.
- BS-8110: British code for design of reinforced concrete structures.

10.4. Web Sites:

- **https://dokumen.tips/documents/design-of-reinforced-concrete-structure-volume-1-dr1-mashhour-a-ghoneim.html**
- **http://www.hbrc.edu.eg/**
- **https://www.concrete.org/middleeast.aspx**

Course Directors	Name	Signature
Teaching staff	Dr. Mostafa Anter	
Course coordinator	Prof. Essam Khalifa	
Program Coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval		

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	
Course Specification	
CIV 154: Steel Structures 1:	

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Steel Structures 1			**Course Code:**		CIV 154	
Program / level	Civil Engineering			**JUNIOR**			
Term/ Academic year:	Oct.-Jan. 2023-2024			**Credit Hours:**		3	
Contact Hours:	4	**Lecture:**	2	**Tutorial:**	2	**Laboratories:**	----
Pre-Requisite	CIV 113 – CIV 143						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- To provide an understanding of structure design of different Frames elements.
- To emphasize the relation between conceptual understanding and problem solving aproaches.
- To provide the students with strong foretaste for engineering practice

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1. Complete understanding of the general lay-out of industrial steel structures
CLO 2. Complete design of tension members according to the ASD & LRFD
CLO 3. Complete design of compression members according to the ASD & LRFD
CLO 4. Complete structural design and detailing of concentric shear connections using ordinary, high strength bolts and fillet welding according to the ASD design formats.

3- ***Relationship between the course and the Competencies :***

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 154
Program Academic Standards that the course contributes in achieving	A2, A3, A4, A10	B1, B2

4- ***Mapping Course Los to NARS***

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A2.** Develop and conduct appropriate experimentation and/or simulation, analyse and interpret data, assess, and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 1.** Choose the suitable structural system for the steel truss. **LO 2**. Calculate the loads on a typical steel truss and analyze the internal forces of the truss and compute their design strengths.
	A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	**LO 3**. Apply the design specification requirements to get the most economic cross-sections for truss.
	A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	**LO 4**. Use the design strength for the truss component and beam according to the Egyptian code of practice. **LO 5.** Employ the structural connections that are integrated parts of the overall structural design.
	A10. Acquire and apply new knowledge; and practice self, lifelong, and other learning strategies.	**LO 6.** Develop student ability of to self-extract and manipulate data from different sources, textbooks, and international codes.

COMPETENCIES of CIV 154	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 7**. Utilize advanced numerical software techniques like computer software packages (SAP2000 and/or ETABS) for the analysis and design of steel truss.
	B2. Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbours; or any other emerging field relevant to the discipline.	**LO 8.** Carry out the design of the structural truss and their connections that are integrated parts of the overall structural design as well as beam design. **LO 9**. Produce design drawing necessary for cost estimation.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Fundamentals and principles necessary for the design of steel structures. Egyptian and American codes. Steel properties, Loads, Design of Tension members, Design of Compression members; Design of Bolted Connections and Design of Welded Connections. Structural systems including Trusses.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Introduction to Steel Systems for Industrial Buildings	4	2	2	0	**LO 1**
Week-2	General Lay-out for Steel Systems for Industrial Buildings	4	2	2	0	**LO 1, LO 6**

Week-3	Types of Loads (Dead, Live, Wind)	4	2	2	0	**LO 2, LO 7**
Week-4	Design of Tension members (ECOP)	4	2	2	0	**LO 3, LO 4**
Week5	Design of Tension members (AISC)	4	2	2	0	**LO 3, LO 4, LO 6**
Week-6	Design of Compression members (ECOP)	4	2	2	0	**LO 3, LO 4**
Week-7	Design of Compression members (AISC)	4	2	2	0	**LO 3, LO 4, LO 6**
Week-8	**Midterm Exam.**					
Week-9	Analysis & Design of Bracing Systems for Industrial Buildings	4	2	2	0	**LO 2, LO 7**
Week-10	Detailing of Concentric shear Connections (ordinary bolted Connection)	4	2	2	0	**LO 5, LO 8, LO 9**
Week-11	Detailing of Concentric shear Connections (high strength bolted Connection)	4	2	2	0	**LO 5, LO 8, LO 9**
Week-12	Detailing of Concentric shear Connections (fillet welded Connection)	4	2	2	0	**LO 5, LO 8, LO 9**
Week-13	Design of Laterally Supported Simple Beams (ECOP)	4	2	2	0	**LO 4, LO 8**
Week-14	Design of Laterally Supported Simple Beams (ECOP)	4	2	2	0	**LO 4, LO 8**
Week 15	**Final Exam.**					

5.3. Experiment Topics:

Serial	Experiment	Laboratory hrs.
1st	NA	
2nd		

6- Matrix of Course Objective and Los

Course Learning Objectives	Learning Outcomes (LOs)								
	General						CIV 154		
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9
CLO 1	√	√							
CLO 2			√	√	√	√	√	√	
CLO 3			√	√	√	√	√	√	
CLO 4			√	√	√			√	√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome* (LOs)								
	General						CIV 154		
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9
Face-to-Face Lecture	√	√	√	√	√	√		√	√
Online Education									
Tutorial/ Exercise	√	√	√	√	√	√	√	√	√
Group Discussion	√								
Laboratory									
Site Visit									
Presentation									
Mini Project		√	√	√	√			√	√
Research and Reporting	√					√			
Brain Storming									
Self-Learning						√	√		

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome* (LOs)								
	General						CIV 154		
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9
Written Exam		√	√	√	√			√	√
Online Exam									
Oral Exam									
Quiz				√	√				
Lab Exam									
Take-Home Exam									
Research Assignment	√					√			
Reporting Assignment	√					√		√	√
Project Assignment	√	√	√	√	√		√	√	√
In-Class Questions	√	√	√	√	√		√	√	√

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment/ project (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- Projector (data show system)
B- White board
C- Online platform system (MS Teams)

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Text Books and Additional References:

- Egyptian Code of Practice For Steel Construction and Bridges (ASD & LRFD), 1157
- Egyptian Loading Code
- Steel Structures Design and Behavior 4th Edition (Charle E. Salmon and John E. Jonson).
- Steel structures design (Allowable stress design) (Prof. Abdelrahim Khalil Dessouki, Ain Shams Univeristry, Faculty of engineering, Structural Engineering Department), Dar El marafa, 16661
- Steel Designer Manual, G.R.Knowl, 8375
- Structural Steel Design, Joseph E. Bowles, 8390

10.3. Recommended Books:

- Behavior, Analysis and Design of Steel Work Vol. 1, 2 and 3 (Prof. EL-Sayed Bahaa Machaly), 8334.

10.4. Web Sites:

- https://www.steel.org/
- https://www.sciencedirect.com/journal/journal-of-constructional-steel-research
- https://www.aisc.org/publications/steel-standards/aisc%20303/#:~:text=The%20AISC%20Code%20of%20Standard,with%20construction%20in%20structural%20steel

Course Directors	Name	Signature
Teaching staff	Dr. Amr Mokhtar Dr. Mohamed Fathi	
Course coordinator	Prof. Essam Amoush	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023-2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 155: Irrigation and Drainage

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Irrigation and Drainage			**Course Code:**		CIV 155	
Program / level	Civil Engineering			**JUNIOR**			
Term/ Academic year:	Oct.-Jan. 2023 - 2024			**Credit Hours:**		2.0	
Contact Hours:	3.0	**Lecture:**	2.0	**Tutorial:**	0	**Laboratories:**	1
Pre-Requisite	CIV 142						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- Construct the importance of irrigation and drainage engineering science.
- Learn the different methods of calculating the water needs of the various plants.
- Understand the functions of the various hydraulic structures.
- Learn and study different irrigation methods.
- The student will be able to design the subsurface drainage system under different flow conditions.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Define methods for calculating the water duty for different plants.

CLO 2. Choose the correct irrigation structures used in any projects.

CLO 3. Acheive the designing of irrigation system.

3- ***Relationship between the course and the Competencies :***

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 155
Program Academic Standards that the course contributes in achieving	A3,A4	B1

4- ***Mapping Course Los to NARS***

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A3.** Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical, and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	**LO 1**. Conduct the principles of irrigation Structures.
		LO 2. Determine old and modern irrigation techniques.
COMPETENCIES of CIV 155	**A4**. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	**LO 3.** Select ideas in determining the best irrigation system needed.
	B1. Select appropriate and sustainable technologies for construction of buildings, infrastructures, and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.discipline.	**LO 4**. Identify irrigation and drainage project designed using different techniques.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Construct the importance of irrigation and drainage engineering science. Thus, the student acquainted with the various hydraulic structures built along the waterways. In addition to learn the different methods of calculating the water needs of the various plants. Also learn and study different irrigation methods. Finally, the student will be able to design the subsurface drainage system under different flow conditions.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			LOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction and Studying basic definitions on irrigation and drainage science- humid and arid regions.	3	2	0	1	**LO 2**
Week-2	Studying the hydrological cycle-different hydraulic structures on water-ways.	3	2	0	1	**LO 1, LO 2**
Week-3	Studying kinds of soil water-movement of water into and within the soil	3	2	0	1	**LO 3**
Week-4	Studying the soil water interaction and soil moisture characteristics-frequency of irrigation..	3	2	0	1	**LO 4**
Week5	Studying crops consumptive use of water	3	2	0	1	**LO 4**
Week-6	Irrigation efficiency.	3	2	0	1	**LO 1**
Week-7	**Midterm Exam.**					
Week-8	Introduction to irrigation methods.	3	2	0	1	**LO 1**
Week-9	Studying sprinkler method..	3	2	0	1	**LO 3, LO 4**
Week-10	Studying trickle Method.	3	2	0	1	**LO 3, LO 4**
Week-11	Projects to be solved using modern irrigation techniques.	3	2	0	1	**LO 4**

Week-12	Introduction to land drainage	3	2	0	1	**LO 4**
Week-13	Design on drainage systems	3	2	0	1	**LO 2, LO 4**
Week-14	Introduction to smart drainage system.	3	2	0	1	**LO 1**
Week 15	**Final Exam.**					

6- Matrix of Course Objective and LOs

Course Learning Objectives	**Learning Outcomes (LOs)**			
	General		**CIV 155**	
	LO 1	**LO 2**	**LO 3**	**LO 4**
CLO 1	*		*	*
CLO 2		*	*	*
CLO 3			*	*

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)			
	General		CIV 155	
	LO 1	LO 2	LO 3	LO 4
Face-to-Face Lecture	*	*	*	*
Online Education				
Tutorial/ Exercise				
Group Discussion				
Laboratory	*	*	*	*
Site Visit				
Presentation	*	*		
Mini Project				
Research and Reporting	*		*	
Brain Storming				
Self-Learning				

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)			
	General		CIV 155	
	LO 1	LO 2	LO 3	LO 4
Written Exam	*	*	*	*
Online Exam				
Oral Exam				
Quiz	*	*	*	*
Lab Exam			*	*
Take-Home Exam				
Research Assignment	*			
Reporting Assignment		*		
Project Assignment				*
In-Class Questions			*	

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	7th	60 min.
End of term laboratory exam (*Lab*)	**5**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and Project (*Term Work*)	**15**	weekly	---
Quizzes/reports/presentation/ Attendance. (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**	According to the schedule	**90 min.**

9- Facilities Required:

A- Lab room equipped with Data show.
B- white board and markers.
C- Suitable room for exercises.

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Additional References:

- Irrigation Engineering, Dr. Ahmed Helmy (Noor Publishing), ISBN, 3330852283, 9783330852280, 2017.

Course Directors	Name	Signature
Teaching staff	Dr. Mohammad Anas	
Course coordinator	Ass. Prof. Dr. Samah Hassan	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

FTR 161 : Field Training (2)

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	**Field Training (2)**			**Course Code:**		FTR 161	
Academic year / level	2023						
Contact Hours:	3	**Lecture:**	---	**Tutorial:**	---	**Laboratories:**	18
Pre-Requisite	FTR 131 - ARE 101 – CIV 101						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- To focus on the construction of various elements in the site made with different materials and construction methods.
- To achieve training on all construction methods.
- To train the students to implement concrete mixes from the mix design techniques background and to implement the mixes with different techniques such as manually or mechanically.
- To train the students to execute and supervise the construction of wooden formworks considering various structural inventory of quantities.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Focuses on the traditional works on the site with various elements using different materials and construction methods.

CLO 2. Training the student on how to implement buildings using reinforced concrete, designing concrete mixers, using different methods of concrete mixing, such as manual mixing and mechanical mixing.

CLO 3. Training on the student's exercise on the work of wooden formwork for the various structural elements and the inventory of quantities.

*3- **Relationship between the course and the Competencies :***

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of ITR 161
Program Academic Standards that the course contributes in achieving	A2,A9	B1

4- *Mapping Course Los to NARS*

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A2.** Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 1.** Uses different materials and construction methods.
	A9. Use creative innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	**LO 2.** Designs concrete mixes, using various methods

COMPETENCIES of FTR 161	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 3.** Applies a full range of civil engineering concepts and techniques through different construction methods. **LO 4.** Distinguishes properties technology for construction analysis by construction methods, training on the student's exercise on the work of wooden formwork for the various structural elements and the inventory of quantities. **LO 5.** Practice calculating all quantities of materials used in construction

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

The student shall be trained on how to execute reinforced concrete and concrete mix design on site; the use of different mixing methods, such as manual, mechanical. Understanding the technique of mix station. Also the student shall be trained to design and construct the shuttering for different concrete elements, and quantity surveying.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Ability of using different materials and construction methods.	18	-	-	18	**LO 1.**
Week-2	Choose the creative solution for constructing structures with different surveying devices, training on how to implement buildings using reinforced concrete, designing concrete mixers, using different methods of concrete mixing.	18	-	-	18	**LO 1. , LO 2.**
Week-3	**Mi dterm Exam.**					
Week-4	Applying a full range of civil engineering concept and techniques by construction methods, training on how to implement buildings using reinforced concrete, designing concrete	18	-	-	18	**LO 1. , LO 2. , LO 3. , LO 4., LO 5.**
	mixers, using different methods of concrete mixing.					

Week-5	Preparing and planning the site.	18	-	-	18	**LO 1. , LO 2. , LO 3. , LO 4.**
Week-6	**Final Exam.**					

5.3. Experiment Topics: (NA)

Serial	Experiment	Laboratory hrs.
1st	NA	---

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)				
	LO1	**LO2**	**LO3**	**LO4**	**LO5**
CLO 1	√		√	√	
CLO 2		√	√	√	√
CLO 3	√	√	√	√	√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)				
	General		FTR 161		
	LO 1	LO 2	LO 3	LO 4	LO 5
Face-to-Face Lecture					
Electronic Education					
Tutorial/ Exercise					
Group Discussion	√	√	√	√	√
Laboratory	√	√	√	√	√
Site Visit	√	√	√	√	√
Presentation	√	√	√	√	√
Mini Project	√	√	√	√	√
Research and Reporting	√	√	√	√	√
Brain Storming		√	√	√	√
Self-Learning			√	√	√

8-Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)				
	General		FTR 161		
	LO 1	LO 2	LO 3	LO 4	LO 5
Written Exam					
Electronic Exam					
Oral Exam	√	√	√	√	√
Quiz					
Lab Exam	√	√	√	√	√
Take-Home Exam					
Research Assignment	√	√	√	√	√
Reporting Assignment	√	√	√	√	√
Project Assignment	√	√	√	√	√
In-Class Questions					

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**---**	---	---
Midterm Oral Exam (*Term Work*)	**20**	3th	30 min.
End of term laboratory exam (*Lab*)	**---**	---	---
End of term Oral exam	**30**	5th	60 min.
Tutorial and report assessment (*Term Work*)	**25**	weekly	---
Quizzes/ Electronic exams (*Term Work*)	**---**	---	---
Report	**25**	5th	---
Total Mark	**100**		

8- Facilities Required:

A- Field site.
B- MS Teams.

9- List of References:

10.1. Course Notes:

- Instructions of supervisor of Field Training (handed to students part by part).

10.2. Required Text Books and Additional References:

- -------

10.3. Recommended Books:

- -------

10.4. Web Sites:

- -------

Course Directors	Name	Signature
Teaching staff		
Course coordinator	Dr. Shymaa Mohamed Mukhtar	
Program coordinator	Dr. Ahmed Nabil Dr. Ghada Nashat	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023 -2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

Course Code : CSC101

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	**Computer programming for civil engineering**			**Course Code:**		CS199 – CSC101	
Program /level	Civil Engineering			**SENIOR (1)**			
Term/ Academic year:	OCT 2023-2024			**Credit Hours:**		2	
Contact Hours:	4	**Lecture:**	1	**Tutorial:**	----	**Laboratories:**	3
Pre-Requisite	CSC001						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- To introduce the major programming paradigms and the principles and techniques involved in the design and implementation of modern programming languages.
- Introduce notations to describe syntax and semantics of programming languages
- Analyze and explain the behavior of simple programs in imperative languages using concepts.
- The use of programming languages in various applications of civil engineering.
- Convert a script into a simple app, Create an App Programmatically.
- Use a neural network (also called an artificial neural network) to learn from data and train to recognize patterns, classify data, and forecast future events.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Acquire computer programming languages such as MATLAB programming languages.
CLO 2. Utilize software skills of solving civil engineering-related problems.

CLO 3. Analysis of data to predict behavior of properties of concrete, ets.....)
CLO 4. Computer programming for civil engineering.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV
Program Academic Standards that the course contributes in achieving	A2,A10	B1

4- *Mapping Course Los to NARS*

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
	A2. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 1**. analyze and interpret data, and use statistical analyses and objective engineering judgment to draw conclusions. analyses engineering problems by applying engineering fundamentals
	A10. learning Acquire and apply new knowledge; and practice self, lifelong and other strategies	**LO 2**. Construct new knowledge, and practice self.

COMPETENCIES of CIV	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics	**LO3**. Demonstrate understanding of facts and ideas to Select appropriate and sustainable technologies for construction of buildings

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Principles of designing a simple program - The basic ideas of uses of the computer in programming - The basic ideas of matlab language - How to write a complete program with high level language matlab. How to design, code, debug, and document program laboratory assignments - The syntax of writing any program by matlab language

5.2. Course Topics/hours/Los Matrixlo

Week No.	*Topic*	*Total Hours*	*Contact hrs*			LOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction to programing	4	1	-	3	**LO 1**
Week-2	MATLAB overview	4	1	-	3	**LO1**
Week-3	Simple math operations	4	1	-	3	**LO1**
Week-4	Elementary math built-in functions	4	1	-	3	**LO1**
Week5	Application of programing in civil Eng	4	1	-	3	**LO1,LO2, LO3**

Week-6	function:switch, catch,max,min, mean	4	1	-	3	**LO 1**
Week-7	**Midterm Exam.**					
Week-8						
Week-9	. If function and its application at programing in civil Eng	4	1	--	3	**LO1, LO2, LO3**
Week-10	Matrix operation	4	1	-	3	**LO1**
Week-11	Application of programing in civil Eng	4	1	-	3	**LO1, LO2, LO3**
Week-12	Programming: for and while loops	4	1	-	3	**LO1**
Week-13	Plotting and data representation	4	1	-	3	**LO1**
Week-14	Application of programing in civil Eng.	4	1	-	3	**LO1, LO2, LO3**
Week 15	**Final Exam.**					

6.-xperiment Topics:

Serial	Experiment	Laboratory hrs.
1st	NA	
2nd	NA	

7-Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)		
	LO 1	LO 2	LO 3
CLO 1	●		
CLO 2		●	●
CLO 3		●	●
CLO 4		●	●

8-Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)		
	General		CIV
	LO 1	LO 2	LO 3
Face-to-Face Lecture		●	
Online Education	●	●	
Tutorial/ Exercise	●		
Group Discussion			
Laboratory	●	●	●
Site Visit			
Presentation	●	●	●
Mini Project			●
Research and Reporting	●		
Brain Storming	●	●	●
Self-Learning	●		

9- Assessment

9.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)		
	General		CIV
	LO 1	LO 2	LO 3
Written Exam	●	●	●
Online Exam			
Oral Exam			
Quiz	●	●	●
Lab Exam	●	●	●
Take-Home Exam			
Research Assignment	●	●	●
Reporting Assignment			
Project Assignment			
In-Class Questions	●	●	●

9.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*Lab*)	**30**	15th	40 min.
Midterm Exam (*Lab*)	**30**	8th	40 min.
End of term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**25**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**15**	According to the schedule	---
Total Mark	**100**		

10- Facilities Required:

A- computer lab
B- Monitor presentation
C- whiteboard
D- whiteboard pens

11-List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Text Books and Additional References:

Reference name	*Author*	*ISBN*	*Library Ref.*
PROGRAMMING THE DYNAMIC ANALYSIS OF STRUCTURE	**P BHATT**	**9780367863494**	**11060**
ANALYSIS OF STRUCTURES V1, V2	**V.N.VAZIRANI**	**9788174091406**	**1179 & 8343**

- MATLAB Documentation

10.3. Recommended Books:

10.4. Web Sites:

https://ww2.mathworks.cn/en/

Course Directors	Name	Signature
Teaching staff	Dr. Ghada Nashaat & Dr. Mohamed Fahmy	Ghada Nashaat M. Fahmy
Course coordinator	Dr. Ghada Nashaat & Dr. Mohamed Fahmy	Ghada Nashaat M. Fahmy
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI) Department: Department of Basic Science	

Course Specification

HUM 108 : Communication & Presentation Skills

Program(s) on which this course is given	All Programs of Engineering
Department offering the program:	All Programs of Engineering
Department offering the course:	Basic Science

Basic information

Course Title:				**Course Code:**			
Program	All Programs of Engineering			**Level**		Diploma level	
Term/ Academic year:				**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	1	**Tutorial:**	2	**Laboratories:**	---
Pre-Requisite							
Academic standards	Academic reference standards (ARS)						
Bylaw Approval	2016						

1. Course Description (*as indicated in program Bylaw*):

Course Aims to provide the student with the latest knowledge about the concepts, characteristics, and types of managerial and interpersonal communications, as well as the concepts and requirement of good listening and presentation, and Developing the student's abilities and skills of effective communication, and good listening, as well as how to use the interpersonal and managerial communication methods and the presentation techniques in performance and dealing with others inside and outside the organization. Course Contents: Concept and nature of communication – Communication model – Formal and informal communications - Interpersonal and managerial communications – Body language – Written communications (Reports and memos) – Ten Communications of effective communication – Good listening – Elements of effective presentation model –Preparation of good presentation – Carrying out presentations – Discussion and dealing with

2.1. Course Aims:	
No.	**Course Aims**
1	• **To introduce the basic definition and concepts of Communication.**
2	• **To outline the historical events leading to the development of different fields of Communication technology.**
3	**To introduce the basic definition and concepts of Presentation Skils**
4	**To give selective subjects concerning engineering technology (Quality, standerzation, impacts of engineering technology on environment, technical writing, creativity and design, ultimately, engineering Ethics).**

2.2. Mapping Course Aims with Program Aims	
Program Aims	**Course Aims**
to provide the student with the latest knowledge about the communication methods and presentation, skills	• **To introduce the basic definition and concepts of Communication.**
	• **To outline the historical events leading to the development of different fields of Communication technology.**
	To introduce the basic definition and concepts of Presentation Skils
	To give selective subjects concerning engineering technology (Quality, standerzation, impacts of engineering technology on environment, technical writing, creativity and design, ultimately, engineering Ethics).

3. Learning Outcomes (LOs):	
3.1. Course Learning Outcomes (CLOs):	
LO. 1.	provide the student with the latest knowledge about the concepts, characteristics, and types of managerial
LO. 2	The function of Communication.
LO. 3	concepts and requirement of good listening and presentation
LO. 4	types of managerial and interpersonal communications,.

LO. 5	interpersonal **Communication**
LO. 6	presentation techniques
LO. 7	**-Communication** concepts and standardization principles
LO. 8	perform and explain the gained knowledge orally
LO. 9	Working in a team group.
LO. 10	presentation techniques in performance and dealing with others and outside the organization

3.2. Relationship Between the Course and the Program Competencies:

Field	Academic Reference Standard (ARS) Competencies for Engineering Graduates
	(level "A")
Program Academic Standards that the course contributes to achieving	**A1, A7, A8, A9, A10**

3.3. Mapping Course LOs to Program Competencies:

Field	Program Academic Standards that the course contributes in achieving	Learning Outcomes (LOs)
Program academic Standar	**A1.** Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	**LO. 1** Define the main items of the of Communication technology
		LO. 3- Define the main items of the of of Presentation Skils
		LO. 7 Classify the problems according to the suitable integral's method
	A7. Function efficiently as an individual and as a member of multi-disciplinary and multi-	**LO.5** Define interpersonal **Communication** .
		LO. 9- Working in a team group.

	A8. Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	**LO. 8-** Define perform and explain the gained knowledge orally
		LO. 5 interpersonal **Communication**
		LO.4- types of managerial and interpersonal communications
	A9. Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	**LO9.** presentation techniques in performance and dealing with others inside organization
	A10. Acquire and apply new knowledge and practice self, lifelong and other learning strategies.	
		LO. 10 presentation techniques in performance and dealing with others and outside the organization

4. Course Contents:

4.1. Course Topics / Hours / LOs Matrix:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			LOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Fundamental of definition concepts, characteristics and types of Communication.	3	3	0	0	LO1
Week-2	managerial and interpersonal communications	3	3	0	0	LO2
Week-3	concepts and requirement of good communications	3	3	0	0	LO1
Week-4	Communication model – Formal and informal communications	3	3	0	0	LO1
Week5	Interpersonal and managerial communications	3	3	0	0	LO8
Week-6	how to use the interpersonal and managerial communication methods	3	3	0	0	LO8
Week-7	Written communications (Reports and memos)	3	3	0	0	LO7
Week-8	**Midterm Exam.**					
Week-9	presentation techniques	3	3	0	0	LO10
Week-10	presentation techniques in performance and dealing with others inside organization	3	3	0	0	LO8
Week-11	presentation techniques in performance and dealing with others and outside the organization	3	3	0	0	LO5
Week-12	Interpersonal communications	3	3	0	0	LO10
Week-13	Body language	3	3	0	0	LO10
Week 14	**Final Exam.**					

5. Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome* (LOs)									
	General (A)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
Face-to-Face Lecture	√	√	√	√	√		√	√		
Online Education										
Tutorial/ Exercise		√		√		√			√	
Group Discussion			√		√					√
Laboratory										
Site Visit										
Presentation										
Mini Project										
Research and Reporting							√		√	
Brain Storming	√		√			√				√
Self-Learning					√				√	

6. Assessment Methods:

6.1. Course Assessment Methods:

Assessment Methods	Learning Outcomes (LOs)										
	General (A)										
Written Exam			√	√		√	√	√			
Online Exam											
Oral Exam											
Quiz	√				√				√	√	√
Lab Exam											
Take-Home Exam											
Research Assignment											
Reporting Assignment		√	√			√		√			
Project Assignment											
In-Class Questions			√	√		√	√	√			

6.2. Assessment Schedule and Grades Distribution:			
Assessment Method	**Mark**	**Week**	**Exam Time**
Final Exam (*written*)	**40**	14th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
Tutorial and report assessment (Term Work)	**20**	**weekly**	---
Quizzes/reports/presentation (Term Work)	**20**	**According to the schedule**	---
Total Mark	**100**		

7. Facilities Required for Teaching and Learning:	
No.	**Required Facilities**
1	White board.
2	Data show.

8. List of References:	
8.1 Course Notes:	
1.	Available Presentation (handed to students part by part).
1.2 **Required Text Books and Additional References:**	
1.	-Gary Johns and Alan M.Saks, Organization Behavior, Addison Wesley Longman, 2009.
2.	-Scgermerhorn Jr., R. J., and Osborn, N. R., Organizational Behavior, John Wiley & Sons, Inc., New York, 10th Ed.,2008".
3	Lustberg, Arch: How To Sell Yourself: Winning Techniques For Selling Yourself, Your Ideas, Your Message. Franklin Lakes: The Career Press, 2002
4	Bovee, Courtland L, John V. Thill & Barbara E. Schatzman. Business Communication Today: Tenth Edition. New Jersey: Prentice Hall, 2010
5.	Hasson, Gill. Brilliant Communication Skills. Great Britain: Pearson Education, 2012.
6	Ajmani, J. C. Good English: Getting it Right. New Delhi: Rupa Pubications, 2012.
7	Bovee, Courtland L, John V. Thill & Barbara E. Schatzman. Business Communication Today: Tenth Edition. New Jersey: Prentice Hall, 2010.
8	Lesikar, Raymond V and Marie E. Flatley. Basic Business Communication: Skills for Empowering the Internet Generation: Ninth Edition. New Delhi: Tata McGraw-Hill, 2002.
8.3. Recommended Books:	

1.	Gary Johns and Alan M.Saks, Organization Behavior, Addison Wesley Longman, 2009
2.	Ajmani, J. C. Good English: Getting it Right. New Delhi: Rupa Pubications, 2012.

	Name	Signature
Teaching staff	**Ass.prof.Ahmed abd Elgaffar** **Dr. Mohmad Ragab** **Dr. Ashraf Selim**	
Course coordinator	**Dr. Mohmad Ragab**	
Program coordinator	**Dr. Mohmad Ragab**	
Head of the Department	**Prof. Eid Abd El Baset Eid**	
Date of approval	Oct 2023	

The Higher Technological Institute (HTI)

Department: Basic Science Department

Course Specification

HUM 109: Analysis & Research Skills

A – Affiliation

Relevant program:	**All engineering programs**
Department offering the program:	**All engineering programs**
Department offering the course:	**Basic Science Department**

B – Basic information

Title:	**Analysis & research skills**		**Code:**			**HUM 109**	
Academic year/level:	**Diploma**		**Credit Hours:**			**2**	
Contact Hours:	**3**	**Lecture**	**1**	**Lecture Tutorial**	**2**	**Laboratory**	**0**
Prerequisite:	**Non**						

1- Course Aims:

- **The course introduces the framework for analyzing engineering problems considering technical, economic, environmental, and ethical issues.**
- **Student should be understanding the phases of problem solving (Understanding the problem and formulating it, Solution plan, implementation plan, Evaluation, and Revision).**
- **Student should be gaining role of creativity in the analysis for different alternatives. SWOT (strengths, Weaknesses, Opportunities, and Threats) analysis for different alternatives. Cost – Benefit analysis and Risk analysis.**
- **Student should be attaining the role of cooperation and team – work in analyzing large engineering problems**

2 – Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1. Describe the basics of Web search methods and explain the main principal of role of creativity in the analysis for different alternatives.
CLO 2. Elucidate the main principle of SWOT analysis and clarify the main principal cost as well as benefit analysis and Risk analysis.
CLO 3. Assess issues of Phases of problem solving (Understanding the problem and formulating it, Solution plan, Implementation plan, Evaluation, and Revision).

3- Relationship between the course and the Competencies:

Field	National Academic Reference Standard (NARS)
	Engineering Competences (As)
Program academic Standards that the course contributes to achieving	A1, A4, A5, A6, A7, A8, A9, A10

4.1 - Learning Outcomes (LOs):

On successful completion of the course, the student should have the ability to

LO 1	Describe the main concepts of basics Web search methods.
LO 2	Explain the main principle of Role of creativity in the analysis for different alternatives.
LO 3	Elucidate the main principal SWOT analysis for different alternatives.
LO 4	Clarify the main principal Cost – Benefit analysis and Risk analysis.
LO 5	Evaluating search results, choosing the appropriate search engine.
LO 6	Assess issues of Phases of problem solving (Understanding the problem and formulating it, Solution plan, Implementation plan, Evaluation, and Revision).
LO 7	Design the problems of role of cooperation and team – work in analyzing large engineering problems.
LO 8	Working in a team group.
LO 9	Perform and explain the gained knowledge orally.
LO 10	Solving problems related to SWOT analysis, decision making, team work decision.

4.2 Mapping Course LOs to NARS

Field		Learning Outcomes (LOs)									
NARS 2018 Competencies		LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9	LO10
Basic Engineering Competencies (As)	A1	√	√	√	√	√	√	√	√	√	√
	A2										
	A3										
	A4				√		√	√			√
	A5	√	√			√	√				
	A6										
	A7	√	√					√	√		
	A8							√	√	√	
	A9	√	√				√	√			√
	A10	√	√			√	√				√
	B5										

5- Course Content:

5.1. Catalogue Course Description (As indicated in program Bylaw):

To Introduce Analysis & Research Skills this include studying the framework for analyzing engineering problems considering technical, economic, environmental, and ethical issues. Phases of problem solving (Understanding the problem and formulating it, Solution plan, implementation plan, Evaluation, and Revision). Role of creativity in the analysis for different alternatives. SWOT (strengths, Weaknesses, Opportunities, and Threats) analysis for different alternatives. Cost – Benefit analysis and Risk analysis. Role of cooperation and team – work in analyzing large engineering problems. Importance of finding the relevant data, information, and knowledge. Basics Web search methods and how to formulate search engine queries using logical connectives (e.g. AND, OR, NOT). Phrase, title, domain, URL, and link search. Evaluating search results, choosing the appropriate search engine. Importance of evaluating the credibility of the different web sites.

5.2. Course Topics/hours/Los Matrix

Week No	Topics	Total hrs.	Contact hours			LOs Covered by Course
			Lect.	Tut	Lab	
1	Basics Web search methods Phrase, title, domain, URL, and link search.	3	2	1	0	LO1, 5
2	How to formulate search engine queries using logical connectives (e.g. AND, OR, NOT).	3	2	1	0	LO1, 9
3	Evaluating search results, choosing the appropriate search engine.	3	2	1	0	LO1, 5
4	Importance of evaluating the credibility of the different web sites.	3	2	1	0	LO1, 5
5	Framework for analyzing engineering problems considering technical, economic, environmental, and ethical issues.	3	2	1	0	LO6, 7
6	Phases of problem solving (Understanding the problem and formulating it, Solution plan, Implementation plan, Evaluation, and Revision).	3	2	1	0	LO6
7	Role of creativity in the analysis for different alternatives.	3	2	1	0	LO2
8	Mid Term Exam					
9	SWOT (strengths, Weaknesses, Opportunities, and Threats) analysis for different alternatives.	3	2	1	0	LO3, 10
10	Cost – Benefit analysis and Risk analysis.	3	2	1	0	LO4
11	Role of cooperation and team – work in analyzing large engineering problems.	3	2	1	0	LO8

12	Importance of finding the relevant data, information, and knowledge	3	2	1	0	LO5
13	Revision	3	2	1	0	LO9
14	Final Exam					

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
CLO 1	√				√				√	
CLO 2		√	√	√			√			√
CLO 3		√				√	√	√	√	

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome* (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
Face-to-Face Lecture	√	√	√	√	√	√	√	√	√	√
Online Education										
Tutorial/ Exercise		√	√	√	√	√	√			√
Group Discussion								√		
Laboratory										
Site Visit										
Presentation						√	√	√		
Mini Project		√				√	√	√		
Research and Reporting	√		√			√	√			√
Brain Storming		√	√		√	√	√			√
Self-Learning		√		√		√	√			

8- Assessment

8.1 Course Assessment Methods:

Assessment Methods	Learning Outcome (LOs)									
	General									
	LO 1	LO 2	LO3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
Written Exam	√	√	√	√	√	√	√			√
Online Exam										

Oral Exam								√	√	
Quiz	√	√		√	√	√				√
Lab Exam										
Home Exam				√	√	√	√			
Research Assignment	√					√	√	√		√
Reporting Assignment		√	√			√				√
Project Assignment								√	√	
In-Class Questions						√			√	

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	**15th**	**90 min.**
Midterm written Exam (Term Work)	**20**	**8th**	**60 min.**
Tutorial and report assessment (Term Work)	**20**	**weekly**	**15 min**
Quizzes/reports/presentation (Term Work)	**20**	**According to the schedule**	**20 min**
Total Mark	**100**		

9- Facilities Required for Teaching and Learning:

A- Notebook and data show equipped lecture room.

B- Teaching aids and computers.

C- Notebook and data show equipped lecture room.

10- List of References:

10.1. Course Notes:

1- **Lecture notes, Hard copy (Available: handed to students).**
2- **Available Presentation (handed to students' part by part).**

10.2. Required Textbooks and Additional References:

1- **G.R.Notess, Tesching Web Search Skills, information Today Inc., 2021.**

2- **D.Newnan, T.Eshenbach, and J.Lavelle, Engineering Economic Analysis, Oxford University Press, fourteenth edition, 2019.**

10.3. Recommended Books:

1- **Search skills for researchers "workshop", Engineering economic analysis by Donald G. Newnan .et., al, 2018.**

2- **G.R.Notess, Tesching Web Search Skills, information Today Inc., 2021.**

3- **D.Newnan, T.Eshenbach, and J.Lavelle, Engineering Economic Analysis, Oxford**

University Press, fourteenth edition, 2019.

4- **Murray, R. 2018: How to survive your viva. Maidenhead:Open University Press.**

5- **Rugg, G. & Petre, M. 2021: The unwritten rules of PhD research. Maidenhead:Open University Press.**

6- **Tinkler, P. & Jackson, C. 2021: The doctoral examination process: a handbook for students, examiners and supervisors. The Society for Research into Higher Education. Maidenhead:Open University Press.**

10.4. Web Sites:

- **http://www.scribd.com/anh_ch%C3%A2u_6/d/62390771-Change-Management-Best-Practice-Guide**>

Course Directors	Name	Signature
Teaching staff	**1- Dr. Abdelmoneim Ahmed Saleh** **2- Dr Ashraf Selim**	
Course coordinator	**Dr. Abdelmoneim Ahmed Saleh**	
Head of the Department	**Prof. Dr Eid Abd El-Basit Eid**	
Date of approval	13/10/2023	

The Higher Technological Institute (HTI)	
Department: Department of Mechanical Engineering	

Course Specification

Course Code : MNG 103 Course name: Technical Report Writing

Program(s) on which this course is given	All Engineering Programs
Department offering the program:	Mechanical Engineering
Department offering the course:	Mechanical Engineering

A– Basic information

Course Title:	Technical Report Writing			**Course Code:**	MNG 103		
Program / level	Mechanical Engineering			**Junior**			
Term/ Academic year:	Oct.-Jan. 2023 – 2024			**Credit Hours:**	2		
Contact Hours:	3	**Lecture:**	1	**Tutorial:**	2	**Laboratories:**	-----
Pre-Requisite	LNG 002						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- Learn how to get your thoughts on paper.
- Understand the features and differences between various types of technical documents.
- Become a more critical editor of technical documents.
- Translate complex and innovative ideas into clear, logical and technically accurate documents
- Produce technical information for non-specialist audiences.
- Help your readers to take action or make decisions effectively.

.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Explain how technical writing differs from general writing.

CLO 2. Explain the key elements of technical writing.

CLO 3. Explain the role that communication plays within an organization.

CLO 4. Explain the importance of good communication skills.

CLO 5. Identify the foundations of technical writing and the qualities of good technical writing.

CLO 6. Identify the foundations of technical presentation.

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of MEC
Program Academic Standards that the course contributes in achieving	A5, A8, A10	-----

3- ***Mapping Course Los to NARS***

Field	Program (MEC) that the course contributes in achieving	Learning Outcomes (LOs)
COMPETENCIES of ENGINEERING	**A5.** Practice research techniques and methods of investigation as an inherent part of learning.	**LO1**. Identify introduction of technical writing, qualities of good technical writing and difference between technical writing and general writing **LO2**. Distinguish the Elements of Technical Reports, C V, Letter and technical presentation
	A8. Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	**LO3**. Apply the common elements of technical reports, C V, Letter and technical presentation to submitting a technical report from the students .
	A10. Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.	**LO4**. Analyze applications for technical reports and technical presentation by searching for information to develop knowledge and skills which leading to life-long learning.

5- Course Content:

5.1.

Essential elements of a technical report: Abstract - Summary - Contents - Objectives - Details of the report including figures, images, video ...etc, - Conclusions - Recommendations - References using a standard format and the different electronic sources. Report Classification: Technical (Requirement specification, Analysis, Design, and Implementation). Administrative (Directed to different operational and management levels). Levels of confidentiality for the different reports. Report Composition: Logical presentation of the report and coordination between its components. Importance of using correct grammar and punctuation. Enhancing communication effectiveness by the use of different media. Report Implementation: Use of the appropriate software packages including any graphics or multimedia packages.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			LOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction of technical writing	3	1	2	-	**LO 1**
Week-2	Common Elements of Technical Reports	3	1	2	-	**LO 2, LO 3**
Week-3	Common Elements of Technical Reports	3	1	2	-	**LO 2, LO 3**
Week-4	Common Elements of Technical Reports	3	1	2	-	**LO 2, LO 3**
Week5	Common Elements of Technical Reports	3	1	2	-	**LO 2, LO 3**
Week-6	Common Elements of Technical Reports	3	1	2	-	**LO 2, LO 3**
Week-7	Punctuation, Layout and Equations.	3	1	2	-	**LO 2, LO 3**
Week-8	**Midterm Exam.**					
Week-9	CV (Curriculum Vitae)	3	1	2	-	**LO 2, LO 3**
Week-10	Letters	3	1	2	-	**LO 2, LO 3**
Week-11	Technical Presentations	3	1	2	-	**LO 2, LO 3**
Week-12	Submitting a technical report from the students and evaluating the report	3	1	2	-	**LO 2, LO 3, LO 4**

	according to the aforementioned explanation					
Week-13	Submitting a technical presentation from the students and evaluating the report according to the aforementioned explanation	3	1	2	-	**LO 2, LO 3, LO 4**
Week-14	Submitting a technical presentation from the students and evaluating the report according to the aforementioned explanation	3	1	2	-	**LO 2, LO 3, LO 4**
Week 15	**Final Exam.**					

5.3. Experiment Topics:

Serial	Experiment	Laboratory hrs.
1st	NA	
2nd		

6- Matrix of Course Objective and Los

Course Learning Objectives	Learning Outcomes (LOs)							
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8
CLO 1	*							
CLO 2		*	*					
CLO 3		*	*					
CLO 4		*	*					
CLO 5		*	*	*				
CLO 6		*	*	*				

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)							
	General	MEC 212						
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8
Face-to-Face Lecture	*	*	*	*				
Online Education								
Tutorial/ Exercise	*	*	*	*				
Group Discussion								
Laboratory								
Site Visit								
Presentation			*	*				
Mini Project								
Research and Reporting			*	*				
Brain Storming			*					
Self-Learning				*				

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)											
	General							MEC				
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10	LO 11	LO 12
Written Exam	*	*	*	*								
Online Exam												
Oral Exam												
Quiz												
Lab Exam												
Take-Home Exam												
Research Assignment	*	*	*	*								
Reporting Assignment	*	*	*	*								
Project Assignment												
In-Class Questions												

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**10**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**30**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- Data- show, laptop.
B- Library
C- Microsoft teams
D- Egyptian Knowledge Bank (EKB)

10- List of References:

10.1. Course Notes:

- Course notes available to the students on copy center of the Institute.

10.2. Required Text Books and Additional References:

- Hand out to the students part by part.
- D. Riordan and S.E. Pauley, Technical Report Writing Today, Wadsworth Publishing, 2004.

10.3. Recommended Books:

- Saunders, D. (2004) Making presentations: a guide for students. Centre for Lifelong Learning: University of Glamorgan.

10.4. Web Sites:

- Periodicals, Web sites, etc.: As needed

Course Directors	Name	Signature
Teaching staff	Dr. Mohamed Ashraf Dr. Mohamed El sayed Dr. Mohamed Mansour	
Course coordinator	Dr. Mohamed Ashraf	
Program coordinator	Prof. Dr. Hesham M. Mostafa	
Head of the Department	Prof. Dr. Adel Fathy Meselhy	
Date of approval	Oct.2023	

المعهد التكنولوجي العالي (HTI)

القسم: قسم العلوم الأساسية

توصيف مقرر

مقدمة فى تاريخ الحضارات : HUM 101

أ – الانتماء (انتساب المقرر)

البرنامج المانح :	جميع البرامج الهندسية
القسم الذي يقدم البرنامج:	جميع الأقسام الهندسية
القسم الذي يقوم بتدريس المقرر:	قسم العلوم الأساسية

ب – المعلومات الأساسية

عنوان المقرر	مقدمة فى تاريخ الحضارات			كود المقرر			HUM 101
المستوي الدراسي	دبلوم			الساعات المعتمدة			2
ساعات الاتصال الكلية	٢	محاضرة	٢	سكشن	٠	مختبر	٠
المتطلب السابق	لا يوجد						

٢- أهداف المقرر:

يهدف هذا المقرر إلى تعريف الطالب على نبذة عن تاريخ الحضارات التي مرت بها البشرية، بحيث يكون لدى الطالب المعرفة بمفهوم الحضارة والثقافة والتاريخ وبدايات أصول الحضارة الإنسانية فى العصور القديمة فى بلاد الشرق والغرب القديم – ويتناول المقرر الحضارة والثقافة والتطورات التي مر بها الإنسان عبر تاريخه منذ بداية حياته على الأرض، وما يمكن أن يستفيده الطالب من إيجابيات وسلبيات تلك الحضارات.

٣- الأهداف التعلمية للمقرر (CLO):

في نهاية هذا المقرر، يجب أن يكون الطالب قادرًا على:

CLO ١	الوقوف على إيجابيات وسلبيات الحضارات المختلفة للاستفادة منها.
CLO٢	معرفة الفروق بين مفاهيم الحضارة والثقافة والتاريخ.
CLO٣	معرفة التطور العلمي والتكنولوجي، وإدراك الفروق بين العلم والتكنولوجيا والفن والثقافة.

٣- العلاقة بين المقرر و الجدارات (الكفاءات) الهندسية :

نطاق الإرتباط	المعيار المرجعي الأكاديمي الوطني (NARS)	
	الكفاءات الهندسية الأساسية (As)	كفاءات الهندسية لبرنامج الهندسة ------
المعايير الأكاديمية للبرنامج التي يساهم المقرر في تحقيقها	A3, A4, A5, A6, A10	Bs or Cs

٤.١ - مخرجات التعلم (LOs) :

عند الانتهاء من دراسة المقرر ، يجب أن يكون لدى الطالب القدرة على

LO 1	فهم الحضارات التي مرت بها البشرية.
LO 2	إدراك العلاقة بين الحضارة والثقافة والتاريخ.
LO 3	إدراك العلاقة بين الحضارات المختلفة وتأثرها ببعضها البعض.
LO 4	فهم التأثير والتأثر بين الحضارة والثقافة والعلم والتكنولوجيا.
LO 5	استخدام المنهج المقارن كأداة من أدوات القياس.
LO 6	استخلاص العبر من الحضارات السابقة للاستفادة من إيجابياتها وعدم الوقوع فيما وقعت فيه من سلبيات.
LO 7	إدراك دور التكنولوجيات في بناء الحضارات..
LO 8	فهم أن القرار الصحيح هو القرار المبني على معلومات دقيقة.
LO 9	تعزيز العديد من السلوكيات والمهارات داخل وخارج نطاق العمل بحيث يعمل ضمن فريق.
LO10	القدرة على قيادة المهنيين والعمل كفريق لإنجاز المهام.

٤.٢ إرتباط نواتج التعلم للمقرر (LOs) والمعايير القياسية المرجعية الوطنية (NARS)

نطاق الإرتباط	نواتج التعلم لبرنامج الهندسية الميكانيكية	مخرجات التعلم للمقرر (LOs)									
		LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9	LO10
الجدارات الهندسية الأساسية	A1										
	A2					✓					
	A3						✓				
	A4			✓	✓	✓		✓			
	A5	✓		✓	✓		✓	✓			
	A6										
	A7									✓	✓
	A8								✓		✓
	A9		✓		✓		✓		✓	✓	✓
	A10										
الجدارات الهندسية الأساسية لبرنامج الهندسية الميكانيكية	B1										
	B2										
	B3										
	B4										
	B5										

٥- محتوى المقرر:

توصيف المقرر (كما هو موضح في لائحة البرنامج):

يشرح المقررمفهوم الحضارة وأصول الحضارة الإنسانية فى العصور القديمة، بالإضافة إلى مفهوم الحضارة والثقافة وتطوره فى العصور الوسطى، ومن ثم الاستفادة من الحضارات السابقة لعمل نهضة علمية ثقافية تكنولوجية في عصرنا الحالي.

موضوعات المقرر

رقم الأسبوع	المواضيع	مجموع الساعات	ساعات الاتصال			LOs التي يحققها المقرر
			محاضرة	سكشن	المختبر	
١	تعريف بالمقرر الدراسي ومقدمة عامه.	٢	٢	0	0	LO 1
٢	مفهوم الحضارة – العلاقة بين الثقافة والحضارة.	٢	٢	0	0	LO 2
٣	مفهوم الحضارة- العلاقة بين التاريخ والحضارة.	٢	٢	0	0	LO 2
٤	أصول الحضارة الإنسانية في العصور القديمة، من حيث البدايات الحضارية الأولى.	٢	٢	0	0	LO 3
٥	أصول الحضارة الإنسانية في العصور القديمة، من حيث الثقافة والحضارة في بلاد الشرق القديم.	٢	٢	0	0	LO 1
٦	أصول الحضارة الإنسانية في العصور القديمة، من حيث الثقافة والحضارة في بلاد الغرب القديم، لا سيما في بلاد اليونان والرومان.	٢	٢	0	0	LO 1
٧	الحضارة والثقافة في العصور الوسطى، لا سيما المسيحية والمراحل التي مرت بها البشرية.	٢	٢	0	0	LO 6
٨	امتحان منتصف الفصل الدراسي					
٩	الحضارة والثقافة في العصر الإسلامي.	٢	٢	0	0	LO 3
١٠	الحضارة في العصور الحديثة، وخاصة حقبة النهضة.	٢	٢	0	0	LO 3
١١	الحضارة فى العصور الحديثة، فيما يتعلق بالإصلاح الديني وتقدم العلوم.	٢	٢	0	0	LO 4
١٢	الحضارة فى العصور الحديثة، فيما يتعلق بالفلسفة والآداب والفنون.	٢	٢	0	0	LO 7
١٣	مراجعة عامة	٢	٢	0	0	LO
١٤	امتحان نهائي الفصل الدراسي					

٦- مصفوفة توافق أهداف المقرر الدراسي و نواتج (مخرجات) التعلم

أهداف تعلم المقرر	مخرجات التعلم (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
CLO ١	✓	✓							✓	
CLO ٢			✓	✓			✓		✓	✓
CLO 3	✓		✓		✓	✓		✓		

٧- طرق التدريس والتعلم :

طرق التعليم والتعلم	نتائج التعلم (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
محاضرة وجها لوجه	✓	✓	✓	✓	✓	✓				
التعليم عبر الإنترنت	✓	✓			✓					

واجبات منزلية		✓		✓		✓		✓		
مناقشة جماعية	✓		✓		✓		✓	✓		
مختبر										
زيارة الموقع										
عروض تقديمية بالبوربوينت	✓		✓							
مشروع صغير										
أبحاث وإعداد التقارير							✓	✓		
العصف الذهني	✓	✓		✓	✓					
التعلم الذاتي			✓			✓				

٨- التقييم

٨.١ طرق تقييم المقرر:

طرق التقييم	نتائج التعلم (LOs)									
	مخرجات التعلم للمقرر (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
الإمتحان التحريري	✓	✓				✓	✓	✓		
إمتحان عبر الإنترنت										
الامتحان الشفوي			✓	✓						
مسابقات تنافسية									✓	✓
الامتحانات المعملية										
واجبات منزلية	✓		✓		✓					
مهمة بحثية				✓			✓	✓		
مهمة إعداد التقارير	✓		✓	✓		✓			✓	
تعيين المشروع										
الأسئلة داخل المحاضرة	✓	✓	✓	✓	✓	✓				

٨.٢. جدول التقييم وتوزيع الدرجات:

طريقة التقييم	الدرجة	التوقيت	وقت الامتحان
الامتحان النهائي	٤٠	الاسبوع ١٤	60 دقيقة.
الامتحان التحريري لنصف الترم الدراسي	٢٠	الاسبوع ٨	45 دقيقة.
امتحانات تقيمية وتحريرية قصيرة (خلال الترم الدراسي)	٢٠	وفقا للجدول الزمني	---
اختبارات/تقارير/عرض تقديمي (خلال الترم)	٢٠	وفقا للجدول الزمني	---
مجموع الدرجات	١٠٠		

٩- المرفقات المطلوبة للتعليم والتعلم:

A- قاعة محاضرات مجهزة .

B- المكتبات المركزية والفرعية .

C- الوسائل التعليمية (داتا شو) وجهاز كمبيوتر محمول.

D- مُذكرة لتدريس المقرر وكشوف متابعة للطلاب.

١٠-قائمة المراجع:

١٠.١. كتاب المقرر:

١- "مقدمة في تاريخ الحضارات "مذكرة المقرر

٢- عروض تقديمية (بوربوبينت) يعطى للطلاب جزء بجزء

١٠.٢. الكتب المرجعية المطلوبة والمراجع الإضافية:

١- أحمد عبد الرازق، الحضارة الإسلامية فى العصور الوسطى، القاهرة، ٢٠٠٤.

٢- حسين مؤنس، الحضارة، عالم المعرفة، الكويت، ١٩٧٨.

٣- حسن شحاتة سعفان، الموجز في تاريخ الحضارة والثقافة، دار النهضة المصرية ،١٩٥٩.

٤- رالف لينتون، شجرة الحضارة، ترجمة أحمد فخري، (٣ أجزاء)، المركز القومي للترجمة ٢٠١٠

a. الكتب الموصى بها:

١- أحمد عبد الرازق، الحضارة الإسلامية فى العصور الوسطى، القاهرة، ٢٠٠٤

b. المواقع الإلكترونية:

- https://ar.wikipedia.org/wiki
- http://www.du.edu.eg/
- https://www.youtube.com/watch?v=bnCua19M_EA

القائمين على مراجعة وتقييم المقرر	الاسم	التوقيع
أعضاء هيئة التدريس	أ.م. د. وليد رضوان. أ.م. د. جيهان السيد. د. خالد الشربيني.	وليد رضوان
منسق المقرر	أ.م. د. وليد رضوان	وليد رضوان
رئيس القسم	أ.د. محمد عبد العاطي	
تاريخ الموافقة	The Second Term- Jan/May 2023	

المعهد التكنولوجي العالي (HTI)

القسم: قسم العلوم الأساسية

توصيف مقرر

التذوق الأدبى: HUM 104

أ – الانتماء (إنتساب المقرر)

البرنامج المانح :	جميع البرامج الهندسية
القسم المقدم للبرنامج:	جميع الأقسام الهندسية
القسم الذي يقوم بتدريس المقرر:	قسم العلوم الأساسية

ب – المعلومات الأساسية

عنوان المقرر	التذوق الأدبي			كود المقرر	HUM 104		
المستوي الدراسي	مرحلة الدبلوم			الساعات المعتمدة	2		
ساعات الإتصال الكلية	2	محاضرة	2	سكشن	0	مختبر	0
المتطلب السابق	لا يوجد						

2- أهداف المقرر:

يهدف المقرر إلي تعريف الطالب على أشكال التذوق الأدبي بحيث يكون لدى الطالب المعرفة الكافية فيما يلى :

- النص الإبداعي وأشكال التعبير الوجداني و الأنواع الأدبية الشعرية والنثرية والمسرحيات الادبية والقصصية
- نظريات التلقي وتعدد قراءات الدارس للنص علي مستويات الفهم والتذوق والتحليل
- أسس التشكيل الجمالي للنص من خلال التحليل اللغوي.

3- الأهداف التعلمية المقرر (CLO):

في نهاية هذا المقرر، يجب أن يكون الطالب قادرا على:

CLO 1	نقد النصوص الأدبية النظرية والتطبيقية وكذلك تحليل النقد التأثري الإنطباعي والنقد الموضوعي للنص قديماً وحديثاً
CLO 2	تطبيق إحدي نظريات التلقي وإستكشاف أعماق النص علي أساس الوعي بالتحليل الجماعي للمفردات والأصوات والتراكيب والجمل وفضاءات تجارب الشعراء.
CLO 3	دراسة آليات التذوق الأدبي وأسس تكوينه من خلال تعدد القراءات بالظواهر النقدية والإبداعية.

3- العلاقة بين المقرر و الجدارات (الكفاءات) الهندسية :

نطاق الإرتباط	المعيار المرجعي الأكاديمي الوطني (NARS)	
	الكفاءات الهندسية الأساسية (As)	كفاءات الهندسة لبرنامج الهندسة -- ----
المعايير الأكاديمية للبرنامج التي يساهم المقرر في تحقيقها	A10 ،A7	Bs or Cs

المعهد التكنولوجي العالي(HTI)	
القسم: قسم العلوم الأساسية	

توصيف مقرر

التراث الأدبى المصرى: HUM 106

البرنامج المانح :	*جميع البرامج الهندسية*
القسم الذي يقدم البرنامج:	*جميع الأقسام الهندسية*
القسم الذي يقوم بتدريس المقرر:	*قسم العلوم الأساسية*

المعلومات الأساسية

عنوان المقرر	**التراث الأدبى المصرى**		**كود المقرر**			**HUM 106**
المستوي الدراسي	*1*		**الساعات المعتمدة**			2
العام الأكاديمي	2022 / 2023					
ساعات الأتصال 2	**محاضرة**	2	**تمارين**	**----**	**مختبر**	--------
المتطلب السابق	لا يوجد					
المعايير الأكاديمية	Academic reference standards (ARS)					
الائحة المعتمدة	**2016**					

1 . توصيف المقرر

يهدف المقررإلي تعريف الطالب بالتميز لاإقليمي لمصر في العصور القديمة والوسطي والحديثة وأثر عبقرية المكان علي الفكر والوعي المصري وتجلياته في التراث الادبي شعراً ونثراً من خلال الدرس التاريخي والنصي للادب المصري في مراحله المختلفة. محتوي المقرر: مصر وتراثها الأدبي من منظور حضاري وإبداعي – المكتبة التراثية المصرية من منظور تاريخي متجدد- دراسة مفهوم وضعية العصور الوسطي في مصر والفرق بينها وبين العصور الوسطي في أوروبا – التراث الجغرافي المصري وأدب الرحلة في كتابات مصرية – التأليف الموسوعي في مصر والصياغة الادبية في فن الموسوعات – الظواهر الادبية الغالبة علي الأدب المصري – مناهج دراسة التراث الأدبي المصري ودلالاته – مدارس التأليف والإبداع في تاريخ الفكر المصري – مجالات الإبداع في الشعر المصري (الطبيعة المصرية - أدب الحروب الموضوعات الجديدة والبيئة المصرية) - مدارس الكتابة الفنية علي المستوي الرسمي وغيرها - تتبع التطبيق علي النص والتحليل من خلال أبرز شعراء وكتاب التراث المصري من أمثال ابن نباتة المصري وابن سناء الملك وصولا إلي أدوار الدكتور محمد كامل حسين والأستاذ أمين الخولي والدكتور جمال حمدان في تناول التراث الأدبي المصري بالتحليل والدراسة المنهجية حول عبقرية المكان.

2 أهداف المقرر و رسم□رائطه مع اهداف البرنامج :

2.1. أهداف المقرر	
رقم	أهداف المقرر
1	• تعريف الطالب بالتميز الإقليمي لمصر في العصور القديمة والوسطي والحديثة
2	أثر عبقرية المكان علي الفكر والوعي المصري وتجلياته في التراث الادبي شعراً ونثراً
3	دراسة بعض النصوص التاريخية و الادبية المصرية في المراحل المختلفة من العصور المتلاحقة.

أهداف البرنامج	أهداف المقرر
تطبيق المفاهيم الأساسية-في الإلمام بثقافات علمية في غير مجال التخصص وإكتساب مهارات إدارة الوقت بكفاءة	يهدف المقرر إلي تعريف الطالب بالتميز لاإقليمي لمصر في العصور القديمة والوسطي والحديثة.
	أثر عبقرية المكان علي الفكر والوعي المصري وتجلياته في التراث الادبي شعراً ونثراً
	التراث الادبي شعراً ونثراً من خلال الدرس التاريخي والنصي للادب المصري في مراحله المختلفة.

3. مخرجات التعلم (LOs)

3.1. مخرجات التعلم للمقرر

LO 1	يتعرف على أهمية دراسة التراث الادبى المصرى
LO 2	التعرف علي مراحل-التطورللتراث الادبى المصرى
LO 3	معرفة -تاثير-الوعي المصري وتجلياته في التراث الادبي شعراً ونثراً

LO 4	يستنتج الدور الحيوى والرئيسى التراث الادبى المصرى.
LO 5	تمييز أنواع المؤلفات- التراث الادبى المصرى المختلفة (عالمية – عربية)
LO 6	التواصل بفاعلية من□لال المناقشة والحوار.
LO 7	توظيف المادة العلمية في□دمة التراث الادبى المصرى
LO 8	تعزيز العديد من السلوكيات والمهارات د□ل و□ارج نطاق العمل بحيث يعمل ضمن فريق
LO 9	الإلمام بثقافات علمية في غير مجال التخصص وإكتساب مهارات إدارة الوقت بكفاءة
LO10	إستخدام تكنولوجيا المعلومات ومواقع الإنترنت لإكتساب مهارات التعليم الذاتي.

3.2. العلاقة بين المقرر و الجدارات (الكفاءات) الهندسية :

نطاق الإرتباط	المعيار المرجعي الأكاديمي الوطني (NARS)		
	الكفاءات الهندسية الأساسية (As)	كفاءات الهندسية لبرنامج الهندسة Bs	كفاءات الهندسية لبرنامج الهندسة Cs
	A5, A8, A10	----------	----------

3.3. □ريطة إرتباط نواتج التعلم للمقرر (LOs)والمعايير القياسية المرجعية الوطنية (NARS)

نطاق الإرتباط	نواتج التعلم لبرنامج الهندسية	مخرجات التعلم للمقرر (LOs)
	A5. ممارسة تقنيات البحث وطرق التحقيق كجزء متأصل من التعلم	LO 1 يتعرف على أهمية دراسة التراث الادبى المصرى LO 2إ التعرف علي مراحل-التطورللتراث الادبى المصرى LO 3إ معرفة –تأثير-الوعي المصري وتجليته في التراث الادبي شعراً ونثراً LO 8: تعزيز العديد من السلوكيات والمهارات د□ل و□ارج نطاق العمل بحيث يعمل ضمن فريق.
	A8. العمل بكفاءة كفرد وكعضو في فرق متعددة التخصصات ومتعددة الثقافات.	LO4-يستنتج الدور الحيوى والرئيسى التراث الادبى المصرى LO8: تعزيز العديد من السلوكيات والمهارات د□ل و□ارج نطاق العمل بحيث يعمل ضمن فريق LO9 الإلمام بثقافات علمية في غير مجال التخصص وإكتساب مهارات إدارة الوقت بكفاءة
	A10. اكتساب المعارف الجديدة وتطبيقها وممارسة استراتيجيات التعلم الذاتي ومدى الحياة وغيرها.	LO 7: توظيف المادة العلمية في□دمة التراث الادبى المصرى LO 9: الإلمام بثقافات علمية في غير مجال التخصص وإكتساب مهارات إدارة الوقت بكفاءة LO10: إستخدام تكنولوجيا المعلومات ومواقع الإنترنت لإكتساب مهارات التعليم الذاتي.

4. محتوى المقرر :

4.1 موضوعات المقرر / ساعات / مصفوفة LOs:

رقم الأسبوع	المواضيع	مجموع الساعات	ساعات الاتصال			LOs التي يحققها المقرر
			محاضرة	سكشن	المختبر	
1	مصر وتراثها الأدبي من منظور حضاري وإبداعي	2	2	0	0	LO1
2	المكتبة التراثية المصرية من منظور تاريخي متجدد	2	2	0	0	LO1, LO2
3	دراسة مفهوم وضعية العصور الوسطي في مصر والفرق بينها وبين العصور الوسطي في أوروبا	2	2	0	0	LO1, LO4
4	التراث الجغرافي المصري وأدب الرحلة في كتابات مصرية	2	2	0	0	LO4
5	التأليف الموسوعي في مصر والصياغة الادبية في فن الموسوعات	2	2	0	0	LO3
6	الظواهر الادبية الغالبة علي الأدب المصري	2	2	0	0	LO4
7	مناهج دراسة التراث الأدبي المصري ودلالاته – مدارس التأليف والإبداع في تاريخ الفكر المصري	2	2	0	0	LO10
8	*Week-8* **Midterm Exam.**					
9	مدارس الكتابة الفنية علي المستوي الرسمي وغيرها -	2	2	0	0	LO5
10	- تتبع الكتابة الفنية-و التطبيق علي النص والتحليل من خلال أبرز شعراء وكتاب التراث المصري	2	2	0	0	LO8
11	أبرز شعراء وكتاب التراث المصري من أمثال ابن نباتة المصري وابن سناء الملك وصولا إلي أدوار الدكتور محمد كامل حسين	2	2	0	0	,LO9
12	أبرز شعراء وكتاب التراث المصري من أمثال لأستاذ أمين الخولي والدكتور جمال حمدان	2	2	0	0	LO7
13	تناول التراث الأدبي المصري بالتحليل والدراسة المنهجية حول عبقرية المكان	2	2	0	0	LO10
14	**الأ□تبار النهائي**					

4.2موضوعات عمليه		
مسلسل	التجربة	عدد ساعات المعمل
	لا	

5. طرق التدريس والتعلم :										
طرق التعليم والتعلم	نتائج التعلم (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
محاضرة وجها لوجه	✓	✓	✓	✓	✓					
التعليم عبر الإنترنت	✓	✓			✓					
واجبات منزلية		✓		✓						
مناقشة جماعية	✓		✓		✓		✓	✓		
مختبر										
زيارة الموقع										
عروض تقديمية بالبوربوينت	✓		✓							✓
مشروع صغير										
أبحاث وإعداد التقارير							✓	✓		
العصف الذهني	✓	✓			✓				✓	
التعلم الذاتي			✓	✓						✓

6. طرق تقييم المقرر:										
	6.1 نتائج التعلم									
طرق التقييم	مخرجات التعلم للمقرر (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
الإمتحان التحريري	✓	✓					✓	✓		
إمتحان عبر الإنترنت										
الامتحان الشفوي			✓	✓						
مسابقات تنافسية									✓	✓
الامتحانات المعملية										
واجبات منزلية	✓		✓		✓					

مهمة بحثية				✓	✓			✓		
مهمة إعداد التقارير	✓					✓	✓		✓	
تعيين المشروع										
الأسئلة د□ل المحاضرة	✓	✓	✓			✓	✓	✓		✓

6.2. جدول التقييم وتوزيع الدرجات:

طريقة التقييم	الدرجة	التوقيت	وقت الامتحان
الامتحان النهائي	40	الاسبوع 14	90 دقيقة.
الامتحان التحريري لنصف الترم الدراسي	20	الاسبوع 8	60 دقيقة.
إمتحانات تقيمية و تحريرة قصيرة(□لال الترم الدراسي)	20	وفقا للجدول الزمني	---
□تبارات/تقارير/عرض تقديمي (□لال الترم)	20	وفقا للجدول الزمني	---
مجموع الدراجات	100		

7. Facilities Required for Teaching and Learning:

No.	Required Facilities
1	White board
2	Data show

8. قائمة المراجع:

8.1 كتاب المقرر:

1	مذكرة المقرر "محاضرات في **التراث الأدبى المصرى**
2	عروض تقديمية (بوربوبينت)

8.2 الكتب المرجعية المطلوبة والمراجع الإضافية:

1	عوض مرسي الغباري ، كتاب دراسات في الأدب المصري، الدار الدولية للإستثمارات الثقافية ، القاهرة، الأولي، 2007

8.3 الكتب الموصى بها:

1	عوض مرسي الغباري ، كتاب دراسات في الأدب المصري، الدار الدولية للإستثمارات الثقافية ، القاهرة، الأولي، 2007

القائمين علي مراجعة وتقيم المقرر	الإسم	توقيع
رئيس القسم	أ.د. ايناس الخواص	
تاريخ الموافقة	2022/2023	

The Higher Technological Institute (HTI)	
Department: **Basic Sciences**	

Course Specification

LNG 101: English (C)

Program(s) on which this course is given	*All Programs of Engineering*
Department offering the program:	*All departments of Engineering*
Department offering the course:	*Basic Science*

Basic information

Course Title:	English (C)			**Course Code:**		LNG 101	
Program	*All Programs of Engineering*			**Level**		Bachelor Level	
Term/ Academic year:	OCT-JAN 2023-2024			**Credit Hours:**		1	
Contact Hours:	3	**Lecture:**	1	**Tutorial:**	0	**Laboratories:**	2
Pre-Requisite	LNG 001&LNG 002						
Academic standards	Academic reference standards (ARS)						
Bylaw Approval	2016						

1. Course Description:

The course aims to integrate the four language skills and helping students to communicate in English well. On successful completion of the course, the students should demonstrate knowledge and understanding of the four skills, expressing themselves effectively, and have critical thinking skills.

2. Course Aims and its Mapping with Program Aims:

2.1. Course Aims:	
No.	**Course Aims**
1	• Building an understanding of concepts and ideas explicitly in terms of previous learning.
2	• Integrating the four language skills and communicate in English well.
3	• Emphasizing the relationship between conceptual understanding and problem-solving approaches.
4	• Providing students with a strong critical thinking skill.

2.2. Mapping Course Aims with Program Aims	
Program Aims	**Course Aims**
Applying basic concepts in English to provide students and help them to gain knowledge of general vocabulary that would help the students in various topics.	Apply the principle of grammatical rules in their usage of English.
	Enhance the degree of awareness to participate using English words professionally in their life.
	Upgrade the capability of usage of the English language in various topics.

3. Learning Outcomes (LOs):	
3.1. Course Learning Outcomes (CLOs):	
LO 1.	Have a mix of skills in English Language.
LO 2.	Study different grammatical Rules.
LO 3.	Enhance students' abilities in expressing themselves.
LO 4.	Understand English and respond correctly.
LO 5.	Work effectively in team of multi-disciplinary or multi-culture.
LO 6	Apply the four skills of language freely.
LO 7	Express themselves in English with confidence.

3.2. Relationship Between the Course and the Program Competencies:

Field	Academic Reference Standard (ARS)
	Engineering Competences (As)
Program Academic Standards that the course contributes to achieving	**A1, A2, A8, A10**

3.3. Mapping Course LOs to Program Competencies:

Field	Program Academic Standards that the course contributes in achieving	Learning Outcomes (LOs)
Competencies for Engineering Graduates (level "A")	**A1.** Identify, formulate, and solve complex engineering problems by applying the correct English vocabulary and grammatical rules.	**LO 1.** Have a mix of skills in English Language.
		LO 3. Enhance students' abilities in expressing themselves
		LO 4. Understand English and respond correctly.
	A2. Enhance and Develop the students' abilities and awareness for appropriate analysis and interpretation to all the scientific topics written in English words. **A8**. Communicate effectively, verbally and in writing with a range of audiences.	**LO 2.** Study different grammatical Rules.
		LO 5. Work effectively in team of multi-disciplinary or multi-culture.
	A10. Acquire and apply new knowledge and practice through English language.	**LO 6.** Apply the four skills of language freely.
		LO 7. Express themselves in English with confidence.

4. Course Contents:

4.1. Course Topics / Hours / LOs Matrix:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			LOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	**Unit 1: That's What Friends are for!**	3	1	0	2	**LO 1**
Week-2	**Unit 2: Career Moves**	3	1	0	2	**LO 1**
Week-3	**Unit 3: Could you do me a Favor?**	3	1	0	2	**LO 1**
Week-4	**Unit 4 What a Story!**	3	1	0	2	**LO 1**
Week5	**Unit 5: Crossing Cultures**	3	1	0	2	**LO 2, LO 7**
Week-6	**Unit 6: What's wrong with it ?**	3	1	0	2	**LO 2, LO 5**
Week-7	**Midterm Exam.**					
Week-8	**Unit 7: The World we live in**	3	1	0	2	**LO 3, LO 4, LO 5**
Week-9	**Unit 8: Learning to Learn**	3	1	0	2	**LO5**
Week-10	**Supplementary Material and Quiz**	3	1	0	2	**LO 5, LO 6**
Week-11	**Supplementary Material and Quiz**	3	1	0	2	**LO 5**
Week-12	**Presentations**	3	1	0	2	**LO 5**
Week-13	**Project**	3	1	0	2	**LO 5**
Week-14	**Revision and Quiz**	3	1	0	2	**LO 6, LO7**
Week 15	**Final Exam.**					

5. Course Teaching and Learning Methods:

Teaching and Learning Methods	Learning Outcomes (LOs) General (A)						
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
Face-to-Face Lecture	√		√		√		√
Online Education							
Tutorial/ Exercise		√		√		√	
Group Discussion			√		√		
Laboratory							
Site Visit							
Presentation							
Mini Project							
Research & Reporting							√
Brain Storming	√		√			√	
Self-Learning					√		

6. Assessment Methods:

6.1. Course Assessment Methods:

Assessment Methods	Learning Outcomes (LOs) General (A)						
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
Written Exam			√	√		√	√
Online Exam							
Oral Exam							
Quiz	√				√		
Lab Exam							
Take-Home Exam							
Research Assignment				√			
Reporting Assignment		√	√			√	
Project Assignment			√	√		√	√

6.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	60 min.
Midterm written Exam (*Term Work*)	**20**	7th	60 min.
End of term laboratory exam (*Lab*)	**-**		
End of term Oral exam	**-**		
Mini projects (*Term Work*)	**-**	-	---
Quizzes/reports/presentation (*Term Work*)	**40**	Quiz: 6th , 11th	15 min.
Total Mark	**100**		

7. Facilities Required for Teaching and Learning:

No.	Required Facilities
1	White board.
2	Data show.

8. List of References:

8.1 Course Notes:

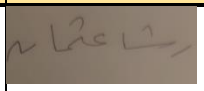
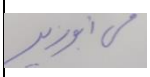
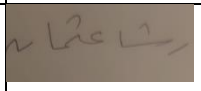
1. Available Presentation (handed to students part by part).
2. "English C"; HTI; Available Hard copy.

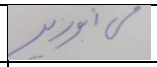
8.2 Required Text Books and Additional References:

1. **Interchange 3rd edition, Cambridge University Press, 2019**
2. **Interchange Workbook 3rd edition, Cambridge University Press, 2019**

8.3. Recommended Books:

1. **English Grammar in Use. Cambridge University Press, 2020**
2. **English Vocabulary in Use. Cambridge University Press, 2021**

Course Directors	Name	Signature
Teaching staff	**Dr. Rasha Osman**	
	Dr. Mai Abouzaid	
Course coordinator	**Dr. Rasha Osman**	

	Dr. Mai Abouzaid	
Head of the Department	**Prof. Dr. Eid Abdel Basset**	
Date of approval	OCT-JAN 2023-2024	

Das höhere technologische Institut (HTI)	
Abteilung: Grundlegende Wissenschaft	

Kursspezifikation

LNG 102: Deutsche Sprache

Wesentliches Programm:	**Alle Programme vom Engenieurwesen**
Abteilung, die das Programm anbietet:	**Alle Abteilungen vom Engenieurwesen**
Abteilung, die den Kurs anbietet:	**Grundlegende Wissenschaft**

Grundlegende Information

Course Title:	Deutsch			**Kode**		LNG 102	
Programm	**Alle Programme vom Engenieurwesen**			**Niveau**		Diplom und Bachelor Niveau	
Semester/ Akademisches Jahr:	FEB-MAI 2022-2023			**Kreditstunden**		2	
Kontaktstunden	2	**Vortrag:**	2	**Tutorium**	0	**Labor:**	---
Voraussetzung	-						
Akademischer Standard	Academic reference standards (ARS)						
Städtische Verordnung	2016						

1. Kursbeschreibung:

Der Kurs gibt eine Einführung in alle wichtigen Sturukturen der deutschen Sprache. Sie macht den Lernenden mit der Lautung und Intonation, mit der Formenlehre und Satzstruktur bekannt, so dass er schnell und sicher zu brauchbaren und ausbaufähigen Kenntnissen gelangt, die ihn zum aktiven mündlichen und schriftlichen Gebrauch der Sprache befähigen. Es ist auch das Ziel des Kurses, den Schüler intensiv in den Gebrauch der Sprache einzuführen und ihm sichere Grundlagen für die eigene Weiterarbeit zu geben.

2. Koursziele und Programmziele:

2.1. Kursziele:	
No.	**Kursziele**
1	• Aneignung der vier Grundfertigkeiten der deutschen Sprache.
2	• Arbeit in multikulturellen Arbeitsgruppen
3	• Formolierung von Begriffen, Erlebnissen, Gedanken, Ergebnisse usw. Sowie auch Ausbildung von Normen und Regeln.
4	• Kritische Denkfähigkeiten fördern.

2.2. Kursziele und Programmziele	
Programmziel	**Kursziel**
Es ist das Ziel der Stufe, der Lernende in die Lage zu versetzen, sich zunächst an einfachen, aber auch in zunehmendem Mass auch an schwierigen Gesprächen zu beteiligen	Die Lernenden müssen beim Ende des Kurses viele Vokabeln haben, die sie in verschieden Situationen gut gebrauchen können
	Verschiedene Themen, Gedanken, Erlebnisse usw. Können sie auch formulieren
	Mündlich sollen sie sich auch ausdrücken

3. Lernenergebnisse (LOs):
3.1. Kurslernenergebnisse (CLOs):
Die vier Fertigkeiten der deutschen Sprache beherrschen
Viele grammatische Regeln studieren.
Sich gut in Deutsch ausdrücken.
Deutsche Grammatische Regeln richtig gebrauchen.
Deutsch gut verstehen und richtig antworten.
Die vier Fertigkeiten richtig und gut benutzen.
Selbstvertrauen beim Sprechen haben.
Die Fähigkeit Deutsch in verschiedenen Themen zu gebrauchen verbessern.

3.2. Relation zwischen dem Kurs und der Programfähigkeit:	
Be-reich	**Academic Reference Standard (ARS)**
	Fähigkeit vom Engenieurwesen (As)

Program Akademischer Standard, dem der Kurs spendet	**A1, A2, A8, A10**

3.3. Kurs Los und Programmfähigkeit:

Be-reich	Program Akademischer Standard, dem der Kurs spendet	**Lernenergebnisse (LOs)**
Fähigkeiten der Engenieurwesensgraduierten (Stufe "A")	**A1.** Es ist das Ziel der Stufe, der Lernende in die Lage zu versetzen, sich zunächst an einfachen, aber auch in zunehmendem Mass auch an schwierigen Gesprächen zu beteiligen .	**LO 1.** Immer viele und neue Vokabeln lernen, die bei verschiedenen Themen natürlich helfen.
		LO 3. Deutsche Grammatische Regeln richtig gebrauchen.
		LO 4. Selbstvertrauen beim Sprechen haben.
	A2. Die Lernenden müssen beim Ende des Kurses viele Vokabeln haben, die sie in verschieden Situationen gut gebrauchen können	**LO 2.** Die Fähigkeit Deutsch in verschiedenen Themen zu gebrauchen verbessern
		LO 5. In multikulturellen Arbeitsgruppen aktiv arbeiten
	A8. Wichtig ist auch, dass sie mit Hilfe von Strukturierungs-elementen einfache persönliche Angaben in schriftlicher Form machen oder erfahren, die sich auf Informationen zur Person und einzelne konkrete Situationen beziehen.	**LO 6.** Die vier Fertigkeiten der deutschen Sprache beherrschen
	A10. Sie können auch in vertrauten Situationen einfache Wörter, alltägliche Ausdrücke und sehr einfache strukturen anwenden und auf Fragen reagieren	**LO 7.** Sich gut in Deutsch ausdrücken

4. Kursinhalt:

5.24.1. Kursthemen/stunden/Los Matrix

Wo-che Num.	Themen	Total st.	Kontachtstunden			LOs beim Kurs
			Lec t.	Tut	Lab.	
Woche-1	**Abschnitt 1:Der Artikel, die Konjugation der Verben.**	**2**	**2**	**0**	**0**	**LO 1**
Woche 2	**Abschnitt 1: Übungen, die Personal-pronomen, Negation, Alltagssituationen**	**2**	**2**	**0**	**0**	**LO 1**
Woche -3	**Abschnitt 2: Der Unterricht, das Nomen, der Akkusativ, das Verb "haben"**	**2**	**2**	**0**	**0**	**LO 1**
Woche -4	**Abschnit 2: Übungen, die Fragepronomen "Wer, Wen, Was", Altagssituationen**	**2**	**2**	**0**	**0**	**LO 1**
Woche 5	**Quiz**	**2**	**2**	**0**	**0**	**LO 2, LO 7**
Woche -6	**Abschnitt 3: Die Zahlen, die Zeit**	**2**	**2**	**0**	**0**	**LO 2. LO 5**
Woche -7	**Halbjahresprüfung**					
Woche -8	**Abschnitt 4 : Eine Reise, starke Verben, trennbare und untrennbare Verben**	**2**	**2**	**0**	**0**	**LO 3**
Woche -9	**Abschnitt 4 : Übungen, Wortstellung, Präpositionen, Alltagssituationen**	**2**	**2**	**0**	**0**	**LO 5**
Woche -10	**Abschnitt 5 : Ein Freund kommt, der Dativ ,Verben mit dem Dativ und dem Akkusativ**	**2**	**2**	**0**	**0**	**LO 6**
Woche -11	**Abschnitt 5 : Übungen, die Possessivpronomen**	**2**	**2**	**0**	**0**	**LO 2**
Woche -12	**Zusätzliche Material und Quiz**	**2**	**2**	**0**	**0**	**LO 7**
Woche -13	**Projekt**	**2**	**2**	**0**	**0**	**LO 4**
Woche -14	**Wiederholung und Quiz**	**2**	**2**	**0**	**0**	**LO 4**
Woche 15	**Abschluβprüfung**					

5. Course Teaching and Learning Methods:

Teaching and Learning Methods	Learning Outcomes (LOs) General (A)						
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
Face-to-Face Lecture	√		√		√		√
Online Education							
Tutorial/ Exercise		√		√		√	
Group Discussion			√		√		
Laboratory							
Site Visit							
Presentation							
Mini Project							
Research & Reporting							√
Brain Storming	√		√			√	
Self-Learning					√		

6. Assessment Methods:

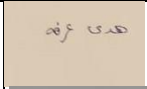
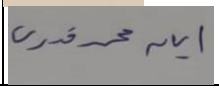
6.1. Course Assessment Methods:

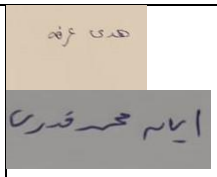
Assessment Methods	Learning Outcomes (LOs) General (A)						
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
Written Exam			√	√		√	√
Online Exam							
Oral Exam							
Quiz	√				√		
Lab Exam							
Take-Home Exam							
Research Assignment				√			
Reporting Assignment		√	√			√	
Project Assignment			√	√		√	√

6.2. Assessment Schedule and Grades Distribution:			
Assessment Method	**Mark**	**Week**	**Exam Time**
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	7th	60 min.
End of term laboratory exam (*Lab*)	**-**		
End of term Oral exam	**-**		
Mini projects (*Term Work*)	**-**	-	---
Quizzes/reports/presentation (*Term Work*)	**40**	Quiz: 6th , 11th	15 min.
Total Mark	**100**		

7. Möglichkeiten zum Lehren und Lernen ::	
No.	**Required Facilities**
1	**Arbeitsbuch und data show im Schulzimmer**
2	**Lehrenhilfe und computers.**

8. Liste der Fachbücher::	
8.1 Kurs::	
1.	**Deutsche Sprachlehre für Ausländer, Grundstufe, Teil 1, Dora Schulz / Heinz Griesbach, Hueber Verlag, 2017**
2 .	**Präsentation**
8.2 Zusätzliche Quellenangaben:	
1.	**Deutsch lernen, Wortschatz und Übungen zum Thema: Mein Tag, Aneta Goch, 2021**
2.	**Deutsche Grammatik: Zeichensetzung und Grammatik, alles was du wissen musst, Taschenbuch, Lonas Klein, Verlagshaus Stopfer, 2021**
8.3. Empfehlende Bücher::	
1.	**Deutsch üben, Wortschatz & Grammatik A1&A2, Anneli Billina, Hueber Verlag, München, 2019**
2.	**Deutsch üben Lesen und schreiben A2, Anneli Billina / Lilli Marlen Brill / Marion Techmer Hueber Verlag, München, 2018**

Course Directors	Name	Signature
Teaching staff	**Dr. Hoda Arafa** **Dr. Eman Kadry**	 

Course coordinator	**Dr. Hoda Arafa** **Dr. Eman Kadry**	
Head of the Department	**Prof. Dr. Mohamed Abdel Atty**	
Date of approval	FEB-MAI 2022-2023	

The Higher Technological Institute (HTI)	
Department: Department of Mechanical Engineering	

Course Specification

MNG 101: Monitoring & Quality control systems

Program(s) on which this course is given	All Engineering Programs
Department offering the program:	Mechanical Engineering
Department offering the course:	Mechanical Engineering

A– Basic information

Course Title:	Monitoring & Quality control systems			**Course Code:**		MNG 101	
Program /level	Engineering			**SENIOR (1)**			
Term/ Academic year:	Oct.-Jan. 2023 - 2024			**Credit Hours:**		1	
Contact Hours:		**Lecture:**	2	**Tutorial:**		**Laboratories:**	-----
Pre-Requisite							
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- To spot on the importance of monitoring systems and how it contributes to better production performance.
- To clarify the procedures of applying modern quality control systems
- To illustrate how to use statistical methods and tools to support quality management systems in order to maximize the potential use of available data.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1. Use statistical methods to evaluate performance.

CLO 2. Compare between quality management systems and easily spot strength and

weakness points in each system.

CLO 3. Maximize the potential use of data in performance optimization

CLO 4. Use latest Quality theories to handle the available resources.

*3- **Relationship between the course and the Competencies :***

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of MEC
Program Academic Standards that the course contributes to achieve	A4, A8, A9	NA

4- *Mapping Course LO's to NARS*

Field	Program (MEC) that the course contributes in achieving	Learning Outcomes (LOs)
COMPETENCIES of ENGINEERING	**A4.** Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.	**LO1.** Use statistical methods to evaluate performance.
	A8. Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	**LO2**. Optimize the potential using of graphical data in performance.
	A9. Use creative, innovative, and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	**LO 3.** Compare between quality management systems. **LO 24.** Utilise the latest Quality theories to handle the available resources.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

1 Cr. hrs. = [1 Lect. + 0 Tut + 0 Lab]

Introduction: history of quality, the dimensions of quality. Quality Control Concepts: quality assurance, total quality management. Control systems: objectives of control systems, quality systems, top management communicating. Hazard Analysis: high -quality recommendations, commitment monitoring, follow up Systems, the base line of hazard analysis critical point (HACCP). Sampling and Inspection: Sample size, sampling error, sampling designs and inspection, acceptance sampling plans. Quality Control Tools and Techniques: tools for creating new concepts, tools for organization and analysis of data, tools for determine and solving problems (Control Charts for Variables - Control Charts for Attributes - PRE - control - analysis - flow charts). International Standards Accreditation: Accreditation meaning, ISO requirements and recommendations, Audit program, Certification body. Analysing Process Capability: Process capability indices, process performance indices.

5.2. Course Topics/Hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Introduction: history of quality, Quality management, the dimensions of quality Variations, Total Quality	2	2			**LO 1,2**
Week-2	Quality Control Leaders**.**	2	2			**LO1,2**
Week-3	Quality Control Systems, Design, Factors, Costs, Measures; quality assurance.	2	2			**LO2,3**
Week-4	Quality Control Tools	2	1	1		**LO 3**
Week5	Control systems: Total Quality Management.	2	1	1		**LO 3**
Week-6	International Standards Accreditation: Accreditation meaning, ISO requirements and recommendations, Audit program, Certification body.	2	2			**LO 1,2,3**
Week-7	Review	2		2		
Week-8	**Midterm Exam.**					

Week-9	Hazard Analysis: high -quality recommendations, commitment monitoring, follow up Systems, the base line of hazard analysis critical point (HACCP).	2	2			**LO 4**
Week-10	Sampling and Inspection: Sample size, sampling error, sampling designs and inspection, acceptance sampling plans.	2	1	1		**LO 3,4**
Week-11	Quality Control Tools: Six Sigma analysis.	2	2			**LO 2,4**
Week-12	Analyzing Process Capability: Process capability indices, performance indices.	2	1	1		**LO 1,2,3,4**
Week-13	Project Submission	2		2		**LO 1,2,3,4**
Week-14	Review	2		2		
Week 15	**Final Exam.**					

5.3. Experiment Topics:

Serial	Experiment	Laboratory hrs.
1st	Use Microsoft Office to statistically evalute Student Performance	2
2nd	NA,	

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)							
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8
CLO 1	*							
CLO 2		*						
CLO 3			*					
CLO 4				*				

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome* (LOs)							
	General	MEC						
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8
Face-to-Face Lecture	*	*	*	*				
Online Education	-	*	-	*				
Tutorial/ Exercise	*	*	*	*				
Group Discussion	-	-	-	-				
Laboratory	-	-	-	-				
Site Visit	-	-	-	-				
Presentation	-	-	*	*				
Mini Project	*	*	*	*				
Research and Reporting	-	*	-	*				
Brain Storming	*	*	*	*				
Self-Learning	-	*	*	*				

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome* (LOs)								
	General				MEC				
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9
Written Exam	*	*	*	*					
Online Exam	*	*	*	*					
Oral Exam	-	-	-	-					
Quiz	*	*	*	*					
Lab Exam	-	-	-	-					
Take-Home Exam	*	*	*	*					
Research Assignment	-	-	-	-					
Reporting Assignment	*	*	*	*					
Project Assignment	*	*	*	*					
In-Class Questions	-	*	*	*					

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- Lecturing class
B- Data show
C- Microsoft office

10- List of References:

10.1. Course Notes:

- Lecture Notes and Präsentation

10.2. Required Text Books and additional References:

- Managing Six Sigma: A Practical Guide to Understanding, Assessing, and Implementing the Strategy that Yields Bottom-Line Success. Breyfogle, F.W., III, Cupello, J.M., & Meadows, B. (2003).
- Managing Quality: An Integrative Approach. Foster, S. Thomas. (2004).
- Project Management: a systems approach to planning, scheduling, and controlling. Kerzner, Harold. (2003).
- Organizational Behavior: key concepts, skills & best practices. Kinicki, A, & Kreitner, R. (2003).
- Six Sigma for Everyone. Eckes, George. (2003)

10.3. Recommended Books:

- The Six Sigma Revolution: How General Electric and Others Turned Process into Profits. New York, New York: John Wiley & Sons.

10.4. Web Sites:

- **https://teams.microsoft.com/l/team/19%3a5xwSQhdalh206uBRrdFNrpEAvq3wldyvvIRTzoSOhLU1%40thread.tacv2/conversations?groupId=29085357-5c18-4e8e-bb47-e7f919ec0b9a&tenantId=9241132d-c810-4da1-bc3a-a00f714767c4**

Course Directors	Name	Signature
Teaching staff	Dr. Radwa A. Ghazalla	
Course coordinator	Dr. Radwa A. Ghazalla	
Program coordinator	Prof. Dr. Hesham M. Mostafa	
Head of the Department	Prof. Dr. Adel Fathy Meselhy	
Date of approval	Oct.2023	

The Higher Technological Institute (HTI)	
Department: Department of Mechanical Engineering	

Course Specification

MNG 102: Engineering Economics

Program(s) on which this course is given	All Engineering Programs
Department offering the program:	Mechanical Engineering
Department offering the course:	Mechanical Engineering

A– Basic information

Course Title:				**Course Code:**			
Program / level	Mechanical Engineering			**SENIOR (1)**			
Term/ Academic year:	Oct.-Jan. 2022 - 2023			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	-----
Pre-Requisite							
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- Apply the basic concepts of engineering economy as part of a decision making process.
- Evaluate investment opportunities and compare between alternatives using single and combined engineering economy factors.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Complete computations and manipulations using the basic engineering economic equations.
CLO 2. Apply the role of income tax and depreciation in making engineering economic decisions.
CLO 3. Perform a replacement study considering inflation and indirect cost allocation.
CLO 4. Perform breakeven analysis and sensitivity analysis under uncertainty conditions.

3- ***Relationship between the course and the Competencies :***

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of MEC
Program Academic Standards that the course contributes in achieving	A1,A2	NA

4- ***Mapping Course Los to NARS***

Field	Program (MEC) that the course contributes in achieving	Learning Outcomes (LOs)
COMPETENCIES of ENGINEERING	**A.1**. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	**LO1.** Identify the cost and revenue concepts. **LO2**. Identify the concept of breakeven analysis. **LO3**. Classify cost elements into fixed or variable costs.
	A.2.Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess, and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO4**. Apply breakeven analysis to investigate company's profit or losses. **LO5.** Analyse results to investigate profitability of projects. **LO6**. Apply nominal and effective interest rates to case study problems. **LO7**. Design a candidate project, define its cost elements and discus its feasibility from the economic point a view.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Introduction_ to Economy: Basic Concepts, Varieties of Market Structure, The Law of Supply And Demand, Elasticity, Different Types Of Economy, Accounting Income And Cash Flow, The Objectives Of The Firms, Balance Sheet (BS). Introduction To Engineering Economy: Engineering Decision Making, Break - Even analysis, Production Function) Payback Period Method, Payback Period Method. Time Value of Money: Rate of Return calculations using A Present •worth PW, Rate of Return Calculation by Using annual worth EAW, Rate of Return Evaluation for Multiple Alternatives. Depreciation models: Nature of Depreciation, Depreciation Conventional Method s, Methods Based on Asset Usage, Switching Between Depreciation models.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			LOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	**Introduction**	3	2	1		**LO1**
Week-2	**Description and Role in Decision Making**	3	2	1		**LO2**
Week-3	**Simple Interest**	3	2	1		**LO1, LO2**
Week-4	**Cost Concepts and Behavior**	3	2	1		**LO3**
Week5	**Cost Concepts and Behavior**	3	2	1		**LO3**
Week-6	**Life-Cycle Product Costing and Pricing**	3	2	1		**LO4**
Week-7	**Cash Flows: Estimation and Diagramming**	3	2	1		**LO5**
Week-8	**Midterm Exam.**					
Week-9	**Introduction to Use Spreadsheet**	3	2	1		**LO6**
Week-10	**Factors: How Time and Interest Affect Money**	3	2	1		**LO7**
Week-11	**PW, FW, EUAS / EUAC**	3	2	1		**LO6, LO7**

Week-12	**Net present value, rate of interest**	3	2	1		**LO6**
Week-13	**Payback period, benefit .**	3	2	1		**LO6, LO7**
Week-14	**Choosing among alternatives**	3	2	1		**LO7**
Week 15	**Final Exam.**					

5.3. Experiment Topics:

Serial	Experiment	Laboratory hrs.
1st	NA	0

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)							
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8
CLO 1	√		√		√			
CLO 2		√		√			√	
CLO 3						√		√
CLO 4				√				√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods					*Learning Outcome*(LOs)			
	General				MEC			
	LO 1	LO 2	LO 3	LO4	LO 5	LO 6	LO 7	LO 8
Face-to-Face Lecture	√	√			√	√	√	√
Online Education	√	√			√	√	√	√
Tutorial/ Exercise	√	√			√	√	√	√
Group Discussion	√	√			√	√	√	√
Laboratory								
Site Visit								
Presentation								
Mini Project	√	√			√	√	√	√
Research and Reporting								
Brain Storming	√	√			√	√	√	√
Self-Learning								

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)											
	General							MEC				
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10	LO 11	LO 12
Written Exam	√	√	√	√	√	√	√					
Online Exam	√	√	√	√	√	√	√					
Oral Exam	√	√	√	√	√	√	√					
Quiz	√	√	√	√	√	√	√					
Lab Exam	√	√	√	√	√	√	√					
Take-Home Exam	√	√	√	√	√	√	√					
Research Assignment	√	√	√	√	√	√	√					
Reporting Assignment	√	√	√	√	√	√	√					
Project Assignment	√	√	√	√	√	√	√					
In-Class Questions	√	√	√	√	√	√	√					

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- *Facilities Required:*

Lecture room with a whiteboard, computer and data show.

10- *List of References:*

10.1. Course Notes:

- Lecture notes
- The majority of information in class will be given through handouts made by the lecturer.

10.2. Required Text Books and Additional References:

- Engineering economy, le and blank, P.E Anthony, seventh edition,2012 build by Mc Grain
- Engineering economy analysis, 9th edition, Donald G newman and Ted G., 2004 published by oxford university, press, Inc.
- Jose A. Sepulveda, William E. Souder & Byron S. Gottfried, "Engineering Economics" ,Mc-Graw-Hill Book Company, NW,1984.
- H. G. Thuesen, W. J. Fabrycky & G. J. Thuesen, "Engineering Economy", Prentice-Hall,Inc., NJ, 1971.

10.3. Recommended Books:

- E. Paul DeGarmo, William G. Sullivan & James A. Bontadelli, "Engineering Economy", Macmillan publishing company,Nw,1990.

Course Directors	**Name**	**Signature**
Teaching staff	Dr. Muhammad Tayssir	
Course coordinator	Dr. Muhammad Tayssir	
Program coordinator	Prof. Dr. Hesham Mostafa	
Head of the Department	Prof. Dr. Adel Fathy.	
Date of approval	Oct.2023	

The Higher Technological Institute (HTI)

Department: Basic Science

Course Specification

MTH 103: Numerical Method

A – Affiliation

Relevant program:	**Programs of Engineering**
Department offering the program:	**Programs of Engineering**
Department offering the course:	**Basic Science**

B – Basic information

Title:	**Numerical Method**			**Code:**		**MTH 103**	
Academic year/level	**Diploma level**			**Credit Hours:**		**3**	
Contact Hours:	**4**	**Lecture:**	**2**	**Lecture Tutorial:**	**2**	**Laboratory:**	0
Prerequisite:	**MTH 101**						

1- Course Aims:

The course aimed to

- **Recognize approaches and skills of numerical analysis methods.**
- **Plan out the interpolation and fitting the curve.**
- **Solve the Integration and differentiate problems using numerically methods.**
- **work out the initial value problems for ordinary and partial differential equations numerically.**

2 – Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1.	• **Understand the concepts of numerical method solution for the nonlinear equation in one variable.**
CLO 2.	• **Perform the interpolation and fitting the curve data.**
CLO 3	• **Solve the problem using numerical methods via several techniques and Assessment the mathematical results**

CLO 4	• **Plan the initial value problems for ordinary and partial differential equations numerically.**

3- Relationship between the course and the Competencies:

Field	National Academic Reference Standard (NARS)	
	Engineering Competences (As)	Engineering Competences of Mechanical engineering program
Program academic Standards that the course contributes to achieving	A1,A4,A7, A8,A10	Bs or Cs

4.1 - Learning Outcomes (LOs):

On successful completion of the course, the student should have the ability to

LO1	**Define Mathematical Preliminaries**
LO 2	**Describe and demonstrate the nonlinear equation in one variable.**
LO 3	**Define the interpolation data point and proceed the problems on them**
LO 4	**Explain the curve fitting**
LO5	**Apply the Integration and differentiate numerically methods as well as Evaluating the mathematical results.**
LO 6	**Justify the initial value problems for ordinary and partial differential equations**
LO 7	**Solve problems of ordinary and partial differential equations**
LO 8	**Interpret graphically the initial value problems for ordinary and partial differential equations.**
LO 9	**Implement the mathematical Modeling numerically for Interpolate data point, Integrate, differentiate ordinary and partial differential equations.**
LO 10	**Work under stress as leader of teamwork.**

4.2 Mapping Course LOs to NARS

Field		Learning Outcomes (LOs)									
NARS 2018 Competencies		LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9	LO10
Basic Engineering Competencies (As)	A1	√		√							√
	A2										
	A3										
	A4	√	√		√						
	A5			√		√		√			
	A6										√
	A7		√		√						
	A8	√	√								√
	A9										
	A10		√			√					√

5- Course Content:

5.1 – Catalogue Course Description (As indicated in program Bylaw):

This course introduces an introduction to numerical methods. It includes solving nonlinear equations in one variable, interpolation, curve fitting, interpolation polynomial approximation, numerical integration and differentiation, numerical solutions for ordinary differential equation with initial value problems, and numerical solutions for partial differential equation.

5.2 Course Topics/hours/Los Matrix

Week No.	Topics	Total hrs.	Contact hours			LOs Covered by Course
			Lect.	Tut	Lab	
1	Mathematical Preliminaries (Review of calculus, Round off Errors and computer Arithmetic)	4	2	2	0	LO1
2	Taylor series	4	2	2	0	LO1
3	Solutions of nonlinear equations in one Variable (The Bisection Algorithm	4	2	2	0	LO2
4	The Newton-Raphson Method, Secant method.	4	2	2	0	LO2
5	Interpolation and polynomial Approximation (The Newton forward , Lagrange Polynomials, Newton Divided Differences)	4	2	2	0	LO3
6	Fitting Curve(Straight line, Expontial function)	4	2	2	0	LO4
7	Fitting the rational function, and spiel cases	4	2	2	0	LO4
8	Mid Term Exam					
9	Numerical Differentiation.	4	2	2	0	LO5
10	Numerical Integration (Romberg Integration, trapezoidal rule, Simpson rule)	4	2	2	0	LO5
11	Initial value problems for Ordinary Differential Equations	4	2	2	0	LO6
12	(Elementary Theory of Initial Value problems, Euler's Method)	4	2	2	0	LO6
13	Improved Euler method, Rung-Kutta method.	4	2	2	0	LO7
14	the initial value problems for partial differential equations	4	2	2	0	LO8
15	Final term exam					

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
CLO 1	√	√			√					
CLO 2			√				√	√		√
CLO 3			√							
CLO 4				√					√	√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome* (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
Face-to-Face Lecture	√	√	√	√	√	√	√	√	√	
Online Education		√		√		√			√	√
Tutorial/ Exercise	√	√	√	√	√	√	√	√	√	√
Group Discussion			√	√		√				√
Laboratory										
Site Visit	√		√						√	
Presentation	√	√	√	√	√	√	√	√	√	√
Mini Project										
Research and Reporting			√		√					√
Brain Storming										
Self-Learning		√								√

8- Assessment

8.1 Course Assessment Methods:

Assessment Methods	Learning Outcome (LOs)									
	General									
	LO 1	LO 2	LO3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
Written Exam	√	√	√	√	√	√	√	√	√	√
Online Exam			√			√				
Oral Exam										
Quiz	√	√	√	√	√	√	√	√	√	√
Lab Exam										
Home Exam										

Research Assignment	√	√	√	√	√	√	√	√	√	√
Reporting Assignment										
Project Assignment	√	√	√	√	√	√	√	√	√	√
In-Class Questions						√		√		

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	40	15th	90 min.
Midterm written Exam (Term Work)	20	8th	60 min.
Tutorial and report assessment (Term Work)	20	weekly	---
Quizzes/reports/presentation (Term Work)	20	According to the schedule	---
Total Mark	100		

9- Facilities Required for Teaching and Learning:

A- Notebook and data show equipped lecture room.

B- Teaching aids and computers.

C- Notebook and data show equipped lecture room.

10- List of References:

10.1. Course Notes:

1-**Available Presentation (handed to students' part by part).**

10.2. Required Textbooks and Additional References:

1- **Erwin Kreyszig, Advanced Engineering Mathematics**

10.3. Recommended Books:

1. **Erwin Kreyszig, Advanced Engineering Mathematics**

a. Web Sites:

- https://math.fandom.com/wiki/Hypermathematics
- https://github.com/AlexCharlton/hypermath
- https://www.britannica.com/science/mathematics
- https://www.khanacademy.org/math
- https://animated-mathematics.net/

Course Directors	Name	Signature
Teaching staff	**1- Prof. Dr Mohmad Abd El-Aty** **2- Dr. Safinaz Ahmed**	
Course coordinator	**Dr. Safinaz Ahmed**	
Head of the Department	**Prof. Dr Mohmad Abd El-Aty**	
Date of approval	Feb.23	

The Higher Technological Institute (HTI)	
Department: Department of Mechanical Engineering	

Course Specification

MNG 101: Monitoring & Quality control systems

Program(s) on which this course is given	All Engineering Programs
Department offering the program:	Mechanical Engineering
Department offering the course:	Mechanical Engineering

A– Basic information

Course Title:	Monitoring & Quality control systems			**Course Code:**		MNG 101	
Program /level	Engineering			**Junior**			
Term/ Academic year:	May-August 2022 - 2023			**Credit Hours:**		1	
Contact Hours:		**Lecture:**	1	**Tutorial:**	1	**Laboratories:**	-----
Pre-Requisite							
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- To spot on the importance of monitoring systems and how it contributes to better production performance.
- To clarify the procedures of applying modern quality control systems
- To illustrate how to use statistical methods and tools to support quality management systems in order to maximize the potential use of available data.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1. Use statistical methods to evaluate performance.

CLO 2. Compare between quality management systems and easily spot strength and

weakness points in each system.

CLO 3. Maximize the potential use of data in performance optimization

CLO 4. Use latest Quality theories to handle the available resources

*3- **Relationship between the course and the Competencies :***

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of MEC
Program Academic Standards that the course contributes to achieve	A4, A8, A9	NA

4- *Mapping Course LO's to NARS*

Field	Program (MEC) that the course contribute in achieving	Learning Outcomes (LOs)
COMPETENCIES of ENGINEERING	**A4.** Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.	**LO 1.** Use statistical methods to evaluate performance.
	A8. Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	**LO 3**. optimize the potential using of graphical data in performance
	A9. Use creative, innovative, and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations	**LO2.** Compare between quality management systems **LO4.** utilise the latest Quality theories to handle the available resources

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

1 Cr. hrs. = [1 Lect. + 1 Tut + 0 Lab]

Introduction: history of quality, the dimensions of quality. Quality Control Concepts: quality assurance, total quality management. Control systems: objectives of control systems, quality systems, top management communicating. Hazard Analysis: high -quality recommendations, commitment monitoring, follow up Systems, the base line of hazard analysis critical point (HACCP). Sampling and Inspection: Sample size, sampling error, sampling designs and inspection, acceptance sampling plans. Quality Control Tools and Techniques: tools for creating new concepts, tools for organization and analysis of data, tools for determine and solving problems (Control Charts for Variables - Control Charts for Attributes - PRE - control - analysis - flow charts). International Standards Accreditation: Accreditation meaning, ISO requirements and recommendations, Audit program, Certification body. Analyzing Process Capability: Process capability indices, process performance indices.

5.2. Course Topics/Hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Introduction: history of quality, Quality management, the dimensions of quality Variations, Total Quality	2	2			**LO 1,2**
Week-2	Quality Control Leaders**.**	2	2			**LO1,2**
Week-3	Quality Control Systems, Design, Factors, Costs, Measures; quality assurance.	2	2			**LO2,3**
Week-4	Quality Control Tools	2	1	1		**LO 3**
Week5	Control systems: Total Quality Management.	2	1	1		**LO 3**
Week-6	International Standards Accreditation: Accreditation meaning, ISO requirements and recommendations, Audit program, Certification body.	2	2			**LO 1,2,3**
Week-7	Review	2		2		
Week-8	**Midterm Exam.**					
Week-9	Hazard Analysis: high -quality recommendations, commitment monitoring, follow up Systems, the base line of hazard analysis critical point (HACCP).	2	2			**LO 4**

Week-10	Sampling and Inspection: Sample size, sampling error, sampling designs and inspection, acceptance sampling plans.	2	1	1		**LO 3,4**
Week-11	Quality Control Tools: Six Sigma analysis.	2	2			**LO 2,4**
Week-12	Analyzing Process Capability: Process capability indices, performance indices.	2	1	1		**LO 1,2,3,4**
Week-13	Project Submission	2		2		**LO 1,2,3,4**
Week-14	Review	2		2		
Week 15	**Final Exam.**					

5.3. Experiment Topics:

Serial	Experiment	Laboratory hrs.
1st	Use Microsoft Office to statistically evalute Student Performance	2
2nd	NA,	

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)			
	LO 1	LO 2	LO 3	LO 4
CLO 1	*			
CLO 2		*		
CLO 3			*	
CLO 4				*

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome* (LOs)							
	General							
	LO 1	LO 2	LO 3	LO 4				
Face-to-Face Lecture	*	*	*	*				
Online Education	-	*	-	*				
Tutorial/ Exercise	*	*	*	*				
Group Discussion	-	-	-	-				
Laboratory	-	-	-	-				
Site Visit	-	-	-	-				
Presentation	-	-	*	*				
Mini Project	*	*	*	*				
Research and Reporting	-	*	-	*				
Brain Storming	*	*	*	*				
Self-Learning	-	*	*	*				

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome* (LOs)								
	General								
	LO 1	LO 2	LO 3	LO 4					
Written Exam	*	*	*	*					
Online Exam	*	*	*	*					
Oral Exam	-	-	-	-					
Quiz	*	*	*	*					
Lab Exam	-	-	-	-					
Take-Home Exam	*	*	*	*					
Research Assignment	-	-	-	-					
Reporting Assignment	*	*	*	*					
Project Assignment	*	*	*	*					
In-Class Questions	-	*	*	*					

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- Lecturing class
B- Data show
C- Microsoft office

10- List of References:

10.1. Course Notes:

- Lecture Notes and Präsentation

10.2. Required Text Books and additional References:

- Managing Six Sigma: A Practical Guide to Understanding, Assessing, and Implementing the Strategy that Yields Bottom-Line Success. Breyfogle, F.W., III, Cupello, J.M., & Meadows, B. (2003).
- Managing Quality: An Integrative Approach. Foster, S. Thomas. (2004).
- Project Management: a systems approach to planning, scheduling, and controlling. Kerzner, Harold. (2003).
- Organizational Behavior: key concepts, skills & best practices. Kinicki, A, & Kreitner, R. (2003).
- Six Sigma for Everyone. Eckes, George. (2003)

10.3. Recommended Books:

- The Six Sigma Revolution: How General Electric and Others Turned Process into Profits. New York, New York: John Wiley & Sons.

10.4. Web Sites:

https://teams.microsoft.com/l/team/19%3a5xwSQhdalh206uBRrdFNrpEAvq3wldyvvIRTzoSOhLU1%40thread.tacv2/conversations?groupId=29085357-5c18-4e8e-bb47-e7f919ec0b9a&tenantId=9241132d-c810-4da1-bc3a-a00f714767c4

Course Directors	Name	Signature
Teaching staff	Dr. Radwa A. Ghazalla- Dr. Mohamed Ali	
Course coordinator	Dr. Radwa A. Ghazalla	
Program coordinator	Prof. Dr. Hesham M. Mostafa	
Head of the Department	Prof. Dr. Adel Fathy Meselhy	
Date of approval	06-05-2023	

المعهد التكنولوجى العالى بالعاشر من رمضان	
قسم: العلوم الأساسية	

توصيف مقرر
التذوق الموسيقي : HUM 105

أ - الوصف

البرنامج المانح للبرنامج	جميع برامج الأقسام الهندسية
القسم المقدم للبرنامج	جميع برامج الأقسام الهندسية
القسم المقدم للمقرر	العلوم الأساسية

ب - المعلومات الأساسية

العنوان:		التذوق الموسيقى		الكود:		HUM 105	
الفرقة الأكاديمية / المستوى:		اعدادي		الساعات المعتمدة		2	
ساعات التدريسية	2	المحاضرة	2	تمارين	0	المعمل	0
المتطلب السابق	لا يوجد						

ج - المعلومات المهنية

1 – وصف المحتوى

الاستماع لمجموعات الآلات الموسيقية الوركسترالية وهي مجموعة الآلات الوترية – مجموعة ألات النفخ الخشبي – مجموعة ألات النفخ النحاسي – الآلات الإيقاعية، والتعرف عليها من خلال الصور المرفقة مع الملزمة الخاصة بالمقرر الدراسي

2- الأهداف العامة للمقرر

يكون الطالب قادراً علي: التعرف بالاستماع علي الآلات الموسيقية المستخدمة في الاوركسترا – دراسة أنواع المعلومات الهامة عن موسيقي الجاز – دراسة الموسيقي العربية وألاتها – الإلمام الكامل بأنواع الموسيقي المختلفة – المهارات الذهنية: بعد دراسة هذا المقرر يكون الطالب قادراً علي:

- إدراك ومعرفة أنواع الآلات الموسيقية المختلفة
- التعرف علي مجموعة الآلات الوترية
- كيفية تكوين الاوركسترا الغربي والشرقي وفرق الجاز
- توظيف المادة العلمية في خدمة الثقافة الموسيقية
- المقارنة بين أنواع المؤلفات الموسيقية المختلفة (عالمية – عربية)
- الإلمام بثقافات العلمية الموسيقية

3 - مخرجات التعلم

a) المعارف والمفاهيم

بعد تزويد الطالب بالمقرر ينبغي أن يكون قادراً علي الفهم ومعرفة المعارف التالية :

a1	معرفة مجموعة الآلات الوترية
a2	التعرف علي أصوات مجموعات ألات النفخ الخشبي و مجموعات ألات النفخ النحاسي والتعرف على الات الموسيقية من خلال الصور
a3	معرفة تكوين الاوركسترا الغربي والشرقي وفرق الجاز

b) المهارات الذهنية

بعد تزويد الطالب بالمقرر ينبغي أن يكون قادراً على :

b1	إدراك ومعرفة أنواع الآلات الموسيقية المختلفة
b2	تمييز أنواع المؤلفات الموسيقية المختلفة (عالمية – عربية)

d) المهارات العامة

بعد تزويد الطالب بالمقرر ينبغي ان يكون قادراً على :

d1	التواصل بفاعلية من خلال المناقشة والحوار
d2	توظيف المادة العلمية في خدمة الثقافة الموسيقية
d3	الإلمام بثقافات علمية في غير مجال التخصص

إسهامات المقرر في برنامج مخرجات التعلم:

	Course ILO's	Program ILO's
A	المعارف والمفاهيم	
B	مهارات ذهنية	
C	مهارات مهنية	
D	المهارات العامة	

4 – المحتوى

الاسبوع	الموضوع	المحاضرة	تمارين	عملي	الإجمالي
1	تعريف بالمقرر الدراسى ومقدمة عامه	1	0	0	1
2	العلاقة بين الهندسة التكنولوجية والعلم	1	0	0	1
3	تعريف الفن والفنان	1	0	0	1
4	دور الهندسة و التكنولوجيا في العصور القديمة	1	0	0	1
5	استغلال المواد الطبيعية	1	0	0	1

6	دور الهندسة والتكنولوجيا خلال العصور الوسطي	1	0	0	1
7	دور علماء المسلمين في الهندسة والتكنولوجيا	1	0	0	1
8	امتحان نصف الفصل	1	0	0	1
9	انتقال تكنولوجيا العصر الحديث بين الدول	1	0	0	1
10	مشاكل نقل التكنولوجيا بين الدول	1	0	0	1
11	مجال العمل الهندسي ومسؤلية المهندس	1	0	0	1
12	تطور تاريخ التعليم الهندسي في مصر من عصر الحمله الفرنسية وحتي عصر الاحتلال البريطاني	1	0	0	1
13	مراجعة عامة	1	0	0	1
14	الامتحان النهائي	1	0	0	1
	ساعات كلية	0	0	0	13

5 - التدريس وطرق التعلم

مخرجات التعلم للمقرر	طرق التدريس					طريق التعليم				
	محاضرة	أفلام وثائقية	مناقشات	تمارين	حلول الأسئلة	عصف ذهني	مشاريع	تعليم ذاتي	نماذج	عرض
المعرفة المفاهيم	X	X	X		X			X		X
مهارات ذهنية	X		X		X					
مهارات تنفيذية										
مهارات عامة	X		X		X	X				

6- طرق تقييم الطلاب وتصنيفهم

الطريقة	رقم الأسبوع	الدرجة
أعمال سنة	خلال الفصل	40
امتحان نصف الفصل	8	20
الامتحان النهائي	14	40
الدرجة الكلية		100

7 - قائمة المراجع

1-7 مذكرات المقرر	
1	عرض يعطى للطلاب جزء بجزء
2-7 الكتاب المقرر	
1	التذوق الموسيقى

8- الوسائل المتاحة للتدريس والتعلم	
كتاب المقرر وجهازي لاب توب وعرض البيانات	1

9- طرق ردود الأفعال
✓ . الكتابة ✓ . واجبات منزلية ✓ . أسئلة شفويه خلال المحاضرة

منسق المقرر	د/ هويدا عبد المنعم
رئيس القسم	أ.د/ محمد عبدالعاطي
التاريخ	يوليو 2020

المعهد التكنولوجي العالي (HTI)

القسم: قسم العلوم الأساسية

توصيف مقرر

الإتجاهات الفنية المعاصرة : HUM 107

أ – الانتماء (إنتساب المقرر)

البرنامج المانح :	جميع البرامج الهندسية
القسم المقدم للبرنامج:	جميع الأقسام الهندسية
القسم الذي يقوم بتدريس المقرر:	قسم العلوم الأساسية

ب – المعلومات الأساسية

عنوان المقرر	إتجاهات فنية معاصرة			كود المقرر		HUM 107	
المستوي الدراسي	مرحلة الدبلوم			الساعات المعتمدة		2	
ساعات الإتصال الكلية	2	محاضرة	2	سكشن	0	مختبر	0
المتطلب السابق	لا يوجد						

2- أهداف المقرر:

يهدف المقرر الي:

- إكساب الطالب القدرة على التذوق الفني
- إكساب الطالب مهارة قراءة الأعمال الفنية وذلك من خلال دراسة الفلسفات والاتجاهات المذاهب المعاصرة الحديثة وما بعد الحداثة.
- دراسة بعض الأعمال الفنية لرساميين عالميين .

3- الأهداف التعلمية المقرر (CLO):

في نهاية هذا المقرر، يجب أن يكون الطالب قادرا على:

CLO 1	التذوق الفني
CLO 2	المقدرة علي فهم و قراءة الأعمال الفنية وذلك من خلال دراسة الفلسفات والاتجاهات المذاهب المعاصرة الحديثة وما بعد الحداثة.
CLO 3	دراسة بعض الأعمال الفنية لرساميين عالميين .

3- العلاقة بين المقرر و الجدارات (الكفاءات) الهندسية :

نطاق الإرتباط	المعيار المرجعي الأكاديمي الوطني (NARS)	
	الكفاءات الهندسية الأساسية (As)	كفاءات الهندسية لبرنامج الهندسة -- ----
المعايير الأكاديمية للبرنامج التي يساهم المقرر في تحقيقها	A3, A4, A5, A6, A10	Bs or Cs

4.1 - مخرجات التعلم (LOs) :

عند الانتهاء من دراسة المقرر ، يجب أن يكون لدى الطالب القدرة على

LO 1	يتعرف على أهمية الفنون الحديثة المعاصرة خاصة (الابداع الرسومي)
LO 2	يتعرف على أهم المؤثرات التي ساهمت في إظهارالأعمال الفنية للرساميين العالميين .
LO 3	يلخص مصادرومكانة الأعمال الفنية للرساميين في أوربا القديمة والمعاصرة
LO 4	يستنتج الدور الحيوى والرئيسى للعمل الفني المعاصر
LO 5	يربط بين التأثير والتأثر بين الفنون الرسومية القديمة و الحديثة.
LO 6	يقارن بين الاعمال الفنية المصـــرية المعاصـــرة و الفنية المصـــرية القديمة ، و يربط بين الفلســـفيات القديمة والمعاصرة في الاعمال الفنية.
LO 7	يثمن قيمة العلم والمعرفة و يثمن دور العقول المصرية التي أبدعت في كافة الميادين.
LO 8	يستخدم تكنولوجيا المعلومات بما يخدم الممارسة المهنية في مجال الفنون.
LO 9	يظهر مهارات إدارة الوقت بكفاءة في مجال أى مهنة ترتبط بالفنون .
LO10	تعزيز العديد من السلوكيات والمهارات داخل وخارج نطاق العمل بحيث يعمل ضمن فريق يظهر مهارات التواصل مع الآخرين، و كذلك قدرات التعلم الذاتى .

4.2 إرتباط نواتج التعلم للمقرر (LOs) والمعايير القياسية المرجعية الوطنية (NARS)

نطاق الإرتباط	نواتج التعلم لبرنامج الهندسية الميكانيكية	مخرجات التعلم للمقرر (LOs)									
		LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9	LO10
الجدارات الهندسية الأساسية	A1										
	A2										
	A3	✓	✓				✓				
	A4			✓	✓	✓		✓			
	A5				✓			✓			
	A6										
	A7										✓
	A8								✓		✓
	A9						✓			✓	
	A10										✓
الجدارات الهندسية الأساسية لبرنامج الهندسية الميكانيكية	B1										
	B2										
	B3										
	B4										
	B5										

5- محتوى المقرر:

توصيف المقرر (كما هو موضح في لائحة البرنامج):

يهدف المقرر إلى: إكســـاب الطالب القدرة على التذوق الفني - إكســـاب الطالب مهارة قراءة الأعمال الفنية وذلك من خلال دراسة الفلسفات والاتجاهات المذاهب المعاصرة الحديثة وما بعد الحداثة.
ويحتوي المقرر على الموضوعات التالية : التعريف بالفنون القديمة كمدخل للفلسفات الكلاسيكية - مدخل للفنون الكلاسيكية والأصـــول اليونانية - الكلاســـيكية الجديدة(أهم المصـــورين و المثاليين) - الحداثة وحركة التأثيريين الفرنســـيين (صـــالون

الشباب) سيزان، مافية، مونييه – التكعيبية (باراك، بيكاسو) ، المستقبلية (بوتشيني) البعد الزمني- التجريديه (كاندنسيكي- موندريان) - الاتجاه التعبيري(إدوارد مونخ ، فان جوخ) في ألمانيا الوحشية - التلقائية (بول كيلي- خوان ميرو) - الاتجاهات الحديثة والفن الحر- الاتجاهات الحديثة في الفنون المصرية (الحركة التشكيلية المصرية المعاصرة) - الفنانين المصريين المثاليين (محمود مختار- صبحي جرجس- السجيني – الوشاحى) – المصورين المصريين (محمود سعيد، يوسف كامل، راغب عياد، عبد العزيز درويش) فنانين مصريين عالميين (صلاح عبد الكريم، حامد ندى، ناجي شاكر) - ما بعد الحداثة وأهم اتجاهاتها.

موضوعات المقرر

رقم الأسبوع	المواضيع	مجموع الساعات	ساعات الاتصال			LOs التي يحققها المقرر
			محاضرة	سكشن	المختبر	
1	التعريف بالفنون القديمة كمدخل للفلسفات الكلاسيكية	2	2	0	0	LO 1
2	مدخل للفنون الكلاسيكية والأصول اليونانية	2	2	0	0	LO 2
3	الكلاسيكية الجديدة (أهم المصورين و المثاليين) الحداثة وحركة التأثيريين الفرنسيين (صالون الشباب) سيزان، مافية، مونييه	2	2	0	0	LO 1
4	التكعيبية (باراك، بيكاسو) ، المستقبلية (بوتشيني).	2	2	0	0	LO
5	البعد الزمني- التجريديه (كاندنسيكي- موندريان)	2	2	0	0	LO
6	الاتجاه التعبيري(إدوارد مونخ ، فان جوخ) في ألمانيا الوحشية	2	2	0	0	LO
7	التلقائية (بول كيلي- خوان ميرو)	2	2	0	0	LO
8	إمتحان منتصف الفصل الدراسي					
9	الاتجاهات الحديثة والفن الحر	2	2	0	0	LO
10	الاتجاهات الحديثة في الفنون المصـــرية (الحركة التشكيلية المصرية المعاصرة)	2	2	0	0	LO
11	الفنانين المصريين المثاليين (محمود مختار- صبحي جرجس- السجيني – الوشاحى)	2	2	0	0	LO
12	المصورين المصريين (محمود سعيد، يوسف كامل، راغب عياد، عبد العزيز درويش) فنانين مصـــريين عالميين (صلاح عبد الكريم، حامد ندى، ناجي شاكر)	2	2	0	0	LO
13	ما بعد الحداثة وأهم اتجاهاتها	2	2	0	0	LO
14	الإمتحان النهائي					

6- مصفوفة توافق أهداف المقرر الدراسي و نواتج (مخرجات) التعلم

أهداف تعلم المقرر	مخرجات التعلم (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
CLO 1	✓	✓							✓	
CLO 2			✓	✓			✓		✓	✓
CLO 3	✓		✓		✓	✓		✓		

- طرق التدريس والتعلم :

طرق التعليم والتعلم	نتائج التعلم (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
محاضرة وجها لوجه	✓	✓	✓	✓	✓	✓				
التعليم عبر الإنترنت	✓	✓			✓					
واجبات منزلية		✓		✓		✓				
مناقشة جماعية	✓		✓		✓		✓	✓		
مختبر										
زيارة الموقع										
عروض تقديمية بالبوربوينت	✓		✓							
مشروع صغير										
أبحاث وإعداد التقارير							✓	✓		
العصف الذهني	✓	✓			✓	✓				
التعلم الذاتي			✓	✓						

8- التقييم

8.1 طرق تقييم المقرر:

طرق التقييم	نتائج التعلم (LOs)									
	مخرجات التعلم للمقرر (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
الإمتحان التحريري	✓	✓				✓	✓	✓		
إمتحان عبر الإنترنت										
الامتحان الشفوي			✓	✓						
مسابقات تنافسية					✓				✓	✓
الامتحانات المعملية					✓					
واجبات منزلية	✓		✓		✓					
مهمة بحثية				✓			✓	✓		
مهمة إعداد التقارير	✓		✓	✓		✓			✓	
تعيين المشروع										
الأسئلة داخل المحاضرة	✓	✓	✓	✓	✓	✓				

8.2. جدول التقييم وتوزيع الدرجات:

طريقة التقييم	الدرجة	التوقيت	وقت الامتحان
الامتحان النهائي	40	الاسبوع 14	90 دقيقة.
الامتحان التحريري لنصف الترم الدراسي	20	الاسبوع 8	60 دقيقة.
إمتحانات تقيمية و تحريرة قصيرة (خلال الترم الدراسي)	20	وفقا للجدول الزمني	---
اختبارات/تقارير/عرض تقديمي (خلال الترم)	20	وفقا للجدول الزمني	---
مجموع الدراجات	100		

9- المرافقات المطلوبة للتعليم والتعلم:

A- قاعة محاضرات مجهزة .
B- المكتبات المركزية والفرعية .
C- الوسائل التعليمية (داتا شو) وجهاز كمبيوتر محمول.
D- مُذكرة لتدريس المقرر وكشوف متابعة للطلاب

10-قائمة المراجع:

10.1. كتاب المقرر:

1- " الإتجاهات الفنية المعاصرة " مذكرات المقرر
2- عروض تقديمية (بوربوبينت) يعطى للطلاب جزء بجزء

10.2. الكتب المرجعية المطلوبة والمراجع الإضافية:

- محمود خالد بشايرة ، التربية الفنية وتنمية التفكير-اتجاهات حديثة في التدريس، عالم الكتب الحديث 25أبريل 2009

a. الكتب الموصى بها:

- محمود خالد بشايرة ، التربية الفنية وتنمية التفكير-اتجاهات حديثة في التدريس، عالم الكتب الحديث 25أبريل 2009

b. المواقع الإلكترونية:

- https://ar.wikipedia.org/wiki
- http://www.du.edu.eg/
- https://www.youtube.com/watch?v=bnCua19M_EA

القائمين علي مراجعة وتقيم المقرر	الإسم	توقيع
أعضاء هيئة التدريس	د/	
منسق المقرر	د/	
رئيس القسم	أ.د. محمد عبد العاطي	
تاريخ الموافقة		

المعهد التكنولوجي العالي (HTI)

القسم: قسم العلوم الأساسية

توصيف مقرر
الحضارة العربية والإسلامية : HUM 103

أ – الانتماء (إنتساب المقرر)

البرنامج المانح :	جميع البرامج الهندسية
القسم المقدم للبرنامج:	جميع الأقسام الهندسية
القسم الذي يقوم بتدريس المقرر:	قسم العلوم الأساسية

ب – المعلومات الأساسية

عنوان المقرر	الحضارة العربية والإسلامية				كود المقرر	HUM 103	
المستوى الدراسي	مرحلة الدبلوم				الساعات المعتمدة	2	
ساعات الإتصال الكلية	2	محاضرة	2	سكشن	0	مختبر	0
المتطلب السابق	لا يوجد						

2- أهداف المقرر:

يهدف المقرر إلى تعريف الطالب بالحضارة العربية والإسلامية بحيث يكون لدى الطالب قدر من المعرفة عما يلى:

- أسس الحضارة الإسلامية، من حيث القرآن والسنة، والأمة العربية، ثم اللغة العربية، فالإطار التاريخي، ثم الشعوب المفتوحة، فالتأثيرات الأجنبية.
- أركان النظام السياسي والإداري والمالي والقضائي والتعليمي في الحضارة العربية والإسلامية.
- النظم العسكرية في الجيش والأسطول من حيث طرق التكوين والتسليح.
- التعرف على عناصر وأجناس المجتمع الإسلامي.
- يتفهم الطالب احوال العرب قبل الاسلام
- يتفهم الطالب احوال العرب بعد الاسلام
- يدرك الطالب غرس مبادئ و اساسيات الحضارة العربية الاسلامية
- يدرك الطالب النواحى الانسانية فى الحضارة العربية الاسلامية و فى السيرة النبوية العطرة
- يدرك الطالب اشكال القدوة و المثل و الانتماء فى الحضارة العربية الاسلامية

3- الأهداف التعلمية المقرر (CLO):

في نهاية هذا المقرر، يجب أن يكون الطالب قادرا على:

CLO 1	شرح أسس الحضارة الإسلامية .
CLO 2	معرفة أركان النظم السياسى والإدارية و المالية و القضائية والتعليمية في الحضارة الإسلامية.
CLO 3	مقارنة النظم العسكرية و التعليمية والثقافية.

3- العلاقة بين المقرر و الجدارات (الكفاءات) الهندسية :

نطاق الإرتباط	المعيار المرجعي الأكاديمي الوطني (NARS)	
	الكفاءات الهندسية الأساسية (As)	كفاءات الهندسية لبرنامج الهندسة -- ----
المعايير الأكاديمية للبرنامج التي يساهم المقرر في تحقيقها	A3, A4, A5, A6, A10	Bs or Cs

4.1 - مخرجات التعلم (LOs) :

عند الانتهاء من دراسة المقرر، يجب أن يكون لدى الطالب القدرة على:

LO 1	الوعي بأهم الأحداث التي مرت بها الحضارة العربية والإسلامية.
LO 2	إدراك الأسس التي نهضت عليها الحضارة العربية والإسلامية.
LO 3	إدراك قيمة وعظمة الحضارة العربية والإسلامية.
LO 4	يستنتج العلاقات بين الأحداث التى مرت بها الحضارة العربية والإسلامية.
LO 5	التحليل والمقارنة بين الأحداث في تلك المرحلة.
LO 6	الربط بين عوامل التأثير والتأثر وما نتج عنها من إيجابيات وسلبيات.
LO 7	تعزيز العديد من السلوكيات والمهارات داخل وخارج نطاق العمل بحيث يعمل ضمن فريق .
LO 8	استخدام المنهج التحليلي والمنهج المقارن عند تناوله للأحداث والموضوعات المختلفة.
LO 9	اكتساب مهارة التنبؤ بالمستقبل من خلال فهم الماضي والحاضر.
LO10	استخدام تكنولوجيا المعلومات بما يخدم الممارسة المهنية.

4.2 إرتباط نواتج التعلم للمقرر (LOs) والمعايير القياسية المرجعية الوطنية (NARS)

نطاق الإرتباط	نواتج التعلم لبرنامج الهندسية الميكانيكية	مخرجات التعلم للمقرر (LOs)									
		LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9	LO10
الجدارات الهندسية الأساسية	A1										
	A2										
	A3	✓	✓				✓				
	A4			✓	✓	✓		✓			
	A5				✓			✓			
	A6										
	A7										✓
	A8								✓		✓
	A9						✓			✓	
	A10										✓
الجدارات الهندسية الأساسية لبرنامج	B1	✓	✓				✓				
	B2			✓	✓	✓		✓			
	B3		✓		✓			✓			
	B4			✓			✓			✓	

الهندسية الميكانيكية	B5						✓		✓		

5- محتوى المقرر:

توصيف المقرر (كما هو موضح في لائحة البرنامج):

يتكون المقرر من تعريف الطالب بالحضـــارة العربية والإســـلامية والأســـس التى قامت عليها، والنظم التى عملت بها، ســـواء سياسية أو إدارية أو مالية أو عسكرية، بالإضافة إلى مكانة العلم والثقافة، والعلوم الشرعية وغيرها من العلوم الأخرى سواء علوم نظرية أو عملية، بالإضـــافة إلى النظام القضـــائي، و غيره من العلوم والفنون الإســـلامية مثل العمارة والآثار وغيرها من الفنون .

موضوعات المقرر

رقم الأسبوع	المواضيع	مجموع الساعات	ساعات الاتصال			LOs التي يحققها المقرر
			محاضرة	سكشن	المختبر	
1	تعريف بالمقرر الدراسى ومقدمة عامه	2	2	0	0	LO 1
2	أسس الحضارة العربية والإسلامية: (القرآن والسنة – الأمة العربية - اللغة العربية – الإطار الجغرافي - الشعوب المفتوحة – التأثيرات الأجنبية).	2	2	0	0	LO 2
3	النظام السياسى : (الخلافة - الوزارة - الكتابة – الحجابة).	2	2	0	0	LO 2
4	النظام الإداري: (الإدارات المحلية – دواوين الجند والخراج والرسائل والبريد ..... إلخ).	2	2	0	0	LO 3
5	النظام المالى : (موارد بيت المال –النفقات – السكة)	2	2	0	0	LO 3
6	النظم العسكرية : (الجيش : تكوينه و أسلحته و أساليبه – الأسطول)	2	2	0	0	LO 3
7	التعليم و الثقافة : (العلوم الشرعية "علم الكلام و الفقه" – العلوم العقلية)	2	2	0	0	LO 5
8	إمتحان منتصف الفصل الدراسي					
9	الفنون و الآثار و العمارة .	2	2	0	0	LO 3
10	القضاء و التقاضى .	2	2	0	0	LO 3
11	المجتمع الإسلامي: (عناصره وأجناسه – الطوائف الدينية والمذهبية)	2	2	0	0	LO 5
12	المجتمع الإسلامى : (البناء الطبقى : الحكام و الفقهاء و العلماء و التجار و أصحاب الحرف و الصناعات .....إلخ)	2	2	0	0	LO 8
13	مراجعة عامة	2	2	0	0	LO
14	الإمتحان النهائي					

6- مصفوفة توافق أهداف المقرر الدراسي و نواتج (مخرجات) التعلم

أهداف تعلم المقرر	مخرجات التعلم (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10

CLO 1	✓	✓						✓		
CLO 2			✓				✓	✓	✓	✓
CLO 3	✓		✓		✓	✓		✓		

7- طرق التدريس والتعلم :

طرق التعليم والتعلم	نتائج التعلم (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
محاضرة وجها لوجه	✓	✓	✓	✓	✓	✓				
التعليم عبر الإنترنت	✓	✓			✓					
واجبات منزلية		✓		✓		✓				
مناقشة جماعية	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
مختبر										
زيارة الموقع										
عروض تقديمية بالبوربوينت	✓		✓							
مشروع صغير										
أبحاث وإعداد التقارير							✓	✓		
العصف الذهني	✓	✓				✓		✓	✓	✓
التعلم الذاتي			✓	✓				✓	✓	✓

8- التقييم

8.1 طرق تقييم المقرر:

طرق التقييم	نتائج التعلم (LOs)									
	مخرجات التعلم للمقرر (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
الإمتحان التحريري	✓	✓				✓	✓	✓		
إمتحان عبر الإنترنت										
الامتحان الشفوي			✓	✓						
مسابقات تنافسية									✓	✓
الامتحانات المعملية										
واجبات منزلية	✓		✓		✓					
مهمة بحثية				✓			✓	✓		
مهمة إعداد التقارير	✓		✓	✓		✓			✓	

تعيين المشروع									
الأسئلة داخل المحاضرة	✓	✓	✓	✓	✓	✓			

8.2. جدول التقييم وتوزيع الدرجات:

طريقة التقييم	الدرجة	التوقيت	وقت الامتحان
الامتحان النهائي	40	الاسبوع 14	60 دقيقة.
الامتحان التحريري لنصف الفصل الدراسي	20	الاسبوع 8	45 دقيقة.
امتحانات تقييمية و تحريرية قصيرة (خلال الفصل الدراسي)	20	وفقا للجدول الزمني	---
اختبارات/تقارير/عرض تقديمي (خلال الفصل الدراسي)	20	وفقا للجدول الزمني	---
مجموع الدرجات	100		

9- المرفقات المطلوبة للتعليم والتعلم:

A- قاعة محاضرات مجهزة .
B- المكتبات المركزية والفرعية .
C- الوسائل التعليمية (داتا شو) وجهاز كمبيوتر محمول.
D- مُذكرة لتدريس المقرر وكشوف متابعة للطلاب

10-قائمة المراجع:

10.1. كتاب المقرر:

1- " الحضارة العربية و الإسلامية " مذكرات المقرر
2- عروض تقديمية (بوربوبينت) يعطى للطلاب جزء بجزء

10.2. الكتب المرجعية المطلوبة والمراجع الإضافية:

1- أحمد عبد الرازق، الحضارة الإسلامية فى العصور الوسطى، القاهرة، 2004.
2- فتحية النبراوى،تاريخ النظم و الحضارة الإسلامية، القاهرة، 1985 .
3- عباس محمود العقاد: أثر العرب في الحضارة الأوربية، دار المعارف، القاهرة 1960.
4- عبد المنعم ماجد، تاريخ الحضارة الإسلامية فى العصور الوسطى، القاهرة 1978.
5- عبدالرحمن حسن الميدانى الحضارةالاسلامية أسسها و وسائلها و صور من تطبيقات المسلمين لها و لمحات من تأثيرها فى سائر الأمم 1998
6- راغب راغب السرجانى ماذا قدم المسلمون للعالم إسهامات المسلمين فى الحضارة الإنسانية 2009
7- سعيد عاشور و سعد زغلول عبد الحميد دراسات فى تاريخ الحضارة العربية الإسلامية 1996

a. الكتب الموصى بها:

1- أحمد عبد الرازق، الحضارة الإسلامية فى العصور الوسطى، القاهرة، 2004.

b. المواقع الإلكترونية:

- https://ar.wikipedia.org/wiki

- http://www.du.edu.eg/
- https://www.youtube.com/watch?v=bnCua19M_EA

القائمين علي مراجعة وتقيم المقرر	الإسم	توقيع
أعضاء هيئة التدريس	أ م د جيهان السيد د/ خالد الشربينى	
منسق المقرر	د/ خالد الشربينى	
رئيس القسم	أ.د. عيد عبد الباسط عيد	
تاريخ الموافقة		

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 144: Properties and Testing of Materials (3)

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	**Properties and Testing of Materials (3)**			**Course Code:**		CIV 144	
Program /level	Civil Engineering			Senior (1)			
Term/ Academic year:	OCT-Jan2023-2024			**Credit Hours:**		**2**	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	0	**Laboratories:**	1
Pre-Requisite	CIV 124						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- The different kinds of destructive, hardness, Impact, creep, and Fatigue tests.
- Microstructure of materials.
- The different kinds of Non-destructive tests.
- Discussions about: Atomic Arrangements, Structural imperfections and single-phase metals.
- Study Iron carbon alloys, Heat treatment of Carbon steel and the iron carbon diagram.
- Brief introduction to experimental stress analysis.
- The application of welding (types, defects and testing).

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1. Understand and apply the various specs, codes, and standards considering the choice and tests of materials.

CLO 2. Recognize the various types of non-destructive tests.

CLO 3. Recognize the various types of alloys and construction steels.

CLO 4. Learn about the Atomic, molecular, and crystal structures.

CLO 5. Learn about phases of materials.

CLO6. Identify the different types of welding and their tests.

3- Relationship between the course and the Competencies:

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV
Program Academic Standards that the course contributes in achieving	A1, A2, A4, A10	B1

4- Mapping Course Los to NARS

Field	Program (CBEs) that the course contributes in achieving	Learning Outcomes (LOs)
COMPETENCIES of ENGINEERING	**A1**. Identify, and solve complex engineering problems by applying, basic science, and mathematics.	LO1- Identify basic fundamentals of destructive and nondestructive tests. LO2- Identify difference between short and long period tests. LO3- Identify different types of welding. LO4- Recognize the different types of atomic structures, imperfections, and phases of materials. LO5- Recognize the different types of Carbon-steel and copper alloys.

	A2. Develop and conduct appropriate experimentation, analyze and interpret data, assess and evaluate findings, and engineering judgment to draw conclusions.	LO6- Conduct non-destructive and destructive tests on materials. LO7- Assess and evaluate the materials under specs and codes requirements. LO8- Analyze and interpret stress and strain data.
	A4. Utilize engineering technologies, codes of practice and standards, quality guidelines, health and safety requirements.	LO9- Utilize codes, and standards in the evaluation and choice of materials ingredients.
	A10. Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.	LO10- Develop a comprehensive understanding of the influence of material's microstructure on its mechanical and physical properties.
COMPETENCIES of CIV 144	**B1.** Select appropriate and sustainable technologies for retrofitting of buildings; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques.	LO11- Select material properties according to design requirements. LO12-Use materials testing to meet the requirements Properties and Strength of materials for construction elements.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Metals: Hardness, Testing in Impact, Fatigue and Creep, Non-destructive tests, welding: Types, Defects and Testing. Selected topics from: Atomic Arrangements, Structural imperfections, Single phase metals, Binary alloys, and Iron carbon alloys, Heat treatment of Carbon steels. Cast iron, copper and copper alloys, Experimental Stress Analysis.

5.2. Course Topics/hours/Los Matrix

Week No.	Topic	*Total Hours*	*Contact hrs*			LOs Coveredby Course
			Lec.	**Tut.**	**Lab.**	
Week -1	Introduction	3	2	0	1	**LO1**
Week-2	Microstructure of cementitious materials.	3	2	0	1	**LO1, LO6, LO7, LO9, LO10, LO11**
Week-3	Microstructure of cementitious materials (SM, BSE, EDEX)	3	2	0	1	**LO1, LO6, LO7, LO9, LO10, LO11**
Week-4	Destructive tests (Fatigue test)	3	2	0	1	**LO1, LO2, LO6, LO7, LO9, LO10, LO11**
Week5	Long term test (Creep)	3	2	0	1	**LO1, LO2, LO6, LO7, LO9, LO10, LO11**
Week-6	Non-destructive tests	3	2	0	1	**LO1, LO2, LO6, LO7, LO9, LO10, LO11**
Week-7	Non-destructive tests	3	2	0	1	**LO1, LO6, LO7, LO9, LO10, LO11**
Week-8	**Midterm Exam.**					
Week-9	Atomic Arrangements	3	2	0	1	**LO4**
Week-10	Structural imperfections and Singlephase metals.	3	2	0	1	**LO4**
Week-11	Iron carbon alloys, Heat treatment of Carbon steel and the iron carbon diagram.	3	2	0	1	**LO5**
Week-12	Iron carbon alloys, Heat treatment of Carbon steel and the iron carbon diagram.	3	2	0	1	**LO5**
Week-13	Brief introduction about experimental stress analysis.	3	2	0	1	**LO8**
Week-14	Welding types, specs, defects and testing.	3	2	0	1	**LO3,LO10,LO11**
Week 15	**Final Exam.**					

5.3. Experiment Topics:

Serial	Experiment	Laboratory hrs.
1st	hardness	1
2nd	impact	1

6- Matrix of Course Objective and Los

Course Learning Objectives	Learning Outcomes (LOs)											
	General										CIV 144	
	LO1	LO2	LO3	LO 4	LO 5	LO6	LO7	LO8	LO9	LO10	LO11	LO12
CLO 1	√	√				√	√		√	√	√	√
CLO 2	√	√				√	√		√		√	√
CLO 3					√							
CLO 4				√								
CLO 5								√				
CLO 6				√								

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	Learning Outcome (LOs)											
	General										CIV 144	
	LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9	LO10	LO11	LO12
Face-to-Face Lecture	√	√	√	√	√	√	√	√	√	√	√	√
Online Education												
Tutorial/ Exercise	√	√				√		√		√		
Group Discussion									√		√	√
Laboratory	√	√										
Site Visit												
Presentation												
Mini Project												
Research and Reporting												
Brainstorming												
Self-Learning												

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	Learning Outcome (LOs)											
	General										CIV 144	
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10	LO11	LO 12
Written Exam	√	√	√	√	√	√	√	√	√	√	√	√
Online Exam												
Oral Exam												
Quiz	√	√				√		√				
Lab Exam	√	√										
Take-Home Exam												
Research Assignment												
Reporting Assignment	√	√	√									
Project Assignment												
In-Class Questions				√			√					√

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**5**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**15**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9-Facilities Required:

A- White board
B- Data Show
C- Materials Lab
D- MS teams

10 List of References:

10.1. Course Notes:

- Lecture notes

10.2. Recommended Books:

-W.d.callister, david g. Rethwisch, Materials science and engineering an introduction, Wiley , ISBN: 14485, 2007.

-B.onouye, Satics and strength of materials for architecture and building construction, Pearson, ISBN 14712, 2007.

-Soutso M., construction materials, Routledge (Taylor&Francis Group), ISBN 9781498741101, 2018.

Course Directors	Name	Signature
Teaching staff	Dr.Sahar El sayed Zakey	
Course coordinator	Ass. Prof .Sherif H. Al-Tersawy	
Program coordinator	Ass. Prof .Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof .Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 211: Transportation Planning and Traffic Engineering

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Transportation Planning			**Course Code:**		CIV 211	
Program / level	Civil Engineering			**SENIOR (2)**			
Term/ Academic year:	OCT-Jan 2023-2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	-----
Pre-Requisite							
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

Course Aims:

1- The course of Transportation Planning and Traffic Engineering aims to provide students with high quality education and to prepare them for a successful professional career

2- produce graduates take the responsibility of planning transportation networks and achieving traffic safety.

Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Recognize transportation systems and organization.

CLO 2. Act professionally in planning of transportation networks.

CLO 3. Recognize concepts and theories of traffic stream characteristics.

CLO 4. Analysis capacity and level of service and traffic operation.

3- ***Relationship between the course and the Competencies :***

Field	National Academic Reference Standard(NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV256
Program Academic Standards that the course contributes in achieving	A2,A3,A5	B2

4- ***Mapping Course Los to NARS***

Field	Program(CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A2.**Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 1.**use statistical analyses and objective engineering judgment to draw conclusions.
	A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	**LO 2**.Apply engineering design processes to produce cost-effective solutions.
	A5. Practice research techniques and methods of investigation as an inherent part of learning.	**LO 3**.Practice research techniques and methods of investigation as an inherent part of learning.
	B2. Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbors; or any other emerging field relevant to the discipline.	**LO 4**. Achieve an optimum planning of transportation networks. **LO5.** Forecasting travel demand. **LO 6**.Making balance between traffic demand and supply. **LO 7**. Achieve traffic safety. **LO 8**. Analyse road capacity and level of service.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

The course has the objective of introducing the fundamentals of transportation planning and traffic engineering to the civil engineering undergraduate students. **Transportation planning**: Introduction to transportation planning. Objectives and goals and transportation planning, Stages of the urban and regional transportation planning, Data collection process required for the transportation plans, Stages of travel demand forecasting using the traditional sequential approach, Trip generation, Trip distribution, Mode split and trip assignment. Evaluation of transportation projects.**Traffic engineering**: Human and vehicle characteristics, Traffic studies (volume, speed, density, travel time and delay), Traffic counting methods, Traffic flow characteristics,Capacity analysis and level of service, Traffic control devices

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week-1	Introduction and Transportation planning elements	3	2	1	---	**LO1**
Week-2	Transportation systems and organization	3	2	1	---	**LO 1, LO 2**
Week-3	Transportation planning process	3	2	1	---	**LO 3**
Week-4	Transportation planning process	3	2	1	---	**LO 3, LO5**
Week5	Transportation models for travel demand forecasting stages	3	2	1	---	**LO 1, LO 7**
Week-6	Transportation models for travel demand forecasting stages	3	2	1	---	**LO1, LO 6**
Week-7	Transportation models for travel demand forecasting stages	3	2	1	---	**LO 3, LO 3**
Week-8	**Semester exam**					
Week-9	Traffic engineering scope and approaches Human and vehicle characteristics	3	2	1	---	**LO 3, LO8**
Week-10	Traffic Engineering studies	3	2	1	---	**LO2, LO 7**
Week-11	Traffic Engineering studies	3	2	1	---	**LO 3, LO4**
Week-12	Traffic stream characteristics	3	2	1	---	**LO4**
Week-13	Capacity analysis and level of service	3	2	1	---	**LO 4, LO8**
Week-14	Traffic operation and control Accident analysis	3	2	1	---	**LO7**
Week 15	**Final term exam**					

5.3. Experiment Topics:

Serial	Experiment	Laboratory hrs.
1st	NA	---

6- Matrix of Course Objective and Los

Course Learning Objectives	Learning Outcomes (LOs)							
	LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8
CLO 1		*	*					
CLO 2	*				*			
CLO 3				*			*	
CLO 4						*		*
CLO 5			*				*	

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)							
	General	CIV211						
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8
Face-to-Face Lecture	*	*	*	*	*	*	*	*
electronic Education	*	*	*	*	*	*	*	*
Tutorial/ Exercise	*	*	*	*	*	*	*	*
Group Discussion								
Laboratory								
Site Visit								
Presentation	*	*	*	*	*	*	*	*
Mini Project								
Research and Reporting				*	*	*	*	*
Brain Storming								
Self-Learning								

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)							
	General							
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8
Written Exam	*	*	*	*	*	*	*	*
Online Exam								
Oral Exam			*	*	*			
Quiz								
Lab Exam								
Take-Home Exam								
Research Assignment	*	*						
Reporting Assignment							*	*
Project Assignment				*	*			
In-Class Questions						*	*	*

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

6- *Facilities Required:*

A- White board
B- Data show
C- MS Teams

7- *List of References:*

10.1. Course Notes:

- Lecture notes

10.2. Required Text Books and Additional References:

1- .“Traffic Engineering Handbook“,McShane, Willium R., Roess, Roger P., Prentice-Hall, Inc., Englewood Cliffs, New Gersey, USA,1990.
2-"Highway Traffic Analysis and Design", Salter, R. J., The Macmillan Press, Ltd., 1992.
3-" Highway Capacity Manual", Transportation Research Board, , 2000
4-" مبادئ تخطيط النقل وهندسة المرور"- كلية الهندسة - جامعة عين شمس.

Course Directors	Name	Signature
Teaching staff	Dr. Amr Nada	
Course coordinator	Dr. Amr Nada	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023-2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 212: Specifications, Bids and Contracts

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information							
Course Title:	Specifications, Bids and Contracts			**Course Code:**		CIV 212	
Program / level	Civil Engineering			**SENIOR (1)**			
Term/ Academic year:	OCT-Jan2023-2024			**Credit Hours:**		1	
Contact Hours:	2	**Lecture:**	1	**Tutorial:**	1	**Laboratories:**	0
Pre-Requisite	CIV 101, CIV 153						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

This course introduces students to Introduction to the legal and contractual aspects of the construction industry and includes:

1. Techniques for coordinating decisions and actions in the design and construction of engineering projects.
2. Resource loading and cost crashing concepts with and without resource limitations.
3. Bidding strategies and procedures. Different types of Specifications.
4. Quantity surveying principals - Claims- Disputes – Contacts types.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Offers a rather comprehensive introduction to the the legal and contractual aspects of the construction industry.

CLO 2. Learn the behaviour and techniques for coordinating decisions and actions in the design and construction of engineering projects.

CLO 3. Bidding strategies and procedures. Different types of Specifications.

CLO 4. Deal with Quantity surveying principals - Claims- Disputes – Contacts types.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING (General)	COMPETENCIES of CIV 212
Program Academic Standards that the course contributes in achieving	A2, A3, A4, A5, A6, A8	B3, B4

4- *Mapping Course Los to NARS*

Course Outcomes

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A2.** Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 1**. Identify Bidding strategies and procedures **LO 2**. Identify the different types of Specifications
	A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	**LO 3**. Apply the different solutions of expected and unexpected technical Quantity surveying principals
	A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	**LO 4**. Describe the engineering projects **LO 5.** State the Claims, Disputes, and Contacts types.
	A5. Practice research techniques and methods of investigation as an inherent part of learning.	**LO 6.** Illustrate the Different types of Specifications.
	A6. Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	**LO 7.** Plan construction of engineering projects documentation.
	A8. Communicate effectively – graphically, verbally and in writing- with arrange of audiences using contemporary tools	**LO 8.** State the tender price of construction projects and estimate the contractor tender
COMPETENCIES of CIV212	**B3.** Plan and manage construction processes; address construction defects, instability and quality issues; maintain safety measures in construction and materials; and assess environmental impacts of projects.	**LO 9**. Develop the Knowledge of construction contracts.

	B4. Deal with biddings, contracts and financial issues including project insurance and guarantees	**LO 10**. Develop the Knowledge of construction contracts.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Introduction to the legal and contractual aspects of the construction industry. Techniques for coordinating decisions and actions in the design and construction of engineering projects. Bidding strategies and procedures. Different types of Specifications. Contract documents. Quantity surveying principals - Claims- Disputes – Contacts types.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			LOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction to the legal and contractual aspects of the construction industry	2	1	1	0	**LO 1, LO 7, LO 8**
Week-2	Introduction to the legal and contractual aspects of the construction industry	2	1	1	0	**LO 2**
Week-3	Techniques for coordinating decisions and actions in the design and construction of engineering projects	2	1	1	0	**LO 3, LO 9**
Week-4	Techniques for coordinating decisions and actions in the design and construction of engineering projects.	2	1	1	0	**LO 3**
Week5	Techniques for coordinating decisions and actions in the design and construction of engineering projects.	2	1	1	0	**LO 4, LO 5**
Week-6	Bidding strategies and procedures.	2	1	1	0	**LO 10, LO 5**
Week-7	Revision and Midterm Exam	2	1	1	0	**LO 4, LO 5**
Week-8	**Midterm Exam.**					
Week-9	Different types of Specifications. Contract documents	2	1	1	0	**LO 4, LO 5**
Week-10	Different types of Specifications. Contract documents	2	1	1	0	**LO 2, L O 9**

Week-11	Quantity surveying principals.	2	1	1	0	**LO 6**
Week-12	Quantity surveying principals.	2	1	1	0	
Week-13	Claims- Disputes – Contacts types.	2	1	1	0	**LO 4, LO 5**
Week-14	Claims- Disputes – Contacts types.	2	1	1	0	**LO 4, LO 10,**
Week 15	Final Exam					

5.3. Experiment Topics:

Not Applicable

6- Matrix of Course Objective and LOs

Course Learning Objectives				**Learning Outcomes (LOs)**						
	COMPETENCIES of ENGINEERING (General)								**civil**	
	LO 1	**LO 2**	**LO 3**	**LO 4**	**LO 5**	**LO 6**	**LO 7**	**LO 8**	**LO 9**	**LO 10**
CLO 1	√	√	√				√	√		
CLO 2				√	√	√			√	
CLO 3				√	√	√			√	√
CLO 4				√	√			√		√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome* (LOs)									
	COMPETENCIES of ENGINEERING (General)								CIV212	
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
Face-to-Face Lecture	√	√	√	√	√	√	√	√		
Online Education										
Tutorial/ Exercise		√	√		√	√	√	√	√	√
Group Discussion	√						√	√		
Laboratory										
Site Visit										
Presentation							√	√		
Mini Project		√	√	√	√	√				
Research and Reporting	√						√	√		
Brain Storming	√									
Self-Learning		√		√		√	√		√	√

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods		*Learning Outcome*(LOs)								
	COMPETENCIES of ENGINEERING (General)								CIV212	
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
Written Exam		√	√	√	√	√				
Online Exam										
Oral Exam										
Quiz				√	√	√				√
Lab Exam										
Take-Home Exam										
Research Assignment	√									
Reporting Assignment	√						√	√		
Project Assignment	√	√		√	√		√		√	√
In-Class Questions	√	√		√	√	√			√	√

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**	-	---
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- Projector
B- White board

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Text Books and Additional References:

- *Richard H. Clough, et al; 2015.“ Construction Contracting A Practical Guide to Company Management“. Publisher* **Wiley,** *ISBN: (978-1-118-69321-6)*
- *Lukas Klee; 2018, “International Construction Contract Law". Publisher* **Wiley-Blackwell** *, ISBN: (9781119430384)*
- *Donald Charrett; 2018 “The Application of Contracts in Engineering and Construction Projects“. Publisher* Informa Law from Routledge, *ISBN: (*9781351006347*)*
- *The Law of Construction Disputes; Cyril Chern; 2019 The Europa Directory of International Organizations 2021, Informa Law from Routledge, ISBN: (*9781032176932*)*
- *The Europa Directory of International Organizations 2021; Europa Publications; 2021*
- *أ.د. سامي محمد فريج- موسوعة إدارة العقود الهندسية وعقود التشييد- الثلاث الأجزاء* -الناشر: دار الرضا للنشر والتوزيع – مصر

10.3. Recommended Books:

- قانون رقم 182 لسنة 2018 تنظيم التعاقدات واتفاقياته ولائحته التنفيذية. بإصدار قانون تنظيم التعاقدات التى تبرمها الجهات العامة
- القانون المدنى المصرى قانون رقم ١٣١ لسنة ١٩٤٨ بإصدار القانون المدني وآخر تعديلاته في١٣ أكتوبر عام ٢٠٢١.
- قانون رقم ١٠٤ لسنة ١٩٩٢ بإنشاء الاتحاد المصرى لمقاولى التشييد والبناء

- FIDIC Books 2021

10.4. Web Sites:

- International Federation of Consulting Engineers https://fidic.org/
- Construction Management **Association** of America; https://www.cmaanet.org/ (1982-now)
-
- Project Management **Institute**; **https://www.pmi.org/** (1969- now)
- American Society of Civil Engineers; https://www.Asce.org/ (1852 to now)

Course Directors	Name	Signature
Teaching staff	Dr Asmaa Ahmed Salman	
Course coordinator	Dr. Mahmoud Malek Olwan	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	
Course Specification	
CIV 213: Reinforced Concrete 2	

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information							
Course Title:	Reinforced Concrete 2			**Course Code:**		CIV 213	
Program /Level	Civil Engineering			**SENIOR (1)**			
Term/ Academic year:	OCT-Jan2023-2024			**Credit Hours:**		3	
Contact Hours:	5	**Lecture:**	2	**Tutorial:**	2	**Laboratories:**	1
Pre-Requisite	CIV 153						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- Understanding the concept and ideas explicitly in terms of previous learning.
- Emphasize the relationship between conceptual understanding and design-solving approach.
- Provide students with strong forecasts of engineering-design practice.
- The students will be able to act professionally in identifying the suitable statical system for the different structural systems. Analysis and design of special slabs (hollow block slab, flat slab). Analysis and design for shear and torsion, design methodologies for columns, and different types of stairs.

2- Course Learning Objectives (CLO):

At the end of this course, the student should be able to:

CLO 1. Contract the essential items of evaluating the design of hollow block slabs, flat slabs structural system, and beam elements and their practical application for reinforced concrete structures.

CLO 2. Achieve optimum design method of hollow block slab and flat slab structural system.

CLO 3. Study the behavior of shear and torsion members. Examine the crack pattern for reinforced concrete beams failed in shear/ torsion.

CLO 4. Analysis of the calculation notes on the design of special slabs, stairs, and columns.

CLO 5. List the design methodologies for the design of columns

CLO 6. Prepare the structure design drawings and calculation sheet.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 213
Program Academic Standards that the course contributes in achieving	A2, A3, A4, A10	B1, B2

4- *Mapping Course Los to NARS*

Field	Program (CBEs) that the course contributes in achieving	Learning Outcomes(Los)
COMPETENCIES of ENGINEERING	**A2.** Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 1.** Identify the concrete properties of flexure, and torsion members to solve engineering-based design problems by applying design formulas.

		LO 2. Conduct design parameters of flexure, torsion, shear, and normal members. **LO 3**. Employ the Egyptian code in the design of flexure, torsion, shear, and normal members.
	A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	**LO 4**. List the design methodologies for the design of columns. **LO 5.** Describe the different types of stairs.
	A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	**LO 6.** Apply the design process of reinforced concrete flat and hollow block slabs system to produce a cost-effective design.
	A10. Acquire and apply new knowledge, and practice self, lifelong and other learning strategies.	**LO 7.** Utilize code practices and standards to design appropriate special slabs system, columns, and stairs.
COMPETENCIES of CIV 213	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 8**. Calculate the axial loads acting on columns. **LO 9**. Utilize the Egyptian code in the design and construction of reinforced concrete structures. **LO 10**. Select the appropriate structural system.
	B2. Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbors;	**LO 11.** Achieve optimum design of special slab-system and flexure, torsion members. **LO 12**. Analysis of concrete shear and torsion strength and the safe design of beam elements.

	or any other emerging field relevant to the discipline.	

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Design of floor systems, one way, two ways, ribbed, hollow and flat slabs. Examine compressive strength of hollow block prism with dimensions 400x200x200. Design for torsion, combined shear and torsion by the strength method. In addition, testing prototype of reinforced concrete beam under shear/ torsion to determine the different failure modes. Design of continuous beams. Moment redistribution for minimum rotation capacity. Design of columns under axial and eccentric loading, short and long columns, Staircases, and Footings. Test prototype of columns under axial compression load to determine the effect of buckling.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**Los Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Special slabs – introduction – ribbed slabs – hollow block slabs. Determine the axial compression load for standard blocks 400x200x200.	5	2	2	1	**LO 1, LO 6, LO 7**
Week-2	Analysis and design of hollow block slabs. Preparation of detailed drawings.	5	2	2	1	**LO 6, LO 7, LO 9**
Week-3	Analysis and design of hidden beams. Term project 1 for Hollow block slab.	5	2	2	1	**LO 1, LO 11**
Week-4	Introduction on Flat slab, minimum dimensions. Equivalent frame method empirical method for solving flat slabs.	5	2	2	1	**LO 1, LO 6 LO 7, LO 9**
Week5	Check for punching shear and reinforcement details for flat slab Term project 2 for a flat slab.	5	2	2	1	**LO 1, LO 3, LO 11**
Week-6	Stair design – slab type stairs – cantilever type stairs – reinforcement	5	2	2	1	**LO 1, LO 3, LO 5, LO 7,**

	details of stairs.					**LO 10**
Week-7	Design of sections subjected to torsion moment accompanied with shear force – code requirement details. Crack pattern for reinforced concrete beams failed in shear, and torsion.	5	2	2	1	**LO 1, LO 2, LO 12**
Week-8	**Midterm Exam.**					
Week-9	Introduction Columns, design of tied short columns and design of spiral short columns. Test small scales of short and spiral under axial compression load	5	2	2	1	**LO 2, LO4, LO 9**
Week-10	Loads on columns using actual reactions of beams or using area served method, the effective height of columns, cylinder-ness ratio. Test prototype of columns to determine the buckling effect.	5	2	2	1	**LO 3, LO 8**
Week-11	Check whether the building is braced or un-braced	5	2	2	1	**LO 2, LO3**
Week-12	Check on long columns (braced and un-braced)	5	2	2	1	**LO 2, LO 8**
Week-13	Design of sections subjected to axial compression and uniaxial bending.	5	2	2	1	**LO 1, LO 3**
Week-14	Design of sections subjected to biaxial bending. Term project 3 for columns	5	2	2	1	**LO 1, LO 3**
Week 15	**Final Exam.**					

5.3. Experiment Topics:

Serial	Experiment	Laboratory hrs.
1st	• Axial compression load for standard hollow block 400x200x200. • Test small scales of short and spiral under axial compression load to determine the effect of spiral stirrups. • Axial compression load for small scale of columns to determine the buckling effect. • Test prototype of RC beams unber shear and torsion.	1

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)											
	General							CIV 213				
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO10	LO11	LO12
CLO 1	*	*				*	*		*	*		
CLO 2						*	*		*	*	*	
CLO 3	*	*	*									*
CLO 4				*	*	*	*		*	*		
CLO 5		*	*	*				*	*			
CLO 6			*				*		*	*		

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)											
	General							CIV 213				
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10	LO 11	LO 12
Face-to-Face Lecture	*	*	*	*	*	*	*	*	*	*	*	*
Online Education						*	*					
Tutorial/ Exercise	*	*	*	*	*	*	*	*	*	*	*	*
Group Discussion				*	*							
Laboratory	*	*	*	*		*	*	*	*			*
Site Visit												
Presentation				*	*	*	*	*	*	*		
Mini Project				*	*	*	*	*	*	*		
Research and Reporting	*		*			*	*	*	*			
Brain Storming				*	*					*	*	
Self-Learning												*

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)											
	General							CIV 213				
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10	LO 11	LO 12
Written Exam	*	*	*	*	*	*	*	*	*	*	*	*
Online Exam												
Oral Exam												
Quiz												
Lab Exam												
Take-Home Exam												
Research Assignment	*				*	*	*					
Reporting Assignment	*	*	*	*	*			*				
Project Assignment		*	*	*		*	*	*	*	*		
In-Class Questions												

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End-of-term laboratory exam (*Lab*)	**5**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**15**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- Whiteboard
B- Data show
C- MS Teams

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Text Books and Additional References:

- BULIDING CONSTRUCTION, MADAN MEHTA,2013, USA.
- FUNDAMENTALS OF CONSTRUCTION ESTIMATING, DAVID J. PRATT,2017, USA.
- Design of reinforced concrete structures: Dr. M. Goneem
- Reinforced Concrete: Park and Puly
- Design and construction of reinforced concrete structures ECP-203-2018
- Loads applied on building ECP-208

10.3. Recommended Books:

- ACI-318: American concrete institute (American code for design of reinforced concrete structures.
- ASCE: American society of civil Engineering.
- BS-8110: British code for design of reinforced concrete structures.

10.4. Web Sites:

- **https://dokumen.tips/documents/design-of-reinforced-concrete-structure-volume-1-dr1-mashhour-a-ghoneim.html**
- **http://www.hbrc.edu.eg/**
- **https://www.concrete.org/middleeast.aspx**

Course Directors	Name	Signature
Teaching staff	Dr. Mohamed Elkheshen & Mohamed assran	
Course coordinator	Prof. Essam Khalifa	
Program Coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 214: Theory of Structures (3)

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	**Theory of Structures (3)**			**Course Code:**		CIV 214	
Academic year / level	Oct-Jan. 2023-2024			Senior			
				Credit Hours:		3	
Contact Hours:	4	**Lecture:**	2	**Tutorial:**	2	**Laboratories:**	-----
Pre-Requisite	CIV 143						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- To understand the concept and ideas the explicitly in terms of pervious learning.
- To introduce the meaning of structural deflections including point displacements and rotation and overall structural deflection curves. And to provides the tools for calculating the deflections in different structures by alternative methods.
- To provide students with a strong forecast of the effect of moving loading and influence lines for many structures as beams, frames, and truss.

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2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Define of rather comprehensive introduction of deflection, influence lines, and intermediate structures.

CLO 2. Calculate and draw influence lines for determinate overhanging beams, frames, trusses, and arches.

CLO 3. Recognize deflections using several techniques such as; double integration method, moment area method, conjugate beam method, and virtual work method.

CLO 4. Applying many different applications on deflection

CLO 5. Focus the sense of engineering.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 143
Program Academic Standards that the course contributes in achieving	A2,A3,A9	B1

4- *Mapping Course Los to NARS*

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A2.** Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 1 .** Develop the suitable technique to calculate the deflection and analyze results to draw elastic curves.

	A3. Apply engineering design process to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, and ethical and aspects as appropriate to discipline and within the principles and contexts of sustainable design and development.	**LO2.** Apply to solve environmental problems and its effect on structures as loss of support.
	A9. Use creative innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	**LO 3.** Examine the creative solution for deflections and moving loads with flexible thinking and respond to new situations.
COMPETENCIES of CIV 214	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 4.** Apply a full range of civil engineering concept and techniques by structure analysis. **LO 5.** Define the properties technology for construction analysis by structural analysis.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Structural deformations and deflections due to axial force, bending moment, shear force and torsion. Energy and complementary energy concepts. Virtual work method; linear and nonlinear systems. Castiglione's theorem. Principle of minimum potential energy. Differential equations of beams and beam-columns in static and dynamic equilibrium. Finite difference and Rayleigh-Ritz method of solution; approximate methods of structural analysis; portal and cantilever methods; sketching of deflected shapes. Influence lines of indeterminate structures; trusses and beams.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Beam deflections using the double integration method.	4	2	2	-	**LO 1.**
Week-2	Beam deflection using conjugate beam method.	4	2	2	-	**LO 1. , LO 2.**
Week-3	Beam deflections using the virtual work method.	4	2	2	-	**LO 1. , LO 2. , LO 3.**
Week-4	Frame deflections using the virtual work method.	4	2	2	-	**LO 1. , LO 2.**
Week5	Frame deflections using the virtual work method.	4	2	2	-	**LO 2. , LO 3.**
Week-6	Truss deflections using the virtual work method.	4	2	2	-	**LO 2. , LO 3.**
Week-7	Effect of temperature and settlement on deflection.	4	2	2	-	**LO 2. , LO 3. , LO 4.**
Week-8	**Midterm Exam.**					
Week-9	Influence lines for statically determine simple beams.	4	2	2	-	**LO 3. , LO 4.**
Week-10	Influence lines for statically determine continues beams.	4	2	2	-	**LO 4. , LO 5.**
Week-11	Influence lines for statically determine trusses.	4	2	2	-	**LO 4. , LO 5.**
Week-12	Influence lines for statically determine frames.	4	2	2	-	**LO 5.**
Week-13	Influence lines for statically determine frames.	4	2	2	-	**LO 4. , LO 5.**
Week-14	revision.	4	2	2	-	**LO 4. , LO 5.**
Week 15	**Final Exam.**					

5.3. Experiment Topics: (NA)

Serial	Experiment	Laboratory hrs.
1st	NA	

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)				
	General			CIV 214	
	LO1	LO2	LO3	LO4	LO5
CLO 1	√		√		
CLO 2		√		√	
CLO 3	√	√	√		
CLO 4			√	√	√
CLO 5			√	√	√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	Learning Outcome(LOs)				
	General			CIV 214	
	LO 1	LO 2	LO 3	LO 4	LO 5
Face-to-Face Lecture	√	√	√	√	√
Electronic Education	√	√	√	√	√
Tutorial/ Exercise	√	√	√	√	√
Group Discussion		√	√		√
Laboratory					
Site Visit					
Presentation					
Mini Project		√	√	√	√
Research and Reporting				√	√
Brain Storming			√	√	
Self-Learning			√		√

8-Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)				
	General			CIV 214	
	LO 1	LO 2	LO 3	LO 4	LO 5
Written Exam	√	√	√	√	√
Electronic Exam	√	√	√	√	√
Oral Exam	√	√	√	√	√

Quiz	√	√	√	√	√
Lab Exam					
Take-Home Exam					
Research Assignment		√	√	√	√
Reporting Assignment		√	√	√	√
Project Assignment					
In-Class Questions	√	√	√	√	√

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	6th	90 min.
Midterm written Exam (*Term Work*)	**20**	4th	50 min.
End of term laboratory exam (*Lab*)	**---**	---	---
End of term Oral exam	**---**	---	---
Tutorial and report assessment (*Term Work*)	**15**	weekly	---
Quizzes/ Electronic exams (*Term Work*)	**20**	According to the schedule	---
Report	**5**	5th	---
Total Mark	**100**		

8- Facilities Required:

A- White Board.
B- Data Show.
C- MS Teams.

9- List of References:

10.1. Course Notes:

- Lecture notes available (handed to students part by part).

10.2. Required Text Books and Additional References:

- Theory of structures Vol. 1, W.M.El-Dakhakhni, Dar El-Maaref, Cairo & Civil Engineering Department Library, H.T.I. of 10th of Ramadan.
- Advanced Theory of Structure, V.N.VAZIRAMI, Civil Engineering Department Library, H.T.I. of 10th of Ramadan.
- Analysis of Structures, V.N.VAZIRAMI, Civil Engineering Department Library, H.T.I. of 10th of Ramadan.
- Structural Analysis, J.C.MCCO., Civil Engineering Department Library, H.T.I. of 10th of Ramadan.
- Theory of Structures, R.S.KHURMI, Civil Engineering Department Library, H.T.I. of 10th of Ramadan.

10.3. Web Sites:

- http://www.experiencefestival.com/structural_analysis_-_mechanics_of_materials_methods
- https://ka-engroup.com/2023/01/20/deflection-in-telecom-structure-analysis/

10.4.

Course Directors	Name	Signature
Teaching staff	Dr.Shymaa Mohamed Mukhtar	
Course coordinator	Dr. Morcos Farid Samaan	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 221: Surveying III

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Surveying III			**Course Code:**		CIV 221	
Program / level	Civil Engineering			Senior (1)			
Term/ Academic year:	OCT-Jan2023-2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	0	**Laboratories:**	1
Pre-Requisite	CIV 141						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- To build an understanding of concepts and ideas explicitly in terms of previous learning.
- To emphasize the relationship between conceptual understanding and problem-solving approaches.
- To provide students with a strong foretaste of engineering practice.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Study the use of Total station, measuring Co-ordinates.

CLO 2. How to obtain the distances between two points by Electronic distance measurement (EDM).

CLO 3. Setting out Co-ordinate.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 141
Program Academic Standards that the course contributes in achieving	A1, A10	B1

4- *Mapping Course Los to NARS*

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes (LOs)
COMPETENCIES OF ENGINEERING	**A1.** Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.	**LO 1**. Identify the traversing computation and solve the connected traverse.
COMPETENCIES OF CIV 221	**A10.** Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.	**LO 2.** practice the different methods to measure the geodetic coordinate, and applying the processes of setting out the Co-ordinates.
	B1. Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 3.** Achieve an optimum method to measure the geodetic coordinate.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

To provide an introduction to surveying engineering including geodetic coordinates and their relation to geographic coordinates – geodetic latitude, longitude and azimuth determination from spherical triangle – Different reference ellipsoids and geodetic datum. Global positioning system (GPS), theory of errors.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Define the direct and indirect method to compute coordinates.	3	2	0	1	**LO 2, LO 3**
Week-2	Define the classification of triangulation framework and adjustment.	3	2	0	1	**LO 1, LO 3**
Week-3	Define the using EDM and Total station.	3	2	0	1	**LO 3**
Week-4	Define the sphere, spherical triangle and its parameters.	3	2	0	1	**LO 2, LO 3**
Week5	Define the spherical excess and convergence of meridian.	3	2	0	1	**LO 2, LO 3**
Week-6	Define the sources and kinds of errors and its correction.	3	2	0	1	**LO 1, LO 3**
Week-7	Define the weighted error and its corrections	3	2	0	1	**LO 2**
Week-8	**Midterm Exam.**					
Week-9	Define the GPS and there uses	3	2	0	1	**LO 1, LO 2, LO 3**
Week-10	Defining and calculation of coordinates of occupied and unoccupied station, transformation	3	2	0	1	**LO 2, LO 3**
Week-11	Defining and calculation the conditions of the figure of triangulation	3	2	0	1	**LO 2, LO 3**
Week-12	Defining and application the temporary and permanent adjustment of total station.	3	2	0	1	**LO 1, LO 3**

Week-13	Defining and calculation the coordinates of position using GPS.	3	2	0	1	**LO 3**
Week-14	Final Practical exam.	3	2	0	1	
Week 15	**Final Exam.**					

5.3. Experiment Topics:

Serial	Experiment	Laboratory hrs.
1st	Plan the student in how to compute and set control points.	1
2nd	Plan the student in how to adjustment the triangulation network.	1
3th	Plan the student in how to use Total station instrument.	1
4th	Plan the student in how to adjust the spherical triangle.	1
5th	Training the student in how to compute the coordinates of stations on the spheroid.	1
6th	Plan the student in how to adjust the survey observations using theory of errors	1

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)		
	General	CIV 221	
	LO 1	LO 2	LO 3
Objective #1: Plan the student in how to compute and set control points.	√	√	√
Objective #2: Plan the student in how to adjustment the triangulation network.	√	√	√
Objective #3: Plan the student in how to use Total station instrument.	√	√	√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)		
	General	CIV 221	
	LO 1	LO 2	LO 3
Face-to-Face Lecture	√	√	√
Online Education			
Tutorial/ Exercise	√	√	√
Group Discussion			√
Laboratory	√	√	√
Site Visit	√		√
Presentation		√	
Mini Project	√	√	√
Research and Reporting	√		
Brain Storming			√
Self-Learning		√	

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)		
	General	CIV 221	
	LO 1	LO 2	LO 3
Written Exam	√	√	√
Online Exam			
Oral Exam	√	√	√
Quiz	√	√	
Lab Exam	√	√	√
Take-Home Exam			
Research Assignment			√
Reporting Assignment	√		
Project Assignment	√	√	√
In-Class Questions	√		

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**30**	15th	90 min.
Midterm written Exam (*Term Work*)	**30**	8th	60 min.
End of term laboratory exam (*Lab*)	**10**	14th	Committee
End of term Oral exam	**-**	14th	Committee
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**10**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- Laboratory
B- Theodolite device
C- Projector

10. List of References:

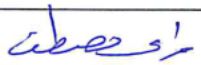
10.1. Course Notes:

- Lecture notes

10.2. Recommended Books:

- A., AGOR, "A Textbook of Advanced Surveying", Khanna Publishers, 2002.
- Duggal, S.K., "Surveying", Volume 2, ISBN-10 : 9353167523, MC Graw Hill India, 2018.
- Dr. B. C. Punmia , Ashok, K. J. , Arun, K. J. | Laxmi "Surveying Volume 2", 8th Edition, National Institute of Technology Goa Farmagudi, Ponda, Goa - 403 401, 2018.

  Bannister, A., Raymond, S. and Baker, R., "Surveying", 6th Edition, ISBN 10: 0582302498, Prentice Hall, 1998.

Course Directors	Name	Signature
Teaching staff	Dr.Ramy mostafa	
Course coordinator	Dr. Amr Nada	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 222: Sanitary Engineering I

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Sanitary Engineering I			**Course Code:**		CIV 222	
Program / level	Civil Engineering			**SENIOR (1)**			
Term/ Academic year:	Oct.-Jan. 2023 - 2024			**Credit Hours:**		3	
Contact Hours:	5	**Lecture:**	2	**Tutorial:**	2	**Laboratories:**	1
Pre-Requisite	CIV 151						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- Introducing raw water sources, water treatment process selection, water demand and population forecasting.
- Laying foundations for the design of different types of raw water abstraction systems, theory and design of coagulation process, theory and design of flocculation process, theory and design of sedimentation process; enhanced sedimentation process, theory and design of different type of filtration processes, and theory of disinfection and softening.
- Developing knowledge on the Design of water supply networks including pumping stations & storage capacity, including appurtenances.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Understanding the essential preliminary studies that shall be conducted for planning, designing, implementing, and operating waste supply systems.

CLO 2. Selection of environmentally sustainable and cost-effective water treatment operations and process to achieve the water treatment objects for a service area.

CLO 3. Design of water treatment plants and distribution systems according to the Egyptian codes of practices, and the internationally recognized best practices.

3- Relationship between the course and the Competencies:

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 222
Program Academic Standards that the course contributes in achieving	A2, A3, A4	B1, B2

4- *Mapping Course Los to NARS*

Field	Program (CBEs) that the course contributes in achieving	Learning Outcomes (LOs)
COMPETENCIES of ENGINEERING	**A2.** Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 1**. Enable the student to calculate and predict the ultimate water treatment and distribution networks'capacities.
	A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	**LO 2.** Develop the student's understanding of water treatment processes to design sustainable .cost-effective systems
	A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	**LO 3.** Develop the student's Engineering design capabilities for water treatment works and distribution systems according to the latest literature and codes of practice.
	B1. Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using	**LO 4**. Enable the student to select the optimum water treatment and distribution

	either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	technologies to ensure the provision of safe treated water to the different consumers.
COMPETENCIES of CIV	**B2.** Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbors; or any other emerging field relevant to the discipline.	**LO 5.** Prepare the student to design and plan water treatment plants and distribution systems

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Introduction to water supply works: sources of water, water quality, rate of water consumption, preliminary studies to estimate water demands. Collection works: types of intakes, location, and design of low lift pumps. Water treatment works: coagulation, clarification, filtration, disinfection, and softening. Storage works: elevated and ground storage. Water distribution works: high lift pumps, design of distribution networks using methods: equivalent pipe method, method of sections, and circle method

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Preliminary studies for water supply projects	5	2	2	1	**LO 1**
Week-2	Population and water consumption	5	2	2	1	**LO1**
Week-3	Water Collection	5	2	2	1	**LO2, 3, 4 & 5**
Week-4	Water Quality	5	2	2	1	**LO 2**
Week5	Plain Sedimentation	5	2	2	1	**LO 2**
Week-6	Plain Sedimentation (Cont.) + Quiz 1	5	2	2	1	**LO 2**
Week-7	Chemical Sedimentation	5	2	2	1	**LO 3, 4 & 5**
Week-8	**Midterm Exam.**					
Week-9	Filtration	5	2	2	1	**LO 2, 3, 4 & 5**
Week-10	Disinfection and ground storage	5	2	2	1	**LO 2, 3, 4 & 5**
Week-11	Disinfection and ground storage (Cont.) + Quiz 2	5	2	2	1	**LO 2, 3, 4 & 5**
Week-12	High lift pumps and elevated tanks	5	2	2	1	**LO 1,3, 4 & 5**
Week-13	Pipe Networks	5	2	2	1	**LO3, 4 & 5**
Week-14	Pipe Networks (Cont.) + Quiz 3	5	2	2	1	**LO 3, 4 & 5**
Week 15	**Final Exam.**					

6- Matrix of Course Objective and Los

Course Learning Objectives	**Learning Outcomes (LOs)**					
	General				**CIV 222**	
		LO 1	**LO 2**	**LO 3**	**LO 4**	**LO 5**
CLO 1		✓	✓			
CLO 2			✓	✓	✓	
CLO 3				✓	✓	✓

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)				
	General			CIV	
	LO 1	LO 2	LO 3	LO 4	LO 5
Face-to-Face Lecture	✓	✓	✓	✓	✓
Online Education					
Tutorial/ Exercise	✓	✓	✓	✓	✓
Group Discussion		✓		✓	
Laboratory	✓	✓	✓	✓	✓
Site Visit					
Presentation					
Mini Project					✓
Research and Reporting					
Brain Storming	✓	✓		✓	
Self-Learning					

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)				
	General			CIV 222	
	LO 1	LO 2	LO 3	LO 4	LO 5
Written Exam	✓	✓	✓	✓	✓
Online Exam					
Oral Exam					
Quiz	✓	✓	✓	✓	✓
Lab Exam	✓	✓	✓	✓	✓
Take-Home Exam					
Research Assignment					
Reporting Assignment					
Project Assignment	✓	✓	✓	✓	✓
In-Class Questions	✓	✓	✓	✓	✓

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.

End of term laboratory exam (*Lab*)	-	15th	Committee
End of term Oral exam	-	15th	Committee
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- Power point lectures.
B- Laptop
C- Data show

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Textbooks and Additional References:

- Water works engineering: planning, design, and operation; Syed R. Qasim, Edward M. Motley, Guang Zhu
- Egyptian Code of Practice for water treatment design, 1998 Ministerial decree 52/1998

10.3. Recommended Books:

- WARREN VIESSMAN, WATER SUPPLY AND POLLUTION CONTROL, 2009, Pearson Prentice Hall, Upper Saddle River, ISBN:9780132337175.
- A.C.PANCHDHARI, WATER SUPPLY AND SANITARY INSTALLATIONS, 1993, Wiley Eastern, New Delhi, ISBN:
- 9788122402803
- G.S.BIRDIE, WATER SUPPLY AND SANITARY ENGINEERING, 1996, Dhanpat Rai and Sons, Delhi, OCLC Number / Unique Identifier:85980440

Course Directors	Name	Signature
Teaching staff	Dr. Fadia Salem	
Course coordinator	Dr. Fadia Salem	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 223: Inland navigation and harbor engineering

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Inland navigation and harbor engineering			**Course Code:**		CIV 223	
Program / level	Civil Engineering			**SENIOR (1)**			
Term/ Academic year:	OCT-Jan2023-2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	-----
Pre-Requisite	CIV 142						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- Knowledge of harbor engineering definition , its different elements , natural phenomena
- Emphasize the relationship between conceptual understanding and problem solving approaches
- Provide students with a strong foretaste of engineering practice.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Introduce Harbor Engineering, Define the Wind,Tides and sea currents, Explain the Wave impact on walls and, state the Shore protection

CLO 2. Determine the Wave refraction and the Wave diffraction Definition Harbor master planning

CLO 3. Definition Harbor master planning

CLO 4. Design the breakwater and berths.

3- ***Relationship between the course and the Competencies :***

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV
Program Academic Standards that the course contributes in achieving	A3,A6, A8	B2

4- ***Mapping Course Los to NARS***

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A3.** Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	**LO1.** Study Wind rose, Tides and sea currents, explain the Wave impact on walls. **LO 2**.design **Break water and berths**
	A6. Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	**LO 3**.Plan a harbor with different items of harbor master planning design - Navigational channel design- Turning basin design
	A8. Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	**LO 4**. **Study the** wave diffraction using Graphical wave diffraction.

COMPETENCIES of CIV	**B2.** Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbors; or any other emerging field relevant to the discipline	**LO 5**. Achieve an optimum design of Harbors.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Introduce Harbor Engineering, Define the Wind,Tides and sea currents, Explain the Wave impact on walls. Definition Harbor master planning. Determine the Wave refraction and the Wave diffraction Definition Harbor master planning and, state the Shore protection. Design the breakwater and berths.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			LOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	**Introduction to harbour engineering** (Definition - Harbour different parts - Factors affecting on harbour design)	3	2	1	0	**LO 1**
Week-2	**Wind study** (Wind definition -Importance of wind study - Different methods for wind rose)	3	2	1	0	**LO1**
Week-3	**Tides and sea currents** **(I**ntroduction- Importance of tides and sea currents - Definitions of tides and sea currents - Sea currents measurement methods). **+Quiz**	3	2	1	0	**LO1**
Week-4	**Wave diffraction** (Introduction to wave diffraction- Wave diffraction definition -	3	2	1	0	**LO1 and LO4**

	Graphical wave diffraction method **+ Quiz**					
Week5	**Wave diffraction** (Introduction to wave diffraction- Wave diffraction definition - Graphical wave diffraction method **+ Quiz**	3	2	1	0	**LO_1 , LO_4**
Week-6	**Wave impact on walls** (introduction - Wave impact assumptions - Different analytical methods of wave impact)**+Quiz**	3	2	1	0	**LO_1 , LO_2**
Week-7	**Wave impact on walls** (introduction - Wave impact assumptions - Different analytical methods of wave impact)**+Quiz**	3	2	1	0	**LO_1 , LO_2**
Week-8	**Midterm Exam.**					
Week-9	Semester Exam **Harbour master planning** (Factors affecting on harbour master planning design - Different items of harbour master planning design - Navigational channel design- Turning basin design - Analytical method for calculating number of harbour berths) .	3	2	1	0	**LO_1 , LO_3**
Week-10	**Harbour master planning** (Factors affecting on harbour master planning design - Different items of harbour master planning design - Navigational channel design- Turning basin design - Analytical method for calculating number of harbour berths) **+Quiz**	3	2	1	0	**LO_1 , LO_3 ,LO_5**
Week-11	**Break water design** (Importance of break water design - Factors affecting on break water planning- Different	3	2	1	0	**LO_1 , LO_4 ,LO_5**

	types of break water- Factors affecting on choosing break water type- Graphical and analytical method of ripple break water design) **+Quiz**					
Week-12	**Shed design Quay wall design** (Introduction- Graphical and analytical method of quay wall design (block type)).–**+Quiz**	3	2	1	0	**LO_1 , LO_4 ,LO_5**
Week-13	**shore protection** (Introduction to sedimentation and erosion - Different types of shore line shape- Different shore protection methods- Analytical method of groins design (system of shore protection)) **+Quiz**	3	2	1	0	**LO_1**
Week-14	Revision	3	2	1	0	**LO_1 , LO_3 ,LO_5**
Week 15	**Final Exam.**					

5.3. Experiment Topics:

Serial	Experiment	Laboratory hrs.
1st	NA	

6- Matrix of Course Objective and Los

Course Learning Objectives	Learning Outcomes (LOs)				
	General				CIV 223
	LO 1	LO 2	LO 3	LO 4	LO 5
CLO 1	*	*	*	*	*
CLO 2		*	*		*
CLO 3			*	*	*
CLO 4			*	*	*

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)				
	General				CIV 223
	LO 1	LO 2	LO 3	LO 4	LO 5
Face-to-Face Lecture	*	*	*	*	*
Online Education					
Tutorial/ Exercise	*	*	*	*	*
Group Discussion	*				
Laboratory					
Site Visit					
Presentation				*	*
Mini Project				*	*
Research and Reporting				*	
Brain Storming					
Self-Learning				*	*

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)				
	General				CIV 223
	LO 1	LO 2	LO 3	LO 4	LO 5
Written Exam	*	*	*	*	*
Online Exam					
Oral Exam					
Quiz	*	*	*	*	*
Lab Exam					
Take-Home Exam	*				
Research Assignment			*	*	
Reporting Assignment			*	*	*
Project Assignment			*	*	*
In-Class Questions					

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**20**	Weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- White board
B- MS teams
C- Data show

10- ist of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Text Books and Additional References:

- **Agerschou, H., Lundgren, H., and Sorensen, T. (1983) "Planning and Design of Ports and Marine Terminals"**
- **Dean, R. and Dalrymple, R. A. (1984) "Wave Mechanics for Engineers and Scientists**
-

10.3. Recommended Books:

- **A. Pecher and J.P. Kofoed (2017.), Handbook of Ocean Wave Energy, Ocean Engineering & Oceanography 7, DOI 10.1007/978-3-319-39889-1_4 , SBN 978-3-319-39889-1 (eBook)**
- **Abou Seida, M. M. (2002) "Introduction to Coastal and Harbor Engineering" Facility of Engineering, Cairo University.**
- **El Mongy, A. (1994) "Natural Phenomena Affecting Harbor and Coastal Process" Facility of Engineering, Ain Shams University**
- **Heikal, E. M. (2003) "Lectures Notes on Harbor Engineering and Marine Structures" Facility of Engineering, Zagazig University**

10.4. Web Sites:

Rageh, O. S. (2003) "Lectures Notes on Harbor Engineering and Marine Structures" Facility of Engineering, Mansoura University.

U. S. Army Corps of Engineers (1977) "Shore Protection Manual".

Course Directors	Name	Signature
Teaching staff	Dr. Ebtehal sayed	
Course coordinator	Ass. Prof. Samah Hassan	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 224: Irrigation Works Design 1

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Irrigation Works Design 1			**Course Code:**		CIV 224	
Program / level	Civil Engineering			**SENIOR (1)**			
Term/ Academic year:	Oct.-Jan. 2023 - 2024			**Credit Hours:**		3	
Contact Hours:	5	**Lecture:**	2	**Tutorial:**	2	**Laboratories:**	1
Pre-Requisite	CIV 122, CIV 155,CIV 213						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- Understand the basics and fundamentals of irrigation.
- Planning and designing canal and drains.
- Understand the functions of the various hydraulic structures.
- Design of hydraulic structures, so the graduate can properly carry out Hydraulic structural design.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Understand the concept of planning canals and drains in irrigation project.

CLO 2. Design the irrigation structure and solve the problems.

CLO 3. Acheive the designing of irrigation system.

3- ***Relationship between the course and the Competencies :***

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 224
Program Academic Standards that the course contributes in achieving	A3, A4, A6	B1, B2

4- ***Mapping Course Los to NARS***

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A3.** Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical, and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	**LO 1.** Methodologies of solving engineering problems, data collection and interpretation. **LO 2**. The principles of sustainable design and development. **LO 3**. Principles of design including elements design, process and/or a system related to Civil Engineering.
	A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	**LO 4**. Utilize the limitations and parameters of designs the structures.
	A6. Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	**LO 5.** Quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues.

	B1. Select appropriate and sustainable technologies for construction of buildings, infrastructures, and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 6**. Solve engineering problems, often on the basis of limited and possibly contradicting information.
COMPETENCIES of CIV 224	**B2.** Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbours; or any other emerging field relevant to the discipline.	**LO 7.**. Select appropriate solutions for engineering problems based on analytical thinking.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

To provide the student with general background on land alignment and canalization including the methodology of drawing the synoptic diagram and designing of longitudinal and cross section of canals and drains. Then the course goes through the design of crossing works such as bridges, culverts, siphons, aqueducts, and escapes.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs.*			LOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction to canals and drains.	5	2	2	1	**LO 2**
Week-2	Alignment of Canal	5	2	2	1	**LO 1, LO 2**
Week-3	Alignment of Drains	5	2	2	1	**LO 1, LO 2**
Week-4	Synoptic Diagram for canals + Quiz	5	2	2	1	**LO 4, LO 5**
Week5	Synoptic Diagram for drains.	5	2	2	1	**LO 4, LO 5**
Week-6	Rotations for Canals + Quiz	5	2	2	1	**LO 3**
Week-7	Design of Cross Section for canal.	5	2	2	1	**LO 3**

Week-8	**Midterm Exam.**					
Week-9	Design of Cross Section for drains.	5	2	2	1	**LO 3**
Week-10	Design of longitudinal section	5	2	2	1	**LO 7**
Week-11	Hydraulic design for bridge.	5	2	2	1	**LO 1, LO 6**
Week-12	Structure design of bridge + Quiz	5	2	2	1	**LO 4, LO 6**
Week-13	Hydraulic design for Culvert	5	2	2	1	**LO 1, LO 6**
Week-14	Structure design for Syphon & Aquduct + Quiz	5	2	2	1	**LO 4, LO 6**
Week 15	**Final Exam.**					

5.3. Experiment Topics:

Serial	Experiment	Laboratory hrs.
1st	Lab drawing using ACAD for design of project content.	13

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)						
	General					CIV 224	
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
CLO 1	*		*	*	*		
CLO 2		*	*	*			
CLO 3				*	*	*	*

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)						
	General					CIV 224	
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
Face-to-Face Lecture	*	*	*	*	*	*	*
Online Education							
Tutorial/ Exercise	*	*	*	*	*	*	*
Group Discussion							
Laboratory							
Site Visit							
Presentation		*					
Mini Project	*		*	*	*	*	*
Research and Reporting							
Brain Storming							
Self-Learning							

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)						
	General					CIV 224	
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
Written Exam	*	*	*	*	*	*	*
Online Exam							
Oral Exam							
Quiz		*	*				
Lab Exam				*	*		
Take-Home Exam							
Research Assignment							
Reporting Assignment							
Project Assignment	*	*	*	*	*	*	*
In-Class Questions							

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**5**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and Project (*Term Work*)	**15**	weekly	---
Quizzes/reports/presentation/ Attendance. (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**	According to the schedule	**90 min.**

9- Facilities Required:

A- Lecture room equipped with Data show.
B- White board and markers.
C- Suitable room for exercises.

10- List of References:

10.1. Course Notes:

- Lecture notes.

10.2. Recommended References:

- IRRIGATION ENGINEERING AND HYDRAULIC, by DR S.K. SHARMA (S. Chand PUBLISHING), ISBN, 9352533771, 9789352533779, 2016.
- Soutso M., construction materials, Routledge (Taylor&Francis Group), ISBN 9781498741101, 2018.

Course Directors	Name	Signature
Teaching staff	Dr. Mohammad Anas	
Course coordinator	Ass. Prof. samah hassan	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 225 : Theory of Structures (4)

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	**Theory of Structures (2)**			**Course Code:**		CIV 225	
Academic year / level	Oct.-Jan. 2023 - 2024			Credit hours		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	-----
Pre-Requisite	CIV 214						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- Understanding the concept and ideas the explicitly in terms of pervious learning.
- Calculate reactions for different kinds of indeterminate structures.
- To illustrate the concept of internal forces in structural elements and practice the students to identify, compute and draw these forces in different types of indeterminate structures.
- Understanding and calculating normal forces, shear forces, and bending moments in indeterminate beams and indeterminate frames.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Evaluation of internal forces equations for indeterminate frames under different kinds of loadings.

CLO 2. Recognize the various types of loads.

CLO 3. Understanding new methods to analysis statically indeterminate structures.

CLO 4. Reactions, shear force, and bending moment diagrams for statically indeterminate frames.

CLO 5. Reactions, shear force, and bending moment diagrams for statically indeterminate closed frames.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 225
Program Academic Standards that the course contributes in achieving	A2,A9	B1

4- ***Mapping Course Los to NARS***

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A2.** Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 1.** To facilitate the solutions of different types of indeterminate structures and to obtain the internal forces diagrams and reactions by alternative methods. **LO 2.** Ability to choose the suitable technique to calculate the reactions, shear force and bending moment diagrams for statically indeterminate structures.
	A9. Use creative innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	**LO 3.** Choose the creative solution for analysis indeterminate structures. **LO 4.** The ability to analyze indeterminate structures manually by choosing the most appropriate method from several ones.
COMPETENCIES of CIV 225	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 5.** Applying a full range of civil engineering concept and techniques by structure analysis. **LO 6.** Distinguish properties technology for construction analysis by structural analysis.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Studying influence lines analysis under moving loads, for statically deternale structures. Calculating structural deformations for statically determent for beams, trusses, archs, and frames. Using virtual work method, double integration method, and conjugate beam method. Effect of temperature and support settlement loading on determinate structure.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Evaluation of structural degree of indeterminacy.	3	2	1	-	**LO 1.**
Week-2	Solution of indeterminate beams by the consistent deformations method.	3	2	1	-	**LO 1. , LO 2.**
Week-3	Solution of indeterminate frames by the consistent deformations method.	3	2	1	-	**LO 1. , LO 2. , LO 3.**
Week-4	Solution of indeterminate trusses by the consistent deformations method.	3	2	1	-	**LO 1. , LO 2.**
Week5	Solution of special indeterminate problems by the consistent deformations method.	3	2	1	-	**LO 1. , LO 4. , LO 6.**
Week-6	Solution of indeterminate frames by the slope deflections method.	3	2	1	-	**LO 1. , LO 3. , LO 4.**
Week-7	Solution of indeterminate closed frames by the slope deflections method.	3	2	1	-	**LO 2. , LO 3. , LO 4. , LO 5.**
Week-8	**Midterm Exam.**					
Week-9	Solution of indeterminate closed frames by the slope deflections method under various types of loads.	3	2	1	-	**LO 1. , LO 3. , LO 5. , LO 6.**
Week-10	Solution of indeterminate beams by the moment distribution method.	3	2	1	-	**LO 1. , LO 3. , LO 5. , LO 6.**
Week-11	Solution of indeterminate frames by the moment distribution method.	3	2	1	-	**LO 1. , LO 3. , LO 4. , LO 5.**
Week-12	Shear stresses in thin-walled sections due to shear force.	3	2	1	-	**LO 1. , LO 3. , LO 4. , LO 5.**
Week-13	Shear flow and shear center.	3	2	1	-	**LO 1. , LO 3. , LO 4. , LO 6.**
Week-14	Shear stresses in thin-walled sections due to torsion moment.	3	2	1	-	**LO 2. , LO 3. , LO 5. , LO 6.**
Week 15	**Final Exam.**					

5.3. Experiment Topics: (NA)

Serial	Experiment	Laboratory hrs.
1st	NA	

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)							
	LO1	LO2	LO3	LO4	LO5	LO6		
CLO 1	√		√					
CLO 2		√		√		√		
CLO 3	√	√	√			√		
CLO 4			√	√	√	√		
CLO 5		√	√		√	√		

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)							
	Gener l	CIV 143						
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6		
Face-to-Face Lecture	√	√	√	√	√	√		
Electronic Education	√	√	√	√	√	√		
Tutorial/ Exercise	√	√	√	√	√	√		
Group Discussion		√	√		√	√		
Laboratory								
Site Visit								
Presentation								
Mini Project								
Research and Reporting					√	√		
Brain Storming			√	√		√		
Self-Learning			√		√			

8-Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)											
	General											
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6						
Written Exam	√	√	√	√	√	√						
Electronic Exam	√	√	√	√	√	√						
Oral Exam	√	√	√	√	√	√						
Quiz	√	√	√	√	√	√						
Lab Exam												
Take-Home Exam												
Research Assignment			√	√	√	√						
Reporting Assignment			√	√	√	√						
Project Assignment												
In-Class Questions		√	√	√	√	√						

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	7th	50 min.
End of term laboratory exam (*Lab*)	**---**	---	---
End of term Oral exam	**---**	---	---
Tutorial and report assessment (*Term Work*)	**15**	weekly	---
Quizzes/ Electronic exams (*Term Work*)	**20**	According to the schedule	---
Report	**5**	12th	---
Total Mark	**100**		

8- Facilities Required:

A- White Board.
B- Data Show.
C- MS Teams.

9- List of References:

10.1. Course Notes:

- Lecture notes available (handed to students part by part).

10.2. Required Text Books and Additional References:

- Theory of structures Vol. 2, El-Dakhakhni, Dar El-Maaref, Cairo - 2018
- Structural Analysis – T.S. Thandavamoorth – 2015 – NewDelhi .

10.3. Recommended Books:

- ASCE.

10.4. Web Sites:

- **http://www.experiencefestival.com/structural_analysis_-_mechanics_of_materials_methods**

Course Directors	Name	Signature
Teaching staff	Dr.Shady Khairy Mahmoud	
Course coordinator	Dr. Morcos Farid Samaan	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 226: Metallic Structures (II)

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:				**Course Code:**		CIV 226	
Program / level	Civil Engineering			**SENIOR (1)**			
Term/ Academic year:	1st term Jan-May 2023-2024			**Credit Hours:**		3	
Contact Hours:	4	**Lecture:**	2	**Tutorial:**	2	**Laboratories:**	-----
Pre-Requisite	CIV 154 – CIV 214						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- To provide an understanding of structure design of different Frames elements.
- To emphasize the relation between conceptual understanding and problem solving aproaches.
- To provide the students with strong foretaste f engineering practice

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1. Complete understanding of the differnce between laterally supported and un-spported beams
CLO 2. Complete design of simple and continuous beams according to the ASD & LRFD
CLO 3. Complete dof esign beam-column elements according to the ASD
CLO 4. Complete structural design and detailing of building connections according to the ASD design formats and Compute a final calculation sheet and complete details for steel frame

*3- **Relationship between the course and the Competencies :***

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 226
Program Academic Standards that the course contributes in achieving	A2, A3, A4, A10	B1, B2

4- *Mapping Course Los to NARS*

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A2.** Develop and conduct appropriate experimentation and/or simulation, analyse and interpret data, assess, and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 1.** Identify the laterally supported and un-supported beams as well as the buckling lengths of different frame elements. **LO 2** Calculate the loads on a steel frame and analyze the internal forces of the frame components and compute their design strengths.
	A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	**LO 3**. Apply the design specification requirements to get the most economic cross-sections for beams.
	A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	**LO 4**. Compute the design strength for the frame component according to the Egyptian code of practice. **LO 5.** Design structural connections that are integrated parts of the overall structural design.

	A10. Acquire and apply new knowledge; and practice self, lifelong, and other learning strategies.	**LO 6.** Develop student ability of to self-extract and manipulate data from different sources, textbooks, and international codes.
COMPETENCIES of CIV 226	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures, and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 7**. Utilize advanced numerical techniques like computer software packages (SAP2000 and/or ETABS) for the analysis and design of steel frames.
	B2. Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbours; or any other emerging field relevant to the discipline.	**LO 8.** Design structural beams and their connections that are integrated parts of the overall structural design. **LO 9**. Produce design drawing necessary for cost estimation.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Basic behaviour of steel structures, including both the component parts and the completed structures. Egyptian code of practice Allowable Stress Design (ASD) and American code and resistant and factor design specification LRFD (AISC). Laterally supported and unsupported Beams, Continuous Beams, Composite Design, Beam - Column Elements, Bracing Systems, Connection detailing, and stiffening. Structural systems include Rigid Frames, Floor Systems and Buildings.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Introduction to Steel Systems for Industrial Buildings	4	2	2	0	**LO 1, LO 7, LO 6**
Week-2	Design of Laterally Supported Simple Beams (ECOP)	4	2	2	0	**LO 2, LO 3, LO 4**

Week-3	Design of Laterally Supported Simple Beams (AISC)	4	2	2	0	**LO 2, LO 3, LO 4, LO 6**
Week-4	Design of Laterally Unsupported Simple Beams (ECOP)	4	2	2	0	**LO 3, LO 4**
Week5	Design of Laterally Unsupported Simple Beams (AISC)	4	2	2	0	**LO 2, LO 3, LO 4, LO 6**
Week-6	Design of Continuous Beams (ECOP)	4	2	2	0	**LO 3, LO 4**
Week-7	Design of Continuous Beams (AISC)	4	2	2	0	**LO 2, LO 3, LO 4, LO 6**
Week-8	**Midterm Exam.**					
Week-9	Design of Beam-Column Elements (ECOP)	4	2	2	0	**LO 3, LO 4**
Week-10	Analysis & Design of Bracing Systems for Industrial Buildings	4	2	2	0	**LO 2, LO3, LO 7**
Week-11	Detailing of Building Connections (Framed Beam Connection)	4	2	2	0	**LO 5, LO 8, LO 9**
Week-12	Detailing of Building Connections (Framed Beam Connection)	4	2	2	0	**LO 5, LO 8, LO 9**
Week-13	Detailing of Building Connections (Column Base & Anchor Bolt Design)	4	2	2	0	**LO 5, LO 8, LO 9**
Week-14	Detailing of Building Connections (Column Base & Anchor Bolt Design)	4	2	2	0	**LO 5, LO 8, LO 9**
Week 15	**Final Exam.**					

5.3. Experiment Topics:

Serial	Experiment	Laboratory hrs.
1st	NA	
2nd		

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)								
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9
CLO 1	√		√			√			
CLO 2		√	√	√		√	√		
CLO 3		√	√	√		√	√		
CLO 4					√	√		√	√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome* (LOs)								
	General	CIV 226							
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9
Face-to-Face Lecture	√	√	√	√	√	√		√	√
Online Education						√			
Tutorial/ Exercise	√	√	√	√	√		√	√	√
Group Discussion	√					√			
Laboratory									
Site Visit									
Presentation						√			
Mini Project		√	√	√	√		√	√	√
Research and Reporting	√								
Brain Storming									
Self-Learning						√	√		

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome* (LOs)								
	General							CIV	
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9
Written Exam		√	√	√	√			√	√
Online Exam									
Oral Exam									

Quiz	√	√	√	√	√				
Lab Exam									
Take-Home Exam									
Research Assignment						√			
Reporting Assignment						√		√	√
Project Assignment	√	√	√	√	√	√	√	√	√
In-Class Questions	√	√	√	√	√		√	√	√

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- Projector (data show system)
B- White board
C- Online platform system (MS Teams)

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Text Books and Additional References:

- Steel Structures Design And Behavior 4th Edition, Charle E. Salmon And John E. Jonson
- Steel Structures Design (Allowable Stress Design) , Abd el rahim K.M Dessouki
- Structural Steel Design, Abraham J.R., 1152
- Steel Structures, Ch.G.Salam, 1229-1230-1231-1232

- Behavior,Analysis And Design Of Steel Work V1,2 And 3, El-Sayed Bahaa Machaly, 8334
- Steel Designer Manual, G.R.Knowl, 8375
- Structural Steel Design, Joseph E. Bowles, 8390
- Egyptian Code Of Practice For Steel Construction And Bridges (Asd & Lrfd) , 1157
- Egyptian Loading Code

10.3. Recommended Books:

- Design Of Cold-Formed Steel Structures, Abd El Rahim K.M Dessouki, 10220-10221

10.4. Web Sites:

- https://www.aisc.org/publications/steel-standards/aisc-303/#:~:text=The%20AISC%20Code%20of%20Standard,with%20construction%20in%20structural%20steel.
- https://www.steel.org/
- https://www.sciencedirect.com/journal/journal-of-constructional-steel-research

Course Directors	Name	Signature
Teaching staff	Dr. M. Fathi Belal	
Course coordinator	Professor: Essam Amoush	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 227: Principals of Construction Management

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Principals of Construction Management			**Course Code:**		CIV 227	
Program / level	Civil Engineering			**SENIOR (2)**			
Term/ Academic year:	OCT-Jan2023-2024			**Credit Hours:**		1	
Contact Hours:	1	**Lecture:**	1	**Tutorial:**	0	**Laboratories:**	0
Pre-Requisite	CIV 101, MNG 201						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

This course introduces students to define of engineering projects and includes:

1. Modelling of projects, tasks and subtasks as activity, networks, Principles and practices of critical path methodology under conditions of certainty (CPM) and uncertainty (PERT).
2. Line of balance.
3. Resource loading and cost crashing concepts with and without resource limitations.
4. Cash flow analysis and financial analysis.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Offers a rather comprehensive introduction to the field of managing for engineering projects.

CLO 2. Learn the behaviour and compute project duration.

CLO 3. Study and deal for Resource loading and cost crashing concepts with and without resource limitations

CLO 4. Study and deal Cash flow analysis and financial analysis

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING (General)	COMPETENCIES of CIV 227
Program Academic Standards that the course contributes in achieving	A2, A3, A4, A5, A6, A10	B3, B4

4- *Mapping Course Los to NARS*

Course Outcomes

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A2.** Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 1**. Identify the Express ideas in different states of cash flow. **LO 2**. Use mathematical, and theories formulae to solve engineering problems, modelling and design
	A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	**LO 3**. Apply the different solutions of expected and unexpected technical problems related to annotated topics.
	A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	**LO 4**. Describe the engineering projects **LO 6.** State the Cash flow analysis and financial analysis
	A5. Practice research techniques and methods of investigation as an inherent part of learning.	**LO 5.** Illustrate the critical path methodology under conditions of certainty.
	A6. Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	**LO 6.** Plan and schedule engineering projects

	A10. Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	**LO 7.** Plan and monitor the executing of construction projects and state the project status
COMPETENCIES of CIVIL	**B3.** Plan and manage construction processes; address construction defects, instability and quality issues; maintain safety measures in construction and materials; and assess environmental impacts of projects.	**LO 8**. The Knowledge of construction management, and its applications
	B4. Deal with biddings, contracts and financial issues including project insurance and guarantees	**LO 9**. Apply the different solutions of expected and unexpected technical problems related to construction planning and delays and responsibilities of parties

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Definition of engineering projects, Modelling of projects, tasks and subtasks as activity, networks, Principles and practices of critical path methodology under conditions of certainty (CPM) and uncertainty (PERT).Line of balance. Resource loading and cost crashing concepts with and without resource limitations. Cash flow analysis and financial analysis.

5.2. Course Topics/hours/Los Matrix

Week No.	***Topic***	***Total Hours***	***Contact hrs***			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Introduction for construction management. Definition of engineering projects, tasks and subtasks as activity	1	1	0	0	**LO 1, LO 7, LO 8**
Week-2	networks, Principles and practices of critical path methodology under conditions of certainty (CPM)	1	1	0	0	**LO 2**
Week-3	networks, Principles and practices of critical path methodology under conditions of certainty (CPM)	1	1	0	0	**LO 3, LO 9**
Week-4	networks, Principles and practices of critical path methodology under conditions of uncertainty (PERT)	1	1	0	0	**LO 3**

Week5	Line of balance.	1	1	0	0	**LO 4, LO 5**
Week-6	Line of balance.	1	1	0	0	**LO 4, LO 5**
Week-7	Revision and Midterm Exam	1	1	0	0	**LO 4, LO 5**
Week-8	**Midterm Exam.**					
Week-9	Resource Management	1	1	0	0	**LO 4, LO 5**
Week-10	Resource Management	1	1	0	0	**LO 2, L O 9**
Week-11	Time-cost trade off concepts with and without resource limitations.	1	1	0	0	**LO 6**
Week-12	Time-cost trade off concepts with and without resource limitations.	1	1	0	0	
Week-13	Cash flow analysis and financial analysis.	1	1	0	0	**LO 8, LO 5**
Week-14	Cash flow analysis and financial analysis.	1	1	0	0	**LO 4, LO 5,**
Week 15	Final Exam					

5.3. Experiment Topics:

Not Applicable

6- Matrix of Course Objective and LOs

Course Learning Objectives	**Learning Outcomes (LOs)**								
	COMPETENCIES of ENGINEERING (General)							**CIV 227**	
	LO 1	**LO 2**	**LO 3**	**LO 4**	**LO 5**	**LO 6**	**LO 7**	**LO 8**	**LO 9**
CLO 1	√	√	√				√	√	
CLO 2				√	√	√			
CLO 3				√	√	√			√
CLO 4				√	√			√	√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome* (LOs)								
	COMPETENCIES of ENGINEERING (General)							CIV 227	
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9
Face-to-Face Lecture	√	√	√	√	√	√	√	√	
Online Education									
Tutorial/ Exercise		√	√	√	√	√	√	√	√
Group Discussion	√						√	√	
Laboratory									
Site Visit									
Presentation							√	√	
Mini Project		√	√	√	√	√			
Research and Reporting	√						√	√	
Brain Storming	√								
Self-Learning	√	√	√	√	√	√	√	√	√

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)								
	COMPETENCIES of ENGINEERING (General)							CIV 227	
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9
Written Exam		√	√	√	√	√			
Online Exam									
Oral Exam									
Quiz				√	√	√			
Lab Exam									
Take-Home Exam									
Research Assignment	√								
Reporting Assignment	√						√	√	
Project Assignment	√	√	√	√	√	√	√	√	√
In-Class Questions	√	√	√	√	√	√			√

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**		
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- *Facilities Required:*

A- Projector
B- White board

10- *List of References:*

10.1.Course Notes:

- Lecture notes

10.2. Required Text Books and Additional References:

- Project Management Techniques in Planning; H. N. Ahuja, 1994, Publisher John Wiley & Sons Inc, ISBN (**0471591688).**
- Introduction to Construction Management; Fred Sherratt, 2015, Routledge Publishing ,ISBN (9781032007441)
- Handbook of Construction Management: Scope, Schedule, and Cost Control; Abdul Razzak Ruman; 2016, Publisher CRC Press, ISBN (1482226642)
- Construction Management: Theory and Practice; Chris March; 2017, Routledge Publishing ,ISBN (9781138694477)
- International Construction Management: How the Global Industry Reshapes the World; Igor Martek; 2022. Routledge Publishing ,ISBN (9780367563622)

10.3. Recommended Books:

Web Sites:

- **Construction Management Association of America;** https://www.cmaanet.org/ (1982-now)
- **Project Management Institute; https://www.pmi.org/** (1969- now)

Course Directors	Name	Signature
Teaching staff	Dr. : Asmaa Ahmed Salman	
Course coordinator	Dr. : Mahmoud Malek Olwan	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

FTR 231 : Field Training (3)

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	**Field Training (1)**			**Course Code:**		FTR 231	
Academic year / level	2023						
Contact Hours:	3	**Lecture:**	---	**Tutorial:**	---	**Laboratories:**	18
Pre-Requisite	FTR 161						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- Accomplish training on how to deal with different workers in different disciplines, study quantities and categories, and quality control methods.
- Training the students to efficiently read and understand executive drawing (architectural structural) and hence execute them within the limitations of coast and time restraints with the project management plan.
- Training how to read the executive boards (architectural - construction) and apply them to the site and planning and project management to ensure that work is completed on time.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Training on how to organize work and how to manage the different stages on the site.

CLO 2. Training how to deal with different workers in different disciplines and study quantities and categories and methods of quality control.

CLO 3. Training how to read the executive boards (architectural - construction) and apply them to the site and planning and project management to ensure that work is completed on time.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 143
Program Academic Standards that the course contributes in achieving	A2,A9	B1

4- *Mapping Course Los to NARS*

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING		
	A2. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 1.** Manages the various stages of construction on the site.
	A9. Use creative innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	**LO 2.** Applies of quality control. For quantities and categories.

COMPETENCIES of ITR 231	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 3.** Applies a full range of civil engineering concepts, techniques and project management in the construction site **LO 4.** Distinguish properties technology for construction analysis by construction methods. **LO 5.** Study different materials and implementation of finishing works for various structural elements

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

The student shall be trained to control the work and manage its different stages on site with the following: Communicate with different types of workers; Reviewing quantities, prices and quality control; Training to read drawings and apply it on site, Planning and management of the site to guarantee to finish all works on time.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Organizing work and how to manage the different stages on the site.	18	-	-	18	**LO 1.**
Week-2	Study quantities and categories and methods of quality control.	18	-	-	18	**LO 1. , LO 2., LO 5.**
Week-3	**Mi dterm Exam.**					
Week-4	Reading the executive boards (architectural - construction) and apply them to the site and planning and project management.	18	-	-	18	**LO 1. , LO 2. , LO 3. , LO 4., LO 5.**
Week-5	Preparing and planning the site to ensure that work is completed on time.	18	-	-	18	**LO 1. , LO 2. , LO 3. , LO 4.**
Week-6	**Final Exam.**					

5.3. Experiment Topics: (NA)

Serial	Experiment	Laboratory hrs.
1st	NA	---

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)				
	LO1	LO2	LO3	LO4	LO5
CLO 1	√		√	√	√
CLO 2		√	√	√	√
CLO 3	√	√	√	√	√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)				
	General		FTR 231		
	LO 1	LO 2	LO 3	LO 4	LO 5
Face-to-Face Lecture					
Electronic Education					
Tutorial/ Exercise					
Group Discussion	√	√	√	√	√
Laboratory					
Site Visit	√	√	√	√	√
Presentation	√	√	√	√	√
Mini Project	√	√	√	√	√
Research and Reporting	√	√	√	√	√
Brain Storming		√	√	√	√
Self-Learning			√	√	√

8-Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)				
	General		FTR 231		
	LO 1	LO 2	LO 3	LO 4	LO 5
Written Exam					
Electronic Exam					
Oral Exam	√	√	√	√	√
Quiz					
Lab Exam	√	√	√	√	√
Take-Home Exam					
Research Assignment	√	√	√	√	√
Reporting Assignment	√	√	√	√	√
Project Assignment	√	√	√	√	√
In-Class Questions					

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	---	---	---
Midterm Oral Exam (*Term Work*)	**20**	3th	30 min.
End of term laboratory exam (*Lab*)	---	---	---
End of term Oral exam	**30**	5th	60 min.
Tutorial and report assessment (*Term Work*)	**25**	weekly	---
Quizzes/ Electronic exams (*Term Work*)	---	---	---
Report	**25**	5th	---
Total Mark	**100**		

8- Facilities Required:

A- Field site.
B- MS Teams.

9- List of References:

10.1. Course Notes:

- Instructions of supervisor of Field Training (handed to students part by part).

10.2. Required Text Books and Additional References:

- -------

10.3. Recommended Books:

- -------

10.4. Web Sites:

- -------

Course Directors	Name	Signature
Teaching staff		
Course coordinator	Dr. Shymaa Mohamed Mukhtar	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	
Course Specification	
CIV 301: Hydraulic Structures	

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Hydraulic Structures			**Course Code:**		CIV 301	
Program / level	Civil Engineering			SENIOR 2			
Term/ Academic year:	OCT-Jan2023-2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	0
Pre-Requisite	CIV 142						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

-provide an introduction to hydraulic structures.
-Design of inlet & outlet structures for irrigation canals
- Hydraulic design of irrigation structures

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1. Define Hydraulic Structures.Describe Cross section of structures. Making suitable empirical dimensions of the hydraulic structures. Design of inlet and outlet structures for irrigation canals. Hydraulic design of irrigation structures

CLO 2. Describe Energy dissipation below hydraulic structures. Solve ideas in structural and mathematical terms. Solving problem and obtaining solutions in the field of Hydraulic structures design. Increase the ability of connecting between theory and reality.

3- ***Relationship between the course and the Competencies :***

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 301
Program Academic Standards that the course contributes in achieving	A5	B1, B2

4- ***Mapping Course Los to NARS***

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A5.** Practice research techniques and methods of investigation as an inherent part of learning.	**LO 1**. Solve ideas in structural and mathematical terms. Solving problem and obtaining solutions in the field of Hydraulic structures design.
COMPETENCIES of CIV 301	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures, and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 2**. Design of inlet and outlet structures for irrigation canals. Hydraulic design of irrigation structures **LO 3.** Definition and designing of Hydrograph.
	B2. Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbours; or any other emerging field relevant to the discipline.	**LO 4**. Hydraulic design of irrigation structures

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

-Provide an introduction to hydraulic structures.
-Design of inlet & outlet structures for irrigation canals
- Hydraulic design of irrigation structures

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Introduction to Hydraulic Structures.	3	2	1	0	**LO 1**
Week-2	Design of inlet and outlet structures for irrigation canals.	3	2	1	0	**LO 2**
Week-3	Introduction to Cross structures.	3	2	1	0	**LO 3**
Week-4	Hydraulic design for Culvert structure	3	2	1	0	**LO 4**
Week5	Hydraulic design for Culvert structure **(Cont.)**	3	2	1	0	**LO 4**
Week-6	Hydraulic design for Siphons structure.	3	2	1	0	**LO 4**
Week-7	**Midterm Exam.**					
Week-8	Hydraulic design for Aqueducts structure.	3	2	1	0	**LO 4**
Week-9	Hydraulic design for Aqueducts structure **(Cont.)**	3	2	1	0	**LO 4**
Week-10	Hydraulic design for Spillways structure.	3	2	1	0	**LO 4**
Week-11	Hydraulic design for Dams structure.	3	2	1	0	**LO4**

Week-12	Hydraulic design for Dams structure **(Cont.)**	3	2	1	0	**LO 4**
Week-13	Energy dissipation below hydraulic structures.	3	2	1	0	**LO 4**
Week-14	Hydraulic design for Aqueducts structure.	3	2	1	0	**LO 4**
Week 15	**Final Exam.**					

6- Matrix of Course Objective and LOs

Course Learning Objectives	**Learning Outcomes (LOs)**			
	General	**CIV 301**		
	LO 1	**LO 2**	**LO 3**	**LO 4**
CLO 1		*	*	*
CLO 2	*	*	*	*

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	***Learning Outcome*(LOs)**			
	General	**CIV301**		
	LO 1	**LO 2**	**LO 3**	**LO 4**
Face-to-Face Lecture	*	*	*	*
Tutorial/ Exercise	*	*	*	*
Presentation	*	*		
Self-Learning	*	*	*	*

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome* (LOs)			
	General	CIV 301		
	LO 1	LO 2	LO 3	LO 4
Written Exam	*	*	*	*
Quiz	*			*
Research Assignment	*		*	*
Reporting Assignment		*		*
In-Class Questions	*	*		

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	7th	60 min.
End of term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and Project (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation/ Attendance. (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**	According to the schedule	**90 min.**

9- Facilities Required:

A- Lecture room equipped with Data show.
B- White board and markers.
C- Suitable room for exercises.

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Text Books and Additional References:

- IRRIGATION ENGINEERING AND HYDRAULIC, by DR S.K. SHARMA (S. Chand PUBLISHING), ISBN, 9352533771, 9789352533779, 2016.

Course Directors	Name	Signature
Teaching staff	Dr. Mohamed Anas	
Course coordinator	Ass. Prof. Samah Hassan	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	
Course Specification	
Course Code: CIV 303	

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information							
Course Title:	Coastal & Harbor Engineering			**Course Code:**		CIV 303	
Program / level	Civil Engineering			**SENIOR (1)**			
Term/ Academic year:	OCT-Jan2023-2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	N/A
Pre-Requisite	CIV 232						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- Definition, analysis, refraction, diffraction & reflection of waves.
- Measurements of waves.
- Coastal currents & tides.
- Motion of sediment along coasts.
- Surveying of coastal areas & collection of data.
- Harbors, type, selection of site & its constituents for various purposes.
- Breakwaters & jetties, design & maintenance.
- Wharf design, shipway & dry docks. Shore protection.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1. Express the Coastal and Harbor Engineering. And Define water waves, its analysis. Define Water wave's refraction, diffraction, and reflection. Collect ideas about coastal engineering. Apply suitable empirical dimensions of coastal components

CLO 2. Describe costal currents and tides. Discuss Motion of sediment along the coast, and its effects. Identify the surveying of coastal areas &collection of data.

CLO 3. Identify the surveying of coastal areas &collection of data. Apply suitable empirical dimensions of coastal components. List Harbors type, selection of sites, and constituents for various purposes. Explain the design and maintenance of breakwaters and jetties. Evaluate the developing in the student's analysis, problem identification, and capability creative thinking and obtaining solutions in the field of coastal engineering design.

CLO 4. Discuss wharf, shipway, and dry docks. Discuss the shore protection. Evaluate obtained results both individually or as a part of team. Illustrate the main phenomena which affecting on the coastal engineering design and the main precautions considering

3- Relationship between the course and the Competencies:

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 303
Program Academic Standards that the course contributes in achieving	A2	B1, B2,B3

4- *Mapping Course Los to NARS*

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes (LOs)
COMPETENCIES of ENGINEERING	**A2.** Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering Judgment to draw conclusions.	**LO 1.** Understanding the dimensions of complex Coastal and Harbor Engineering problems and challenges by applying basic scientific principles and engineering fundamentals
		LO 2. Assess and evaluate the coastal engineering design

COMPETENCIES of CIV 303	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 3**. Select appropriate sustainable coastal engineering design and management approaches
	B2. Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbors; or any other emerging field relevant to the discipline.	**LO 4.** Obtained results both individually or as a part of team. Illustrate the main phenomena which affecting on the coastal engineering
	B3. Plan and manage construction processes; address construction defects, instability and quality issues; maintain safety measures in construction and materials; and assess environmental impacts of projects.	**LO 5.** Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; in costal engineering structures.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Define water waves, wave refraction, diffraction, refraction. Measurements of waves. Coastal currents and tides. Motion of sediment along coast. Design of harbor elements.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Introduction to Coastal and Harbor Engineering	3	2	1	0	**LO. 1**
Week-2	Definition of water waves, its analysis.	3	2	1	0	**LO. 1**
Week-3	Water waves refraction, diffraction, and reflection.	3	2	1	0	**LO. 2, LO 3.**
Week-4	Costal currents and tides	3	2	1	0	**LO. 3, LO. 5**
Week5	Motion of sediment along the coast, and its effects.	3	2	1	0	**LO. 3, LO. 4, LO. 5**
Week-6	Surveying of coastal areas &collection of data.	3	2	1	0	**LO. 4, LO. 5**
Week-7	Harbors type, selection of sites, and its constituents for various purposes.	3	2	1	0	**LO. 3, LO. 4, LO. 5**
Week-8	**Midterm Exam.**					
Week-9	Harbors type, selection of sites, and its constituents for various purposes (cont).	3	2	1	0	**LO. 1, LO. 2**
Week-10	Design and maintenance of breakwaters and jetties. Q	3	2	1	0	**LO 3., LO. 4, LO. 5**
Week-11	Design of wharf, shipway	3	2	1	0	**LO. 2, LO. 3, LO. 5**
Week-12	Design of dry docks.	3	2	1	0	**LO. 2, LO. 3, LO. 5**
Week-13	Shore protection 1	3	2	1	0	**LO. 2, LO. 3, LO. 5**
Week-14	Shore protection 2	3	2	1	0	**LO. 3, LO. 4, LO. 5**
Week 15	**Final Exam.**					

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)				
	General		CIV 303		
	LO 1	LO 2	LO 3	LO 4	LO 5
CLO 1	✓	✓			
CLO 2	✓	✓			
CLO 3		✓	✓	✓	✓
CLO 4		✓	✓	✓	✓

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)				
	General		CIV 303		
	LO 1	LO 2	LO 3	LO 4	LO 5
Face-to-Face Lecture	✓	✓	✓	✓	✓
Online Education					
Tutorial/ Exercise	✓	✓	✓	✓	✓
Group Discussion	✓	✓	✓	✓	✓
Laboratory					
Site Visit					
Presentation					
Mini Project					
Research and Reporting	✓				✓
Brain Storming	✓	✓	✓	✓	✓
Self-Learning					

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcomes* (LOs)				
	General		CIV 303		
	LO 1	LO 2	LO 3	LO 4	LO 5
Written Exam	✓	✓	✓	✓	✓
Online Exam					
Oral Exam					
Quiz	✓	✓	✓	✓	✓
Lab Exam					

Take-Home Exam					
Research Assignment	✓	✓	✓	✓	✓
Reporting Assignment					
Project Assignment					
In-Class Questions	✓	✓	✓	✓	✓

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- Power point lectures.
B- Laptop
C- Data show

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Textbooks and Additional References:

- A Text Book of harbor engineering of (Dr. Ibrahim Abido) Part (1) & Part (2).

Course Directors	Name	Signature
Teaching staff	Dr. Mohamed Anas	
Course coordinator	Ass. Prof. Dr. Samah Hassan	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 305: Surface and ground -water Hydrology

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Surface and ground -water Hydrology			**Course Code:**		CIV 305	
Term/ Academic year:	OCT-Jan2023-2024			**Credit Hours:**		**2**	
Program /level	Civil Engineering			**senior**			
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	0
Pre-Requisite	CIV 142						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

Introduce Hydrology science, which divided into two branches one of them is surface water hydrology and the other, is ground water hydrology.

Understanding of the hydrology cycle, the water balance equation, metrological data, evaporation, transpiration, infiltration, precipitation and run off.

1- Studying the hydrograph, Sum curve, inflow and outflow, storage and flood routing.

2- Studying ground water flow and wells

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1. Describe the hydrology cycle. Discuss the water balance equation, metrological data, evaporation, transpiration, infiltration, precipitation and run off.

CLO 2. Study hydrograph. Analyses the Sum curve, inflow and outflow, storage and flood routing.

CLO 3Studying ground water flow and wells. Solve the problems of wells. Use the Excel sheet solve the ground water flow.

3- Relationship betwe`en the course and the Competencies:

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV **305**
Program Academic Standards that the course contributes to achieve	A2,A10	B1

Mapping Course Los to NARS

Field	**Program (CBEs) that the course contribute in achieving**	**Learning Outcomes (Los)**
COMPETENCIES General	**A2-** Develop appropriate experimentation or simulation and interpret data, assess and evaluate findings, and use statistical analysis and objective engineering judgment to draw conclusions.	**LO 1.** Interpret fundamentals Solve complex Hydrology problems
	A10. Acquire and apply new knowledge and practice self, lifelong and other learning strategies.	**LO 2.** Study the hydrograph. Analyses the Sum curve, inflow and outflow, storage and flood routing. **LO 3.** Studying ground water flow and wells. Solve the problems of wells. Use the Excel sheet solve the ground water flow.

COMPETENCIES of CIV 305	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 4.** Select appropriate sustainable Hydrology engineering design and management approaches **LO 5.** Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; in Hydrology engineering structures

Course Content:

3.1. Course Description (As indicated in program Bylaw):

Review of hydrologic cycle elements. Computation of average precipitation stream flow & stage discharge relationship. Hydrographic. Analysis, infiltration indices, hydrographic of basin out flow. Unit hydrographic. Storage routing, natural channels & reservoirs. Probability concepts in design recurrence interval. Flood frequency analysis & flow direction curves. Ground water, hydraulics of wells, boundary effects, well construction & maintenance.

3.2. Course Topics/hours/Los Matrix

Week No.	***Topic***	***Total Hourse***	***Contact hrs***			**Los Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Introduction to hydrology science.	3	2	1	0	**LO 1**
Week-2	Studying the hydrology cycle.	3	2	1	0	**LO 1**
Week-3	Studying the water balance equation and the metrological data (Temperature – Solar radiation – Wind – Atmospheric pressure - Humidity).	3	2	1	0	**LO 1- LO 2.**

Week-4	Studying precipitation – evaporation.	3	2	1	0	**LO 1- LO 2**
Week5	Studying transpiration	3	2	1	0	**LO 1- LO 2**
Week-6	Studying infiltration.	3	2	1	0	**LO 1- LO 2**
Week-7	Surface run off.	3	2	1	0	**LO 1- LO 2**
Week-8	midterm exam.					
Week-9	Studying the hydrograph – Unit hydrograph.	3	2	1	0	**LO 1- LO 2**
Week-10	Studying the complex hydrograph.	3	2	1	0	**LO 1- LO 2**
Week-11	Storage.	3	2	1	0	**LO 1- LO 2 - LO.3**
Week-12	Flood routing.	3	2	1	0	**LO 2 - LO.3**
Week-13	Ground water hydrology.	3	2	1	0	**-LO 2 - LO.3 LO.4- LO.5**
Week-14	Cont. Ground water hydrology	3	2	1	0	**LO 1- LO 2 - LO.3 LO.4- LO.5**
Week 15	**Final Exam.**					

4- Matrix of Course Objective and Los

Course Learning Objectives	Learning Outcomes (Los)				
	General			CIV 305	
	LO 1	LO 2	LO 3	LO 4	LO 5
CLO 1	□				
CLO 2		□	□	□	
CLO 3			□	□	□

5- Course Teaching and Learning Methods:

Teaching and Learning Methods	Learning Outcomes (Los)				
	General			CIV 305	
	LO 1	LO 2	LO 3	LO 4	LO 5
Face-to-Face Lecture	□	□	□	□	□
Tutorial/ Exercise	□			□	□
Presentation	□	□	□		
Research and Reporting	□	□	□		
Self-Learning	□	□	□		

6- Assessment

6.1. *Course Assessment Methods:*

Assessment Methods	Learning Outcomes (Los)				
	General			CIV 305	
	LO 1	LO 2	LO 3	LO 4	LO 5
Written Exam	□	□	□	□	□
Quiz	□	□	□		
Take-Home Exam	□	□	□	□	□
In-Class Questions	□				

6.2. *Assessment Schedule and Grades Distribution:*

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Reports/presentation (*Term Work*)	**20**	---	---
Quizzes (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

7- Facilities Required:

A- White board
B- Data Show
C- MS teams

10- List of References:

10.1. Course Notes:

Available (written through the lessons).

10.2. WebSites:

www.researchgate.net

www.engineeringcivil.com

www.eng-tips.com

http://ocw.mit.edu/

Course Directors	Name	Signature
Teaching staff	Ass. Prof. Dr. Samah Hassan	
Course coordinator	Ass. Prof. Dr. Samah Hassan	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	
Course Specification	
CIV 307: Irrigation and Drainage Engineering	

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information							
Course Title:	Irrigation & Drainage Engineering			**Course Code:**		CIV 307	
Program / level	Civil Engineering			**SENIOR (1)**			
Term/ Academic year:	OCT-Jan2023-2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	N/A
Pre-Requisite	CIV 155						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- Define of soil water relationship
- Planning irrigation and drainage schemes.
- Water requirements, methods of irrigation
- Design of canals and drains
- Design of irrigation structures
- Construction Materials with Emphasis on Concrete.
- Value Engineering and Logistics

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1. Identify Irrigation and Drainage Engineering. Define the relation between soil and water**.** Define methods of Irrigation and Drainage Schemes. Search about all types of irrigation structures Express ideas about coastal engineering design

CLO 2. Plan system of irrigation structures. Identify Water requirements

CLO 3. Identify Methods of subsurface drainage. Design by different techniques irrigation and drainage project. Draw different sections of irrigation structures. Create all dimension and section for canals and Drains

CLO 4. Solve problem of irrigation structures. Develop logical thinking for students

3- Relationship between the course and the Competencies:

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 307
Program Academic Standards that the course contributes in achieving	A3, A6	B1, B2

4- *Mapping Course Los to NARS*

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes (LOs)
	A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	**LO 1.** Solve problem of irrigation structures. Develop logical thinking. **LO 2**. Use mathematical, and theories formulae to Identify Methods of subsurface drainage. Design by different techniques irrigation and drainage project.
	A6. Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	**LO 3.** Apply the different solutions of expected and unexpected technical problems related Irrigation and Drainage Structures.

COMPETENCIES of CIV 307	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 4.** Select appropriate sustainable Hydrology engineering design and management approaches.
	B2. Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works,Irrigation, Water Resources and Harbors; orany other emerging field relevant to the discipline.	**LO 5**. Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; in Hydrology engineering structures.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Soil water relations. Planning irrigation & drainage schemes. Water requirement. Methods of irrigation. Design of canals & drains, subsurface drainage, introduction to the design of irrigation Structures.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Introduction to Irrigation and Drainage Engineering	3	2	1	0	**LO 1, LO 2**
Week-2	Define the relation between soil and water	3	2	1	0	**LO 1, LO 2**
Week-3	Planning Irrigation and Drainage Schemes.	3	2	1	0	**LO. 2, LO 3.**
Week-4	Planning Irrigation and Drainage Schemes (cont.).	3	2	1	0	**LO. 3, LO. 5**
Week5	Planning Irrigation and Drainage Schemes (cont.).	3	2	1	0	**LO. 3, LO. 4, LO. 5**
Week-6	Water requirements	3	2	1	0	**LO. 4, LO. 5**
Week-7	Methods of irrigation.	3	2	1	0	**LO. 3, LO. 4, LO. 5**

Week-8	**Midterm Exam.**					
Week-9	Methods of irrigation (cont.).	3	2	1	0	**LO. 1, LO. 2**
Week-10	Design of canals and Drains	3	2	1	0	**LO 3., LO. 4, LO. 5**
Week-11	Methods of subsurface drainage.	3	2	1	0	**LO. 2, LO. 3, LO. 5**
Week-12	Design of irrigation structures	3	2	1	0	**LO. 2, LO. 3, LO. 5**
Week-13	Design of irrigation structures	3	2	1	0	**LO. 2, LO. 3, LO. 5**
Week-14	Design of irrigation structures (cont.).	3	2	1	0	**L LO. 2, LO. 3, LO. 5**
Week 15	**Final Exam.**					

6- Matrix of Course Objective and LOs

Course Learning Objectives	**Learning Outcomes (LOs)**				
	General				**CIV 307**
	LO 1	**LO 2**	**LO 3**	**LO 4**	**LO 5**
CLO 1	✓	✓			
CLO 2	✓	✓			
CLO 3		✓	✓	✓	✓
CLO 4		✓	✓	✓	✓

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)				
	General				CIV 307
	LO 1	LO 2	LO 3	LO 4	LO 5
Face-to-Face Lecture	✓	✓	✓	✓	✓
Online Education					
Tutorial/ Exercise	✓	✓	✓	✓	✓
Group Discussion	✓	✓	✓	✓	✓
Laboratory					
Site Visit					
Presentation					
Mini Project					
Research and Reporting	✓				✓
Brain Storming	✓	✓	✓	✓	✓
Self-Learning					

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcomes* (LOs)				
	General				CIV 307
	LO 1	LO 2	LO 3	LO 4	LO 5
Written Exam	✓	✓	✓	✓	✓
Online Exam					
Oral Exam					
Quiz	✓	✓	✓	✓	✓
Lab Exam					
Take-Home Exam					
Research Assignment	✓	✓	✓	✓	✓
Reporting Assignment					
Project Assignment					
In-Class Questions	✓	✓	✓	✓	✓

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.

End of term laboratory exam (*Lab*)	-	15th	Committee
End of term Oral exam	-	15th	Committee
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- Power point lectures.
B- Laptop
C- Data show

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Textbooks and Additional References:

- Drainage Engineering (Part (1) & Part (2), 1983, Dr. Nazeh Asaad Younan – Faculty of Engineering, Alexandria University.

10.3. Recommended Books:

- Drainage and land reclamation, 2000, Dr. Osama Wahid El-Din, Faculty of Eng., Zagazig Univ. Egypt.

Course Directors	Name	Signature
Teaching staff	Dr. Mohamed Anas	
Course coordinator	Ass. Prof. Samah Hassan	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023-2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 309: Selected Topics in Water Resources

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information								
Course Title:	Selected Topics in Water Resources			**Course Code:**		CIV 309		
Program / level	Civil Engineering			**SENIOR (2)**				
Term/ Academic year:	OCT-Jan2023-2024			**Credit Hours:**		2.0		
Contact Hours:	3.0	**Lecture:**	2.0	**Tutorial:**	1.0	**Laboratories:**	-----	
Pre-Requisite	CIV 155							
Academic standards	(NARS 2018)							
Bylaw Approval	2016							

1- Course Aims:

- Review of hydrologic cycle elements and the factors which affecting water resources, Studying Water resources in Egypt, and Arab countries.
- Ground water hydrology, hydraulics of wells, Pollution of Ground water, and its effects on environment surrounding, and Design of wells, and its maintenance.
- Mention the River Nile in Egypt and its characteristics, and its structures.
- Hydrology Methods for calculation the rainfall.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Plan the water resources in Egypt and Arab countries.

CLO 2. Define The Irrigation structures in River Nile in Egypt, and its benefits.

CLO 3. Define and calculate the ground water hydrology parameters

CLO 4. Design of irrigation structures.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 309
Program Academic Standards that the course contributes in achieving	A3, A4, A6	B1, B2

4- *Mapping Course Los to NARS*

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
	A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical, and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	**LO 1**. Define the principles of hydrological cycle. **LO 2**. Define of Water resources in Egypt.
	A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	**LO 3.** Define of Nile river structures. **LO 4.** Define Water quality guide lines.

	A6. Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	**LO 5.** Define dam's types.
COMPETENCIES of CIV 309	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures, and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 6.** Definition and designing of Hydrograph.
	B2. Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbours; or any other emerging field relevant to the discipline.	**LO 7**. Design of arch dams structure.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Review of hydrologic cycle elements and the factors which affecting water resources, Studying Water resources in Egypt, and Arab countries , Studying River Nile in Egypt and its characteristics , Design of Irrigation Structures , Water quality guidelines , Ground water hydrology, hydraulics of wells , Pollution of Ground water, and its effects on environment surrounding.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs.*			LOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction to water resources.	3	2	1	0	**LO 1**
Week-2	Review of hydrologic cycle elements, and the factors which affecting water resources.	3	2	1	0	**LO 1**

Week-3	Water resources in Egypt, and Arab countries.	3	2	1	0	**LO 2**
Week-4	River Nile in Egypt and its characteristics.	3	2	1	0	**LO 2, LO 3**
Week5	Irrigation structures in River Nile in Egypt, and its benefits.	3	2	1	0	**LO 3**
Week-6	Introduction to irrigation works, and its uses.	3	2	1	0	**LO 3**
Week-7	**Midterm Exam.**					
Week-8	Water quality guidelines.	3	2	1	0	**LO 4**
Week-9	Ground water hydrology	3	2	1	0	**LO 6**
Week-10	Pollution of Ground water, and its effects on environment surrounding.	3	2	1	0	**LO 6**
Week-11	Define of wells, and its maintenance.	3	2	1	0	**LO 5**
Week-12	Introduction to dams	3	2	1	0	**LO 5**
Week-13	Design of arch dams	3	2	1	0	**LO 5**
Week-14	Hydrograph calculations.	3	2	1	0	**LO 7**
Week 15	**Final Exam.**					

6- Matrix of Course Objective and LOs

Course Learning Objectives	**Learning Outcomes (LOs)**						
	General					**CIV 309**	
	LO 1	**LO 2**	**LO 3**	**LO 4**	**LO 5**	**LO 6**	**LO 7**
CLO 1	*	*	*	*			
CLO 2		*	*	*			
CLO 3						*	*
CLO 4					*	*	

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)						
	General					CIV 309	
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
Face-to-Face Lecture	*	*	*	*	*	*	*
Online Education							
Tutorial/ Exercise	*	*	*	*	*	*	*
Group Discussion							
Laboratory							
Site Visit							
Presentation	*	*					
Mini Project							
Research and Reporting							
Brain Storming							
Self-Learning				*			

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)						
	General					CIV 309	
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
Written Exam	*	*	*	*	*	*	*
Online Exam							
Oral Exam							
Quiz	*			*			*
Lab Exam							
Take-Home Exam							
Research Assignment	*		*				
Reporting Assignment		*		*	*	*	*
Project Assignment							
In-Class Questions							

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	7th	60 min.
End of term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and Project (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation/ Attendance. (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**	According to the schedule	**90 min.**

9- Facilities Required:

A- Lecture room equipped with Data show.
B- white board and markers.
C- Suitable room for exercises.

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Text Books and Additional References:

- A Text Book of Hydrology and Water Resources , Sharma .

10.3. Recommended Books:

- Water Resources Systems , Chin.

Course Directors	Name	Signature
Teaching staff	Ass. Prof. Samah Hassan	
Course coordinator	Ass. Prof. Samah Hassan	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023 /2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	
Course Specification	
CIV 311: Water Pollution Control Processes	

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	**Water Pollution Control Processes**			**Course Code:**		CIV 311	
Program /level	Civil Engineering			**4th year**			
Term/ Academic year:	Oct.-Jan. 2023 - 2024			**Credit Hours:**		2.0	
Contact Hours:	3.0	**Lecture:**	2.0	**Tutorial:**	1.0	**Laboratories:**	-----
Pre-Requisite	CIV 222						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- Fundamental theories of water pollution control
- Ground water hydrology, hydraulics of wells, Pollution of Ground water, and its effects on environment surrounding,
- Design of wells, and its maintenance

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1. Prepare and understand the theories of water pollution control. Identify the processes of water pollution control. Plan the different processes of water pollution control: flotation, filtration, aerobic and biological oxidation processes. Make internet searches

CLO 2. . Identify the sludge processing and disposal. . Solve the different processes of water pollution control: flotation, filtration, aerobic and biological oxidation processes problems. Work as team work

CLO 3. . Review application to water and waste water treatment. Plan the different processes of water pollution control: flotation, filtration, aerobic and biological oxidation processes.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 311
Program Academic Standards that the course contributes in achieving	A3, A4	B1, B3

4- *Mapping Course Los to NARS*

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A3.** Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical, and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	**LO 2**. Identify the sludge processing and disposal. Solve the different processes of water pollution control.
	A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	**LO 3.** Make internet searches
COMPETENCIES of CIV 311	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures, and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 4.** Definition and designing of wells, and its maintenance.
	B3. Plan and manage construction processes; address construction defects, instability and quality issues; maintain safety measures in construction and materials; and assess environmental impacts of projects	**LO 5**. Plan the different processes of water pollution control: flotation, filtration, aerobic and biological oxidation processes.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Fundamental theories of water pollution control. Processes and their application to water and wastewater treatment; gas transfer, sedimentation, coagulation and flocculation, filtration, aerobic and biological oxidation processes.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Particle removal by flotation processes. Particle removal by filtration processes.	3	2	1	0	**LO 1**
Week-2	Membrane processes (Micro-filtration – ultra- filtration – nanofiltration – reverse osmosis – electrodialysis	3	2	1	0	**LO 1**
Week-3	Adsorption (Activated carbon – Adsorb. processes (powdered activated carbon PAC – granular activated carbon GAC	3	2	1	0	**LO 1**
Week-4	Chemical precipitation (processes: Ca and Mg – Phosphorus)	3	2	1	0	**LO 1,**
Week5	Ion Exchange (selectivity and capacity of exchange resins –)	3	2	1	0	**LO 2**
Week-6	Ion exchange application	3	2	1	0	**LO 3**
Week-7	**Midterm Exam.**					
Week-8	Biological processes (factors affecting microbial growth: energy and cell synthesis – nutrient requirements – Influence of temp)	3	2	1	0	**LO 3, LO4**
Week-9	Biological Reactors.	3	2	1	0	**LO3, LO4**
Week-10	Activated Sludge Process (N2 removal – Biology. phosphorus removal)	3	2	1	0	**LO 1**
Week-11	Aerobic bio filters (Rotating Biological Contactor)	3	2	1	0	**LO 3, LO 4**
Week-12	Anaerobic processes (process technology – process design)	3	2	1	0	**LO2, LO3, LO4**

Week-13	Sludge processing and disposal (Alum sludge – sewage slug Industrial W.W. sludge – sludge stabilization (anaerobic digestion - aerobic digestion) – sludge disposal)	3	2	1	0	**LO2, LO3, LO 4**
Week-14	Disinfection (Chemical Agents, Heat, Ultra-Violet light , Ozone ,Chlorine)	3	2	1	0	**LO2, LO3, LO4**
Week 15	**Final Exam.**					

6- Matrix of Course Objective and LOs

Course Learning Objectives	**Learning Outcomes (LOs)**			
	General		**CIV 311**	
	LO 2	**LO 3**	**LO 4**	**LO 5**
CLO 1		√	√	
CLO 2	√			
CLO 3		√	√	√
CLO 4		√	√	√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	***Learning Outcome*** **(Los)**			
	General		**CIV 311**	
	LO 2	**LO 3**	**LO 4**	**LO 5**
Face-to-Face Lecture	√	√	√	√
Tutorial/ Exercise	√	√	√	√
Presentation	√			
Mini Project	√		√	√
Research and Reporting	√	√	√	
Self-Learning	√	√	√	√

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome* (LOs)			
	General		CIV 311	
	LO 2	LO 3	LO 4	LO 5
Written Exam	√	√	√	√
Quiz			√	
Research Assignment		√		
Reporting Assignment	√		√	√

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	7th	60 min.
End of term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and Project (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation/ Attendance. (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**	According to the schedule	**90 min.**

9- Facilities Required:

A- Lecture room equipped with Data show.
B- White board and markers.
C- Suitable room for exercises.

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Text Books and Additional References:

- Unit Treatment Processes in Water and Wastewater Engineering, T. J. Casey, 1997, Wiley, Chichester, ISBN:9780471966937

10.3. Recommended Books:

- Water Quality and Treatment, American Water Works Association, McGraw-Hill, New York,, ISBN:9780070015395

Course Directors	Name	Signature
Teaching staff	Dr. Fadia Salem	
Course coordinator	Dr. Fadia Salem	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023-2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 313: Environmental Engineering

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information							
Course Title:	**Environmental Engineering**			**Course Code:**		CIV 313	
Program /level	Civil Engineering			**senior**			
Term/ Academic year:	Oct.-Jan. 2023 - 2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	N/A
Pre-Requisite	CIV 222						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- The course aims to provide Introduction to pollution problem and impact of development on the environment. Liquid waste disposal: management, characteristics, storage, collection, disposal, and recycling. Air pollution: sources, pollution, effect and control. Noise pollution: sources, effect and control.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1. Understand the major environmental challenges facing the world generally and Egypt specifically, as well as the sustainable development principles

CLO 2. Understand the environmental legislations in Egypt and the environmental agenda to comply with Egypt Vision 2030 and the United Nations Sustainable Development Goals (SDGs)

CLO 3. Assess and analyze solid waste management systems and select the environmentally sound management approaches.

CLO 4. Assess and analyze water pollution and select sustainable cost-effective treatments
CLO 5. Assess and analyze air pollution considering different sources and pollutants, as well as selecting the appropriate treatments.
CLO 6. Assess and analyze Noise Pollution and select appropriate reduction management approaches.
CLO 7. Understand the environmental impacts of the different industries, and the mitigation approaches.

3- Relationship between the course and the Competencies:

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 313
Program Academic Standards that the course contributes in achieving	A3, A4, A6	B1, B2,B3

4- *Mapping Course Los to NARS*

Field	Program (CBEs) that the course contributes in achieving	Learning Outcomes (LOs)
COMPETENCIES of ENGINEERING	**A2.** Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 1**. Assess and evaluate the environmental pollution / deterioration magnitude considering the different types of pollution
	A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	**LO 2.** Apply sustainable cost-effective solutions based on scientific engineering principles to improve the natural environment for the development and benefit of the society.
	A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	**LO 3.** Utilize the Egyptian environmental legislations and relevant codes of practices, in addition to the international environmental agendas and recognized best practices, to base solutions for natural environment enhancements and pollution abatement.

COMPETENCIES of CIV 313	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 4**. Select appropriate sustainable cost-effective treatments and management approaches through numerical approaches.
	B3. Plan and manage construction processes; address construction defects, instability and quality issues; maintain safety measures in construction and materials; and assess environmental impacts of projects.	**LO 5.** Assess environmental impacts of different industrial processes.

5- Course Content:

The course aims to provide information on the major environmental challenges facing the world, and Egypt specifically, with a focus on environmental pollution considering the different sources, effects, and treatments. The course discusses water pollution, air pollution, noise pollution, solid and hazardous waste management, and the different pollution prevention and abatement technologies.

5.1. Course Topics/hours/Los Matrix

Week No.	***Topic***	***Total Hours***	***Contact Hrs.***			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Introduction to pollution problems.	3	2	1	0	**LO. 1**
Week-2	Environmental lows (pollution control laws)	3	2	1	0	**LO. 1, LO 3**
Week-3	Water pollution (source of water pollution- measurement of water quality- wasted treatment)	3	2	1	0	**LO. 2, LO. 4**
Week-4	Water pollution (The methods disposal of treated waste water and sludge)	3	2	1	0	**LO. 3, LO. 4**
Week5	Water pollution (The methods disposal of solid and hazardous waste law)	3	2	1	0	**LO. 1, LO. 4, LO.5**

Week-6	Air pollution (source of air pollution- effects of air pollution (health effects- effects on domestic animals, materials and atmosphere)	3	2	1	0	**LO. 3**
Week-7	measurement of air quality- air pollution control air pollution law)	3	2	1	0	**LO. 3**
Week-8	**Midterm Exam.**					
Week-9	Air pollution (measurement of air quality – air pollution control - air pollution low)	3	2	1	0	**LO. 3**
Week-10	Noise pollution (source of noise pollution- noise measurement and control)	3	2	1	0	**LO. 3**
Week-11	Solid waste (source and solid waste)	3	2	1	0	**LO. 4**
Week-12	Solid waste (the methods disposal of solid waste (onsite incinerator – pyrolysis of solid waste)	3	2	1	0	**LO. 1, LO. 2, LO. 5**
Week-13	Solid waste (the methods disposal of solid waste(sanitary land fills –	3	2	1	0	**LO. 1, LO. 2, LO. 5**
Week-14	composition of (MSW)	3	2	1	0	**LO. 1, LO. 2, LO. 5**
Week 15	**Final Exam.**					

6- Matrix of Course Objective and LOs

Course Learning Objectives	**Learning Outcomes (LOs)**				
	General			**CIV 313**	
	LO 1	**LO 2**	**LO 3**	**LO 4**	**LO 5**
CLO 1	✓				✓
CLO 2			✓		✓
CLO 3	✓	✓		✓	✓
CLO 4	✓	✓		✓	✓
CLO 5	✓	✓		✓	✓
CLO 6	✓			✓	✓
CLO 7	✓			✓	✓

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	Learning Outcome (Los)				
	General			CIV 313	
	LO 1	LO 2	LO 3	LO 4	LO 5
Face-to-Face Lecture	✓	✓	✓	✓	✓
Tutorial/ Exercise	✓	✓	✓	✓	✓
Group Discussion	✓	✓	✓	✓	✓
Research and Reporting	✓	✓	✓	✓	✓
Self-Learning	✓		✓		

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome* (LOs)				
	General			CIV 313	
	LO 1	LO 2	LO 3	LO 4	LO 5
Written Exam	✓	✓	✓	✓	✓
Quiz	✓	✓	✓	✓	✓
Research Assignment	✓		✓		✓
In-Class Questions	✓	✓	✓	✓	✓

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- *Facilities Required:*

A- Power point lectures.
B- Laptop
C- Data show

10- *List of References:*

10.1. Course Notes:

- Lecture notes

10.2. Required Textbooks and Additional References:

- Environmental Engineering, Howard S. Peavy and others, 1972, School of Civil Engineering and Environmental Science, University of Oklahoma, Norman, OK,

10.3. Recommended Books:

- Environmental Technology Handbook, James G. Speight, 2020, Gulf Professional Publishing, an imprint of Elsevier, Cambridge, MA, OCLC Number / Unique Identifier: 1129385226.
- Water and Wastewater Engineering: Design Principles and Practice; Mackenzie L. Davis, 2010, McGraw-Hill, New York, ISBN:9780071713849

Course Directors	Name	Signature
Teaching staff	Dr. Fadia Salem	
Course coordinator	Dr. Fadia Salem	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	
Course Specification	
CIV 315: Wastewater Reclamation and Reuse	

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	**Wastewater Reclamation and Reuse**			**Course Code:**		CIV 315	
Program / level	Civil Engineering			senior			
Term/ Academic year:	Oct 2023 - 2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	0
Pre-Requisite	**CIV 251**						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- The general objectives of the study curriculum:

-Reuse of wastewater as an essential component of water resource management.

- Characteristics of waste water after treatment and water quality specifications for reuse.

- The use of waste water after treatment in (agriculture, landscape improvement - recreation - industrial development). Industrial waste: (types - characteristics - purification and recycling)

-Industrial wastewater treatment methods and the most common ways to get rid of it

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1. Identify the characteristics of municipal secondary effluents. Prepare and understand the uses of reclaimed wastewater in agricultural, landscaping, recreational and industrial development. Design the reclamation and recycling methods used for Industrial Wastes.

CLO 2. Study of Quality Standards for reuse. Design the combined treatment units needed to achieve the required water quality standards.

CLO 3. Work as team work. Make internet searches. Review examples to overcome challenges of implementing recycling technologies.

. ***Relationship between the course and the Competencies:***

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 315
Program Academic Standards that the course contributes in achieving	A3, A4, A6	B1, B2 ,B3

3- Mapping Course Los to NARS

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes (Los)
Competencies General	A2. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	LO 1. Identify the characteristics of municipal secondary effluents. Prepare and understand the uses of reclaimed wastewater in agricultural, landscaping, recreational and industrial development.
	A3- Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	LO 2. Prepare and understand the uses of reclaimed wastewater in agricultural, landscaping, recreational and industrial development LO 3. Design the combined treatment units needed to achieve the required water quality standards
	A5. Practice research techniques and methods of investigation as an inherent part of learning.	LO 4. Make internet searches. Review examples to overcome challenges of implementing recycling technologies.

	A7. Function efficiently as an individual and as a member of multi-disciplinary and multicultural teams.	LO 5. Work as team work.
COMPETENCIES of CIV 315	B1. Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	LO 6. Select appropriate and sustainable technologies for construction of hydraulic structures.
	B2. Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbors; or any other emerging field relevant to the discipline.	LO 7. Achieve an optimum design of reinforced concrete and steel structures.

5-Course Content:

5.1-Course Description (As indicated in program Bylaw):

The curriculum addresses study Wastewater reuse as an essential part of water resources management, Characteristics of municipal secondary effluents and quality standards for reuse, Reclaimed Wastewater use in (agricultural, landscaping, recreational and industrial developments), Industrial wastes: (types, characteristics, reclamation and recycling), and also study the treatment Methods and disposal of industrial, wastes most common in the area

5.2--Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact Hrs.*			**Los Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Characteristics of municipal secondary effluents and Quality Standards.	3	2	1		**LO 1, LO 2**
Week-2	Uses of reclaimed wastewater in agricultural, landscaping, recreational and Industrial development.	3	2	1		**LO 1, LO 2**
Week-3	Needs of the end user for specifications of recycling materials as a factor of recycling technologies methods.	3	2	1		**LO 2, LO 3**
Week-4	Study of waste types and the recycling technology needed	3	2	1		**LO 2, LO 4**
Week5	Recycling technologies,	3	2	1		**LO 2, LO 4, LO 5**
Week-6	Characteristics for organic liquid and organic solids processing.	3	2	1		**LO 2, LO 4, LO 5**
Week-7	Recycling technology characteristics for water processing and metal containing soil, sludge, sediment, or other solid processing.	3	2	1		**LO 2, LO 4, LO 5, LO 6**
Week-8	Midterm					
Week-9	Recycling technology characteristics for metal containing soil, sludge, sediment, or other solid processing.	3	2	1		**LO 4, LO 5, LO 6**
Week-10	Design of combined treatment units Physical Treatment.	3	2	1		**LO 5, LO 6, LO 7**
Week-11	Design of combined treatment units Aerobic Treatment.	3	2	1		**LO 5, LO 6, LO 7**
Week-12	Design of combined treatment units design of combined treatment units (chemical and anaerobic	3	2	1		**LO 5, LO 6, LO 7**

Week-13	Case studies of successful examples to overcome the challenges of implementing recycling technologies.	3	2	1		**LO 5, LO 6, LO 7**
Week-14	Demonstration of application of treatment trains to produce useful products from complex waste mixtures	3	2	1		**LO 5, LO 6, LO 7**
Week 15	**Final Exam.**					

6-Matrix of Course Objective and Los

Course Learning Objectives	**Learning Outcomes (Los)**						
	General					**CIV 315**	
	LO 1	**LO 2**	**LO 3**	**LO 4**	**LO 5**	**LO 6**	**LO 7**
CLO 1	√	√	√				
CLO 2				√	√	√	√
CLO 3				√	√	√	√

7-Course Teaching and Learning Methods:

Teaching and Learning Methods	**Learning Outcomes (Los)**						
	General					**CIV 315**	
	LO 1	**LO 2**	**LO 3**	**LO 4**	**LO 5**	**LO 6**	**LO 7**
Face-to-Face Lecture	√	√	√	√	√	√	√
Tutorial/ Exercise	√	√	√	√	√	√	√
Research and Reporting	√	√	√	√	√	√	√
Self-Learning	√	√	√	√	√	√	√

8-Assessment

8.1Course Assessment Methods:

Assessment Methods	Learning Outcomes (Los)						
	General					CIV 315	
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
Written Exam	√	√	√	√	√	√	√
Quiz	√	√	√	√	√	√	√
Research Assignment	√	√	√				
Reporting Assignment	√	√	√	√			
In-Class Questions	√	√		√	√	√	√

8.2Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
Reports/presentation (*Term Work*)	**20**	---	---
Quizzes (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- White board
B- Data Show
C- MS teams

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Text Books and Additional References:

-Lawrence Smith and others, Recycling and Reuse of Industrial Wastes, 1995, Battelle Press, Columbus, ISBN:9780935470895.

10.3. Recommended Books:

- James G.Mann Y.A.Liu, Industrial Water Reuse and Wastewater Minimization, 1999, McGraw Hill, New York, ISBN:9780071348553

Course Directors	Name	Signature
Teaching staff	Dr. Fadia Salem	
Course coordinator	Dr. Fadia Salem	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	
Course Specification	
CIV 317: Industrial Wastes	

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	**Industrial Wastes**			**Course Code:**		CIV 317	
Program / level	Civil Engineering			**senior**			
Term/ Academic year:	OCT-Jan2023-2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	0
Pre-Requisite	**CIV 251**						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

-Quality & quantity of Water supplies to, & Wastes from industries.

- Methods of treatment & disposal of industrial, wastes most common in the area.

Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1. Identify Quality & quantity of Water supplies to, & Wastes from industries. Air, Water and Solid Waste. pre–and Primary treat: Equalization, Coagulation & Precipitation. Biological Waste water Treat Processes. Solve pre–and Primary treat: Equalization, Coagulation & Precipitation problems. Solve biological Waste water Treat. Processes problems.

CLO 2. Identify Pollution Control in some industries. Evaluate case studies for pollution control in some industries

CLO 3. Illustrate Wastewater minimization through Industrial process changes
. Illustrate Ion Exchange: theory, plating waste treatment. Make internet searches

2- *Relationship between the course and the Competencies:*

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 317
Program Academic Standards that the course contributes in achieving	A2, A3, A4	B1, B2

3- *Mapping Course Los to NARS*

Course Outcomes

Field	Program (CBEs) that the course contributes in achieving	Learning Outcomes (LOs)
Competencies of Engineering		
	A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	LO 3. Apply the different solutions of expected and unexpected biological Waste water Treat. Processes problems.
	A5. Practice research techniques and methods of investigation as an inherent part of learning.	LO 4 Illustrate Wastewater minimization through Industrial process changes . Illustrate Ion Exchange: theory, plating waste treatment. Make internet searches

Competencies of CIV 317	B1. Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	LO 5 Definition and designing of Hydrograph.
	B2. Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbors; or any other emerging field relevant to the discipline.	LO 6. Achieve an optimum design of reinforced concrete and steel structures.

4- Course Content:

4.1. Course Description (As indicated in program Bylaw):

Quality & quantity of Water supplies to, & Wastes from industries. Methods of treatment & disposal of industrial, wastes most common in the area.

4.2. Course Topics/hours/Los Matrix

Week No.	***Topic***	***Total Hours***	***Contact hrs***			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Source & Characteristics of Industrial Wastes. (Industrial waste survey, estimating organic content, ….)	3	2	1		**LO 1**
Week-2	Pollution control -Air Pollution & Disposal of gaseous wastes. -Water Pollution &Disposal of liquid wastes.	3	2	1		**LO 1**
Week-3	Pollution control -Solid waste Pollution &Disposal	3	2	1		**LO 1**

Week-4	Wastewater treats. processes: pre – and primary treat., biological treat., adsorption.	3	2	1		**LO 1**
Week5	Coagulation & precipitation: coagulation, Heavy metals removal.	3	2	1		**LO 1**
Week-6	Biological waste – water treat. Processes: Lagoons & stabilization basins, Aerated Lagoons, activated sludge processes, trickling filters, Rotating biological contactors, anaerobic decomposition.	3	2	1		**LO1**
Week-7	Adsorption: Theory, Properties of activated carbon, powdered activated carbon treat processes (P A C T).	3	2	1		**LO1**
Week-8	Reversion and Midterm exam					
Week-9	Wastewater Minimization through industrial process changes	3	2	1		**LO 1 LO 2**
Week-10	Ion Exchange: theory, plating waste treatment.	3	2	1		**LO 1 LO 2**
Week-11	Chemical Oxidation: Ozone, Hydrogen peroxide m Chlorine, Wearer oxidation.	3	2	1		**LO 1 LO 2**
Week-12	Sludge handling & Disposal: characteristics of sludge for disposal.	3	2	1		**LO 1 LO 2, LO3, LO4**
Week-13	Gravity thickening, Aerobic & Anaerobic digestion, sand drying bed, Incineration.	3	2	1		**LO 1 LO 2, LO3, LO4**
Week-14	Case Studies for Pollution Control in some Industries	3	2	1		**LO 1 LO 2, LO3, LO4**
Week 15	Final Exam					

5- Matrix of Course Objective and LOs

Course Learning Objectives	*Learning Outcome* (LOs)			
	General		CIV 317	
	LO 1	LO 2	LO 3	LO 4
CLO 1	√			
CLO 2	√	√	√	√
CLO 3	√	√	√	√

Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome* (LOs)			
	General		CIV 317	
	LO 1	LO 2	LO 3	LO 4
Face-to-Face Lecture	√	√	√	√
Tutorial/ Exercise	√	√	√	√
Research and Reporting		√	√	√
Self-Learning		√	√	√

Assessment

5.1. *Course Assessment Methods:*

Assessment Methods	*Learning Outcome* (LOs) General CIVIL			
	General		CIV 317	
	LO 1	LO 2	LO 3	LO 4
Written Exam	√	√	√	√

Quiz		√	√	√
Research Assignment	√	√		
Reporting Assignment	√	√	√	√
In-Class Questions	√	√	√	√

Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

Facilities Required:

A- Projector
B- White board
C- Personal Computer

10- List of References:

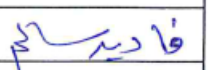
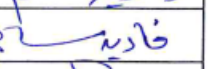
10.1. Course Notes: □ Lecture notes

10.2. Required Text Books and Additional References:

Edmund Besselievre and Others, The Treatment of Industrial Wastes, McGraw-Hill, New York, ISBN:9780070050471.

10.3. Recommended Books:

Edmund Besselievre and Others, The Treatment of Industrial Wastes, McGraw-Hill, New York, ISBN:9780070050471.

Course Directors	Name	Signature
Teaching staff	Dr. Fadia Salem	
Course coordinator	Dr. Fadia Salem	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 319: Selected Topics in Environmental Engineering

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Selected Topics in Environmental Engineering			**Course Code:**		CIV 319	
Program / level	Civil Engineering			**SENIOR (1)**			
Term/ Academic year:	OCT-Jan2023-2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	N/A
Pre-Requisite	CIV 222						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- Providing information on the major environmental challenges facing the world, and Egypt specifically, with a focus on environmental pollution considering the different sources, effects, and treatments.
- Discussing water pollution, air pollution, noise pollution, solid and hazardous waste management.
- Laying foundations for the different pollution prevention and abatement technologies.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1. Understand the major environmental challenges facing the world generally and Egypt specifically, as well as the sustainable development principles.

CLO 2. Understand the environmental legislations in Egypt and the environmental agenda to comply with Egypt Vision 2030 and the United Nations Sustainable Development Goals (SDGs)
CLO 3. Assess and analyze solid waste management systems and select the environmentally sound management approaches.
CLO 4. Assess and analyze water pollution and select sustainable cost-effective treatments.
CLO 5. Assess and analyze air pollution considering different sources and pollutants, as well as selecting the appropriate treatments.
CLO 6. Assess and analyze Noise Pollution and select appropriate reduction management approaches.
CLO 7. Understand the environmental impacts of the different industries, and the mitigation approaches.

3- Relationship between the course and the Competencies:

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 222
Program Academic Standards that the course contributes in achieving	A3, A4, A6	B1, B2, B3

4- *Mapping Course Los to NARS*

Field	Program (CBEs) that the course contributes in achieving	Learning Outcomes (LOs)
COMPETENCIES of ENGINEERING	**A2.** Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 1**. Assess and evaluate the environmental pollution / deterioration magnitude considering the different types of pollution
	A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	**LO 2.** Apply sustainable cost-effective solutions based on scientific engineering principles to improve the natural environment for the development and benefit of the society.
	A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	**LO 3.** Utilize the Egyptian environmental legislations and relevant codes of practices, in addition to the

		international environmental agendas and recognized best practices, to base solutions for natural environment enhancements and pollution abatement.
COMPETENCIES of CIV 319	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 4**. Select appropriate sustainable cost-effective treatments and management approaches through numerical approaches.
	B3. Plan and manage construction processes; address construction defects, instability and quality issues; maintain safety measures in construction and materials; and assess environmental impacts of projects.	**LO 5.** Assess the environmental impacts of different industrial processes.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

XXX

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			LOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction to Environmental Engineering and Sustainable Development	3	2	1	0	**LO. 1**
Week-2	The main environmental challenges facing the world generally, and Egypt specifically	3	2	1	0	**LO. 1**
Week-3	Introduction to Solid Waste Management	3	2	1	0	**LO. 1, LO 2.**
Week-4	Solid Waste Collection	3	2	1	0	**LO. 2, LO. 4**

Week5	Solid Waste Processing and Resource Recovery	3	2	1	0	**LO. 2, LO. 3, LO. 4**
Week-6	Solid Waste Disposal	3	2	1	0	**LO. 3, LO. 4**
Week-7	Hazardous Waste Management	3	2	1	0	**LO. 2, LO. 3, LO. 4**
Week-8	**Midterm Exam.**					
Week-9	Water Pollution	3	2	1	0	**LO. 1**
Week-10	Advanced Wastewater Treatment	3	2	1	0	**LO 2., LO. 3, LO. 4**
Week-11	Air Pollution	3	2	1	0	**LO. 1, LO. 2, LO. 4**
Week-12	Noise Pollution	3	2	1	0	**LO. 1, LO. 2, LO. 4**
Week-13	Industrial Pollution	3	2	1	0	**LO. 1, LO. 2, LO. 4, LO. 5**
Week-14	Pollution Prevention Technologies	3	2	1	0	**LO. 2, LO. 3, LO. 4, LO. 5**
Week 15	**Final Exam.**					

6- Matrix of Course Objective and LOs

Course Learning Objectives	**Learning Outcomes (LOs)**					
	General				**CIV 319**	
		LO 1	**LO 2**	**LO 3**	**LO 4**	**LO 5**
CLO 1		✓				
CLO 2		✓				✓
CLO 3		✓	✓	✓	✓	✓
CLO 4		✓	✓	✓	✓	✓
CLO 5		✓	✓		✓	✓
CLO 6		✓	✓		✓	✓
CLO 7		✓	✓	✓	✓	✓

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome* (LOs)				
	General			CIV 319	
	LO 1	LO 2	LO 3	LO 4	LO 5
Face-to-Face Lecture	✓	✓	✓	✓	✓
Online Education					
Tutorial/ Exercise	✓	✓	✓	✓	✓
Group Discussion	✓	✓	✓	✓	✓
Laboratory					
Site Visit					
Presentation					
Mini Project					✓
Research and Reporting				✓	✓
Brain Storming	✓	✓	✓	✓	✓
Self-Learning					

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcomes* (LOs)				
	General			CIV 319	
	LO 1	LO2	LO 3	LO 4	LO 5
Written Exam	✓	✓	✓	✓	✓
Online Exam					
Oral Exam					
Quiz	✓	✓	✓	✓	✓
Lab Exam					
Take-Home Exam					
Research Assignment	✓	✓	✓	✓	✓
Reporting Assignment					
Project Assignment					
In-Class Questions	✓	✓	✓	✓	✓

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- Power point lectures.
B- Laptop
C- Data show

10- List of References:

10.1. Course Notes:

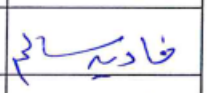
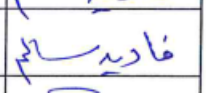
- Lecture notes

10.2. Required Textbooks and Additional References:

- Environmental Engineering ,Howard S . Peavy and others

10.3. Recommended Books:

-K.N.DUGGAL , ELEMENTS OF ENVIRONMENTAL ENGINEERING, 2008, S. Chand, Ram Nagar, New Delhi, ISBN:9788121915472.
-GILBERT M.MASTERS , INTRODUCTION TO ENVIRONMENTAL ENGINEERING AND SCIENCE, Prentice Hall, Upper Saddle River, New Jersey, ISBN:9780131481930.
-ARCADIO P.SINCERO , ENVIRONMENTAL ENGINEERING A DESIGN APPROACH, 1996, Prentice Hall, Upper Saddle River, N.J., ISBN:9780024105646.
-ENVIRONMENTAL ENGINEERING, HOWARD S.PEAVY, 1985, McGraw-Hill, New York, ISBN:9780070491342.

Course Directors	Name	Signature
Teaching staff	Dr. Fadia Salem	
Course coordinator	Dr. Fadia Salem	
Program coordinator	Ass. Prof .Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof .Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 321: Airport Engineering

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Airport Engineering			**Course Code:**		CIV 321	
Program / level	Civil Engineering			**SENIOR (2)**			
Term/ Academic year:	OCT-Jan2023-2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	-----
Pre-Requisite	CIV 211, CIV 256						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

1-To provide an opportunity for students, to study the design, evolution and operation of airports.
2-The viewpoints taken in the course will allow under graduates to play a significant role in those air-transportation development fields in the future, where airport requirements are a significant issue.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1 developed knowledge of the types and methods of air traffic control systems. issues, theories and methods appropriate to the air transport system from an airport planning and management perspective
CLO 2. design of landing area, airport pavements
CLO 3. specialized knowledge in particular areas and/or aspects of airport planning and/or management and an appreciation of the implications for best practice

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard(NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV256
Program Academic Standards that the course contributes in achieving	A3,A4	B2

4- *Mapping Course Los to NARS*

Field	Program(CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A3.**Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development	**LO1.** design of landing area, airport pavements
	A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	**LO2**.specialized knowledge in particular areas and/or aspects of airport planning and/or management and an appreciation of the implications for best practice
COMPETENCIES of CIV 321	**B2.**Achieve an optimum design of pavement and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbors; or any other emerging field relevant to the discipline.	**LO3.** Achievethe travel demand forecasting process.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Design, evolution and operation of airports. The viewpoints taken in the course will allow undergraduates to play a significant role in those air-transportation development fields in the future, where airport requirements are a significant issue.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week-1	Course introduction, history of airport engineering, air craft characteristics	3	2	1	---	**LO1**
Week-2	Air craft characteristics, air craft technology	3	2	1	---	**LO 1, LO 2**
Week-3	Air traffic control systems	3	2	1	---	**LO 2**
Week-4	Problem definition and identification of goals and objectives	3	2	1	---	**LO 3, LO1**
Week5	Airport capacity, air port configuration	3	2	1	---	**LO 1, LO 3**
Week-6	Air port master planning, forecasting in airport planning	3	2	1	---	**LO1, LO 3**
Week-7	Design of the landing area	3	2	1	---	**LO 3, LO 3**
Week-8	**Semester exam**					
Week-9	Airport terminals	3	2	1	---	**LO 3, LO1**
Week-10	Design of airport pavements	3	2	1	---	**LO1, LO 2**
Week-11	Lightening and marking of airport.	3	2	1	---	**LO 3, LO1**
Week-12	Case studies and applications	3	2	1	---	**LO2**
Week-13	Air cargo terminals	3	2	1	---	**LO 1, LO3**
Week-14	Course critique and review	3	2	1	---	**LO1**
Week 15	**Final term exam**					

5.3. Experiment Topics:

Serial	**Experiment**	**Laboratory hrs.**
1st	NA	---

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)		
	CIV 321		
	LO1	LO2	LO3
CLO 1	*		
CLO 2		*	*
CLO 3	*		

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)		
	CIV 321		
	LO 1	LO 2	LO 3
Face-to-Face Lecture	*	*	*
Online Education			
Tutorial/ Exercise	*	*	*
Group Discussion			
Laboratory			
Site Visit			
Presentation			
Mini Project			
Research and Reporting	*		*
Brain Storming			
Self-Learning			

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	Learning Outcome (LOs)		
	CIV 321		
	LO 1	LO 2	LO 3
Written Exam	*	*	*
Online Exam			
Oral Exam			
Quiz		*	
Lab Exam			
Take-Home Exam			
Research Assignment	*		
Reporting Assignment	*	*	*
Project Assignment			
In-Class Questions			

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- White board
B- Data show
C- MS Teams

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Text Books and Additional References:

1-Text books

Garber, N. and Hoel, L. (2001) Traffic and highway Engineering. NewYork

2-References

- Geometric design of Highways, Staff of Highway and Traffic Engineering, CairoUniversity

Structural Design of highways, Staff of Highway and Traffic Engineering, CairoUniversity

Course Directors	Name	Signature
Teaching staff	Dr. Amr Nada	
Course coordinator	Dr. Amr Nada	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 323: Traffic Engineering

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Traffic Engineering			**Course Code:**		**CIV 323**	
Program / level	Civil Engineering						
Term/ Academic year:	OCT-Jan2023-2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	
Pre-Requisite	CIV 211						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

introduction to traffic engineering this includes:

Components of traffic system, Traffic studies, Traffic flow theory, Capacity of urban roads, Capacity of Intersections, Introduction to queuing theory, Traffic signals (signs and marking), Parking, Pedestrians, Traffic safety.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Evaluate different transportation project alternatives.

CLO 2. Judge the appropriateness of different mathematical transport models

CLO 3. Understand the importance of traffic and accident analysis

3- Relationship between the course and the Competencies:

Field	National Academic Reference Standard (NARS)	
	competencies of engineering	COMPETENCIES of CIV 323
Program Academic Standards that the course contributes in achieving	A4, A6	B2

4- *Mapping Course Los to NARS*

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of CIV323	**A4.** Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	LO1. Utilize technologies, codes of standards Capacity of urban roads and intersections. LO2. design of parking
	A6. Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	**LO3**.PLAN transportation project alternatives.
	B2. Achieve an optimum design of following civil engineering topics: Transportation and Traffic, Roadways and Airports,	LO4: Achieve an optimum design of Traffic signals LO5. Study accidents and road safety

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Introduction to the principles of traffic engineering	3	2	1	0	**LO 1**
Week-2	Components of traffic system	3	2	1	0	**LO3,LO4**
Week-3	Traffic studies	3	2	1	0	**LO2, LO4**

Week-4	Traffic flow theory	3	2	1	0	**LO 2, LO4,**
Week5	Capacity of urban roads,	3	2	1	0	**LO5**
Week-6	Capacity of Intersections	3	2	1	0	**LO5**
Week-7	Introduction to queuing theory	3	2	1	0	**LO 2, LO 3**
Week-8	Midterm Exam					
Week-9	Parking surveys and design principles of parking spaces	3	2	1	0	**LO 4**
Week-10	Traffic signals	3	2	1	0	**LO5**
Week-11	types of signals	3	2	1	0	**LO4**
Week-12	Accidents and road safety	3	2	1	0	**LO5**
Week-13	review	3	2	1	0	**LO1, LO2, LO4, LO5**
Week 14	**Final Exam.**					

6- Matrix of Course Objective and LOs

Course Learning Objectives		**Learning Outcomes (LOs)**			
		General		**CIV 323**	
	LO 1	**LO 2**	**LO 3**	**LO 4**	**LO 5**
CLO 1	☑	☑	☑		☑
CLO 2				☑	
CLO 3					☑

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)				
	CIV 323				
	LO 1	LO 2	LO 3	LO 4	LO 5
Face-to-Face Lecture	☑	☑	☑	☑	☑
electronic Education					
Tutorial/ Exercise	☑	☑	☑	☑	☑
Group Discussion					
Laboratory					
Site Visit					
Presentation					
Mini Project					
Research and Reporting					
Brain Storming					
Self-Learning					

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome* (LOs)				
	CIV 323				
	LO 1	LO 2	LO 3	LO 4	LO 5
Written Exam	☑	☑	☑	☑	☑
electronic Exam					
Oral Exam					
Quiz		☑	☑	☑	☑
Lab Exam					
Take-Home Exam					
Research Assignment					
Reporting Assignment					
Project Assignment					
In-Class Questions					

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 mins
Midterm written Exam (*Term Work*)	**30**	8th	60 min.
End of term laboratory exam (*Lab*)		14th	
End of term Oral exam	**-**	-	
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	
Total Mark	**100**		

9- Facilities Required:

A- White board
B- Data show
C- laptop

10- List of References:

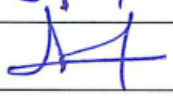
10.1. 1-Course notes

1-Course notes
Available (handed to students' part by part).

2- text books (Highway Engineering Volume 1 and Volume 2, Gerber)

3-Refernces

- Geometric design of Highways, Staff of Highway and Traffic Engineering, Cairo University
- Structural Design of highways, Staff of Highway and Traffic Engineering, Cairo University

Course Directors	Name	Signature
Teaching staff	Dr. Amr Nada	
Course coordinator	Dr. Amr Nada	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 325: Pavement design

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information							
Course Title:	Pavement design			**Course Code:**		**CIV 325**	
Program / level	Civil Engineering						
Term/ Academic year:	2023 - 2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	
Pre-Requisite	CIV 256						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- introduce earth and pavement material testing, thickness design of asphalt and concrete pavements.
- overlay design for pavements. Pavement construction basics are also treated.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1. Develop an understanding of engineering design and judgment needed to accept or reject input and output values supplied by outside sources.

CLO 2. Different Methods to design asphalt concrete pavement.

CLO 3. Understanding the meaning of pavement rehabilitation.

*3- **Relationship between the course and the Competencies:***

Field	National Academic Reference Standard (NARS)	
	competencies of engineering	COMPETENCIES of CIV 325
Program Academic Standards that the course contributes in achieving	A4	B1, B2

4- *Mapping Course Los to NARS*

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A4.** Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	LO 1. Evaluate different transportation project alternatives. LO2. Evaluate the soil classification, material strength, pavement response under loads, and structural design of flexible pavement
COMPETENCIES of CIV 325	**B1.** Select appropriate technologies for construction of buildings, infrastructures using techniques of civil engineering concepts. **B2.** Achieve an optimum design of following civil engineering topics: Transportation and Traffic, Roadways and Airports,	LO3. Develop an understanding of engineering design and judgment using codes. LO4. design asphalt concrete pavement with Different Methods

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*contact Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Course introduction, flexible vs. rigid pavements.	2	2	1	0	**LO 1**
Week-2	Paving materials and test procedure.	2	2	1	0	**LO2**
Week-3	AASHTO flexible pavement design.	2	2	1	0	**LO2, LO3**
Week-4	Asphalt institute flexible pavement design.	2	2	1	0	**LO 1, LO2,**
Week5	AASHTO rigid pavement design.	2	2	1	0	**LO 1, LO2, LO3**
Week-6	PCA rigid pavement design.	2	2	1	0	**LO 1, LO2, LO3**
Week-7	Flexible overlays of flexible pavements.	2	2	1	0	**LO 1, LO2, LO3**
Week-8	Mid Term exam					
Week-9	Shoulder design.	2	2	1	0	**LO 3**
Week-10	Life cycle cost analysis	2	2	1	0	**LO4**
Week-11	Super pave and other asphalt mixes	2	2	1	0	**LO1, LO4**
Week-12	Course critique and review	2	2	1	0	**LO4**
Week-13	REVIEW	2	2	1	0	**LO1, LO2, LO3, LO4,**
Week 14	**Final Exam.**					

6- Matrix of Course Objective and LOs

Course Learning Objectives	**Learning Outcomes (LOs)**			
	General		**CIV 325**	
	LO 1	**LO 2**	**LO 3**	**LO 4**
CLO 1				
CLO 2		☑	☑	☑
CLO 3	☑			

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)			
	General		CIV 325	
	LO 1	LO 2	LO 3	LO 4
Face-to-Face Lecture	☑	☑	☑	☑
electronic Education			☑	
Tutorial/ Exercise	☑	☑	☑	☑
Group Discussion				
Laboratory				
Site Visit				
Presentation				
Mini Project			☑	☑
Research and Reporting				
Brain Storming				
Self-Learning				

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome* (LOs)				
	General			CIV 325	
	LO 1	LO 2	LO 3	LO 4	LO 5
Written Exam	☑	☑	☑	☑	☑
electronic Exam					
Oral Exam					
Quiz				☑	☑
Lab Exam					
Take-Home Exam					
Research Assignment					
Reporting Assignment					
Project Assignment				☑	☑
In-Class Questions					

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 mins
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)		14th	

End of term Oral exam	-	-	
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	
Total Mark	**100**		

9- Facilities Required:

A- White board
B- Data show
C- laptop

10- List of References:

10.1. 1-Course notes

1-Course notes
Available (handed to students' part by part).

2- book:
E. J. Yoder, M. W. Witczak "Principles of Pavement Design" ISBN:9780471977803

Course Directors	Name	Signature
Teaching staff		
Course coordinator	Dr. Amr Nada	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

المعهد التكنولوجي العالي (HTI)

قسم: قسم العلوم الأساسية

توصيف مقرر

تاريخ مصر والتطور التكنولوجي : HUM 201

أ – الانتماء (إنتساب المقرر)

البرنامج المانح :	جميع البرامج الهندسية
القسم المقدم للبرنامج:	جميع الأقسام الهندسية
القسم الذي يقوم بتدريس المقرر:	قسم العلوم الأساسية

ب – المعلومات الأساسية

عنوان المقرر	تاريخ مصر والتطور التكنولوجي			كود المقرر	HUM 201		
المستوي الدراسي	مرحلة الدبلوم			الساعات المعتمدة	2		
ساعات الإتصال الكلية	٢	محاضرة	٢	سكشن	٠	مختبر	٠
المتطلب السابق	لا يوجد						

٢- أهداف المقرر:

يهدف المقرر الي:

- تعرف الطالب على تاريخ مصر والتطور التكنولوجي الذي يذخر بنفائس يجب الحفاظ عليها وتوثيقها والاستفادة بما يحتويه من قيم ومعارف.
- استعراض الظروف السياسية والاقتصادية والاجتماعية التي واجهت مصر.
- التعرف على السياسة الاستعمارية التي استهدفت تبعية مصر للاستعمار ونمت في المواطن الاتباع بدلًا من الإبداع.
- معرفة الآثار السلبية للرأسمالية الأجنبية في مصر التي أدت الي التدخل الإداري ثم احتلال البلاد.
- التعرف على الحركة الوطنية المصرية وتصديها للحكم المطلق وسياسة الاحتلال.
- التعرف على أسس البناء الديمقراطي السليم ودور التربية والتعليم في هذا البناء.

٣- الأهداف التعلمية للمقرر (CLO):

في نهاية هذا المقرر، يجب أن يكون الطالب قادرا على:

CLO ١	الإلمام بالدروس المستفادة من تجارب التاريخ.
CLO٢	غرس الانتماء للوطن والإيمان بكفاح الأجداد وتقوية الثقة بالنفس والأمل والرجاء في المستقبل والتخطيط للمستقبل في ضوء هذه الدروس.
CLO٣	إبراز النقاط المضيئة في تاريخنا الحديث.

٣- العلاقة بين المقرر و الجدارات (الكفاءات) الهندسية :

نطاق الإرتباط	المعيار المرجعي الأكاديمي الوطني (NARS)	
	الكفاءات الهندسية الأساسية (As)	كفاءات الهندسية لبرنامج الهندسة -- ----
المعايير الأكاديمية للبرنامج التي يساهم المقرر في تحقيقها	A3, A4, A5, A6, A10	Bs or Cs

٤.١ - مخرجات التعلم (LOs) :

عند الانتهاء من دراسة المقرر، يجب أن يكون لدى الطالب القدرة على

LO 1	إدراك مدي تطور تاريخ البلاد سياسيا واقتصاديا واجتماعيا وثقافيا.
LO 2	القدرة على اصدار احكام موضوعية علي الظروف التي تمر بها البلاد وان تكون تطلعاته في ضوء تلك الظروف.
LO 3	الإيمان بالماضي والثقة بالنفس والأمل والرجاء في المستقبل.
LO 4	الاقتداء بالنماذج الوطنية والاستفادة من دروس التاريخ.
LO 5	المام الطالب بقضايا وطنه والظروف التي عاقت تقدمه.
LO 6	الوقوف على الأسباب الحقيقية لفشل التجارب الديمقراطية.
LO 7	ان عدم مشاركة المصريين في ركب الحضارة بسبب الظروف التي فرضها الاستعمار والسياسة التي اتبعها.
LO 8	إدراك مدي تطور تاريخ البلاد سياسيا واقتصاديا واجتماعيا وثقافيا.
LO 9	تطبيق المعارف والمهارات التي حصل عليها في حياته العملية.
LO10	توخي السلوك الطيب والاقتداء بالقدوة الحسنة.

٤.٢ إرتباط نواتج التعلم للمقرر (LOs) والمعايير القياسية المرجعية الوطنية (NARS)

نطاق الإرتباط	نواتج التعلم لبرنامج الهندسية الميكانيكية	مخرجات التعلم للمقرر (LOs)									
		LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9	LO10
الجدارات الهندسية الأساسية	A1										
	A2										
	A3	✓	✓				✓				
	A4			✓	✓	✓		✓			
	A5				✓			✓			
	A6										
	A7										✓
	A8								✓		✓
	A9						✓			✓	
	A10										✓
الجدارات الهندسية	B1										
	B2										

الأساسية لبرنامج الهندسية الميكانيكية	B3										
	B4										
	B5										

٥- محتوى المقرر:

توصيف المقرر (كما هو موضح في لائحة البرنامج):

يهدف المقرر الي:

دراسة تاريخ مصر والتطور التكنولوجي الذي يذخر بنفائس يجب الحفاظ عليها وتوثيقها والاستفادة بما يحتويه من قيم ومعارف، ويتم إلقاء الضوء واستعراض الظروف السياسية والاقتصادية والاجتماعية التي واجهت مصر. كما يتطرق الي السياسة الاستعمارية التي استهدفت تبعية مصر للاستعمار ونمت في المواطن ملكة الحفظ وليس الخلق والإبداع. وأيضا تغلغل الرأسمالية الأجنبية في مصر التي أدت الي التدخل الإداري ثم احتلال البلاد. كما يشرح تصدي الحركة الوطنية للحكم المطلق وسياسة الاحتلال. مع ذكر بعض المظاهرات والثورات التي طالبت بالحرية والاستقلال. وفشل جميع التجارب الديمقراطية لغياب اسس البناء الديمقراطي السليم وتفشي الأمية التعليمية والثقافية والفقر. والتوجه إلى سياسة الترقي المعتمدة علي التربية والتعليم.

موضوعات المقرر

رقم الأسبوع	المواضيع	مجموع الساعات	ساعات الاتصال			LOs التي يحققها المقرر
			محاضرة	سكشن	المختبر	
١	تعريف عام بالمقرر وخطة الدراسة.	٢	٢	0	0	LO 1
٢	ظهور الملكية الخاصة في حياة البشر والوصول الي عصر الإقطاع ونظام الطبقات.	٢	٢	0	0	LO 2
٣	الطبقات الفوقة والتحتية في عصر الإقطاع.	٢	٢	0	0	LO 1
٤	مساوئ عصر الإقطاع ومظاهر معاناة الفلاح.	٢	٢	0	0	LO
٥	اكتشاف مصادر الطاقة وظهور النظام الرأسمالي.	٢	٢	0	0	LO
٦	تصاعد النفوذ الأجنبي واحتلال بريطانيا مصر.	٢	٢	0	0	LO
٧	امتحان منتصف الفصل الدراسي					
٨	ظهور الحركة الوطنية لتبني القضايا الوطنية.	٢	٢	0	0	LO
٩	ظهور الديموقراطية الغربية وموقف الزعماء المصريين من التطبيق في مصر.	٢	٢	0	0	LO
١٠	بداية سلسة التجارب الديموقراطية من الخديو اسماعيل وحتي حسني مبارك.	٢	٢	0	0	LO
١١	موقف القوي السياسية من الديموقراطية.	٢	٢	0	0	LO
١٢	اشتعال المظاهرات والثورات المطالبة بالجلاء والحكم الدستوري.	٢	٢	0	0	LO
١٣	الامتحان النهائي					

٦- مصفوفة توافق أهداف المقرر الدراسي ونواتج (مخرجات التعلم)

أهداف تعلم المقرر	مخرجات التعلم (LOs)

	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
CLO ١	✓	✓							✓	
CLO ٢			✓	✓			✓		✓	✓
CLO 3	✓		✓		✓	✓		✓		

٧- طرق التدريس والتعلم:

طرق التعليم والتعلم	نتائج التعلم (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
محاضرة وجها لوجه	✓	✓	✓	✓	✓	✓				
التعليم عبر الإنترنت	✓	✓			✓					
واجبات منزلية		✓		✓		✓				
مناقشة جماعية	✓		✓		✓		✓	✓		
مختبر										
زيارة الموقع										
عروض تقديمية بالبوربوينت	✓		✓							
مشروع صغير										
أبحاث وإعداد التقارير							✓	✓		
العصف الذهني	✓	✓				✓				
التعلم الذاتي			✓	✓						

٨- التقييم

٨.١ طرق تقييم المقرر:

طرق التقييم	نتائج التعلم (LOs)									
	مخرجات التعلم للمقرر (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
الإمتحان التحريري	✓	✓				✓	✓	✓		
إمتحان عبر الإنترنت										
الامتحان الشفوي			✓	✓						
مسابقات تنافسية									✓	✓
الامتحانات المعملية										
واجبات منزلية	✓		✓		✓					
مهمة بحثية				✓			✓	✓		

مهمة إعداد التقارير	✓		✓	✓		✓			✓	
تعيين المشروع										
الأسئلة داخل المحاضرة	✓	✓	✓	✓	✓	✓				

٨.٢. جدول التقييم وتوزيع الدرجات:

طريقة التقييم	الدرجة	التوقيت	وقت الامتحان
الامتحان النهائي	٤٠	الاسبوع ١٤	٩٠ دقيقة.
الامتحان التحريري لنصف الترم الدراسي	٢٠	الاسبوع ٨	٦٠ دقيقة.
امتحانات تقييمية وتحريرية قصيرة (خلال الفصل الدراسي)	٢٠	وفقا للجدول الزمني	---
اختبارات/تقارير/عرض تقديمي (خلال الفصل الدراسي)	٢٠	وفقا للجدول الزمني	---
مجموع الدراجات	١٠٠		

٩- المرافقات المطلوبة للتعليم والتعلم:

A- قاعة محاضرات مجهزة.
B- المكتبات المركزية والفرعية.
C- الوسائل التعليمية (داتا شو) وجهاز كمبيوتر محمول.
D- مُذكرة لتدريس المقرر وكشوف متابعة للطلاب

١٠-قائمة المراجع:

١٠.١. كتاب المقرر:

١- " تاريخ مصر والتطور التكنولوجي" مذكرة المقرر.
٢- عروض تقديمية (بوربوبينت) يعطى للطلاب جزءًا بجزء

١٠.٢. الكتب المرجعية المطلوبة والمراجع الإضافية:

١- د.علي الدين هلال: السياسة والحكم في مصر ١٩٢٣-١٩٥٢.
٢- د.فاروق ابو زيد : أزمة الديموقراطية في الصحافة المصرية.

١٠.٣ الكتب الموصى بها:

١- د.محمد أنيس: دراسات في وثائق ثورة ١٩١٩ ، ج١ .
٢- د.عبد العظيم رمضان: تطور الحركة الوطنية في مصر ١٩١٨-١٩٣٦

10.4 المواقع الإلكترونية:

1- https://ar.wikipedia.org/wiki http://www.du.edu.eg/
2- https://www.youtube.com/

القائمين على مراجعة وتقيم المقرر	الاسم	توقيع
أعضاء هيئة التدريس	أ.م. د/ وليد رضوان	
منسق المقرر	أ.م. د/ وليد رضوان	
رئيس القسم	أ.د. محمد عبد العاطي	
تاريخ الموافقة	The Second term- Jan/May 2023	

The Higher Technological Institute (HTI)	
Department: **Basic Sciences**	

Course Specification

Hum 202: English Literature

Program(s) on which this course is given	*All Programs of Engineering*
Department offering the program:	*All departments of Engineering*
Department offering the course:	*Basic Science*

Basic information

Course Title:	English Literature			**Course Code:**		HUM 202	
Program	*All Programs of Engineering*			**Level**		Diploma and Bachelor Level	
Term/ Academic year:	OCT-JAN2023-2024			**Credit Hours:**		1	
Contact Hours:	2	**Lecture:**	2	**Tutorial:**	---	**Laboratories:**	---
Pre-Requisite	LNG 001& LNG 002						
Academic standards	Academic reference standards (ARS)						
Bylaw Approval	2016						

1. Course Description:

The course aims at familiarizing students with English literature and translated Arabic literature into English. The course also aims at integrating the four language skills and helping students communicate in English well. On successful completion of the course, the student should demonstrate knowledge and understanding of the four skills, expressing themselves effectively, and have critical thinking skills. The course tries to improve students' presentation skills and build students' confidence**.**

2. Course Aims and its Mapping with Program Aims:

2.1. Course Aims:

No.	Course Aims

1	• Building an understanding of concepts and ideas explicitly in terms of previous learning.
2	• Work effectively in team of multi-disciplinary or multi-culture.
3	• Emphasizing the relationship between conceptual understanding of English Literature and problem-solving approaches.
4	• Providing students with a strong critical thinking skill.

2.2. Mapping Course Aims with Program Aims

Program Aims	Course Aims
Applying basic concepts in English to provide students and help them to gain knowledge of general vocabulary that would help the students in various topics.	Apply the principle of literary reading and interpretation rules in their handling of English literature.
	Enhance the degree of awareness to participate using English words professionally in their life.
	Upgrade the capability of usage of the English language in various topics with particular emphasis on English Literature.

3. Learning Outcomes (LOs):

3.1. Course Learning Outcomes (CLOs):

LO 1.	Have a mix of skills in English Language.
LO 2.	Revise different grammatical Rules.
LO 3.	Enhance students' abilities in expressing themselves and sustain their ability of interpretation.
LO 4.	Understand English and respond correctly.
LO 5.	Work effectively in team of multi-disciplinary or multi-culture.
LO 6	Apply the four skills of language freely.
LO 7	Express themselves in English with confidence.

3.2. Relationship Between the Course and the Program Competencies:

Field	Academic Reference Standard (ARS)
	Engineering Competences (As)
Program Academic Standards that the course contributes to achieving	**A1, A2, A8, A10**

3.3. Mapping Course LOs to Program Competencies:

Field	Program Academic Standards that the course contributes in achieving	Learning Outcomes (LOs)
Competencies for Engineering Graduates (level "A")	**A1.** Identify, formulate, and solve complex engineering problems by applying the correct English vocabulary and grammatical rules.	**LO 1.** Have a mix of skills in English Language.
		LO 3. Enhance students' abilities in expressing themselves
		LO 4. Understand English and respond correctly.
	A2. Enhance and Develop the students' abilities and awareness for appropriate analysis and interpretation to all the scientific topics written in English words. **A8**. Communicate effectively, verbally and in writing with a range of audiences.	**LO 2.** Study different grammatical Rules.
		LO 5. Work effectively in team of multi-disciplinary or multi-culture.
	A10. Acquire and apply new knowledge and practice through English language.	**LO 6.** Apply the four skills of language freely.
		LO 7. Express themselves in English with confidence.

4. Course Contents:

4.1. Course Topics / Hours / LOs Matrix:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			LOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	**Introduction to Literature, Poetry and Short Stories**	2	2	0	---	**LO 1**
Week-2	**The Necklace by Guy de Maupassant**	2	2	0	---	**LO 1**
Week-3	**Nice Girl by Sherwood Anderson**	2	2	0	---	**LO 1**
Week-4	**Anton Chekov's Small Fry.**	2	2	0	---	**LO 1**
Week5	**Earnest Hemingway's The Old Man at the Bridge**	2	2	0	---	**LO 2, LO 7**
Week-6	**Vendetta by Guy de Maupassant**	2	2	0	---	**LO 2, LO 5**
Week-7	**Midterm Exam.**					
Week-8	**Sir Walter Raleigh's poems.**	2	2	0	---	**LO 3, LO 4, LO 5**
Week-9	**Shakespeare's Poems**	2	2	0	---	**LO5**
Week-10	**Christopher Marlowe's Poems**	2	2	0	---	**LO 5, LO 6**
Week-11	**Supplementary Material and Quiz**	2	2	0	---	**LO 5**
Week-12	**Presentations**	2	2	0	---	**LO 5**
Week-13	**Project**	2	2	0	---	**LO 5**
Week-14	**Revision and Quiz**	2	2	0	---	**LO 6, LO7**
Week 15	**Final Exam.**					

5. Course Teaching and Learning Methods:

Teaching and Learning Methods	Learning Outcomes (LOs) General (A)						
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
Face-to-Face Lecture	√		√		√		√
Online Education							
Tutorial/ Exercise		√		√		√	
Group Discussion			√		√		
Laboratory							
Site Visit							
Presentation							
Mini Project							
Research & Reporting							√
Brain Storming	√		√			√	
Self-Learning					√		

6. Assessment Methods:

6.1. Course Assessment Methods:

Assessment Methods	Learning Outcomes (LOs) General (A)						
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
Written Exam			√	√		√	√
Online Exam							
Oral Exam							
Quiz	√				√		
Lab Exam							
Take-Home Exam							
Research Assignment				√			
Reporting Assignment		√	√			√	
Project Assignment			√	√		√	√

6.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	7th	60 min.
End of term laboratory exam (*Lab*)	**-**		
End of term Oral exam	**-**		
Mini projects (*Term Work*)	**-**	-	---
Quizzes/reports/presentation (*Term Work*)	**40**	Quiz: 6th , 11th	15 min.
Total Mark	**100**		

7. Facilities Required for Teaching and Learning:

No.	Required Facilities
1	White board.
2	Data show.

8. List of References:

8.1 Course Notes:

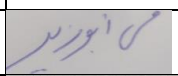
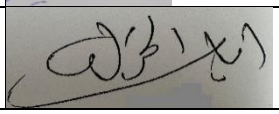
1. **"English Literature"; HTI; Available Hard copy.**
2. **Available Presentation (handed to students' part by part).**

8.2 Required Text Books and Additional References:

1. **History of English Literature by Edward Albert. London: Routledge, 2019.**
2. **Arabic Literature in Translation. Cairo: The American University in Cairo, 2020**
3. **The Complete Works of William Shakespeare. London: Canterbury Classics, 2018.**

8.3. Recommended Books:

1. **The Norton Anthology of World Literature. London: Norton, 2012.**

Course Directors	Name	Signature
Teaching staff	**Mai Abouzaid**	**Mai Abouzaid**
Course coordinator	**Dr. Mai Abouzaid**	
Head of the Department	**Prof. Dr. Enas el Khawas**	

Date of approval	OCT-JAN 2023-2024

The Higher Technological Institute (HTI) Department: Department of Basic Science	

Course Specification

HUM 203 Trade Law

Program(s) on which this course is given	All Programs of Engineering
Department offering the program:	All Programs of Engineering
Department offering the course:	Basic Science

Basic information

Course Title:				**Course Code:**			
Program	All Programs of Engineering			**Level**		Diploma level	
Term/ Academic year:				**Credit Hours:**		2	
Contact Hours:	2	**Lecture:**	2	**Tutorial:**	0	**Laboratories:**	---
Pre-Requisite							
Academic standards	Academic reference standards (ARS)						
Bylaw Approval	2016						

1. Course Description (*as indicated in program Bylaw*):

Kinds of contracts, contract constituents, contract administration, the limitations as imposed by law, disputes, claims, arbitration, the legal variables encountered in business and commercial transactions.

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2.1. Course Aims:

No.	Course Aims
1	• To introduce the basic definition and concepts of **Trade Law**.
2	• **To outline the historical events leading to the development of different fields of** contracts
3	• To outline the historical events leading to the development of different fields of contract constituents, contract administration.
4	the latest knowledge about the concepts of the limitations as imposed by law

2.2. Mapping Course Aims with Program Aims

Program Aims	Course Aims
Course Aims to Providing the student with the latest knowledge about the concepts, dynamic nature, principles, attributes, strategies, and tactics of effective Trade Law	Providing the student with the latest knowledge about the concepts, dynamic nature of contracts, contract constituents, contract administration
	Developing the student's abilities and skills for good preparation and practices of commercial transactions.
	Developing the student's abilities and skills for the legal variables encountered in business

3. Learning Outcomes (LOs):

3.1. Course Learning Outcomes (CLOs):

LO. 1.	**Assess issues of** the latest knowledge about the concepts, characteristics, and types of contracts, contract constituents
LO. 2	**Explain the main principle of Role** of contracts**: concept, attributes, and principles** -.
LO. 3	**Elucidate the main principal** Dynamic nature of contract administration,
LO. 4	**Clarify the main principal**-of limitations as imposed by law,
LO. 5	**Design the** , the legal variables encountered in business
LO. 6	**Solving problems related to** commercial transactions.
LO. 7	**- Evaluating search results,** the limitations as imposed by law,

LO. 8	**Describe the main concepts of the basics** of the legal variables encountered in business and commercial transactions.
LO. 9	**Working in a team group.**.
LO. 10	**presentation techniques in performance and dealing with others and outside the organization**

3.2. Relationship Between the Course and the Program Competencies:

Field	Academic Reference Standard (ARS)		
	Competencies for Engineering Graduates	**Competencies for Electrical Engineering Specializations**	**Competencies for Electronics and Communication**
	(level "A")	**(level "B")**	**Engineering Specializations (level "C")**
Program Academic Standards that the course contributes to achieving	**A1, A7, A8, A9, A10**	**---**	**---**

3.3. Mapping Course LOs to Program Competencies:

Field	Program Academic Standards that the course contributes in achieving	Learning Outcomes (LOs)
Program academic Standards that the course contributes	**A1.** Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	**LO. 1 Assess issues of** the latest knowledge about the concepts, characteristics, and types of contracts, contract constituents
		LO. 3 Elucidate the main principal Dynamic nature of contract administration
		LO. 7 Evaluating search results, the limitations as imposed by law,
	A7. Function efficiently as an individual and as a member of multi-disciplinary and multi-	**LO.5 Design the** , the legal variables encountered in business .
		LO. 9- Working in a team group.

	A8. Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	**LO. 8- Describe the main concepts of the basics** of the legal variables encountered in business and commercial transactions.
		LO. 5 Design the , the legal variables encountered in business
		LO.4- Clarify the main principal-of limitations as imposed by law
	A9. Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	**LO9. Working in a team group**
	A10. Acquire and apply new knowledge and practice self, lifelong and other learning strategies.	**LO6- Solving problems related to** commercial transactions.
		LO. 10 presentation techniques in performance and dealing with others and outside the organization

4. Course Contents:

4.1. Course Topics / Hours / LOs Matrix:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			LOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Fundamental of definition concepts, characteristics **Trade Law**- Dynamic nature and Kinds of contracts	4	4	0	0	LO1
Week-2	concepts and requirement of contract constituents,- concepts and requirement of contract administration	4	4	0	0	LO2
Week-3	Cooperative and competitive negotiations- how to use the the limitations as imposed by law	4	4	0	0	LO1&LO8
Week-4	**Midterm Exam.**					
Week-5	, Good preparation of disputes, claims- the legal variables - the legal variables encountered in business	4	4	0	0	LO10
Week-6	, commercial transactions- the legal variables encountered in commercial transactions	4	4	0	0	LO8
Week-7	. , the limitations as imposed by law, disputes, claims, arbitration	4	4	0	0	LO5
Week 8	**Final Exam.**					

5. Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome* (LOs)									
	General (A)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
Face-to-Face Lecture	√	√	√	√	√		√	√		
Online Education										
Tutorial/ Exercise		√		√		√			√	
Group Discussion			√		√					√
Laboratory										
Site Visit										
Presentation										
Mini Project										
Research and Reporting							√		√	
Brain Storming	√		√			√				√
Self-Learning					√				√	

6. Assessment Methods:

6.1. Course Assessment Methods:

Assessment Methods	Learning Outcomes (LOs)										
	General (A)										
Written Exam			√	√		√	√	√			
Online Exam											
Oral Exam											
Quiz	√				√				√	√	√
Lab Exam											
Take-Home Exam											
Research Assignment											
Reporting Assignment		√	√			√		√			
Project Assignment											
In-Class Questions			√	√		√	√	√			

6.2. Assessment Schedule and Grades Distribution:			
Assessment Method	**Mark**	**Week**	**Exam Time**
Final Exam (*written*)	**40**	14th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
Tutorial and report assessment (Term Work)	**20**	**weekly**	**---**
Quizzes/reports/presentation (Term Work)	**20**	**According to the schedule**	**---**
Total Mark	**100**		

7. Facilities Required for Teaching and Learning:	
No.	**Required Facilities**
1	White board.
2	Data show.

8. List of References:	
8.1 Course Notes:	
1.	Available Presentation (handed to students part by part).
1.2 **Required Text Books and Additional References:**	
1.	محمد عبد الكريم يوسف-"الصياغة القانونية للعقود التجارية, 2012
8.3. Recommended Books:	
1.	• محمد عبد الكريم يوسف-"الصياغة القانونية للعقود التجارية, 2012

Course Directors	Name	Signature
Teaching staff	1- Dr. Ahmed-kamal 2- Dr. Asma-Alhasan	
Course coordinator	**Dr.** Ahmed-kamal	
Program coordinator		
Head of the Department	**Prof. Dr. Enas Elkhawas**	
Date of approval	2022	

The Higher Technological Institute (HTI)	
Department: Department of Basic Science	

Course Specification

HUM 207: Scientific Thinking

Program(s) on which this course is given	All engineering programs
Department offering the program:	All engineering programs
Department offering the course:	Basic Science Department

Basic information

Course Title:				**Course Code:**			
Program	*All Engineering programs*			**Level**		1	
Term/ Academic year:	Senior Level			**Credit Hours:**		2	
Contact Hours:	2	**Lecture:**	2	**Tutorial:**	---	**Laboratories:**	---
Pre-Requisite	----						
Academic standards	Academic reference standards (ARS)						
Bylaw Approval	2016						

1. Course Description (*as indicated in program Bylaw*):

The course trains students to think logically and critically and helps them to adapt and integrate in an academic environment. The student is familiarised with methods of researching and accessing information through the library or the Internet and is trained to assess the content and sources of information, reporting and citing scientific literature, and how to maintain high ethical standards.

2. Course Aims and its Mapping with Program Aims:

2.1. Course Aims:

No.	Course Aims
1	Scientists limit bias by using objectivity to observe and analyze the subject or phenomenon that is being studied and use only evidence to support or falsify the hypothesis
2	Perceive the most general problems students face in learning the scientific way of thinking
3	Support your students to learn scientific thinking skills

2.2. Mapping Course Aims with Program Aims

Program Aims	Course Aims
The course teaches students to think critically and analytically for college. The student learns how to conduct library and Internet research, evaluate the credibility of the information they find, report and cite scientific literature, and uphold the highest ethical standards in their work.	Scientists avoid bias by conducting dispassionate experiments and using only hard data to prove or disprove their hypotheses.
	See the broadest challenges that students face when trying to adopt a scientific worldview.
	Encourage your pupils to develop their capacity for scientific inquiry.

3. Learning Outcomes (LOs):

3.1. Course Learning Outcomes (CLOs):

LO 1.	Explain the fundamentals of scientific reasoning.
LO 2.	Prepare students for success in higher education by developing their ability to think critically and analytically.
LO 3.	Conduct students with research and locate relevant information using library resources and/or the World Wide Web.
LO 4.	Instruct students in the art of information evaluation, report writing, and referencing scientific sources.
LO 5.	Help your students develop scientifically sound ways of thinking and strong moral convictions.

3.2. Relationship Between the Course and the Program Competencies:

Field	Academic Reference Standard (ARS)		
	Engineering Competences (As)	Engineering Competences of **All** engineering program	--------

	(level "A")	(level "B")	Engineering Specializations (level "C")
Program Academic Standards that the course contributes to achieving	**A1, A5, A7, A10**	**---**	**---**

3.3. Mapping Course LOs to Program Competencies:

Field	Program Academic Standards that the course contributes to achieving	Learning Outcomes (LOs)
Competence for engineering program	**A1.** Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics. .	**LO 1** Explain the fundamentals of scientific reasoning.
		LO 2 Prepare students for success in higher education by developing their ability to think critically and analytically.
	A5. Practice research techniques and methods of investigation as an inherent part of learning.	**LO 3** Interpret and apply the physical phenomena relating to the study..
		LO 4 Employ the basic rules of electrostatic physics to solve the problems that relate to his course.
	A7. Function efficiently as an individual and as a member of multi-disciplinary and	**LO 3**. Mention the basic rules of electric field, potential and electric capacitance that relate to his course.

	multicultural teams.	**LO 9**. Perform various experiments to measure and calculate the physical quantities that relate to his course.
		LO 10. Transfer and combine the gained knowledge orally.
	A10. Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.	**LO 5** Help your students develop scientifically sound ways of thinking and strong moral convictions.

4. Course Contents:

4.1. Course Topics / Hours / LOs Matrix:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			LOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1		2	2	---	---	
Week-2		2	2	---	---	
Week-3		2	2	---	---	
Week-4		2	2	---	---	
Week5		2	2	---	---	
Week-6		2	2	---	---	
Week-7		2	2	---	---	
Week-8	**Midterm Exam.**					
Week-9		2	2	---	---	
Week-10		2	2	---	---	
Week-11		2	2	---	---	
Week-12		2	2	---	---	
Week-13		2	2	---	---	
Week-14		2	2	---	---	
Week 15	**Final Exam.**					

5. Course Teaching and Learning Methods:

Teaching and Learning Methods	Learning Outcomes (LOs)				
	General (A)				
	LO 1	LO 2	LO 3	LO 4	LO 5
Face-to-Face Lecture	√	√	√	√	√
Online Education					
Tutorial/ Exercise	√	√	√	√	√
Group Discussion	√	√		√	
Laboratory					
Site Visit					
Presentation	√	√	√	√	√
Mini Project		√	√	√	√
Research & Reporting		√	√	√	√
Brain Storming		√	√	√	√
Self-Learning	√	√	√	√	√

6. Assessment Methods:

6.1. Course Assessment Methods:

Assessment Methods	Learning Outcomes (LOs)				
	General (A)				
	LO 1	LO 2	LO 3	LO 4	LO 5
Written Exam	√	√	√	√	√
Online Exam					
Oral Exam					
Quiz	√	√	√	√	√
Lab Exam					
Take-Home Exam					
Research Assignment		√	√	√	√
Reporting Assignment		√	√	√	√
Project Assignment		√	√	√	√
In-Class Questions	√	√	√	√	√

6.2. Assessment Schedule and Grades Distribution:			
Assessment Method	**Mark**	**Week**	**Exam Time**
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End-of-term laboratory exam (*Lab*)	**-**		
End of term Oral exam	**-**		
Mini projects (*Term Work*)	**10**	7 reports per term	---
Quizzes/reports/presentation (*Term Work*)	**30**	Quiz: 6^{th} , 11^{th}	15 min.
Total Mark	**100**		

7. Facilities Required for Teaching and Learning:	
No.	**Required Facilities**
1	Notebook and data show equipped lecture room.
2	data show equipped lecture room.

8. List of References:	
8.1 Required Text Books and Additional References:	
1.	American University online courses
8.2. Websites	
1.	Aucegypt.edu.eg

Course Directors	Name	Signature
Head of the Department	**Prof. Enas El Khawas**	
Date of approval	2022	

The Higher Technological Institute (HTI)	
Department: Department of Mechanical Engineering	

Course Specification

Hum 206: Entrepreneurship

Program(s) on which this course is given	All Engineering Programs
Department offering the program:	Mechanical Engineering
Department offering the course:	Mechanical Engineering

A– Basic information

Course Title:	Entrepreneurship			**Course Code:**		HUM 206	
Program /level	Mechanical Engineering			**SENIOR (1)**			
Term/ Academic year:	Oct.-Jan. 2023/2024			**Credit Hours:**		2	
Contact Hours:	**2.0**	**Lecture:**	2	**Tutorial:**	-----	**Laboratories:**	-----
Pre-Requisite	-------						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- Describe the underlying principles of entrepreneurship.
- Paying close attention to consumer needs and converting them into innovative business.
- Preparing students to consider their own side projects for start-up companies.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Demonstrate the Knowledge of Entrepreneurship.
CLO 2. Explain the main Features of Entrepreneurs.
CLO 3. Show the significant discrepancy between entrepreneurial and conventional enterprises and how they are applied in the identification and exploitation of possibilities in products, services, and processes.
CLO 4. How to establish innovative strategies for seeking, exploiting, and further developing new possibilities.
CLO 5. List the main Key principles underlying innovation and the challenges associated with developing and sustaining innovation within organizations.
CLO 6. Explain the main Features of Entrepreneurs.
CLO 7. Show the significant discrepancy between entrepreneurial and conventional enterprises and how they are applied in the identification and exploitation of possibilities in products, services, and processes.
CLO 8. How to establish innovative strategies for seeking, exploiting, and further developing new possibilities.

CLO 9. List the main Key principles underlying innovation and the challenges associated with developing and sustaining innovation within organizations.

3- ***Relationship between the course and the Competencies :***

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of MEC
Program Academic Standards that the course contributes in achieving	A6,A8,A9,A10	-

4- ***Mapping Course Los to NARS***

Field	Program (MEC) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A6. Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.**	**LO1.** Design thinking and process tools to evaluate real-world problems and projects.
	A8. Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	**LO2.** Create presentations and business plans that articulate and apply financial, operational, organizational, market, and sales knowledge **LO.3** Mobilize people and resources.
	A9. Use creative, innovative, and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	**LO4**. Elaborate students to consider their own small business project. **LO5**. Analyze methodologies to Sell themselves and their ideas.
	A10. Acquire and apply new knowledge, and practice self, lifelong and other learning strategies.	**LO6.** cultivate endurance to foster self-efficacy through improved communication and problem-solving skills

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Preparation of students to consider his own small business project: Introduction to entrepreneurship, Definition of different project scales, characteristics of small project, planning of small project, small project organization, small project control, performance evaluation. application course project.

5.2. Course Topics/hours/Los Matrix

Week No.	Topic	Total Hours	Contact hrs			LOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	• Definition of Entrepreneurship. • What is meant by: Entrepreneur. • Competencies of entrepreneur.	2	2	-	-	**LO 1.**
Week-2	• Main processes of Entrepreneurship. • The difference between entrepreneurship project and small enterprises. • Inspiring entrepreneurs Story of KINGINE Founders.	2	2	-	-	**LO1 LO2**
Week-3	• The role of entrepreneurship and small enterprises in the development of the economy of countries. • Classification of different types of pilot projects.	2	2	-	-	**LO1, LO2, LO3**
Week-4	• Entrepreneurship between science and talent. • Success story of an entrepreneur (jewelry designer Azza Fahmi).	2	2	-	-	**LO1, LO2, LO3,LO5**
Week5	❖ Stages of Entrepreneurship Process : • Identify and evaluate the opportunity. • Develop business plan • resources required • manage the enterprise ❖ Success story of an entrepreneur: Nike	2	2	-	-	**LO1, LO2, LO3,LO4**
Week-6	• Entrepreneurial problems. • Why so many small projects fail?	2	2	-	-	**LO5, LO6**
Week-7	❖ Revision	2	2	-	-	**LO1 to LO6**
Week-8	**Midterm Exam.**					
Week-9	❖ success stories of ingvar kaberd : IKEA Founder. ❖ Definition of : Business incubators including its Importance.	2	2	-	-	**LO1, LO2, LO3,LO5**
Week-10	❖ Basic services provided by business incubators. ❖ Classification of Business incubators. ❖ Proportions of services provided by business incubators.	2	2	-	-	**LO1, LO2, LO3,LO5**
Week-11	❖ Examples Global and local Business incubators ❖ success stories of El Araby Group .	2	2	-	-	**LO1, LO2, LO3,LO5**
Week-12	Quiz	2	2	-	-	**LO1 to LO6**
Week-13	Entrepreneurial Project Presentations	2	2	-	-	**LO1, LO2, LO3,LO4,LO 5,LO6**
Week-14	Revision	2	2	-	-	**LO1 to LO6**
Week 15	**Final Exam.**					

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)					
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
CLO 1	❖		❖			❖
CLO 2		❖			❖	
CLO 3	❖	❖		❖		❖
CLO 4		❖		❖		❖
CLO 5	❖	❖		❖	❖	❖
CLO 6		❖				❖
CLO 7	❖	❖		❖	❖	
CLO 8		❖		❖	❖	
CLO 9	❖	❖	❖		❖	❖

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)					
	General	Hum 206				
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
Face-to-Face Lecture	❖	❖	❖	❖	❖	❖
Online Education	❖	❖	❖	❖	❖	❖
Tutorial/ Exercise	❖	❖	❖	❖	❖	❖
Group Discussion	❖	❖	❖	❖	❖	❖
Laboratory						
Site Visit						
Presentation	❖	❖	❖	❖	❖	❖
Mini Project	❖	❖	❖	❖	❖	❖
Research and Reporting						
Brain Storming	❖	❖	❖	❖	❖	❖
Self-Learning	❖	❖	❖	❖	❖	❖

8-

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	Learning Outcome(LOs)					
	Hum 206					
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
Written Exam	❖	❖	❖	❖	❖	❖
Online Exam	❖	❖	❖	❖	❖	❖
Oral Exam						
Quiz	❖	❖	❖	❖	❖	❖
Lab Exam						
Take-Home Exam						
Research Assignment						
Reporting Assignment	*	*	*	*	*	*
Project Assignment	❖	❖	❖	❖	❖	❖
In-Class Questions	❖	❖	❖	❖	❖	❖
	❖	❖	❖	❖	❖	❖

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	60 min.
Midterm written Exam (*Term Work*)	**20**	8th	45 min.
End of term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- White Board.
B- Data Show.
C- Laptop.
D- EKB (Egyptian Knowledge Bank).

10- List of References:

- Nieuwenhuizen, C. *Basics of entrepreneurship*. Juta and Company Ltd. (2004).
- Kuratko, D. F.*Entrepreneurship: Theory, process, and practice*. Cengage learning.(2016) .

10.1. Course Notes:

- Lecture notes

10.2. Required Text Books and Additional References:

- Baty GB, Blake MS. Entrepreneurship: Back to basics. Beard Books; 2003.

10.3. Web Sites:

https://smallbusinessify.com/basics-in-entrepreneurship/

Course Directors	Name	Signature
Teaching staff	Dr. Moataz Mohamed Abdel-Raouf	
Course coordinator	Dr. Moataz Mohamed Abel-Raouf	
Program coordinator	Prof. Dr. Hesham Mostafa	
Head of the Department	Prof. Dr. Adel Fathy	
Date of approval	Oct.2023	

The Higher Technological Institute (HTI)

Department: Basic Science Department

Course Specification

HUM 208: Business Administration

A – Affiliation

Relevant program:	All engineering programs
Department offering the program:	All engineering programs
Department offering the course:	Basic Science Department

B – Basic information

Title:	Business Administration		Code:			HUM 208	
Academic year/level:	Bachelor		Credit Hours:			2	
Contact Hours:	2	lecture	2	Lecture Tutorial	0	Laboratory	0
Prerequisite:	Non						

1- Course Aims:

This course aim to

- Outline of the administrative process.
- Form the functions of managers and the functions of the enterprise.
- Recognize the Environmental factors that affect the performance of the facility.
- Identify the management levels and skills required for each level.
- Acquiring the skills of administrative communication and decisions and the relationship of information systems to them.

2 – Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1.	Develop strategic plans using marketing information
CLO 2.	Understand the role of information technology systems (IT) in supporting business operations
CLO 3.	Learn how to solve organizational problems using human resources and management principles
CLO4	Understand how to use data tools to gather business intelligence, then use the information to make key operational decisions
CLO5	Learn to apply critical thinking concepts
CLO6	Develop the ability to apply financial management principles to ensure viability

3- Relationship between the course and the Competencies:

Field	National Academic Reference Standard (NARS)	
	Engineering Competences (As)	Engineering Competences of Mechanical engineering program
Program academic Standards that the course contributes to achieving	A1, A4, A5, A6, A7, A8, A9, A10	Bs or Cs

4.1 - Learning Outcomes (LOs):

On successful completion of the course, the student should have the ability to

LO 1	Describe the main steps of strategic plans using marketing information
LO 2	Understand the role of information technology systems (IT) in supporting business operations.
LO 3	Elucidate the principal of Functions of management: planning: planning concepts & importance, types of plans, characteristics & contents of the plan, planning stages, budgeting for planning.
LO 4	Explicate the fundamentals of organization work: organization concepts & importance, characteristics of good & effective organization, types of organization structures, centralization & decentralization, span of supervision, delegation of authority, integration among the different units in the organization.
LO 5	Evaluating between Direction & supervision: Motivation, communications leadership & its different types.
LO 6	Assess the Control: concept & importance of control, control steps, objectives, actual performance, the deviation, reasons of the deviation, the corrective actions, types of control, internal & external control.
LO 7	Evaluate the decision Making: Types of administrative decisions, decision - making process & steps, importance of information of decision making.
LO 8	Identify the major functions in different companies: production, marketing, finance, human resources.
LO 9	Maintain the ethical standards of administration work and ability to work as a member in a team.
LO 10	Explain the gained knowledge orally.

4.2 Mapping Course LOs to NARS

Field		Learning Outcomes (LOs)									
NARS 2018 Competencies		LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9	LO10
Basic Engineering Competencies (As)	A1	√	√	√	√	√	√	√	√	√	√
	A2										
	A3										
	A4				√		√	√			√
	A5	√	√			√	√				
	A6										

	A7	√	√					√	√		
	A8							√	√	√	
	A9	√	√				√	√			√
	A10	√	√			√	√				√
Competencies of mechanical Engineering program (Bs)	B1										
	B2										
	B3										
	B4										
	B5										

5- Course Content:

5.1. Catalogue Course Description (As indicated in program Bylaw):

Nature, scope, importance & characteristics of business administration, development of the managerial thought, business external & internal environments, types of institutions, the managerial process. Functions of management: planning: planning concepts & importance, types of plans, characteristics & contents of the plan, planning stages, budgeting for planning. Organization: organization concepts & importance, characteristics of good & effective organization, types of organization structures, centralization & decentralization, span of supervision, delegation of authority, integration among the different units in the organization. Direction & supervision: Motivation, communications leadership & its different types. Control: concept & importance of control, control steps, objectives, actual performance, the deviation, reasons of the deviation, the corrective actions, types of control, internal & external control. Decision - Making: Types of administrative decisions, decision -making process & steps, importance of information of decision making. Major functions in different companies: production, marketing, finance, human resources.

5.2. Course Topics/hours/Los Matrix

Week No	Topics	Total hrs.	Contact hours			LOs Covered by Course
			Lect.	Tut.	Lab.	
1	An overview of the administrative process.	2	2	0	0	LO1, 5
2	The nature of the projects and their objectives.	2	2	0	0	LO1, 9
3	An overview of management functions and facility functions.	2	2	0	0	LO1, 5
4	Factors affecting the performance of the facility.	2	2	0	0	LO1, 5
5	Planning function.	2	2	0	0	LO5, 6

6	Regulation function.	2	2	0	0	LO6, 7
7	Mid Term Exam					
8	Orientation function.	2	2	0	0	LO2
9	Control function.	2	2	0	0	LO3, 10
10	Management levels and skills required for each level.	2	2	0	0	LO4
11	Management levels and skills required for each level.	2	2	0	0	LO8
12	Administrative communication process.	2	2	0	0	LO5
13	Final Exam					

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
CLO 1	√				√				√	
CLO 2		√	√	√			√			√
CLO 3		√				√	√	√	√	
CLO 4										
CLO 5	√	√		√				√		
CLO 6			√		√		√		√	√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome* (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
Face-to-Face Lecture	√	√	√	√	√	√	√	√	√	√
Online Education										
Tutorial/ Exercise		√	√	√	√	√	√			√
Group Discussion								√		
Laboratory										
Site Visit										
Presentation						√	√	√		
Mini Project		√				√	√	√		
Research and Reporting	√		√			√	√			√
Brain Storming		√	√		√	√	√			√
Self-Learning		√		√		√	√			

8- Assessment

8.1 Course Assessment Methods:

Assessment Methods	Learning Outcome (LOs)									
	General									
	LO 1	LO 2	LO3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
Written Exam	√	√	√	√	√	√	√			√
Online Exam										
Oral Exam								√	√	
Quiz	√	√		√	√	√				√
Lab Exam										
Home Exam				√	√	√	√			
Research Assignment	√					√	√	√		√
Reporting Assignment		√	√			√				√
Project Assignment								√	√	
In-Class Questions						√			√	

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	40	13th	90 min.
Midterm written Exam (Term Work)	20	7th	60 min.
Tutorial and report assessment (Term Work)	20	weekly	15 min
Quizzes/reports/presentation (Term Work)	20	According to the schedule	20 min
Total Mark	100		

9- Facilities Required for Teaching and Learning:

a) Notebook and data show equipped lecture room.
b) Teaching aids and computers.
c) Notebook and data show equipped lecture room.

10- List of References:

10.1. Course Notes:

1- Available Presentation (handed to students' part by part).

10.2. Required Textbooks and Additional References:

1) Mohamed Abdallah Abd El Rehim, Fundamental of Management & Organization, Cairo University.

2) **El Desouky Hamed Abou Zeid, the Scientific Fundamentals of Management, Cairo University.**

10.3. Recommended Books:

1) **Mohamed Abdallah Abd El Rehim, Fundamental of Management & Organization, Cairo University.**
2) **El Desouky Hamed Abou Zeid, the Scientific Fundamentals of Management, Cairo University.**

10.4. Web Sites:

- https://www.ecpi.edu/blog/what-is-business-administration-all-about
- https://www.edx.org/learn/business-administration

Course Directors	Name	Signature
Teaching staff		
Course coordinator		
Head of the Department	**Prof Mohmad Abd-elaty**	
Date of approval	Feb. 2022	

The Higher Technological Institute (HTI)	
Department: Department of Mechanical Engineering	
Course Specification	
MNG 201 : Project Management	

Program(s) on which this course is given	All Engineering Programs
Department offering the program:	Mechanical Engineering
Department offering the course:	Mechanical Engineering

A– Basic information							
Course Title:	Project Management			**Course Code:**		MNG 201	
Program / level	Mechanical Engineering			**SENIOR (1)**			
Term/ Academic year:	Oct. Jan. 2022 - 2023			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	0
Pre-Requisite							
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

This course introduces students to define of engineering projects and includes:

- Analysis of projects life cycles, process and identification of Projects Stakeholders.
- Analysis of organization strategy and project selection.
- Analysis and management the stakeholder expectations and engagement to ensure a successful project outcome.
- Modelling of projects tasks, subtasks (activities) and Networks (Critical Path Method).
- Understand and apply several methods of cost estimating and when to use each method.
- Understand and apply risk management on projects.
- Evaluate the progress and performance of projects using modern techniques

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Offers a rather comprehensive introduction to the field of managing for engineering projects and project management

CLO 2. Learn the network scheduling technique, CPM analysis and precedence networking

CLO 3. Compute the Project Duration and Cost and the project schedule.

CLO 4. Study the resource allocation and constraints
CLO 5. Study and deal with Project time reduction
CLO 6. Understand and apply risk management on projects
CLO 7. Evaluate the progress and performance of projects using modern techniques

3- Relationship between the course and the Competencies:

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of MEC
Program Academic Standards that the course contributes in achieving	A7, A9&A10	NA

4- *Mapping Course Los to NARS*

Field	Program (MEC) that the course contribute in achieving	Learning Outcomes (LOs)
COMPETENCIES of ENGINEERING	**A7.** Function efficiently as an individual and as a member of multi-disciplinary and multi- cultural teams.	**LO1.** Identify the concept of Project Management. **LO2.** Identify environmental factors that affect both global and domestic management decisions. **LO3.** Analyze the importance of social responsibility and ethics on management.
	A9. Use creative, innovative, and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	**LO4.** Apply essential management concepts to reduce the project duration and risks. **LO5.** Analyze the organization strategy and project selection
	A10. Acquire and apply new knowledge, and practice self, lifelong and other learning strategies.	**LO6.** Apply essential marketing concepts and write a strategic plan. **LO7.** Schedule the projects resources and costs. **LO8.** Recognize the Resource Allocation Methods.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

project management overview, organizational structures assessing success, planning, learning curves network scheduling techniques, CPM analysis, precedence networking, resource allocations and the constraints, cost management, risk management, project performance measurement and control.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Introduction for project management	3	2	1	0	**LO1 - LO3**
Week-2	Organization strategy and project selection	3	2	1	0	**LO5**
Week-3	Work Breakdown structure (WBS), Organization Breakdown Structure (OBS), Activity & Scope, Planning Process and Time management Project Planning	3	2	1	0	**LO6**
Week-4	Activities Duration, Activities Sequence, Project Networks. Gantt Chart(Bar Chart) and Solved (Examples on Bar chart (Gant Chart	3	2	1	0	**LO4**
Week5	Activity On Arrow (AOA) and Solved Examples on Activity On Arrow (AOA)	3	2	1	0	**LO3, LO4**
Week-6	Activity On Node (AON) and Solved Examples on Activity On Node	3	2	1	0	**LO3, LO4**
Week-7	Revision before Midterm	3	2	1	0	**LO1 - LO5**
Week-8	**Midterm Exam.**					
Week-9	Managing Project Risk	3	2	1	0	**LO4, LO7**
Week-10	Scheduling Resources and Costs	3	2	1	0	**LO7, LO8**
Week-11	Applicable Examples on Scheduling Resources	3	2	1	0	**LO7, LO8**
Week-12	Reducing Project Duration	3	2	1	0	**LO4**

Week-13	Cost–Duration Trade-off examples	3	2	1	0	**LO4**
Week-14	Revision	3	2	1	0	**LO4, LO7, LO8**
Week 15	**Final Exam.**					

5.3. Experiment Topics:

Not Applicable

6- Matrix of Course Objective and LOs

Course Learning Objectives	General							
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8
CLO 1	√	√						
CLO 2				√	√			
CLO 3				√			√	
CLO 4					√			√
CLO 5				√	√			
CLO 6				√			√	
CLO 7			√					√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)							
	General							
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8
Face-to-Face Lecture	√	√	√	√	√	√	√	√
Online Education								
Tutorial/ Exercise				√	√	√	√	
Group Discussion					√	√	√	
Laboratory								
Site Visit								
Presentation	√	√	√	√	√	√	√	√
Mini Project								
Research and Reporting				√		√	√	
Brain Storming		√	√		√			
Self-Learning						√	√	

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)							
	General							
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8
Written Exam	√	√	√	√	√	√	√	√
Online Exam								
Oral Exam								
Quiz	√		√		√	√		√
Lab Exa								
Take-Home Exam		√				√	√	
Research Assignment		√		√				
Reporting Assignment		√		√	√			
Project Assignment		√					√	
In-Class Questions		√		√	√	√	√	√

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- Data Show (Projector)
B- White Board
C- Printed Notes

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Text Books and Additional References:

- Gray, C and Larson, E. (2018). Project Management: The Managerial Process, 7 edition, McGraw-hill International Edition.
- Hand book of construction management: Scope, Schedule and cost control Abdul Razzak Ruman, 2016.
- Rory Burke, Project Management: Planning & Control Techniques, Wiley India Pvt. Ltd, 2009.
- Harold Kerzner, (2009). Project Management: A Systems Approach to Planning, Scheduling, and Controlling, 10th Edition, Wiley.
- Project Management in Planning, H. N. Ahuja, 1994

Course Directors	Name	Signature
Teaching staff	Dr. Mansour Abu Gamila Dr. Asmaa Ahmed Soliman	
Course coordinator	Dr. Asmaa Ahmed Soliman	
Program coordinator	Prof. Dr. Hesham Mostafa	
Head of the Department	Prof. Dr. Adel Fathy.	
Date of approval	Oct.2023	

The Higher Technological Institute (HTI)	
Department: Department of Biomedical Engineering	

Course Specification - MNG 203: ethics

A – Affiliation	
Relevant program:	Biomedical Engineering
Department offering the program:	Biomedical Engineering
Department offering the course:	Biomedical Engineering

B – Basic information							
Title:	ethics			Code:		MNG 203	
Academic year/-level:	May 2023--Bachelor			Credit Hours:		1	
Contact Hours:	1	Lecture:	1	Tutorial:	-	Practical:	-
Academic standard	NARS except biomedical and electric departments ARS			Bylaw approval		2016	
Prerequisite:	None						

C - Professional information

1- Course Description

Global Vision about Engineering Science & job of Engineer: Engineering Science is the indicator for any civilization since long time ago. - Being an Engineer is one of the finest and the highest job (Engineering job based on creativity, innovation and development from his own imagination - Serving the whole humanity and seeking for the quality in human life). Engineer's responsibility in the national and the international scale: Vital role for the engineer according to the international engineering contracts (FIDIC) - Responsibility of the engineer according to the Egyptian Laws. Job ethics and etiquette: Global vision on the Engineers Syndicate law no.66 fori974 - Confirming

2 – Course Learning Objectives:

At the completion of this course the students should be able to:

- CLO.1. Share ideas and communicate with others -Provide Global Vision about Engineering Science & job of Engineer: Engineering Science is the indicator for any civilization
- CLO.2. Search for information and engage in life long self-learning discipline
- CLO.3. Write technical reports

3- Course Competencies (NARS 2018-ARS)

Learning outcomes

Level (A) Engineering Competencies

On completing this course, students will be able to:

A.9	Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	LO.1. Plan to improve performance in the field.
A.10	Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.	LO.2. Plan to improve quality in human life.

4- Course Contents

Topics to be Covered weekly & Matrix of Competencies.

Week	Topics	Course Competencies	
		LO.1	LO.2
1	Global Vision about Engineering Science & job of Engineer.	√	
2	Global Vision about job of Engineer.	√	
3	Engineering job based on creativity and innovation.		√
4	Engineering job based on development.		√
5	Vital role for the engineer according to the international engineering contracts.	√	
6	Responsibility of the engineer according to the Egyptian Laws	√	
8	Mid Term Exam	√	√
9	The knowledge about International Federation of Consulting Engineers (FIDIC).	√	
10	Job ethics and etiquette: Global vision on the Engineers Syndicate law no.66 fori974 – Confirming.	√	√
12	Revision and Quiz	√	
13	Final	√	

5- a Teaching and Learning Methods

Course Competencies		Teaching and Learning Methods									
		Face-to-face Lecture	Online Education	Tutorial / Exercise	Group Discussions	Laboratory	Site Visit	Presentation	Mini Project	Research and Reporting	Brain Storming
A--Level A	LO.1	√		√	√			√		√	√
	LO.2	√			√					√	

6- Student Academic Counseling and Support

- Students are directed to contact teaching staff for academic support during specific office hours.
- Regarding this course, I will be available for students for two hours a week as indicated on my time table declared for students from the beginning of the semester.

7- Student Assessment

a- Student Assessment Methods

Course Competencies		Assessment Methods									
		Written Exams	Online Exams	Oral Exam	Quizzes	Lab Exam	Take-Home Exam	Research Assignments	Reporting Assignments	Project Assignments	In-class Questions
Level A	LO.1	√	√		√				√		√
	LO.2				√				√		

b- Assessment Schedule and Weight

Assessment	Week	Weight
Midterm Exam.	8	20 %

Final Examination	13	40 %
Report and Quiz	10, 12	35%
Attendance	-	5 %
Total		**100** %

8- Facilities

The following facilities are needed for this course:

■	Classroom	□	Smart Board	■	Computer with software
□	Lecture Hall	■	White Board	□	MIS system
□	Sound and Microphone	■	Data Show	□	Internet Access
□	Other: ……				

9- List of References

a- Course Notes - Course notes/ppt. prepared by instructor.

b- Recommended Books http://eea.org.eg/#

10- Matrix of Course Objectives and Competencies

Course Objectives	Course Competencies	
	LO.1	LO.2
CLO.1.Share ideas and communicate with others.	√	√
CLO.2.Search for information and engage in life long self-learning discipline.	√	√
CLO.3. Write technical reports.	√	

Course Coordinator	Name	Signature
Teaching staff	**Dr. khaled wally**	
Course coordinator	**Dr. Mohamed Oauf**	

Program coordinator	**Assoc.Prof.Dr. Amal eldesoky**	
Head of the Department	**Assoc.Prof.Dr. Amal eldesoky**	
Date of approval	**2023**	

The Higher Technological Institute (HTI)	
Department: Department of Chemical Engineering	

Course Specification

MNG202: Environmental Impacts of Projects

A – Affiliation	
Program(s) on which this course is given	Chemical Engineering
Department offering the program	Chemical Engineering
Department offering the course	Chemical Engineering

B – Basic information							
Course Title:	Environmental impacts of projects			**Course Code:**		MNG202	
Program /level	Chemical Engineering			**Senior (2)**			
Academic year:	2022 - 2023			**Credit Hours:**		1	
Contact Hours:	1	**Lecture:**	1	**Tutorial:**	-	**Practical:**	-
Pre-Requisite	None						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Subject Area:

% Humanities and Social Sciences	% Math. and Basic Sciences	% Basic Eng. Sciences	% Applied Eng.	% Computer application and ICT	% Design, Projects and practice	% Discretionary subjects	Total
			100%				**100%**

2- Course Aims

By the end of this course the student must be taught:

1. Availability of natural resources, Natural cycles of some basic elements (carbon, oxygen, nitrogen, sulfur, Phosphorous ….)
2. The conflict between development, Economics and environment.
3. Defining pollution emissions sources, impacts, standards and precautions.
4. Types of water, air and soil pollution.

5. The required procedures of the environmental impact assessment study. Environmental impact statement and reporting, contents and forms.

3- Course Learning Objectives:

by the end of this course, student should be able to :

Obj 1 Recognizes the natural cycles of some essential elements.

Obj 2 Familiar with the objectives of the EIA process, the procedures and the creation of the report.

Obj 3 Know the qualitative and quantitative methods of impact analysis.

Obj 4 Identify the different types of pollution.

Obj 5 Understand environmental component analysis.

4- Relationship between the course and the program:

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CHE
Program Academic Standards that the course contributes in achieving	A3, A4, A6	B2

5- Mapping Course Los to NARS

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A3.** Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development	LO1. Define the steps of EIA study and its objectives, also the structure of the final EIA report
	A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	LO2. Recognizes the natural cycles of some essential elements and the conflict between development, Economics and environment LO3. Recognize qualitative and quantitative methods of impact analysis.
COMPETENCIES of CHE	**B2.** Engage in the recent technological changes and emerging fields relevant to chemical engineering to respond to the challenging role and responsibilities of a	LO4. Explain different types of pollution and environmental component analysis

	professional chemical engineer.	

6- Course Topics

No. of Weeks	Topics
3	Introduction to EIA. And natural resources, Natural cycles of some basic elements (carbon, oxygen, nitrogen, sulfur, Phosphorous ….)
1	The conflict between development, Economics and environment.
1	Types of water pollution and measurements.
1	Types of air pollution and measurements.
1	Types of soil pollution and measurements.
2	The required procederes of the environmental impact assessment study.
2	Parameters essential in EIA report and the structure of EIA repot-Project description.

7- Course Content:

7.1. Course Description (As indicated in program Bylaw):

Introduction: Availability of natural resources, Natural cycles of some basic elements (carbon, oxygen, nitrogen, sulfur, Phosphorous ….) Conflicts between developments, Economics and environments. Defining emissions sources, impacts, standards and precautions. Water, air and soil pollution and measurements. Historical development for recognizing the need for environmental impact assessment. Assessing the impacts on health, social, cultural and economic activities. Procedures of the environmental impact assessment: screening, scoping, defining impacts, comparing alternatives, plans for mitigation and alleviation, environmental auditing. and public participation. Environmental impact statement and reporting, contents and forms. Examples for assessing the impacts of water resources projects on the environment and impacts of different activities on the water environment.

7.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Introduction to EIA. And natural resources, Natural cycles of some basic elements (carbon, oxygen, nitrogen, sulfur, Phosphorous ….)	1	1	-	-	LO2
Week-2	Introduction to EIA. And natural resources, Natural cycles of some basic elements (carbon, oxygen, nitrogen, sulfur, Phosphorous ….)	1	1	-	-	LO2
Week-3	Introduction to EIA. And natural resources, Natural cycles of some basic elements (carbon, oxygen, nitrogen, sulfur, Phosphorous ….)	1	1	-	-	LO2
Week-4	Conflicts between developments, Economics and environments.	1	1	-	-	LO2
Week5	Water pollution and measurements.	1	1	-	-	LO4
Week-6	Quiz (1)	1	1	-	-	---
Week-7	Air pollution and measurements.	1	1	-	-	LO4
Week-8	**Midterm Exam.**					
Week-9	Soil pollution and measurements.	1	1	-	-	LO4
Week-10	Procedures of the environmental impact assessment study	1	1	-	-	LO1
Week-11	Procedures of the environmental impact assessment study	1	1	-	-	LO1
Week-12	Parameters essential in EIA report and the structure of EIA repot-Project description.	1	1	-	-	LO3
Week-13	Parameters essential in EIA report and the structure of EIA repot-Project description.	1	1	-	-	LO3
Week-14	Quiz (2)	1	1	-	-	---
Week 15	**Final Exam.**					

7.3. **Experiment Topics:**

Serial	Experiment	Laboratory hrs.
1st	NA	
2nd		

8- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)			
	LO 1	LO 2	LO 3	LO 4
Obj 1		*		
Obj 2	*			
Obj 3			*	
Obj 4				*
Obj 5				*

9- *Course Teaching and Learning Methods:*

Competencies Based Education (CBEs)		Online learning								On-ground learning										
		Lecture	PPT and	Discussion	Tutorial	Brain storming	observation	Report	Case study	Lecture	PPT and	Discussion	Tutorial	Problem solving	Brain storming	Practical /lab.	Cooperative	Discovering	Site visit	Case study
COMPETENCIES of ENGINEERING	LO 1	Depends on the course instructor in the case of needs								*		*								
	LO 2									*		*								
	LO 3									*										

COMP ET-ENCIES of ChE	**LO 4**		*											

10- Teaching and Learning Methods for Low Capacity and Outstanding Students:

For low capacity students	Assign a portion of the office hours for those students.
	Give them specific tasks.
	Repeat the explanation of some of the material and tutorials.
	Assign a teaching assistance to follow up the performance of this group of students.
For outstanding Students	Hand out project assignments to those students.
	Give them some research topics to be searched using the internet and conduct presentation.
	Encourage them to take parts in the running research projects.

11- Assessment

11.1 Course Assessment Methods:

Competencies Based Education **(CBEs)**		**On ground assessment**										**Online assessment**						
		Written Exam	**Oral Exam**	**Tutorial Assessment**	**Project Assessment**	**Model Assessment**	**Report & Discussion Assessment**	**Quiz assessment**	**Presentation Assessment**	**Case study**	**Laboratory Test**	**Online Exam**	**Tutorial Assessment**	**Project Assessment**	**Report & Discussion Assessment**	**Quiz assessment**	**Presentation Assessment**	**Case study**
COMPETENCIES OF ENGINEERING	**LO 1**	*						*				**Depends on the course instructor in the case of needs**						
	LO 2	*						*										
	LO 3	*						*										

COMPET -ENCIES of CHE	**LO 4**	*						*				

11.2 Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**-**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**40**	According to the schedule	---
Total Mark	**100**		

12- Facilities Required:

A- Data show, laptop

B- Library Usage:

Students should be encouraged to use library resources in the preparation of reports and presentation. At least one oral presentation should involve a component of library research to encourage this component of study.

C- Microsoft Teams

D- Egyptian Knowledge Bank (EKB)

13- List of References:

13.1 Course Notes:

- Printed lectures & Sheets hand out to students one by one.

13.2 Required Text Books and Additional References:

- John Glasson, Riki Therivel and Andrew Chadwick ,Introduction to Environmental Impact Assessment, ,4 th edition,2012.

13.3 Recommended Books:

- Peter Morris and Riki Therivel, Methods of Environmental Impact Assessment , Third edition,2009

Course Directors	Name	Signature
Teaching staff	- Prof.Maha Tony - AP.Dr.Soad Abd El.aziz El. Metwally - Dr.Nora Yehia Selem - Dr.Samah Hassan Hwash	
Course coordinator	AP.Dr.Soad Abd El.aziz El. Metwally	
Program coordinator	Dr. Noha Fawzy El Husseiny	
Head of the Department	Pro. Maha Ahmed Abd El Kreem	
Date of approval	Jan. – May 2023	

المعهد التكنولوجي العالي (HTI)

القسم: قسم العلوم الأساسية

توصيف مقرر

تربية رياضية :PHE 201

أ – الانتماء (إنتساب المقرر)

البرنامج المانح:	قسم الهندسية الكهربائية_الميكاترونكس_الطبيه
القسم المقدم للبرنامج:	قسم الهندسيةالكهربائية_الميكاترونكس_الطبية
القسم الذي يقوم بتدريس المقرر:	قسم العلوم الأساسية

ب – المعلومات الأساسية

عنوان المقرر	البيوتكنولوجي				كود المقرر	PHE 201	
المستوي الدراسي	المرحلة البكالوريوس				الساعات المعتمدة	1	
ساعات الإتصال الكلية	2	محاضرة	1	سكشن	0	خيمانيزيم	1
المتطلب السابق	لا يوجد						

2- أهداف المقرر:

يهدف المقرر إلي إكساب الطالب المعرفة الكافية فيما يلي:

- معرفة وإدراك المفاهيم والمعارف المتنوعة حول الهندسية الرياضية
- تنمية المعرفة والعلاقة بين الادوات والاجهزه الرياضية وحركة الجسم والاداء البدني

3- الأهداف التعلمية المقرر (CLO):

في نهاية هذا المقرر، يجب أن يكون الطالب قادرا على:

CLO 1	معرفة وإدراك المفاهيم والمعارف المتنوعة حول مبادئ الهندسه الرياضيه
CLO 2	تنمية المعرفة والعلاقة بين الادوات والاجهزة الرياضية وحركة الجسم والاداء البدني
CLO 3	الشعور بأهمية التفكير العلمي في المجال الرياضي

3- العلاقة بين المقرر والجدارات (الكفاءات) الهندسية :

نطاق الارتباط	المعيار المرجعي الأكاديمي الوطني (NARS)	
	الكفاءات الهندسية الأساسية (As)	كفاءات الهندسية لبرنامج الهندسة -- ----

المعايير الأكاديمية للبرنامج التي يساهم المقرر في تحقيقها	A3, A4, A5, A6, A10	Bs or Cs

4.1 - مخرجات التعلم (LOs) :

عند الانتهاء من دراسة المقرر ، يجب أن يكون لدى الطالب القدرة على

LO 1	تنمية المعرفة بحركة الجسم ومتطلبات القدرات البشرية
LO 2	الزيادة والمحافظة على مستوى اللياقة البدنية
LO 3	تنمية مدى التوافق والتناغم بين القدرات البشرية وبين الادوات والاجهاز من منظومة التصميم الهندسي للمعدات
LO 4	تنمية المعارف والمعلومات حول حركه الجسم البشري
LO 5	التعرف الكفاءه الهوائيه وقدراتها وانواعها
LO 6	استثمار تكنولوجيا التواصل الحديثة في التعليم الذاتي
LO 7	المقدرة على التواصل مع الأخرين والعمل كعضو في فريق متناسق ومتكامل
LO 8	العمل على الاستفادة من معرفه علوم الهندسه الرياضيه في تطوير مجالات جديده للعمل
LO 9	زيادة الثقافة الرياضية وارتباطها بالثقافة العامة للطالب
LO10	تنمية المهارات الحركية ورفع مستوى اللياقة البدنية للطالب

4.2 إرتباط نواتج التعلم للمقرر (LOs) والمعايير القياسية المرجعية الوطنية (NARS)

نطاق الارتباط	نواتج التعلم لبرنامج الهندسية الميكانيكية	مخرجات التعلم للمقرر (LOs)									
		LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9	LO10
الجدارات الهندسية الأساسية	A1										
	A2										
	A3	✓	✓				✓				
	A4			✓	✓	✓		✓			
	A5				✓			✓			
	A6										
	A7										✓
	A8								✓		✓
	A9						✓			✓	
	A10										✓
الجدارات الهندسية الأساسية لبرنامج الهندسية الميكانيكية	B1										
	B2										
	B3										
	B4										
	B5										

5- محتوى المقرر:

توصيف المقرر (كما هو موضح في لائحة البرنامج):

تنمية المعرفة والثقافة الرياضية وخاصة فى العلاقة بين علوم الهندسه والعلوم الرياضيه

موضوعات المقرر

رقم الأسبوع	المواضيع	مجموع الساعات	ساعات الاتصال			LOs التي يحققها المقرر
			محاضرة	سكشن	جيم	
1	المقدمة ومفهوم عن علم الهندسه الرياضيه اهدافها اهميتها + تدريبات على اللياقة البدنية	2	1	0	1	LO 1
2	مصطلحات مستخدمه ومتداولة المجال الرياضي الهندسي + تدريبات على اللياقة البدنية	2	1	0	1	LO 2
3	مقدمه عن جسم الانسان والعضلات الارادية + تدريبات على اللياقة البدنية	2	1	0	1	LO 1
4	الكفاءه الهوائية وقدراتها + تدريبات على اللياقة البدنية	2	1	0	1	LO
5	إمتحان منتصف الفصل الدراسي					
6	مراجعه عامه + التدريب على اختبارات اللياقه البدنيه	2	1	0	1	LO
7	الدين الاكسجيني وانواعه + تدريبات على اللياقة البدنية	2	1	0	1	LO
8	الامتحان النهائي					

6- مصفوفة توافق أهداف المقرر الدراسي ونواتج (مخرجات) التعلم

أهداف تعلم المقرر	مخرجات التعلم (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
CLO 1	✓	✓							✓	
CLO 2			✓	✓			✓		✓	✓
CLO 3	✓		✓		✓	✓		✓		

7- طرق التدريس والتعلم :

طرق التعليم والتعلم	نتائج التعلم (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
محاضرة وجها لوجه	✓	✓	✓	✓	✓	✓				

التعليم عبر الإنترنت	✓	✓			✓					
واجبات منزلية		✓		✓		✓				
مناقشة جماعية	✓		✓		✓	✓	✓			
مختبر(الجيمانيزيم)		✓			✓	✓				
زيارة الموقع										
عروض تقديمية بالبوربوينت	✓		✓							
مشروع صغير										
أبحاث وإعداد التقارير						✓	✓			
العصف الذهني	✓	✓		✓	✓					
التعلم الذاتي			✓							

8- التقييم

8.1 طرق تقييم المقرر:

طرق التقييم	نتائج التعلم (LOs)									
	مخرجات التعلم للمقرر (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
الامتحان التحريري	✓	✓				✓	✓	✓		
امتحان عبر الإنترنت										
الامتحان الشفوي			✓	✓						
مسابقات تنافسية									✓	✓
الامتحانات المعملية										
واجبات منزلية	✓		✓		✓					
مهمة بحثية				✓			✓	✓		
مهمة إعداد التقارير	✓		✓	✓		✓			✓	
تعيين المشروع										
الأسئلة داخل المحاضرة	✓	✓	✓	✓	✓	✓				

8.2. جدول التقييم وتوزيع الدرجات:

طريقة التقييم	الدرجة	التوقيت	وقت الامتحان
الامتحان النهائي	30	الاسبوع 8	90 دقيقة.
الامتحان التحريري لنصف الترم الدراسي	20	الاسبوع5	60 دقيقة.
امتحانات تقييمية وتحررية قصيرة (خلال الفصل الدراسي الدراسي)	20	وفقا للجدول الزمني	---

اختبارات العملي	30	7	---
مجموع الدراجات	100		

9- المرافقات المطلوبة للتعليم والتعلم:

A- قاعة محاضرات مجهزة .
B- المكتبات المركزية والفرعية .
C- الوسائل التعليمية (داتا شو) وجهاز الحاسوب المحمول.
D- مّذكرة لتدريس المقرر وكشوف متابعة للطلاب

10-قائمة المراجع:

10.1. كتاب المقرر:

1- مذكرات المقرر- كتاب بايوتكنولوجي
2- عروض تقديمية (بوربوينت) يعطى للطلاب جزء بجزء

10.2. الكتب المرجعية المطلوبة والمراجع الإضافية:

1- جيرد هوخمرت الميكانيكا الحيوية 1999

2- التطور التقني ودوره في المجال الرياضي صبري عمر_زكي حسن دار المعرفه

a. الكتب الموصي بها:

1- فسيولوجيا الرياضه بهاء الدين سلامه دار الشروق الطبعه الاولي 2022

b. المواقع الإلكترونية:

- https://ar.wikipedia.org/wiki
-

القائمين على مراجعة وتقيم المقرر	الاسم	توقيع
أعضاء هيئة التدريس	د_خلود فاروق حامد	
منسق المقرر	د/ خلود فاروق حامد	
رئيس القسم	أ.د/ محمد عبد العاطي	
تاريخ الموافقة	مايو2021|2022	

المعهد التكنولوجي العالي (HTI)

القسم: قسم العلوم الأساسية

توصيف مقرر

تربية رياضية :PHE 201

أ – الانتماء (إنتساب المقرر)

البرنامج المانح:	قسم الهندسية الكهربائية_الميكاترونكس_الطبيه
القسم المقدم للبرنامج:	قسم الهندسيةالكهربائية_الميكاترونكس_الطبية
القسم الذي يقوم بتدريس المقرر:	قسم العلوم الأساسية

ب – المعلومات الأساسية

عنوان المقرر	البيوتكنولوجي				كود المقرر	PHE 201	
المستوي الدراسي	المرحلة البكالوريوس				الساعات المعتمدة	1	
ساعات الإتصال الكلية	2	محاضرة	1	سكشن	0	خيمانيزيم	1
المتطلب السابق	لا يوجد						

2- أهداف المقرر:

يهدف المقرر إلي إكساب الطالب المعرفة الكافية فيما يلي:

- معرفة وإدراك المفاهيم والمعارف المتنوعة حول الهندسية الرياضية
- تنمية المعرفة والعلاقة بين الادوات والاجهزه الرياضية وحركة الجسم والاداء البدني

3- الأهداف التعلمية المقرر (CLO):

في نهاية هذا المقرر، يجب أن يكون الطالب قادرا على:

CLO 1	معرفة وإدراك المفاهيم والمعارف المتنوعة حول مبادئ الهندسه الرياضيه
CLO 2	تنمية المعرفة والعلاقة بين الادوات والاجهزة الرياضية وحركة الجسم والاداء البدني
CLO 3	الشعور بأهمية التفكير العلمي في المجال الرياضي

3- العلاقة بين المقرر والجدارات (الكفاءات) الهندسية :

نطاق الارتباط	المعيار المرجعي الأكاديمي الوطني (NARS)	
	الكفاءات الهندسية الأساسية (As)	كفاءات الهندسية لبرنامج الهندسة -- ----

المعايير الأكاديمية للبرنامج التي يساهم المقرر في تحقيقها	A3, A4, A5, A6, A10	Bs or Cs

4.1 - مخرجات التعلم (LOs) :

عند الانتهاء من دراسة المقرر ، يجب أن يكون لدى الطالب القدرة على

LO 1	تنمية المعرفة بحركة الجسم ومتطلبات القدرات البشرية
LO 2	الزيادة والمحافظة على مستوى اللياقة البدنية
LO 3	تنمية مدى التوافق والتناغم بين القدرات البشرية وبين الادوات والاجهاز من منظومة التصميم الهندسي للمعدات
LO 4	تنمية المعارف والمعلومات حول حركه الجسم البشري
LO 5	التعرف الكفاءه الهوائيه وقدراتها وانواعها
LO 6	استثمار تكنولوجيا التواصل الحديثة في التعليم الذاتي
LO 7	المقدرة على التواصل مع الأخرين والعمل كعضو في فريق متناسق ومتكامل
LO 8	العمل على الاستفادة من معرفه علوم الهندسه الرياضيه في تطوير مجالات جديده للعمل
LO 9	زيادة الثقافة الرياضية وارتباطها بالثقافة العامة للطالب
LO10	تنمية المهارات الحركية ورفع مستوى اللياقة البدنية للطالب

4.2 إرتباط نواتج التعلم للمقرر (LOs) والمعايير القياسية المرجعية الوطنية (NARS)

نطاق الارتباط	نواتج التعلم لبرنامج الهندسية الميكانيكية	مخرجات التعلم للمقرر (LOs)									
		LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9	LO10
الجدارات الهندسية الأساسية	A1										
	A2										
	A3	✓	✓				✓				
	A4			✓	✓	✓		✓			
	A5				✓			✓			
	A6										
	A7										✓
	A8								✓		✓
	A9						✓			✓	
	A10										✓
الجدارات الهندسية الأساسية لبرنامج الهندسية الميكانيكية	B1										
	B2										
	B3										
	B4										
	B5										

5- محتوى المقرر:

توصيف المقرر (كما هو موضح في لائحة البرنامج):

تنمية المعرفة والثقافة الرياضية وخاصة فى العلاقة بين علوم الهندسه والعلوم الرياضيه

موضوعات المقرر

رقم الأسبوع	المواضيع	مجموع الساعات	ساعات الاتصال			LOs التي يحققها المقرر
			محاضرة	سكشن	جيم	
1	المقدمة ومفهوم عن علم الهندسه الرياضيه اهدافها اهميتها + تدريبات على اللياقة البدنية	2	1	0	1	LO 1
2	مصطلحات مستخدمه ومتداولة المجال الرياضي الهندسي + تدريبات على اللياقة البدنية	2	1	0	1	LO 2
3	مقدمه عن جسم الانسان والعضلات الارادية + تدريبات على اللياقة البدنية	2	1	0	1	LO 1
4	الكفاءه الهوائية وقدراتها + تدريبات على اللياقة البدنية	2	1	0	1	LO
5	إمتحان منتصف الفصل الدراسي					
6	مراجعه عامه + التدريب على اختبارات اللياقه البدنيه	2	1	0	1	LO
7	الدين الاكسجيني وانواعه + تدريبات على اللياقة البدنية	2	1	0	1	LO
8	الامتحان النهائي					

6- مصفوفة توافق أهداف المقرر الدراسي ونواتج (مخرجات) التعلم

أهداف تعلم المقرر	مخرجات التعلم (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
CLO 1	✓	✓							✓	
CLO 2			✓	✓			✓		✓	✓
CLO 3	✓		✓		✓	✓		✓		

7- طرق التدريس والتعلم :

طرق التعليم والتعلم	نتائج التعلم (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
محاضرة وجها لوجه	✓	✓	✓	✓	✓	✓				

التعليم عبر الإنترنت	✓	✓			✓					
واجبات منزلية		✓		✓		✓				
مناقشة جماعية	✓		✓		✓	✓	✓			
مختبر(الجيمانيزيم)		✓			✓	✓				
زيارة الموقع										
عروض تقديمية بالبوربوينت	✓		✓							
مشروع صغير										
أبحاث وإعداد التقارير						✓	✓			
العصف الذهني	✓	✓		✓	✓					
التعلم الذاتي			✓							

8- التقييم

8.1 طرق تقييم المقرر:

طرق التقييم	نتائج التعلم (LOs)									
	مخرجات التعلم للمقرر (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
الامتحان التحريري	✓	✓				✓	✓	✓		
امتحان عبر الإنترنت										
الامتحان الشفوي			✓	✓						
مسابقات تنافسية									✓	✓
الامتحانات المعملية										
واجبات منزلية	✓		✓		✓					
مهمة بحثية				✓			✓	✓		
مهمة إعداد التقارير	✓		✓	✓		✓			✓	
تعيين المشروع										
الأسئلة داخل المحاضرة	✓	✓	✓	✓	✓	✓				

8.2. جدول التقييم وتوزيع الدرجات:

طريقة التقييم	الدرجة	التوقيت	وقت الامتحان
الامتحان النهائي	30	الاسبوع 8	90 دقيقة.
الامتحان التحريري لنصف الترم الدراسي	20	الاسبوع5	60 دقيقة.
امتحانات تقييمية وتحررية قصيرة (خلال الفصل الدراسي الدراسي)	20	وفقا للجدول الزمني	---

اختبارات العملي	30	7	---
مجموع الدراجات	100		

9- المرافقات المطلوبة للتعليم والتعلم:

A- قاعة محاضرات مجهزة .
B- المكتبات المركزية والفرعية .
C- الوسائل التعليمية (داتا شو) وجهاز الحاسوب المحمول.
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2- عروض تقديمية (بوربوينت) يعطى للطلاب جزء بجزء

10.2. الكتب المرجعية المطلوبة والمراجع الإضافية:

1- جيرد هوخمرت الميكانيكا الحيوية 1999

2- التطور التقني ودوره في المجال الرياضي صبري عمر_زكي حسن دار المعرفه

a. الكتب الموصي بها:

1- فسيولوجيا الرياضه بهاء الدين سلامه دار الشروق الطبعه الاولي 2022

b. المواقع الإلكترونية:

- https://ar.wikipedia.org/wiki
-

القائمين على مراجعة وتقيم المقرر	الاسم	توقيع
أعضاء هيئة التدريس	د_خلود فاروق حامد	
منسق المقرر	د/ خلود فاروق حامد	
رئيس القسم	أ.د/ محمد عبد العاطي	
تاريخ الموافقة	مايو2021|2022	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	
Course Specification	
CIV 241: Construction project management	

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information							
Course Title:	Construction Project Management			**Course Code:**		CIV 241	
Program / Level	Civil Engineering			**SENIOR 2**			
Term/ Academic year:	OCT-Jan2023-2024			**Credit Hours:**		1	
Contact Hours:	3	**Lecture:**	1	**Tutorial:**	1	**Laboratories:**	1
Pre-Requisite	CIV 101, CIV 153						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- Modeling of project tasks, subtasks (activities), and Networks (Critical Path Method).
- Principles and practices of critical path methodology under conditions of certainty (CPM) and uncertainty (PERT).
- Resource loading and cost-crashing concepts with and without resource limitations
- Principles and practices of the line of balance technique.
- Analysis and management of the cash flow, financial analysis, and project cost control.
- Use of computer programs in managing engineering projects

2- Course Learning Objectives (CLO):

At the end of this course, the student should be able to :

CLO 1. Offers a rather comprehensive introduction to the field of managing engineering projects.
CLO 2. Compute the Project Duration and Project Schedule

CLO 3. Study The Project Time Reduction (Crashability)

CLO 4. Study and deal with Resource loading and cost-crashing concepts with and without resource limitations

CLO 5. Study the line of balance technique and applied it to actual projects on a computer program.

CLO 6. Study the Cash flow analysis and financial analysis

CLO 7. Study the construction Project Cost Control

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIVIL
Program Academic Standards that the course contributes to achieving	A2	B1, B2, B3

4- *Mapping Course Los to NARS*

Field	Program (MEC) that the course contributes to achieving	Learning Outcomes (Los)
COMPETENCIES of ENGINEERING	**A2.** Evaluate projects (Delays, Failure, Risks, Constraints, Limitation**s…)**	**LO 1**. Analysis of the project life cycle for the construction project. **LO 2**. Predict if the project will achieve success or not (such as time – cost technique).
COMPETENCIES of CIVIL	**B1**. Develop the Construction Project Plan	**LO 3**. Computing activities duration depends on the units or total quantity required **LO 4.** Determine the Relation between tasks.
	B2. Develop the Schedule of projects	**LO 5**. Illustrate the critical path methodology under conditions of certainty. **LO 6.** Controlling the situation of the project
	B.3 Develop the cost control (Value Engineering) for the construction projects	**LO 7**. Apply the BCWS, BCWP, ACWP, Time variance, Time Index and Cost Index

5- Course Content:

5.1. Course Description (As indicated in the program Bylaw):

Definition of engineering projects, Modelling of projects, tasks, and subtasks as activity, networks, Principles, and practices of critical path methodology under conditions of certainty (CPM) and uncertainty (PERT).Line of balance. Resource loading and cost crashing concepts with and without resource limitations. Use of computer programs in managing engineering projects. Cash flow analysis and financial analysis.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			LOS Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction for project management, Work Breakdown Structure (WBS), Organization Breakdown Structure (OBS), Activity & Scope,	3	1	1	1	**LO 1**
Week-2	Planning Process and Time management (Project Planning) Principles and practices of critical path methodology under conditions of certainty (CPM) and conditions of uncertainty ((PERT	3	1	1	1	**LO4, LO5, LO 1**
Week-3	Study the Project Networks such as (AOA, and AON) with solved Examples	3	1	1	1	**LO5, LO6, LO3**
Week-4	Project Constraints and Solved Examples	3	1	1	1	**LO4, LO5, LO6**
Week5	Time-cost trade-off concepts with and without resource limitations.	3	1	1	1	**LO1, LO2, LO3, LO4**
Week-6	Time-cost trade-off concepts with and without resource limitations.	3	1	1	1	**LO4, LO5**
Week-7	Revision before Midterm	3	1	1	1	**LO1, LO2, LO3, LO4**
Week-8	**Midterm Exam.**					
Week-9	Resource Management	2	1	1	0	**LO5, LO6**

Week-10	Cash flow analysis and financial analysis.	3	1	1	1	**LO5, LO6**
Week-11	Cash flow analysis and financial analysis.	3	1	1	1	**LO5, LO6, LO7**
Week-12	Line of balance Technique with solved Examples	3	1	1	1	**LO6, LO7**
Week-13	Cost Control and Value Engineering Technique	3	1	1	1	**LO7**
Week-14	Revision	3	1	1	1	**LO4, LO5, LO6, LO7**
Week 15	**Final Exam.**					

5.3. Experiment Topics:

Serial	Experiment	Laboratory Hours
1st	Plan the students in how to setup and use the Primavera p6 on the Projectt time management (Schedule)	**2**
2nd	Plan the students in how to use the Primavera p6 on assigning the requird resources on theconstruction activities	**2**
3rd	Plan the students in how to use the Primavera p6 on detemining the Project Cash Flow	**2**
4th	Plan the students in how to use the Primavera p6 on Reviewing the control Reports of projects	**2**

6- Matrix of Course Objectives and Los

Course Learning Objectives	*Learning Outcome*(Los)						
	GENERAL		Civil 241				
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
CLO 1	√	√					
CLO 2		√	√	√			
CLO 3			√	√	√		
CLO 4			√	√			
CLO 5					√	√	√
CLO 6						√	√
CLO 7						√	√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(Los)						
	GENERAL		Civil 241				
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
Face-to-Face Lecture	√	√	√	√	√	√	√
Online Education							
Tutorial/ Exercise			√	√	√	√	√
Group Discussion						√	√
Laboratory							
Site Visit							
Presentation			√			√	
Mini Project				√		√	√
Research and Reporting				√		√	
Brain Storming		√	√				
Self-Learning						√	√

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	GENERAL		Civil 241				
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
Written Exam	√						
Online Exam							
Oral Exam							
Quiz	√		√		√	√	
Lab Exam					√	√	
Take-Home Exam		√				√	
Research Assignment		√		√			
Reporting Assignment		√		√	√		
Project Assignment		√					√
In-Class Questions					√	√	√

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End-of-term laboratory exam (*Lab*)	**5**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**15**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- Data Show (Projector)
B- White Board
C- Printed Notes

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Text Books and Additional References:

- Introduction to Construction Management; Fred Sherratt, 2015, Routledge Publishing ,ISBN (9781032007441)
- Handbook of Construction Management: Scope, Schedule, and Cost Control; Abdul Razzak Ruman; 2016, Publisher CRC Press, ISBN (1482226642)

10.3. Recommended Books:

- الكود المصري للمشروعات كود رقم 311 – 2009 – وزارة الاسكان والمرافق والتنمية العمرانية المركز القومي لبحوث الاسكان

10.4. Web Sites:

Project management Institute, https://www.pmi.org/

Course Directors	Name	Signature
Teaching staff	Dr: Asmaa Ahmed Soliman	
Course coordinator	Dr: Mahmoud Malek Olwan	
Program Coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Civil Engineering	

Course Specification

CIV 242: RAILWAY ENGINEERING

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Railway engineering			**Course Code:**		CIV 242	
Program/level	Civil Engineering			SENIOR 2			
Term/ Academic year:	OCT-Jan2023-2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	-----
Pre-Requisite	CIV 211						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- Demonstrate some of the train dynamics and their conceptual influence on the rest of course
- Geometric design including Vertical and Horizontal curve
- Structure design of the railway track
- Planning layout of turnouts and stations

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1. Demonstrate some of the train dynamics such as loads, power, and rolling stocks

CLO 2. calculate train speed.

CLO 3. Design vl and hl curves for any train

CLO 4. Design track structure including rail, sleepers, and ballast

CLO 5. Draw the turnouts and stations

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 242
Program Academic Standards that the course contributes to achieving	A3, A4	B2

4- *Mapping Course Los to NARS*

Field	Programm (CBEs) that the course contribute in achieving	Learning Outcomes (LOs)
COMPETENCIES of ENGINEERING	**A3.** Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	**Lo1.** Apply optimum design to produce cost-effective solution of rail elements.
	A4. Utilize engineering technologies, codes of practice and standards, quality guidelines, health and safety requirements.	Lo2. Design topography of land to choose ideal way to construct geometric design. Lo3.Construct the road according to standard guidelines to satisfy health and safety requirements.

COMPETENCIES of CIV 242	**B2.** Achieve an optimum design Railways engineering	**Lo4.** Identify train dynamics by applying mathematic equations. **Lo5**. solve acceleration and braking equations. **Lo6.** Sketch turnout and stations according to UIC code.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Dynamics of Rolling, Track Alignment, Railway Branches. Design and Details of Track Parts. Stations and Yards. Signals, Maintenance, Renewing.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*total Hours*	*Contact hrs.*			**Los Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Introduction to Railway engineering	3	2	1	0	**LO 4**
Week-2	Define forces, resistance, and relationship between them	3	2	1	0	**LO 4**
Week-3	Calculate acceleration distance and time	3	2	1	0	**LO 5**
Week-4	Calculate braking distance and time	3	2	1	0	**LO 5**
Week5	Introduction to alignment and design Vl curve	3	2	1	0	**LO 2**
Week-6	Complete Vl curve	3	2	1	0	**LO 2, LO3**
Week-7	Introduction of HL curve	3	2	1	0	**LO 3**
Week-8	**Midterm Exam.**					
Week-9	Design Hl curve	3	2	1	0	**LO2, LO 3**
Week-10	Introduction of track design, and design rail	3	2	1	0	**LO 1**
Week-11	Design sleepers, and ballast	3	2	1	0	**LO 1**

Week-12	Turnouts	3	2	1	0	**LO 6**
Week-13	stations	3	2	1	0	**LO 6**
Week-14	General review	3	2	1	0	**LO 1, LO2, LO3, LO4 LO5, LO6**
Week 15	**Final Exam.**					

5.3 experimental Topics: (NA)

6- Matrix of Course Objective and LO's

Course Learning Objectives	**Learning Outcomes (LOs)**					
	General				**CIV 242**	
	LO 1	**LO 2**	**LO 3**	**LO 4**	**LO 5**	**LO 6**
CLO 1				☑	☑	
CLO 2				☑	☑	
CLO 3		☑	☑			
CLO 4	☑					
CLO 5						☑

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	***Learning Outcome (*LO's)**					
	General				**CIV 242**	
	Lo1	**LO 2**	**Lo 3**	**Lo 4**	**Lo 5**	**Lo 6**
Face-to-Face Lecture	☑	☑	☑	☑	☑	☑
electronic Education	☑	☑	☑	☑	☑	☑
Tutorial/ Exercise	☑	☑	☑	☑	☑	☑
Group Discussion		☑	☑			☑
Laboratory						
Site Visit						
Presentation						
Mini Project						
Research and Reporting	☑					
Brain Storming			☑			
Self-Learning			☑			

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome (*LOs)					
	General				CIV 242	
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
Written Exam	☑	☑	☑	☑	☑	☑
Electronic Exam	☑	☑	☑	☑	☑	☑
Oral Exam			☑	☑		
Quiz		☑		☑	☑	
Lab Exam						
Take-Home Exam						
Research Assignment						
Reporting Assignment						
Project Assignment						
In-Class Questions		☑	☑	☑	☑	

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**	0	0
End of term Oral exam	**-**	0	0
Tutorial and report assessment (*Term Work*)	**10**	weekly	-----
Quizzes/electronic exams (*Term Work*)	**25**	Every 2 weeks	About 10 min.
Report	**5**	13th	-----
Total Mark	**100**		

9- Facilities Required:

A- White board

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Recommended Books:

* Nathan Bush "Railway Engineering: Design, Construction and Operation" Willford Press (March 8, 2022, isbn 1647283388

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Course Directors	Name	Signature
Teaching staff	Dr. Mai Moaz ELdeeb	
Course coordinator	Dr. Amr Nada	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	
Course Specification	
CIV 243: Foundation Engineering 1	

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information							
Course Title:	Foundation Engineering 1			**Course Code:**		CIV 243	
Program / level	Civil Engineering			**SENIOR (2)**			
Term/ Academic year:	Oct.-Jan. 2021 - 2022			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	-----
Pre-Requisite	CIV 111						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- To build an understanding of concepts and ideas explicitly in terms of previous learning.
- To emphasize the relationship between conceptual understanding and problems solving approaches.
- To provide students with a strong foretaste of engineering practices.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO1: Contract the essential items to evaluate the shear strength of soil and its practical application for some civil works such as Bearing capacity, and stability of the slope.

CLO2: Achieve optimum design method of shallow foundation by applying Egyptian code.

CLO3: Study the stability of the retaining structure.

*3- **Relationship between the course and the Competencies :***

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of Civil
Program Academic Standards that the course contributes in achieving	A2, A4	B1, B2

4- ***Mapping Course Los to NARS***

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A2.** Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 1.** Identify the shear strength of soil to solve engineering problems related to it by applying engineering fundamentals **LO 2**. Conduct direct shear test triaxial shear test, and unconfined compression test.
	A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	**LO 3**. Employ the Egyptian code in calculating the soil Bearing capacity **LO 4.** Calculate the factor of safety of slopes. **LO 5.** Utilize the Egyptian code in shallow foundation design.

COMPETENCIES of Civil	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 6**. Select appropriate shear strength test according to soil type. .
	B2. Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbors; or any other emerging field relevant to the discipline.	**LO 7.** Calculate the safety requirement of shallow foundation and retaining wall according to Egyptian code.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Soil Compaction: Laboratory and Field Methods, stability of slopes, Seepage through soil, Dewatering, Introduction to Foundation Engineering: Shallow Foundations, Bearing Capacity, and Settlement Analysis.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			LOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction to physical meaning of shear strength of cohesionless and cohesive soils.	3	2	1		**LO 1**
Week-2	Determination of shear parameters in laboratory and field. .	3	2	1		**LO2, LO6**
Week-3	Laboratory visit to recognize the available apparatuses to determine the shear strength parameters	3	2	1		**LO1, LO2**
Week-4	Introduction to bearing capacity of soils, methods of determination the bearing capacity of soil	3	2	1		**LO3**

Week5	Introduction to Stability of Slopes a-Types of slope failure .	3	2	1		**LO4**
Week-6	Determination the factor of safety of slopes in c-φ soils.	3	2	1		**LO4**
Week-7	Introduction to types of settlements in shallow foundation	3	2	1		**LO5**
Week-8	**Midterm Exam.**					
Week-9	Introduction: Types of foundations, factors governing the choice of foundation type, general principles of foundation design.	3	2	1		**LO5**
Week-10	Complete Design of strip footings. , square and rectangular footing	3	2	1		**LO5, LO7**
Week-11	Design of eccentric isolated footings.	3	2	1		**LO5, LO7**
Week-12	Design of combined footings .	3	2	1		**LO5, LO7**
Week-13	Design of strap beam footing	3	2	1		**LO5, LO7**
Week-14	Raft foundation: types and design methods	3	2	1		**LO5, LO7**
Week 15	**Final Exam.**					

5.3. Experiment Topics: (Not applicable)

6- Matrix of Course Objective and Los

Course Learning Objectives	**Learning Outcomes (LOs)**						
	General					**CIV 243**	
	LO 1	**LO 2**	**LO 3**	**LO s4**	**LO 5**	**LO 6**	**LO 7**
CLO1:	√	√	√	√		√	
CLO2:					√		√
CLO3:							√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	Learning Outcome(LOs)						
	General					CIV 243	
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
Face-to-Face Lecture	√	√	√	√	√	√	√
Online Education							
Tutorial/ Exercise	√	√	√	√	√	√	√
Group Discussion					√		
Laboratory							
Site Visit							
Presentation							
Mini Project							√
Research and Reporting				√			
Brain Storming					√	√	√
Self-Learning							

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)						
	General					CIV 243	
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
Written Exam	√	√	√	√	√	√	√
Online Exam							
Oral Exam							
Quiz	√	√	√	√	√	√	√
Lab Exam							
Take-Home Exam							
Research Assignment							
Reporting Assignment							
Mini Project					√		√
In-Class Questions	√	√	√	√	√	√	√

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- White board
B- Projector
C- Egyptian code

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Text Books and Additional References:

- Abd El-Rahman Hindi. "Foundation Design
- Amr Radwan. " Soil Mechanics"

10.3. Recommended Books:

- Bowels, J.E. (1988): Foundation Analysis and DESIGN, Mcgraw. Hill Inc, New York.
- IVAN GRATCHEV (2019): SOIL MECHNICS THROUGH PROJECT, LONDON
- DAVID DARWIN (2016): DESIGN OF CONCRETE STRUCTURES, NEWYORK
- Egyptian Code.

10.4. Web Sites:

- **Geotechnical Journal**
- **www.geotechnical.net**

Course Directors	Name	Signature
Teaching staff	Dr. Kamel Ibrahim	
Course coordinator	Dr. Ahmed Nabil	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023-2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	
Course Specification	
CIV 244: Reinforced Concrete 3	

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information							
Course Title:	Reinforced Concrete 3			**Course Code:**		CIV 244	
Program /level	Civil Engineering			**SENIOR (2)**			
Term/ Academic year:	1ST semester, 2023 - 2024			**Credit Hours:**		3	
Contact Hours:	4	**Lecture:**	2	**Tutorial:**	2	**Laboratories:**	-----
Pre-Requisite	CIV 213, CIV 214						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- Understanding the concept and ideas explicitly in terms of previous learning.
- Emphasize the relationship between conceptual understanding and design-solving approach.
- Provide students with strong forecasts of engineering-design practice.
- The students will be able to act professionally in identifying the suitable statical system for different tank structural systems. Analysis and design of special structures (Tank, frame, and arches). Analysis and design for holes.

2- Course Learning Objectives (CLO):

At the end of this course, a student should be able to :

CLO 1. Contract the essential items of evaluating the design of tanks, frames, arches structural system, and beam elements and their practical application for reinforced concrete structures.

CLO 2. To build an understanding of concepts and ideas explicitly in terms of previous learning.

CLO 3. To emphasize the relationship between conceptual understanding and problem-solving approaches.

CLO 4. Explain the Analysis and design for circular and rectangular tanks

CLO 5. Prepare the structure design drawings and calculation sheet.

3- Relationship between the course and the Competencies:

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 244
Program Academic Standards that the course contributes in achieving	A2, A3, A4, A10	B1, B2

4- *Mapping Course Los to NARS*

Field	Program (CBEs) that the course contributes in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A2.** Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 1.** Identify the concrete properties of flexure, and shear members to solve engineering-based design problems by applying design formulas.

		LO 2. Conduct design parameters of flexure, shear, and normal members. **LO 3**. Employ the Egyptian code in design of flexure, shear and normal members.
	A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical, and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	**LO 4**. List the design methodologies for design of eccentric sections. **LO 5.** Describe the different types of tanks.
	A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.	**LO 6.** Apply design process of reinforced concrete arch and frame system to produce cost-effective design.
	A10. Acquire and apply new knowledge, and practice self, lifelong and other learning strategies.	**LO 7.** Utilize code practices and standard to design appropriate specials tanks, frame and arch.
COMPETENCIES of CIV 244	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 8**. Calculate the axial loads acting on tie. **LO 9**. Utilize the Egyptian code in design and construction of reinforced concrete structures. **LO 10**. Select appropriate structure system.
	B2. Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbors; or any other emerging field relevant to the	**LO 11.** Achieve optimum design of special hole-system and flexure, tension members. **LO 12**. Analyse the shear and torsion strength of concrete and safe design of girder element.

	discipline.	

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Design of Tanks systems, elevated, rested, and underground. Design for bending, normal and combined M&N by the strength method. Design of pools, halls, and tunnels. Design of Frames, arches, sawtooth and holes

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Design of reinforced concrete tanks, introduction, types of tanks, definition of waterside sections.	4	2	2	---	**LO 1, LO 6, LO 7**
Week-2	Design of water side sections subjected to axial tension, bending moment, and both in stages I and II, rules for choosing reinforcement.	4	2	2	---	**LO 6, LO 7, LO 9**
Week-3	Design of rectangular shallow walls in elevated tanks, design of rectangular deep walls in elevated tanks.	4	2	2	---	**LO 1, LO 11**
Week-4	Design of rectangular medium walls in elevated tanks in horizontal and vertical directions.	4	2	2	---	**LO 1, LO 6 LO 7, LO 9**
Week5	Design of cylindrical walls in circular elevated tanks.	4	2	2	---	**LO 1, LO 3, LO 11**
Week-6	Design of ground tanks and underground tanks.	4	2	2	---	**LO 1, LO 3, LO 5, LO 7, LO 10**
Week-7	Design of halls, introduction, wide span structures, different statical systems, general layout, design of girders.	4	2	2	---	**LO 1, LO 2, LO 12**
Week-8	**Midterm Exam.**					
Week-9	Design of reinforced concrete frames.	4	2	2	---	**LO 2, LO4, LO 9**
Week-10	Design of arch girder with a tie.	4	2	2	---	**LO 3, LO 8**

Week-11	Design of arched slab roofs.	4	2	2	---	**LO 2, LO3**
Week-12	Design of north light systems, north direction is parallel to span, north direction is perpendicular to span, design of different supporting elements.	4	2	2	---	**LO 2, LO 8**
Week-13	Design of sections subjected to axial compression and uniaxial bending.	4	2	2	---	**LO 1, LO 3**
Week-14	Revision + Quiz + details of frames	4	2	2	---	**LO 1, LO 3**
Week 15	**Final Exam.**					

5.3. Experiment Topics:

Serial	Experiment	Laboratory hrs.
1st	NA	---

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)											
	General							CIV 244				
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO10	LO11	LO12
CLO 1	*	*				*	*		*	*		
CLO 2						*	*		*	*	*	
CLO 3	*	*	*									*
CLO 4				*	*	*	*		*	*		
CLO 5		*	*	*				*	*			
CLO 6			*				*		*	*		

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)											
	General							CIV 244				
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10	LO 11	LO 12
Face-to-Face Lecture	*	*	*	*	*	*	*	*	*	*	*	*
Online Education						*	*					
Tutorial/ Exercise	*	*	*	*	*	*	*	*	*	*	*	*
Group Discussion				*	*							
Laboratory												
Site Visit												
Presentation				*	*	*	*	*	*	*		
Mini Project				*	*	*	*	*	*	*		
Research and Reporting	*		*			*	*	*	*			
Brain Storming				*	*					*	*	
Self-Learning												*

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)											
	General							CIV 244				
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10	LO 11	LO 12
Written Exam	*	*	*	*	*	*	*	*	*	*	*	*
Online Exam												
Oral Exam												
Quiz												
Lab Exam												
Take-Home Exam												
Research Assignment	*				*	*	*					
Reporting Assignment	*	*	*	*	*			*				
Project Assignment		*	*	*		*	*	*	*	*		
In-Class Questions												

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**25**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**15**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- White board
B- Data show
C- MS Teams

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Textbooks and Additional References:

- Design of reinforced concrete structures: Dr. M. Goneem
- Reinforced Concrete: Park and Puly
- Design and construction of reinforced concrete structures ECP-203-2018
- Loads applied on building ECP-208

10.3. Recommended Books:

- ACI-318: American concrete institure (American code for design of reinforced concrete structures.
- ASCE: American socaity of civil Engineering.
- BS-8110: British code for design of reinforced concrete structures.

10.4. Web Sites:

- https://dokumen.tips/documents/design-of-reinforced-concrete-structure-volume-1-dr1-mashhour-a-ghoneim.html
- http://www.hbrc.edu.eg/
- https://www.concrete.org/middleeast.aspx

Course Directors	Name	Signature
Teaching staff	Dr. Mohamed Elkheshen & Mohamed Assran	
Course coordinator	Prof. Essam Khalifa	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 245: STRUCTURE ANALYSIS 5

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information								
Course Title:	STRUCTURE ANALYSIS 5			**Course Code:**		CIV 245		
Program / level	Civil Engineering			Senior (2)				
Term/ Academic year:	Oct.-Jan. 2023 - 2024			**Credit Hours:**		2		
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	-----	
Pre-Requisite	CIV 225, MTH 211, CSC 101							
Academic standards	(NARS 2018)							
Bylaw Approval	2016							

1- Course Aims:

- To identify the concept of flexibility and stiffness terms on basis of degrees of freedoms.
- To introduce the types and scale of member and structural stiffness.
- To establish different forms and sizes of stiffness matrix.
- To illustrate the stiffness method by applications of trusses, beams and frames.
- To analyze using stiffness matrix method as a base for computerized analysis.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Evaluate structural deflections, internal forces and reactions by means of stiffness direct as well as matrix analysis.

CLO 2. Evaluate the member stiffness and employ them in the structural overall stiffness.

CLO 3. Recognize the interrelation between structural analysis and design.

CLO 4. Emphasizing analysis and design concepts.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 245
Program Academic Standards that the course contributes in achieving	A2,A8	B1

4- Mapping Course Los to NARS

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A2.** Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 1.** Identify the principals to solve statically indeterminate structures using the stiffness method associated with superposition and free body diagram concepts.
		LO 2. Developing of stiffness matrices for members as well as for the entire structures. **LO 3.** Evaluate the deflection results according to input data and engineering sense.
	A8. Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	**LO 4.** Discuss the mini-project output in front of the judging committee established from the course teachers and other students.

COMPETENCIES of CIV245	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics	**LO 5.** Able to select the suitable solving technique whether manual or using computer to solve structure based on available degrees of freedoms and evaluate the final results based on engineering sense.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Matrix Stiffness Analysis, element and structural stiffness assembly, development of computer programs for linear elastic structural analysis.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Stability and determinacy of structures.	3	2	1	-	**LO 1.**
Week-2	Introduction to Direct stiffness matrix method.	3	2	1	-	**LO 1. , LO 2.**
Week-3	Direct Stiffness method for Rod element.	3	2	1	-	**LO 1. , LO 2. , LO 3.**
Week-4	Direct Stiffness method for Rod – Diphram.	3	2	1	-	**LO 1. , LO 2. , LO 3.**
Week5	Matrix Stiffness method for plane trusses.	3	2	1	-	**LO 1. , LO 2. , LO 3. , LO 5.**
Week-6	Direct Stiffness method for plane trusses with inclined members.	3	2	1	-	**LO 1. , LO 2. , LO 3.**
Week-7	Determination of stiffness matrix by assumed displacements.	3	2	1	-	**LO 1. , LO 2. , LO 3.**
Week-8	**Midterm Exam.**					
Week-9	Direct Stiffness method for plane beams.	3	2	1	-	**LO 1. , LO 2. , LO 3. , LO 5.**
Week-10	Direct Stiffness method for plane beams with inclined members.	3	2	1	-	**LO 1. , LO 2. , LO 3. , LO 5.**

Week-11	Direct Stiffness method for plane frame.	3	2	1	-	**LO 1. , LO 2. , LO 3. , LO 5.**
Week-12	Matrix Stiffness method for plane frames with inclined members.	3	2	1	-	**LO 1. , LO 2. , LO 3. , LO 5.**
Week-13	Matrix Stiffness method for Solution combined structure .	3	2	1	-	**LO 1. , LO 2. , LO 3. , LO 5.**
Week-14	Introduction to finite element method.	3	2	1	-	**LO 1. , LO 3. , LO 4. , LO 5.**
Week 15	**Final Exam.**					

5.3. Experiment Topics: (NA)

Serial	Experiment	Laboratory hrs.
1st	NA	

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)				
	General				CIV245
	LO1	LO2	LO3	LO4	LO5
CLO 1	√	√	√	√	√
CLO 2	√	√			√
CLO 3		√	√		
CLO 4				√	√
CLO 5		√	√	√	√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)				
	General				CIV 245
	LO 1	LO 2	LO 3	LO 4	LO 5
Face-to-Face Lecture	√	√	√		√
Electronic Education	√	√	√		√
Tutorial/ Exercise	√	√	√		√
Group Discussion		√	√	√	√
Laboratory					
Site Visit					
Presentation			√	√	√
Mini Project			√	√	√
Research and Reporting			√	√	√
Brain Storming			√	√	
Self-Learning			√	√	√

8-Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)				
	General				CIV 245
	LO 1	LO 2	LO 3	LO 4	LO 5
Written Exam	√	√	√		√
Electronic Exam	√	√	√		√
Oral Exam	√	√	√	√	√
Quiz	√	√	√		√
Lab Exam					
Take-Home Exam					
Research Assignment			√	√	√
Reporting Assignment			√	√	√
Project Assignment				√	
In-Class Questions		√	√		√

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	7th	60 min.
End of term laboratory exam (*Lab*)	**---**	---	---
End of term Oral exam	**---**	---	---
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/ Electronic exams (*Term Work*)	**10**	According to the schedule	---
Report	**10**	14th	---
Total Mark	**100**		

8- Facilities Required:

A- White Board.
B- Data Show.
C- MS Teams.

9- List of References:

10.1. Course Notes:

- Lecture notes available (handed to students part by part).

10.2. Required Text Books and Additional References:

1. McGuire, W., Gallagher, R. H., & Ziemian, R. D. (2015). Matrix Structural Analysis. Createspace Independent Publishing Platform, ISBN 81507585139.
2. Ghali, A., Neville, A., & Brown, T. (2003). Structural Analysis: A Unified Classical and Matrix Approach (5th ed.). CRC Press. ISBN 9780367807672.

10.3. Recommended Books:

10.4. Web Sites:

https://www.colincaprani.com/structural-engineering/courses/structural-analysis-iv/

Course Directors	Name	Signature
Teaching staff	Dr.Morcos Farid Samaan	
Course coordinator	Dr. Morcos Farid Samaan	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 246 : Civil Eng. Project

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Civil Eng. Project			**Course Code:**		CIV 246	
Program / level	Civil Engineering			SENIOR 2			
Term/ Academic year:	Sep.-Jan 2023-2024			**Credit Hours:**		3	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	0
Pre-Requisite	Department approval						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- To provide students with culminating activity that demonstrates the skills of combining research, writing, implementation, and oral presentation/demonstration in a multidisciplinary project.

- To give the students an opportunity outside the classroom to integrate their various courses of study with their individual interests.

- Expand the personal knowledge of the student to real life situations in order to promote lifelong learning.

- Prepare the student for future endeavors in post-secondary education or work.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1. Identify problems with solutions in civil engineering and formulate the problem in the form of "An Essential Question".

CLO 2. Be able to collect scientific data on a particular problem.

CLO 3. Apply the basic knowledge in civil engineering and skills earned throughout the program.

CLO 4. Conduct enough literature review in the project domain.

CLO 5. Write technical reports and conduct presentation about problems in civil engineering in accordance with standard scientific guidelines.

CLO 6. Demonstrate the ability to work independently and as part of a team with colleagues and advisors.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV246
Program Academic Standards that the course contributes in achieving	A3,A4,A5,A6,A7,A8,A9,A10	B1,B2,B3,B4

4- Mapping Course Los to NARS

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A3.** Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	LO 1. Apply engineering design processes in The Context of the civil engineering project.
	A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	LO 2. Utilize codes of practice, standards,quality guidelines, health, and safety requirements in the context of civil Engineering project.
	A5. Practice research techniques and methods of investigation as an inherent part of learning.	LO 3. Practice research and methods of Investigation on collecting scientific data on a particular problem.
	A6. Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	LO 4. Plan, supervise and monitor the Implementation of the project.
	A7. Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.	LO 5. Function efficiently in an individual tasks And as a part of the multi-disciplinary teams.
	A8. Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	LO 6. Communicate effectively using Contemporary tools (graphs, writing, verbal).
	A9. Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	LO 7. Use creative thinking to respond to newsituation during problem solving. LO 8. Acquire leadership skills to anticipate in Problem solving.
	A10. Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.	LO 9. Apply new knowledge and learning Strategies during the project.

COMPETENCIES of CIV246	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	LO 10. Select appropriate and sustainable techniques for all civil engineering branches.
	B2. Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbors; or any other emerging field relevant to the discipline.	LO 11 Achieve an optimum design of all civil Engineering fields.
	B3. Plan and manage construction processes; address construction defects, instability and quality issues; maintain safety measures in construction and materials; and assess environmental impacts of projects.	LO 12. Plan and manage construction processes. LO 13 Address construction defects, instability,and quality issues. LO 14. Maintain safety measures. LO 15. Asses' environmental impact of the project.
	B4. Deal with biddings, contracts and financial issues including project insurance and guarantees.	LO 16. Deal with financial issues.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Independent research and/or design project to be carried out under the supervision of a staff member, running over two semesters in the fifth year. The results must be submitted in the form ofa thesis, judged, and marked by a jury of at least two staff members.

5.2. Course Topics/hours/Los Matrix

<table>
<tr><th colspan="2">Week No.</th><th>Total Hours</th><th colspan="3">Contact hrs</th><th>LOs Covered By Course</th></tr>
<tr><th colspan="2"></th><th></th><th>Lec.</th><th>Tut.</th><th>Lab.</th><th></th></tr>
<tr><td colspan="2">Topics actually taught
Term 1</td><td></td><td></td><td></td><td></td><td rowspan="14">LO 1
LO 2
LO 3
LO 4
LO 7
LO9
LO10
LO 14
LO 16</td></tr>
<tr><td>Week No.</td><td>Topics actually taught
Term 1</td><td rowspan="13">30</td><td rowspan="13">20</td><td rowspan="13">10</td><td rowspan="13"></td></tr>
<tr><td>Week -1</td><td rowspan="2">Discussion of project idea-collecting data</td></tr>
<tr><td>Week-2</td></tr>
<tr><td>Week-3</td><td rowspan="3">Discussion of project idea-collecting data</td></tr>
<tr><td>Week-4</td></tr>
<tr><td>Week5</td></tr>
<tr><td>Week-6</td><td rowspan="3">Analysis of collected data to determine project concept</td></tr>
<tr><td>Week-7</td></tr>
<tr><td>Week-8</td></tr>
<tr><td>Week-9</td><td rowspan="3">Design for experimental work - simulation program</td></tr>
<tr><td>Week-10</td></tr>
<tr><td>Week-11</td></tr>
<tr><td>Week-12</td><td>Preparation of materials, resources</td></tr>
<tr><td colspan="2">Topics actually taught
Term 2</td><td></td><td></td><td></td><td></td><td rowspan="14">LO 5
LO 6
LO 7
LO 8
LO 9
LO 13
LO 14
LO 15
LO1 6</td></tr>
<tr><td>Week No.</td><td>Topics actually taught
Term 2</td><td rowspan="13">30</td><td rowspan="13">20</td><td rowspan="13">10</td><td rowspan="13"></td></tr>
<tr><td>Week -1</td><td rowspan="8">Experimental work, design of all elements..etc</td></tr>
<tr><td>Week-2</td></tr>
<tr><td>Week-3</td></tr>
<tr><td>Week-4</td></tr>
<tr><td>Week5</td></tr>
<tr><td>Week-6</td></tr>
<tr><td>Week-7</td></tr>
<tr><td>Week-8</td></tr>
<tr><td>Week-9</td><td rowspan="3">Review all work and conclusion</td></tr>
<tr><td>Week-10</td></tr>
<tr><td>Week-11</td></tr>
<tr><td>Week-12</td><td>Prepare seminar, presentation, calculation notes, project thesis</td></tr>
</table>

6- Matrix of Course Objective and Los

Course Learning Objectives	Learning Outcomes (LOs)															
	General									CIV 246						
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO10	LO11	LO12	LO13	LO14	LO15	LO16
CLO 1					√		√			√		√				√
CLO 2			√		√		√			√	√	√		√		
CLO 3	√	√		√					√			√	√		√	
CLO 4			√		√			√		√		√				
CLO 5					√	√	√	√					√		√	
CLO 6						√		√	√				√		√	√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	Learning Outcome(LOs)															
	General									CIV 246						
	LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9	LO10	LO11	LO12	LO13	LO14	LO15	LO16
Face-to-Face Lecture	√															
electronic			√													
Tutorial/ Exercise	√															
Group Discussion			√		√	√	√									
Laboratory																
Site Visit																
Presentation										√	√					
Mini Project						√										
Research and Reporting		√													√	
Brain Storming			√						√	√			√		√	
Self-Learning		√				√	√					√	√			√

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	Learning Outcome(LOs)															
	General									CIV 246						
	LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9	LO10	LO11	LO12	LO13	LO14	LO15	LO16
Written Exam																
Electronic Exam																
Oral Exam			√	√						√						
Quiz																
Lab Exam																
Take-Home Exam																
Research Assignment													√	√	√	√
Reporting Assignment												√	√	√	√	√
Project Assignment	√	√	√	√	√	√	√	√	√	√	√					
In-Class Questions	√				√	√					√	√			√	√

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (presentation+ calculation sheet)	**40**	15th	Committee
Midterm Exam (*Term Work*)	**20**	4th	Committee
Attendance	**20**	15th	Committee
Technical Report	**20**	15th	Committee
Total Mark	**100**		

9- Facilities Required:

A- Lab Facilities
B- Data Show
C- M.C. Team
D- Field Visit

10- List of References:

10.1. Course Notes:

- Up to supervisors

Course Directors	Name	Signature
Teaching staff	Drs. Supervisors	
Course coordinator	Dr. Morcos Farid	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 251: Sanitary Engineering II

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Sanitary Engineering II			**Course Code:**		CIV 251	
Program / level	Civil Engineering			**SENIOR (2)**			
Term/ Academic year:	Oct.-Jan. 2023 - 2024			**Credit Hours:**		2	
Contact Hours:	4	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	1
Pre-Requisite	CIV 222						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- Introducing sewage sources and sewage collection works
- Laying foundations for sewage treatment process selection, theory and design of sewage physical treatments, and theory and design of sewage biological treatments.
- Developing knowledge on the theory and design of treated sewage disposal, theory and design of sludge treatment works.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Understand the essential preliminary studies that shall be conducted for planning, designing, implementing, and operating wastewater collection, treatment and disposal systems.

CLO 2. Identify the wastewater collection requirements according to the wastewater characteristics and service area nature.

CLO 3. Select environmentally sustainable and cost-effective wastewater treatment operations and processes to achieve the wastewater treatment objectives according to the intended reuse or disposal applications.

CLO 4. Design wastewater collection systems and treatment plants according to the Egyptian codes of practices, and the internationally recognized best practices.

3- Relationship between the course and the Competencies:

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 251
Program Academic Standards that the course contributes in achieving	A2, A3, A4	B1, B2

4- *Mapping Course Los to NARS*

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes (LOs)
COMPETENCIES of ENGINEERING	**A2.** Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 2**. Enable the student to calculate and predict the ultimate wastewater collection system and treatment capacities.
	A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	**LO 3.** Develop the student's understanding of wastewater collection and treatment processes to design sustainable .cost-effective systems
	A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	**LO 4.** Develop the student's engineering design capabilities for wastewater collection and treatment works according to the codes of practice, and the internationally recognized best practices.
COMPETENCIES of CIV	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a	**LO 5**. Enable the student to select the optimum wastewater treatment technologies and disposal means to ensure

	full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	environmental protection and public health safety.
	B2. Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbors; or any other emerging field relevant to the discipline.	**LO 6.** Prepare the student to design and plan wastewater treatment plants.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Characteristics and sources of waste water. Types of sewage systems: combined and separate. Collection works: design of gravity networks, waste water pump stations, force mains. Primary treatment works: approach channel, screens, grit removal chamber, and primary sedimentation. Secondary or biological treatment works using: trickling filters, activated sludge system, waste stabilization ponds, final sedimentation. Design of sludge treatment and disposal: sludge thickeners, sludge digestion. Different methods of sludge dewatering. Disposal of sewage by: dilution, land treatment.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Sources of sewage and characteristics of wastewater	4	2	1	1	**LO. 1**
Week-2	Types of Sewerage Systems	4	2	1	1	**LO. 2, LO. 3**
Week-3	Sewers' design	4	2	1	1	**LO. 2, LO. 3**
Week-4	Design of sewage pumping stations	4	2	1	1	**LO. 2, LO. 3**
Week5	Introduction to sewage treatment	4	2	1	1	**LO. 4**
Week-6	Primary Treatment (Approach channel and Screens)	4	2	1	1	**LO. 2, LO. 3 & LO. 5**
Week-7	Primary Treatment (Grit Removal Chambers and Primary Sedimentation)	4	2	1	1	**LO. 2, LO. 3 & LO. 5**
Week-8	**Midterm Exam.**					
Week-9	Secondary Treatment – Trickling filters	4	2	1	1	**LO. 2, LO. 3 & LO. 5**
Week-10	Secondary Treatment – Activated sludge systems	4	2	1	1	**LO. 2, LO. 3 & LO. 5**
Week-11	Final Sedimentation	4	2	1	1	**LO. 2, LO. 3 & LO. 5**
Week-12	Treated sewage disposal and reuse	4	2	1	1	**LO. 4**
Week-13	Sludge treatments	4	2	1	1	**LO. 4**
Week-14	Sludge disposal	4	2	1	1	**LO. 4**
Week 15	**Final Exam.**					

6- Matrix of Course Objective and LOs

Course Learning Objectives	General			CIV 251	
	LO 1	LO 2	LO 3	LO 4	LO 5
CLO 1	✓				
CLO 2	✓	✓			
CLO 3		✓	✓	✓	✓
CLO 4		✓		✓	✓

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)				
	General			CIV 251	
	LO 1	LO 2	LO 3	LO 4	LO 5
Face-to-Face Lecture	✓	✓	✓	✓	✓
Online Education					
Tutorial/ Exercise	✓	✓	✓	✓	✓
Group Discussion		✓		✓	
Laboratory					
Site Visit					
Presentation					
Mini Project					✓
Research and Reporting					
Brain Storming	✓	✓		✓	
Self-Learning					

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)				
	General			CIV 251	
	LO 1	LO 2	LO 3	LO 4	LO 5
Written Exam	✓	✓	✓	✓	✓
Online Exam					
Oral Exam					
Quiz	✓	✓	✓	✓	✓

Lab Exam					
Take-Home Exam					
Research Assignment					
Reporting Assignment					
Project Assignment	✓	✓	✓	✓	✓
In-Class Questions	✓	✓	✓	✓	✓

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- Power point lectures.
B- Laptop
C- Data show

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Textbooks and Additional References:

- Water Supply and Pollution Control 7th edition; Warren Viessman, Jr. & Mark J. Hamer

- Egyptian Code of Practice for wastewater treatment design, 1998 Ministerial decree 52/1998

10.3. Recommended Books:

- -WARREN VIESSMAN, WATER SUPPLY AND POLLUTION CONTROL, 2009, Pearson Prentice Hall, Upper Saddle River, ISBN:9780132337175.
- -A.C.PANCHDHARI, WATER SUPPLY AND SANITARY INSTALLATIONS, 1993, Wiley Eastern, New Delhi, ISBN:
- 9788122402803
- -G.S.BIRDIE, WATER SUPPLY AND SANITARY ENGINEERING, 1996, Dhanpat Rai and Sons, Delhi, OCLC Number / Unique Identifier:85980440

Course Directors	Name	Signature
Teaching staff	Dr. Fadia Salem	
Course coordinator	Dr. Fadia Salem	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 252: Irrigation works design (2)

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Irrigation works design (2)			**Course Code:**		CIV 252	
Program / level	Civil Engineering			**SENIOR (2)**			
Term/ Academic year:	OCT-Jan2023-2024			**Credit Hours:**		2	
Contact Hours:	5	**Lecture:**	2	**Tutorial:**	2	**Laboratories:**	1
Pre-Requisite	CIV 224						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- Knowing the Heading Up structures which will be used in irrigation and navigation management. In addition.

- Explaining the main functions and purposes of each structure. The effect of constructing the heading up structures on the water ways and soil is considered by Heading up Structures: Overflow and Standing Wave Weirs, explaining the main functions and purposes of each structure. Hydraulic and Structural Design of weirs. Head and Partial Regulators, Barrages.

- Understanding The effect of constructing the heading up structures on the water ways,

- Hydraulic and Structural Design of regulators, Gates, Navigation Structures: Locks,

Navigation Connections. And. Storage Structures: Dams (Aswan Dam, High Dam).and the main forces effect on.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Mention the functionality of heading up structures

CLO 2. Identifying main types of the heading up structures and hydraulic calculation.

CLO 3. Analysis and design hydraulic structures.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 252
Program Academic Standards that the course contributes in achieving	A3	B1, B2

4- *Mapping Course Los to NARS*

Field	Program (CBEs) that the coursecontribute in achieving	Learning Outcomes (LOs)
COMPETENCIESof ENGINEERING	**A3.** Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	LO 1 Apply engineering design processes to develop theproblem-solving techniques and analysis for the students and using creative thinking of hydraulic structures. **LO 2**. The principles of sustainable design and development. **LO3**. Principles of design including elements design, process and/or a system related to Civil Engineering.

COMPETENCIES of CIV 252	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physicalmeasurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 4** Utilize the limitations and parameters of designs the structures and Calculate and Perform suitable empirical dimensions of the heading up structures. **LO 5**. Study the hydraulic structures and how to check safety against percolation, scour and uplift downstream the hydraulic structures.
	B2. Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works,Irrigation, Water Resources and Harbors; orany other emerging field relevant to the discipline.	**LO 6**. Achieve an optimum design of the floor for any type of flow by using real data and Solve engineering problems, often on the basis of limited and possibly contradicting information. By Using mathematical, and theories formulae. **LO7.** Show the different solutions of expected and unexpected technical problems related to annotated topics and Select appropriate solutions for engineering problems based on analytical thinking

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Understanding The effect of constructing the heading up structures on the water ways and soil is considered by Heading Up Structures: Overflow and Standing Wave Weirs, explaining the main functions and purposes of each structure. Hydraulic and Structural Design of weirs. Head and Partial Regulators, Barrages. The effect of constructing the heading up structures on the water ways, Hydraulic and Structural Design of regulators, Gates, Navigation Structures: Locks, Navigation Connections., and. Storage Structures: Dams (Aswan Dam, High Dam).and the main forces effect on.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Studying Introduction of the Heading up works, the course outline and introduction of the weir.	5	2	**2**	1	**LO 1**
Week-2	Main function of the weirs and describing its types. Defining the main elements	5	2	**2**	1	**LO 2**
Week-3	Hydraulic design of the weirs. Problems taking into account in designing heading up works (creep & scour)**+Quiz**	5	2	**2**	1	**LO 4**
Week-4	Design of floor by using the empirical dimension and check safety	5	2	**2**	1	**LO 5**
Week5	Precautions against scouring and creeping phenomena.	5	2	**2**	1	**LO 4, LO 7**
Week-6	Structure design of weirs Check of the floor against (uplift)	5	2	**2**	1	**LO 3, LO 7**
Week-7	Revision **+Quiz**	5	2	**2**	1	**LO 1, LO 5**
Week-8	Midterm Exam.					
Week-9	Heading up structures (Regulators) Main function of the Regulators and describing its types. Defining the main elements	5	2	**2**	1	**LO 1, LO 6**
Week-10	Design and Check stability of the gate, gate lifting structure, pier, and abutment. **+Quiz**	5	2	**2**	1	**LO 3, LO 7**
Week-11	Structure design, Cases of loading and Check stability of pier and abutment.	5	2	**2**	1	**LO 1, LO3**
Week-12	Design and check stability of the floor in the longitudinal and transverse direction. **+Quiz**	5	2	**2**	1	**LO 4**
Week-13	Hydraulic calculation of locks, describing locks types, main function, and empirical design of main elements of the locks Design of lock chamber and thrust wall	5	2	**2**	1	**LO 4, LO 5**

Week-14	Dams, describing Dams types, main function, and main elements of the Dams The factors affecting on dams.	5	2	**2**	1	**LO 6**
Week 15	**Final Exam.**					

5.3. Experiment Topics:

Serial	Experiment	Laboratory hrs.
1st	Experimental work for open channel hydraulics	14

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)						
	General			CIV 252			
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
CLO 1	*	*	*	*		*	
CLO 2			*		*		*
CLO 3	*				*	*	*

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)						
	General			CIV 252			
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
Face-to-Face Lecture	*	*	*	*	*	*	*
Online Education						*	*
Tutorial/ Exercise	*	*	*	*	*	*	*
Group Discussion						*	*
Laboratory	*		*	*			*
Site Visit							
Presentation						*	*
Mini Project							
Research and Reporting	*		*			*	*
Brain Storming						*	
Self-Learning							

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	Learning Outcome(LOs)						
	General			CIV 252			
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
Written Exam	*	*	*			*	*
Online Exam							
Oral Exam							
Quiz	*	*	*				
Lab Exam	*		*	*			*
Take-Home Exam							
Research Assignment	*				*	*	*
Reporting Assignment	*	*	*	*	*		
Project Assignment						*	*
In-Class Questions							

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**5**	13th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**15**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- White board
B- Data show
C- MS Teams

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Text Books and Additional References:

- Pavel Novak and C. Nalluri, Hydraulics structures, Taylor & Francis, 2007.
- K Subramanya, Engineering Water, Tata McGraw – Hill, 3rd. Ed., 2008.
- Hydraulic Structures, Fourth Edition by P. Novak, A.I.B. Moffat, et al. | Feb 25, 2007
- Nazeih Assaad Younan, Design Textbooks in Civil Engineering – Irrigation Structures.

10.3. Recommended Books:

A text book S. k. sharma, Hydraulic structures design of irrigation structures, RSM Press, ISBN-13: 978-9352533770, January 2017.

10.4. Web sites:

WWW. Irrigation Structures.

Course Directors	Name	Signature
Teaching staff	Ass. Prof. Samah Hassan	
Course coordinator	Ass. Prof. Samah Hassan	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	
Course Specification	
CIV 253: Foundation Engineering 2	

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information							
Course Title:	Foundation (2)			**Course Code:**		CIV 253	
Program / level	Civil Engineering			**SENIOR (2)**			
Term/ Academic year:	OCT2023-2024			**Credit Hours:**		3	
Contact Hours:	4	**Lecture:**	3	**Tutorial:**	1	**Laboratories:**	0
Pre-Requisite	CIV 153 - CIV 243						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- ***Course Aims:***

To build an understanding of concepts and ideas explicitly in terms of previous learning.

To emphasize the relationship between conceptual understanding and problems solving approaches.

To provide students with a strong foretaste of engineering practices.

2- ***Course Learning Objectives (CLO):***

At the end of this course, student should be able to :

CLO1:, Choose the suitable pile type concerning the project location, soil type, and column loads

CLO2: Calculate the pile capacity by applying different methods to determine the number of piles and check the efficiency of the group

CLO3: Achieve optimum design method of raft footing and pile cap according to Egyptian code.

CLO4: Study the stability of sheet pile walls and retaining walls

3- ***Relationship between the course and the Competencies:***

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of Civil
Program Academic Standards that the course contributes in achieving	A3,A4	B1, B2, B3

4- ***Mapping Course Los to NARS***

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A3.** Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	**LO 1.** Identify the different deep foundations to solve engineering problems related to it by applying engineering fundamentals **LO 2**. Apply theoretical and field methods in calculating pile capacity

	A4. Utilize contemporary technologies, Codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	**LO 3**. Employ the Egyptian code in calculating the pile number, the efficiency of grouping, the settlement of the pier, and the pile cap design.
COMPETENCIES of Civil	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 4**. Select the appropriate pile according to soil type, structure load, and site constraint. .
	B2. Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbors; or any other emerging field relevant to the discipline.	**LO 5.** Achieve optimum design method of raft foundation using the computer program and Egyptian code. **LO 6.** Determine the pile capacity to check the safety requirement of piled foundation according to Egyptian code. **LO 7** Understand engineering principles in the field of reinforced concrete in the analysis and design of pile caps.
	B3. Plan and manage construction processes; address construction defects, instability and quality issues; maintain safety measures in construction and materials; and assess environmental impacts of projects.	**LO 8** Explain professional ethics and the impacts of using supporting excavation systems on the safety of nearby different engineering structures.

5-*Course Content:*

5.1. Course Description (As indicated in program Bylaw):

Types of foundation systems and design criteria, design of shallow foundations and deep foundations,

construction methods, effects of construction on nearby structures, special topics and case studies.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Credits hour*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Introduction to types of raft foundation and use computer program in design of	3	3	1	0	**LO 5**
Week -2	Design the raft footing using Egyptian code equation	3	3	1	0	**LO5**
Week -3	Pile classification and method of construction	3	3	1	0	**LO 1, LO 4**
Week-4	Selection of pile type,	3	3	1	0	**LO2, LO6**
Week 5	determination of single pile capacity using structure method, and static equation	3	3	1	0	**LO2, LO6**
Week-6	Calculating pile capacity using pile load test	3	3	1	0	**LO2, LO6**
Week-7	**Midterm Exam.**					
Week-8	Determination of pile capacity using, field measurements, and	3	3	1	0	**LO2, LO6**
Week-9	Check group pile efficiency,	3	3	1	0	**LO3, LO6**
Week-10	Calculation of pile group settlement.	3	3	1	0	**LO3, LO6**
Week-11	Design of pile cap under vertical load and moment	3	3	1	0	**LO7**
Week-12	Introduction to earth pressure and types of sheet pile wall	3	3	1	0	**LO8**
Week-13	Full Design of cantilever sheet pile	3	3	1	0	**LO8**
Week-14	Full Design of retaining wall	3	3	1	0	**LO8**
Week-15	**Final exam**					

Experiment Topics: (Not applicable)

6-3 Matrix of Course Objective and Los

Course Learning Objectives	Learning Outcomes (LOs)							
	General				CIV 253			
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8
CLO1	√			√				
CLO2		√	√			√		
CLO3					√		√	
CLO4								√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	Learning Outcome(LOs)							
	General			CIV 253				
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8
Face-to-Face Lecture	√	√	√	√	√	√	√	√
Online Education								
Tutorial/ Exercise	√	√	√	√	√	√	√	√
Group Discussion								
Laboratory								
Site Visit								
Presentation								
Mini Project					√			
Research and Reporting								
Brain Storming	√			√				
Self-Learning	√							

8- Assessment

8.1.*Course Assessment Methods:*

Assessment Methods	*Learning Outcome*(LOs)						
	General					CIV 253	
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
Written Exam	√	√	√	√	√	√	√
Online Exam							
Oral Exam							
Quiz	√	√	√	√	√	√	√
Lab Exam							
Take-Home Exam							

Research Assignment							
Reporting Assignment							
Mini Project				√			
In-Class Questions	√	√	√	√	√	√	√

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	50 min.
End of term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- *Facilities Required:*

A- White board
B- Projector
C- Egyptian code

10- *List of References:*

10.1. Course Notes:

Lecture notes

10.2. Recommended Books:

Donald P. Coduto.” Geotechnical Engineering: Principles and Practices” INDIA, 2018.
Abd El-Rahman Hindi. "Foundation Design” Cairo, 2012.
Braja M. Das. " Principles of Foundation Engineering” London, 2007.

10.3. Web Sites:

Geotechnical Journal

Course Directors	Name	Signature
Teaching staff	Dr. Ahmed Nabil Dr. Ahmed Abd Latif	
Course coordinator	Dr. Ahmed Nabil	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2024/2023	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	
Course Specification	
CIV 254: Reinforced Concrete 4	

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information							
Course Title:	Reinforced Concrete 4			**Course Code:**		CIV 254	
Program / level	Civil Engineering			**SENIOR (4)**			
Term/ Academic year:	Oct.-Jan. 2023 - 2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	-----
Pre-Requisite	CIV 244						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- Understanding the concept and ideas explicitly in terms of previous learning.
- Emphasize the relationship between conceptual understanding and design-solving approach.
- Provide students with a strong forecasts of engineering-design practice.
- The students will be able to act professionally in identify the suitable statical system for resisting lateral loads. Analysis and design of special structure (Pre-stressed beams). Analysis and design for deep beam & short cantilevers.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1. Analysis and design for corbels and deep beams.

CLO 2. Knowledge of design of structures under lateral loads.

CLO 3. Knowledge of manufacturing process of prestressed beams.

CLO 4. Knowledge of failure types at end zone.

CLO 5. Knowledge of uses of Deep beams & methods of deep beam analysis.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 254
Program Academic Standards that the course contributes in achieving	A2, A3, A4, A10	B1, B2

4- *Mapping Course Los to NARS*

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A2.** Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 1.** Identify the concrete properties of flexure, torsion members to solve engineering-based design problems by applying design formulas. **LO 2**. Conduct design parameters of flexure, torsion, shear and normal members. **LO 3**. Employ the Egyptian code in design of flexure, torsion, shear and normal members.

	A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	**LO 4**. List the design methodologies for design of short cantilever. **LO 5.** Describe the different types of lateral load systems.
	A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	**LO 6.** Apply design process of reinforced concrete elements and pre-stressed system to produce cost-effective design.
	A10. Acquire and apply new knowledge, and practice self, lifelong and other learning strategies.	**LO 7.** Utilize code practices and standard to design appropriate specials deep beam, corbels, and pre-stressed concrete.
COMPETENCIES of CIV 254	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 8**. Calculate the axial loads acting on beams. **LO 9**. Utilize the Egyptian code in design and construction of pre-stressed concrete structures. **LO 10**. Select appropriate structure system.
	B2. Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbors; or any other emerging field relevant to the discipline.	**LO 11.** Achieve optimum design of special lateral load-system and flexure, torsion members. **LO 12**. Analyse the shear and torsion strength of concrete and safe design to wind load.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Perform calculation notes on the design of pre-stressed concrete and lateral loading systems, Analysis of pre-stressed beams at ultimate stages of loading, Structural calculations of short cantilevers, Design of deep beams.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			LOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Revision on the design methodology.	3	2	1	---	**LO 1, LO 6, LO 7**
Week-2	Introduction to pre-stressed concrete.	3	2	1	---	**LO 6, LO 7, LO 9**
Week-3	Types of pre-stressed concrete – Properties of pre-stressing reinforcement steel.	3	2	1	---	**LO 1, LO 11**
Week-4	Losses of pre-stressed – Profiles of pre-stressing tendons.	3	2	1	---	**LO 1, LO 6 LO 7, LO 9**
Week5	Equivalent loads on pre-stressing elements – analysis of beam section under service loads.	3	2	1	---	**LO 1, LO 3, LO 11**
Week-6	Analysis of pre-stressing beam section under ultimate load.	3	2	1	---	**LO 1, LO 3, LO 5, LO 7, LO 10**
Week-7	Design of halls, introduction, wide span structures, different statical systems, general layout, design of girders.	3	2	1	---	**LO 1, LO 2, LO 12**
Week-8	**Midterm Exam.**					
Week-9	Check & design of end zone of pre-stressing elements- Full detailed drawing of pre-stressing members.	3	2	1	---	**LO 2, LO4, LO 9**
Week-10	Design and analysis of reinforced concrete corbels.	3	2	1	---	**LO 3, LO 8**
Week-11	Design and analysis of reinforced concrete deep beams.	3	2	1	---	**LO 2, LO3**
Week-12	Introduction on lateral load design for wind and earthquakes	3	2	1	---	**LO 2, LO 8**
Week-13	Lateral load elements and resisting systems – Calculation of the applied loads on the resisting systems.	3	2	1	---	**LO 1, LO 3**

Week-14	Design for lateral load resisting systems.	3	2	1	---	**LO 1, LO 3**
Week 15	**Final Exam.**					

5.3. Experiment Topics:

Serial	Experiment	Laboratory hrs.
1st	NA	---

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)											
	General							CIV 254				
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO10	LO11	LO12
CLO 1	*	*				*	*		*	*		
CLO 2						*	*		*	*	*	
CLO 3	*	*	*									*
CLO 4				*	*	*	*		*	*		
CLO 5		*	*	*				*	*			
CLO 6			*				*		*	*		

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)											
	General							CIV 254				
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10	LO 11	LO 12
Face-to-Face Lecture	*	*	*	*	*	*	*	*	*	*	*	*
Online Education						*	*					
Tutorial/ Exercise	*	*	*	*	*	*	*	*	*	*	*	*
Group Discussion				*	*							
Laboratory												
Site Visit												
Presentation				*	*	*	*	*	*	*		
Mini Project				*	*	*	*	*	*	*		
Research and Reporting	*		*			*	*	*	*			
Brain Storming				*	*					*	*	
Self-Learning												*

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)											
	General							CIV 254				
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10	LO 11	LO 12
Written Exam	*	*	*	*	*	*	*	*	*	*	*	*
Online Exam												
Oral Exam												
Quiz												
Lab Exam												
Take-Home Exam												
Research Assignment	*				*	*	*					
Reporting Assignment	*	*	*	*	*			*				
Project Assignment		*	*	*		*	*	*	*	*		
In-Class Questions												

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**25**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**15**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- White board
B- Data show
C- MS Teams

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Text Books and Additional References:

- Design of reinforced concrete structures: Dr. M. Goneem
- Reinforced Concrete: Park and Puly
- Design and construction of reinforced concrete structures ECP-203-2018
- Loads applied on building ECP-208

10.3. Recommended Books:

- ACI-318: American concrete institure (American code for design of reinforced concrete structures.
- ASCE: American socaity of civil Engineering.
- BS-8110: British code for design of reinforced concrete structures.

10.4. Web Sites:

- https://dokumen.tips/documents/design-of-reinforced-concrete-structure-volume-1-dr1-mashhour-a-ghoneim.html
- http://www.hbrc.edu.eg/
- https://www.concrete.org/middleeast.aspx

Course Directors	Name	Signature
Teaching staff	Dr. Mohamed Asran	
Course coordinator	Prof. Essam Khalifa	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	
Course Specification	
Course Code: CIV 255	

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information							
Course Title:	Steel Structures (3)			**Course Code:**		**CIV 255**	
Program / level	Civil Engineering			**SENIOR (2)**			
Term/ Academic year:	1st term Jan-May 2023-2024			**Credit Hours:**		2	
Contact Hours:	4	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	1
Pre-Requisite	Steel Structures (2): CIV 226						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

This course introduces students to the behavior and design of plate girder in steel roadway bridges using current design specifications.

- The ECP Code is the choice of design specifications and is used in this course.
- Students apply their knowledge from statics, mechanics of solid, structural analysis and steel structures I, II to gain further understanding in the relationship between analysis and design of steel roadway bridges structures.
- Students learn the design of steel structural roadway bridges including stringer, cross girder, plate girder under combined loads, and connections between these elements, bearing and bracing systems.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Offers a rather comprehensive introduction to the field of design the steel roadway bridges systems and loads refered to ECP code.

CLO 2. Learn the behaviour and design ECP code formula of structural steel beams (stringers, cross girder, and plate girder) and their connections.

CLO 3. Study the design concepts of splices, composite plate girder, bridge bearings and bracing system.

CLO 4. Gain an educational and comprehensive experience in the design and detailing of beam roadway steel bridges.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 255
Program Academic Standards that the course contributes in achieving	A2, A3, A4, A10	B1, B2

4- *Mapping Course Los to NARS*

Course Outcomes

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A2.** Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess, and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 1.** Choose the structural system for the steel bridge. **LO 2**. Calculate the loads on a steel bridge and analyze the internal forces of the frame components and compute their design strengths.
	A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	**LO 3**. Apply the design specification requirements to get the most economic cross-sections for floor beams.
	A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	**LO 4**. Compute the design strength for the beams of the bridge according to the Egyptian code of practice. **LO 5.** Design structural connections that are integrated parts of the overall structural design.

	A10. Acquire and apply new knowledge; and practice self, lifelong, and other learning strategies.	**LO 6.** Develop student ability of to self-extract and manipulate data from different sources, textbooks, and international codes.
COMPETENCIES of CIVIL	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 7**. Utilize advanced numerical techniques like computer software packages (SAP2000 and/or ETABS) for the analysis and design of steel bridges.
	B2. Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbors; or any other emerging field relevant to the discipline.	**LO 8.** Design structural girders and their connections that are integrated parts of the overall structural design. **LO 9**. Produce design drawing necessary for cost estimation.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Fundamentals and Principles of Steel Bridges. Egyptian code. Distinctive features, Analysis procedure and Design of the most widely used Bridge Systems. Loads, Deck Systems and Structural Systems. Structural Systems include Truss Bridges, Plate Girder Bridges, Parallel Girder Systems, Stiffened Suspension Bridges and Cable Stayed Bridges. Analysis and design of hot rolled beams and plate girders for roadway bridges. Additional topics include orthotropic plate decks, grid reinforced decks, bracing and bearing systems, structural details and elastomeric bearings.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Introduction to Steel Bridge Systems	4	2	1	1	**LO 1, LO6**
Week-2	Live Loads (Lane & Truck Loading)	4	2	1	1	**LO 2**
Week-3	Load Application	4	2	1	1	**LO 2, LO 7**
Week-4	Load Application	4	2	1	1	**LO 2, LO 7**
Week5	Floor System Design (ECOP)	4	2	1	1	**LO3, LO 4**
Week-6	Floor System Design (ECOP)	4	2	1	1	**LO3, LO 4**
Week-7	Plate Girder Design (ECOP)	4	2	1	1	**LO3, LO 4**
Week-8	**Midterm Exam.**					
Week-9	Plate Girder Design (ECOP)	4	2	1	1	**LO3, LO 4**
Week-10	Bracing Systems	4	2	1	1	**LO 2, LO 7**
Week-11	Design of beam connections, splices and stiffeners	4	2	1	1	**LO 5, LO 8, LO 9**
Week-12	Bridge Bearings (Elastomeric Bearing Design, Roller) and details	4	2	1	1	**LO 8, LO 9**
Week-13	Composite Plate girder (ECP)	4	2	1	1	**LO3, LO 4, LO 5**
Week-14	Composite Plate girder (ECP)	4	2	1	1	**LO3, LO 4, LO 5**
Week 15	Final Exam					

5.3. Experiment Topics:

Serial	**Experiment**	**Laboratory hrs.**
1st	Plate girder flexural test	1
2nd	Plate girder shear test	1

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)								
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9
CLO 1	√	√	√			√	√		
CLO 2			√	√	√			√	√
CLO 3			√	√	√		√	√	
CLO 4					√	√	√	√	√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome* (LOs)								
	General	CIV 255							
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9
Face-to-Face Lecture	√	√	√	√	√	√		√	√
Online Education						√			
Tutorial/ Exercise	√	√	√	√	√		√	√	√
Group Discussion	√					√			
Laboratory			√					√	
Site Visit									
Presentation						√			
Mini Project		√	√	√	√		√	√	√
Research and Reporting	√								
Brain Storming									
Self-Learning						√	√		

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome* (LOs)										
	General							CIVIL			
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10	LO 11
Written Exam		√	√	√	√					√	√
Online Exam											
Oral Exam						√					
Quiz	√	√	√	√	√						
Lab Exam									√	√	
Take-Home Exam											
Research Assignment						√	√	√			
Reporting Assignment						√	√	√		√	√
Project Assignment	√	√	√	√	√		√	√	√	√	√
In-Class Questions	√	√	√	√	√	√			√	√	√

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**5**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**15**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- *Facilities Required:*

A- Projector
B- White board
C- Virtual Lab

10- *List of References:*

10.1. Course Notes:

- Lecture notes

10.2. Required Text Books and Additional References:

- The Design Of Steel Bridges, K.C. Rocky, 8891
- Design Of Bridge Structures, T.R.Jagadeesh, 10156
- Structural Steel Design, Abraham J.R., 1152
- Steel Structures, Ch.G.Salam, 1229
- Behavior,Analysis And Design Of Steel Work V1,2 And 3, El-Sayed Bahaa Machaly, 8334
- Steel Bridges, Metwaly Abu Hamd
- Egyptian Code Of Practice For Steel Construction And Bridges (Asd & Lrfd), 1157
- Egyptian Loading Code

10.3. Recommended Books:

- Planning And Design Of Bridges, M.S. Troitsky
- Design Of Highway Bridges, Richard M. Barker
- Bridges, F.A.Cerver

10.4. Web Sites:

- https://structurae.net/en/structures/bridges/steel-bridges
- https://www.steelconstruction.info/Bridges
- Journal of Bridge Engineering | ASCE Library

Course Directors	Name	Signature
Teaching staff	Dr. M. Fathi Belal	
Course coordinator	Prof.: Essam Amoush	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023-2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 256: Highway & Airport Engineering

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Highway & Airport Engineering			**Course Code:**		CIV 256	
Program / level	Civil Engineering			**SENIOR (2)**			
Term/ Academic year:	1ST semester 2023-2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	-----
Pre-Requisite	CIV 211, CIV 111						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

CLO 1. To provide the basics of highway engineering.

CLO 2. To provide the basics of geometric design this includes sight distance, horizontal alignment, vertical alignment, intersections design.

CLO 3. To provide the basics of structure design soil classification, soil strength, and pavement response under loads, structural design of flexible pavement, asphalt materials and design of hot asphalt mixtures.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 4. Evaluate the sight distance, horizontal alignment, vertical alignment, and intersections design.

CLO 5. Evaluate the soil classification, material strength, pavement response under loads, and structural design of flexible pavement

CLO 6. Conduct the appropriate horizontal alignment according to the standard specifications

CLO 7. Utilize code practices and standard to design pavement responses under the loads

CLO 8. Plan the data required for design of flexible pavement

CLO 9. Select the stopping and sight distance on highways

CLO 10. Achieve optimum design OF flexible pavement and rigid pavement.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard(NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV256
Program Academic Standards that the course contributes in achieving	A2,A3,A4, A6	B1, B2

4- ***Mapping Course Los to NARS***

Field	Program(CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	.**A2.** Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 1.**Evaluatethe sight distance, horizontal alignment, vertical alignment, and intersections design. **LO2.**Evaluate the soil classification, material strength, pavement response under loads, and structural design of flexible pavement
	A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	**LO3**. Conduct appropriate horizontal alignment according to the standard specifications.
	A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	**LO4**.Utilize code practices and standard to design pavement responses under the loads
	A6. Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	**LO 5.** plan the data required for design of flexible pavement

COMPETENCIES of CIV 153	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO6**.Selectthe suitable pavement materials
	B2. Achieve an optimum design of pavement and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbors; or any other emerging field relevant to the discipline.	**LO7.** Achieve optimum design OF flexible pavement and rigid pavement.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Highway engineering this includes sight distance, horizontal alignment, vertical alignment, intersections design, soil classification, soil strength, pavement response under loads, structural design of flexible pavement, asphalt materials and design of hot asphalt mixtures.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week-1	Introduction to Geometric and Structural Design of Highway	3	2	1	---	**LO1**
Week-2	Sight Distance	3	2	1	---	**LO 1, LO 6**
Week-3	Soil Classification	3	2	1	---	**LO 2**
Week-4	Horizontal Alignment	3	2	1	---	**LO 3, LO1**
Week5	Soil Strength and Soil Stabilization	3	2	1	---	**LO 1, LO 5**
Week-6	Horizontal Alignment	3	2	1	---	**LO1, LO 7, LO 4, LO 5**
Week-7	Pavement Response under Load (Stress and Deflection)	3	2	1	---	**LO 3, LO 7**

Week-8	**Semester exam**					
Week-9	Vertical curves	3	2	1	---	**LO 3, LO1**
Week-10	Specifications o Road Layers or Structural Design	3	2	1	---	**LO5, LO 7**
Week-11	Design of Intersection	3	2	1	---	**LO 3, LO7**
Week-12	Sight Distance at Intersection	3	2	1	---	**LO5**
Week-13	Design of Flexible Pavement	3	2	1	---	**LO 4, LO7**
Week-14	Asphalt Materials and Design of Hot Asphalt Mixtures	3	2	1	---	**LO7**
Week 15	**Final Exam.**					

5.3. Experiment Topics:

Serial	Experiment	Laboratory hrs.
1st	NA	---

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)						
	LO1	LO2	LO3	LO4	LO5	LO6	LO7
CLO 1	*	*	*	*		*	
CLO 2					*		*
CLO 3					*	*	*
CLO 4							*

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)						
	General	CIV 256					
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
Face-to-Face Lecture	*	*	*	*	*	*	*
electronic Education	*	*	*	*	*	*	*
Tutorial/ Exercise	*	*	*	*	*	*	*
Group Discussion						*	*
Laboratory							
Site Visit							
Presentation						*	*
Mini Project							
Research and Reporting	*		*			*	*
Brain Storming						*	
Self-Learning			*				

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	General						
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
Written Exam	*	*	*			*	*
Online Exam							
Oral Exam							
Quiz		*		*		*	*
Lab Exam							
Take-Home Exam							
Research Assignment	*				*	*	*
Reporting Assignment	*	*	*	*	*		
Project Assignment						*	*
In-Class Questions							

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- White board
B- Data show
C- MS Teams

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Text Books and Additional References:

- Highway Engineering Volume 1 and Volume 2, Gerber.

Course Directors	Name	Signature
Teaching staff	Dr. Amr Nada	
Course coordinator	Dr. Amr Nada	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

FTR 261 : Field Training (4)

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	**Field Training (4)**			**Course Code:**		FTR 261	
Academic year / level	2023						
Contact Hours:	3	**Lecture:**	---	**Tutorial:**	---	**Laboratories:**	18
Pre-Requisite	FTR 231						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- Understanding the concepts and ideas explicitly in terms of pervious learning.
- Preparing the design calculation sheets.
- Preparing the executive design drawing including of the various construction details.
- Preparing all the project plan to ensure the workflow according to the specifications set.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Preparing the design arithmetic note.

CLO 2. Preparing the executive design maps with the work of the various construction details.

CLO 3. Preparing all the project data to ensure the workflow according to the specifications set.

*3- **Relationship between the course and the Competencies :***

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 143
Program Academic Standards that the course contributes in achieving	A2,A9	B1

4- *Mapping Course Los to NARS*

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING		
	A2. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 1.** Applies a full range of civil engineering's concept and techniques by construction methods.
	A9. Use creative innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	**LO 2.** Sketches the design papers for construction's details.

COMPETENCIES of FTR 261	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 3.** Designs the arithmetic observations of all elements of the structure. **LO 4.** Follows up the project data to ensure the progress of work according to the specifications set.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

The student shall be trained to execute the following : Prepare design calculation sheets ; Prepare design drawings and working details to be used on site; Prepare all notes related to the works to guarantee the execution of all works according to project specifications.

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Preparing the design arithmetic note.	18	-	-	18	**LO 1.**
Week-2	Preparing the executive design maps with the work of the various construction details.	18	-	-	18	**LO 1. , LO 2.**
Week-3	**Mi dterm Exam.**					
Week-4	Prepare design drawings and working details to be used on site.	18	-	-	18	**LO 1. , LO 2. , LO 3. , LO 4.**

Week-1	Preparing all the project data to ensure the workflow according to the specifications set.	18	-	-	18	**LO 1. , LO 2. , LO 3. , LO 4.**
Week-6	**Final Exam.**					

[1] .2. Course Topics/hours/Los Matrix

5.3. Experiment Topics: (NA)

Serial	Experiment	Laboratory hrs.
1st	NA	---

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)			
	LO1	LO2	LO3	LO4
CLO 1	√		√	√
CLO 2		√	√	√
CLO 3	√	√	√	√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)			
	General		F TR 261	
	LO 1	LO 2	LO 3	LO 4
Face-to-Face Lecture				
Electronic Education				
Tutorial/ Exercise				
Group Discussion	√	√	√	√
Laboratory				
Site Visit	√	√	√	√
Presentation	√	√	√	√
Mini Project	√	√	√	√
Research and Reporting	√	√	√	√
Brain Storming		√	√	√
Self-Learning			√	√

8-Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)			
	General		FTR 261	
	LO 1	LO 2	LO 3	LO 4
Written Exam				
Electronic Exam				
Oral Exam	√	√	√	√
Quiz				
Lab Exam	√	√	√	√
Take-Home Exam				
Research Assignment	√	√	√	√
Reporting Assignment	√	√	√	√
Project Assignment	√	√	√	√
In-Class Questions				

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	---	---	---
Midterm Oral Exam (*Term Work*)	**20**	3th	30 min.
End of term laboratory exam (*Lab*)	---	---	---
End of term Oral exam	**30**	5th	60 min.
Tutorial and report assessment (*Term Work*)	**25**	weekly	---
Quizzes/ Electronic exams (*Term Work*)	---	---	---
Report	**25**	5th	---
Total Mark	**100**		

8- Facilities Required:

A- Field site.
B- MS Teams.

9- List of References:

10.1. Course Notes:

- Instructions of supervisor of Field Training (handed to students part by part).

10.2. Required Text Books and Additional References:

- -------

10.3. Recommended Books:

- -------

10.4. Web Sites:

- -------

Course Directors	Name	Signature
Teaching staff		
Course coordinator	Dr. Shymaa Mohamed Mukhtar	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 327: Transportation Planning

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Transportation Planning			**Course Code:**		CIV 327	
Program / level	Civil Engineering			**SENIOR (2)**			
Term/ Academic year:	Oct.-Jan. 2023 - 2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	-----
Pre-Requisite	CIV 211, CIV 256						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

The course is designed to give the students the basic knowledge concerning the urban and regional transportation Planning.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1. Formulate the appropriateness of different mathematical transport models.
CLO 2. Utilize Evaluate different transportation project alternatives.
CLO3 . Achieve the travel demand forecasting process.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV256
Program Academic Standards that the course contributes in achieving	A4, A6	B2

4- ***Mapping Course Los to NARS***

Field	Program(CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A4.** Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	**LO1**. Utilize Evaluate different transportation project alternatives Identify the data needed for the transportation planning process
	A6. Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	**LO2**.PLAN transportation project alternatives.
COMPETENCIES of CIV 327	**B2.** Achieve an optimum design of pavement and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbors; or any other emerging field relevant to the discipline.	**LO3.** Achieve the travel demand forecasting process. **LO4.** Transportation models for travel

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

The course is designed to give the students an advanced knowledge about Pavement management systems as well as specific issues in transportation planning and analysis of traffic accidents.

5.2. Course Topics/hours/Los Matrix

Week No.	***Topic***	***Total Hours***	***Contact hrs***			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week-1	PLAN Urban and regional transportation planning	3	2	1	---	**LO1**
Week-2	Travel forecasting	3	2	1	---	**LO 1, LO 2**
Week-3	Transportation Planning stages	3	2	1	---	**LO 2**
Week-4	Problem definition and identification of goals and objectives	3	2	1	---	**LO 2, LO1**
Week5	Data collection	3	2	1	---	**LO 1, LO 4**
Week-6	Trip generation	3	2	1	---	**LO1, LO 4**

Week-7	Trip distribution	3	2	1	---	**LO 3, LO 3**
Week-8	**Semester exam**					
Week-9	Modal split	3	2	1	---	**LO 3, LO1**
Week-10	Traffic assignment and network planning	3	2	1	---	**LO1, LO 2**
Week-11	Assessment of Transportation Projects	3	2	1	---	**LO 3, LO4**
Week-12	Case studies and applications	3	2	1	---	**LO3**
Week-13	Transportation models for travel demand forecasting stages	3	2	1	---	**LO 4**
Week-14	Capacity analysis and level of service	3	2	1	---	**LO1**
Week 15	**Final term exam**					

5.3. Experiment Topics:

Serial	Experiment	Laboratory hrs.
1st	NA	---

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)			
	General			CIV 327
	LO1	LO2	LO3	LO4
CLO 1	*			*
CLO 2		*	*	
CLO 3	*			*
CLO 4		*	*	

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)			
	General			CIV 327
	LO 1	LO 2	LO 3	LO 4
Face-to-Face Lecture	*	*	*	*
Online Education				
Tutorial/ Exercise	*	*	*	*
Group Discussion				
Laboratory				
Site Visit				
Presentation				
Mini Project				
Research and Reporting	*		*	
Brain Storming				
Self-Learning				

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)			
	General			CIV 327
	LO 1	LO 2	LO 3	LO 4
Written Exam	*	*	*	
Online Exam				
Oral Exam				
Quiz		*		*
Lab Exam				
Take-Home Exam				
Research Assignment	*			
Reporting Assignment	*	*	*	*
Project Assignment				
In-Class Questions				

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.

End of term laboratory exam (*Lab*)	-	15th	Committee
End of term Oral exam	-	15th	Committee
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- White board
B- Data show
C- MS Teams

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Text Books and Additional References:

1- Text books

G. Venkatappa Rao "Principles of transportation and highway engineering" Tata McGraw-Hill, New Delhi, ISBN:9780074623633, 007462363X

2- References

Salter, R.J and Hounsell, N.B. (1996) Highway Traffic Analysis and Design. Palgrave ISBN 0-333-60903-4

Course Directors	Name	Signature
Teaching staff	Dr. Amr Nada	
Course coordinator	Dr. Amr Nada	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 329: Selected Topics in Transportation Engineering

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Selected Topics in Transportation Engineering			**Course Code:**		CIV 329	
Program / level	Civil Engineering			**SENIOR (2)**			
Term/ Academic year:	1ST semester 2023-2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	-----
Pre-Requisite	CIV 211, CIV 256						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

1- Study an advanced about Pavement management systems
2- Study specific issues in transportation planning and analysis of traffic accidents.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Evaluate different transportation project alternatives.
CLO 2. Understand the pavement management systems
CLO 3. Judge the appropriateness of different mathematical transport models
CLO 4 . Understand the importance of traffic and accident analysis

3- ***Relationship between the course and the Competencies :***

Field	National Academic Reference Standard(NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV256
Program Academic Standards that the course contributes in achieving	A2,A3,A4, A6	B1, B2

4- ***Mapping Course Los to NARS***

Field	Program(CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	A1.Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics	**LO1**. Identify Pavement distress
	A2. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 2.** Evaluate different transportation project alternatives **LO3.**Evaluate the soil classification, material strength, pavement response under loads, and structural design of flexible pavement
	A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	**LO4**.Utilize code practices and standard to design pavement responses under the loads
		LO 5. Utilize the data required for design of flexible pavement

	B1. Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO6**.Selec the suitable pavement materials
	B2. Achieve an optimum design of pavement and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbors; or any other emerging field relevant to the discipline.	**LO7.** Achieve optimum design OF flexible pavement and rigid pavement.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

The course is designed to give the students an advanced knowledge about Pavement management systems as well as specific issues in transportation planning and analysis of traffic accidents.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week-1	Soil stabilization	3	2	1	---	**LO1**
Week-2	Tests of asphalt materials	3	2	1	---	**LO 1, LO 6**
Week-3	Pavement distress	3	2	1	---	**LO 2**
Week-4	pavement Management systems	3	2	1	---	**LO 3, LO1**
Week5	Soil Strength and Soil Stabilization	3	2	1	---	**LO 1, LO 5**
Week-6	Pavement rehabilitation program	3	2	1	---	**LO1, LO 7, LO 4, LO 5**
Week-7	Pavement Response under Load (Stress and Deflection)	3	2	1	---	**LO 3, LO 7**
Week-8	**Semester exam**					
Week-9	Highway capacity and level of service	3	2	1	---	**LO 3, LO1**

Week-10	Capacity and level of service at intersections	3	2	1	---	**LO5, LO 7**
Week-11	Operation analysis	3	2	1	---	**LO 3, LO7**
Week-12	The importance of road safety and causes of traffic accidents	3	2	1	---	**LO5**
Week-13	Accident costing	3	2	1	---	**LO 4, LO7**
Week-14	Accident analysis and prevention	3	2	1	---	**LO7**
Week 15	**Final Exam.**					

5.3. Experiment Topics:

Serial	Experiment	Laboratory hrs.
1st	NA	---

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)						
	LO1	LO2	LO3	LO4	LO5	LO6	LO7
CLO 1	*	*	*	*		*	
CLO 2					*		*
CLO 3					*	*	*
CLO 4							*

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)						
	General	CIV 329					
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
Face-to-Face Lecture	*	*	*	*	*	*	*
Online Education						*	*
Tutorial/ Exercise	*	*	*	*	*	*	*
Group Discussion						*	*
Laboratory							
Site Visit							
Presentation						*	*
Mini Project							
Research and Reporting	*		*			*	*
Brain Storming						*	
Self-Learning							

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	General						
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
Written Exam	*	*	*			*	*
Online Exam							
Oral Exam							
Quiz		*		*		*	*
Lab Exam							
Take-Home Exam							
Research Assignment	*				*	*	*
Reporting Assignment	*	*	*	*	*		
Project Assignment						*	*
In-Class Questions							

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- White board
B- Data show
C- MS Teams

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Text Books and Additional References:

1- Text books

Garber, N. and Hoel, L. (2001) Traffic and highway Engineering. NewYork

2- References

Salter, R.J and Hounsell, N.B. (1996) Highway Traffic Analysis and Design. Palgrave ISBN 0-333-60903-4

Course Directors	Name	Signature
Teaching staff	Dr. Amr Nada	
Course coordinator	Dr. Amr Nada	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	
Course Specification	
CIV 331: Introduction to GPS	

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Introduction to GPS			**Course Code:**		CIV 331	
Program / level	Civil Engineering			Senior (2)			
Term/ Academic year:	OCT-Jan2023-2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	0
Pre-Requisite	Department Approval						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

This course introduces students to:

1. provide an introduction to adjustment of observations in surveying, an introduction to the Global Positioning System GPS.
2. Provide in introduction to monitoring deformation of different kinds of structures using special surveying techniques and instruments.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1. Understanding the concept of adjusting observations in surveying.

CLO 2. Definition of multi-variate, variance – covariance matrix, and error propagation of multi-variate.

CLO 3. Adjustment of surveying observations using least squares technique.

CLO 4. Understanding and knowledge of the basic idea of the Global Positioning System GPS.

CLO 5. Knowledge of GPS observations, modes of calculation, and techniques of observations, and sources of errors.

CLO 6. Understanding of using surveying techniques and instruments in measuring and calculating the deformation of all kinds of structures, such as: buildings, bridges, dams, antiquities, etc.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES
Program Academic Standards that the course contributes in achieving	A2, A6	B1

4- *Mapping Course Los to NARS*

Course Outcomes

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES OF ENGINEERING	**A2.** Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 1**. Adjustment of surveying observations using least squares technique.
	A6. Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	**LO 2.** Understanding and knowledge of the basic idea of the Global Positioning System GPS. **LO 3.** Knowledge of GPS observations, modes of calculation, and techniques of observations, and sources of errors.

COMPETENCIES OF CIV 331	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 4**. Understanding of using surveying techniques and instruments in measuring and calculating the deformation of all kinds of structures, such as: buildings, bridges, dams, antiquities, etc.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

adjustment of observations in surveying; an introduction to the Global Positioning System GPS; and provide in introduction to monitoring deformation of different kinds of structures using special surveying techniques and instruments

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Review of the statistics of univariate, mean, and standard deviation	3	2	1	0	**LO 1, LO 2**
Week-2	Definition of multi-variate, covariance between any two components of multi-variate	3	2	1	0	**LO 1, LO 2**
Week-3	Definition of correlation, characteristics of correlation. Computation of correlation	3	2	1	0	**LO 1, LO 2, LO3**
Week-4	Concept of error propagation. Variance law. applications	3	2	1	0	**LO 1, LO 2**
Week5	Concept of error propagation. Covariance law. Applications	3	2	1	0	**LO 1**
Week-6	Introduction to the Global Positioning System GPS: basic idea – segments-observations.	3	2	1	0	**LO 1, LO 3**

Week-7	Revision	3	2	1	0	**LO 1, LO 2, LO3**
Week-8	**Midterm Exam.**					
Week-9	Introduction to GPS: errors sources – modes of calculations – techniques of observations.	3	2	1	0	**LO 2, LO 3**
Week-10	Applications of GPS	3	2	1	0	**LO 3, L O 4**
Week-11	Applications of GPS	3	2	1	0	**LO 3, L O 4**
Week-12	Measuring deformation of structures: methods of calculating and adjusting observations with appropriate accuracy.	3	2	1	0	**LO 3, L O 4**
Week-13	Measuring deformation of structures: methods of calculating and adjusting observations with appropriate accuracy.	3	2	1	0	**LO 3, L O 4**
Week-14	Measuring deformation of structures: methods of calculating and adjusting observations with appropriate accuracy.	3	2	1	0	**LO 3, L O 4**
Week 15	Final Exam					

5.3. Experiment Topics:

Not Applicable

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)			
	General			CIV 331
	LO 1	LO 2	LO 3	LO 4
CLO 1	√	√	√	
CLO 2			√	√
CLO 3			√	√
CLO 4		√	√	√
CLO 5		√	√	√
CLO 6	√		√	√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome* (LOs)			
	General			CIV 331
	LO 1	LO 2	LO 3	LO 4
Face-to-Face Lecture	√	√	√	√
Online Education				
Tutorial/ Exercise		√	√	√
Group Discussion	√			
Laboratory		√		√
Site Visit				
Presentation				
Mini Project		√	√	√
Research and Reporting	√			
Brain Storming	√			
Self-Learning	√	√		√

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome* (LOs)			
	General			CIV 331
	LO 1	LO 2	LO 3	LO 4
Written Exam		√	√	√
Online Exam				
Oral Exam				
Quiz			√	√
Lab Exam				
Take-Home Exam				
Research Assignment	√			
Reporting Assignment	√			
Project Assignment	√	√		√
In-Class Questions	√	√	√	

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**	---	---
End of term Oral exam	**-**	14th	Committee
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- Projector
B- White board
C- Personal Computer

10- List of References:

10.1. Course Notes:

- Lecture notes
- Text books

10.2. Recommended Books:

- Barry Kavanagh, Diane Slattery, " Surveying with Construction Applications", 8th Edition, ISBN-10: 9780132766982, Pearson, 2014.
- GPS: Theory and practice: B. Hormann – Wellenhof, Springer-Verlag, New York, ISBN-13: 978-3-211-82364-4, 1992.
- Matrix treatment of adjustment computations in surveying: M. Nassar, faculty of engineering, Ain Shams University, 2001.

Course Directors	Name	Signature
Teaching staff		
Course coordinator	Dr. Amr Nada	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 333: Adjustment Computation in Surveying and Monitoring of Structure Deformation

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Adjustment Computation in Surveying and Monitoring of Structure Deformation				**Course Code:**	CIV 333	
Program / level	Civil Engineering				Senior (2)		
Term/ Academic year:	Oct. 2022-2023				**Credit Hours:**	2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:** 1		**Laboratories:**	0
Pre-Requisite	Department Approval						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- Review of the introduction to surveying engineering including the introduction of spherical astronomy.
- To provide students with a strong foretaste of engineering practice.
- To Discuss the information system (GIS).

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1. Study the information system (GIS) and application of GIS in the field.

CLO 2. Understanding the remote sensing, aerial photos, introduction to satellite images.

CLO 3. To provide an introduction to spherical astronomy, determination of latitude and longitude, determination of sidereal time, solar time, standard and local time.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 333
Program Academic Standards that the course contributes in achieving	A2, A6	B1

4- *Mapping Course Los to NARS*

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES OF ENGINEERING	**A2.** Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 1.** Conduct appropriate experimentation on GIS application in the field.
	A6. Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	**LO 2.** Plan to achieve the latitude and longitude.
COMPETENCIES OF CIV 333	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 3**. Select the appropriate technology to use the remote sensing, aerial photos, and satellite images.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Sources and types of errors, Review of theory of errors: mean, variance, standard deviation, Error propagation: covariance, correlation between observations. Variance- covariance matrix, variance law-covariance law. Monitoring of structural deformation: types of deformation, techniques to measure deformation. Calculations and checks.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	**Spherical Astronomy:** definitions-astronomical coordinates.	3	2	1	0	**LO 1, LO 3**
Week-2	Determination of latitude, longitude.	3	2	1	0	**LO 1, LO 2**
Week-3	Determination 0f time: sidereal time, solar time, standard time, local time.	3	2	1	0	**LO 1, LO 2**
Week-4	Stars & observation instruments.			1	0	**LO 1, LO 3**
Week5	**Geographic information system (GIS):** Introduction (GIS), kinds of used information,	3	2	1	0	**LO 1, LO 2**
Week-6	(GIS) kinds of used information,	3	2	1	0	**LO 1, LO 2**
Week-7	Applications of GIS in the field: roads, sanitary engineering, water resources harbors.	3	2	1	0	**LO 1, LO 2, LO 3**
Week-8	**Midterm Exam**					
Week-9	**Remote Sensing:** Introduction to remote sensing (basics &principal).	3	2	1	0	**LO 1, LO 3**
Week-10	Introduction to aerial photos	3	2	1	0	**LO 1, LO 3**
Week-11	Introduction to satellite images interpretations.	3	2	1	0	**LO 1, LO 3**
Week-12	Introduction to satellites: Ocean monitoring, Metrological monitoring, Terrestrial monitoring (like: Land sat, Spot, Indian satellite.)	3	2	1	0	**LO 1, LO 3**
Week-13	Application of Remote sensing.	3	2	1	0	**LO 1, LO 3**
Week-14	Application of Remote sensing.	3	2	1	0	**LO 1, LO 3**
Week-15	**Final Exam**					

5.3. Experiment Topics:

Not Applicable

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)		
	General		CIV 333
	LO 1	LO 2	LO 3
CLO 1	√	√	√
CLO 2	√	√	√
CLO 3	√	√	√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome* (LOs)		
	General		CIV 333
	LO 1	LO 2	LO 3
Face-to-Face Lecture	√	√	√
Online Education			
Tutorial/ Exercise	√	√	√
Group Discussion		√	√
Laboratory	√	√	√
Site Visit			√
Presentation		√	
Mini Project	√	√	√
Research and Reporting			√
Brain Storming	√		
Self-Learning			√

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome* (LOs)		
	General		CIV 333
	LO 1	LO 2	LO 3
Written Exam	√	√	√
Online Exam			
Oral Exam	√	√	√
Quiz	√	√	
Lab Exam			
Take-Home Exam			√
Research Assignment	√	√	
Reporting Assignment		√	√
Project Assignment	√	√	√
In-Class Questions		√	√

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**	14th	Committee
End of term Oral exam	**-**	14th	Committee
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- Laboratory
B- Lab top device
C- Projector

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Recommended Books:

- Agor, R., "A Textbook of Advanced Surveying", ISBN-10: 8174090533, Khanna Publishers, 2016.
- Bannister, A., Raymond, S. and Baker, R., "Surveying", 6th Edition, ISBN 10: 0582302498, Prentice Hall, 1998.
- Dr. B. C. Punmia , Ashok, K. J. , Arun, K. J. | Laxmi "Surveying Volume 2", 8th Edition, National Institute of Technology Goa Farmagudi, Ponda, Goa - 403 401, 2018.

Course Directors	Name	Signature
Teaching staff		
Course coordinator	Dr. Amr Nada	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 341: Advanced Strength of Materials

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	**Advanced Strength of Materials**			**Course Code:**		CIV 341	
Program / level	Civil Engineering			SENIOR (2)			
Term/ Academic year:	OCT-Jan2023-2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	0
Pre-Requisite	Department Approval						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- To understand in depth the mechanical and physical properties of materials.
- To build an understanding of concepts and ideas of the unsymmetrical loads and moments affecting structural members.
- To provide students with a strong foretaste of some mechanical behaviors of complex structural members.
- To use data from tests to perform full assessment and design steps using software and computer applications.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1. Understand the stress-strain curves of various construction materials.

CLO 2. Understand the effect of unsymmetrical bending on prismatic and non-prismatic members.

CLO 3. To evaluate the mechanical behavior of curved beams, the torsional behavior of non-circular sections, elastic buckling of bars, behavior of beams on elastic foundation, and theories of failure.

CLO 4. Preparing test reports for materials to be tested.

CLO 5. To choose material according to the most suitable mechanical properties.

CLO 6 To Use computer to calculate and represent the properties of materials.

3- Relationship between the course and the Competencies:

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 341
Program Academic Standards that the course contributes to achieving	**A2, A4, A9**	**B1, B3**

4- Mapping Course Los to NARS

Field	Program (CBEs) that the course contribute to achieving	Learning Outcomes (LOs)
COMPETENCIES of ENGINEERING	**A2.** Develop and conduct appropriate experimentation, analyze and interpret data, assess and evaluate findings, and engineering judgment to draw conclusions.	**LO1.** Develop a deep understanding of stress-strain relationships of materials. **LO2.** Conduct solutions for problems related to choosing adequate materials from mechanical and physical points of view. **LO3.** Conduct advanced laboratory testing for materials and structural elements considering bending, torsion, and compression. **LO4.** Analyze and interpret data from testing process. **LO5.** Use objective engineering judgement to draw conclusions considering materials properties.
	A4. Utilize engineering technologies, codes of practice and standards, quality guidelines, health and safety requirements.	**LO6.** Utilize codes, and standards in the choice of materials according to its intended usage under unsymmetrical bending, and torsion.
	A9. Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	**LO7.** Use creative, innovative, and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations during and after choosing materials for special structural elements.
COMPETENCIES of CIV 341	**B1.** Select appropriate and sustainable technologies for choosing materials; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques.	**LO8.** Use data from testing of materials as a requirement of selection in structural members for construction.
	B3. Plan and manage construction processes; address construction defects, instability and quality issues.	**LO9.** Manage and plan the construction process according to the required materials type and quality and according to the expected patterns of failure.

5.0. Course Content:

5.1. Course Description (As indicated in program Bylaw):

Stress-strain relationship. Unsymmetrical bending, prismatic and non-prismatic members. Cured beams. Torsion of bars of non-circular sections. Elastic buckling of bars. Beams on elastic foundations. Theories of failure.

5.2. Course Topics/hours/Los Matrix

WeekNo.	***Topic***	***total Hours***	***Contact hrs***			**Los Coveredby Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Stress- Strain relations for construction materials	3	2	1	0	**LO1**
Week-2	Stress- Strain relations for construction materials (continue)	3	2	1	0	**LO1**
Week-3	Unsymmetrical bending for prismatic and non-prismatic members	3	2	1	0	**LO2, LO3, LO4**
Week-4	Behavior and analysis of curved beams	3	2	1	0	**LO3, LO4, LO5**
Week5	Behavior and analysis of curved beams (continue)	3	2	1	0	**LO3, LO4, LO5**
Week-6	Torsion of bars of non-circular sections	3	2	1	0	**LO4, LO5, LO6**
Week-7	Torsion of bars of non-circular sections (continue)	3	2	1	0	**LO4, LO5, LO6**
Week-8	**Midterm Exam.**					
Week-9	Elastic Buckling	3	2	1	0	**LO4, LO5, LO6**
Week-10	Elastic Buckling (continue)	3	2	1	0	**LO4, LO5, LO6**
Week-11	Beams on Elastic Foundation	3	2	1	0	**LO4, LO5, LO6**
Week-12	Beams on Elastic Foundation (continue)	3	2	1	0	**LO4, LO5, LO6**
Week-13	Theories of Failure	3	2	1	0	**LO7, LO8, LO9**
Week-14	Theories of Failure	3	2	1	0	**LO7, LO8, LO9**
Week-15	**Final Exam.**					

6- *Matrix of Course Objective and Los*

Course Learning Objectives	Learning Outcomes (LOs)								
	General							CIV 341	
	LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9
CLO 1	√								
CLO 2		√	√	√					
CLO 3			√	√	√	√	√	√	√
CLO 4			√	√	√				
CLO 5						√	√		
CLO 6					√				√

7- *Course Teaching and Learning Methods:*

Teaching and Learning Methods	Learning Outcomes (LOs)								
	General							CIV 341	
	LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9
Face-to-Face Lecture	√	√	√	√	√	√	√	√	√
electronic Education									
Tutorial/ Exercise		√		√		√			
Group Discussion									
Laboratory									
Site Visit									
Presentation									
Mini Project									
Research and Reporting							√	√	
Brain Storming									
Self-Learning									√

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	Learning Outcomes (LOs)								
	General							CIV 341	
	LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9
Written Exam	√	√	√	√	√	√	√	√	√
electronic Exam									
Oral Exam									
Quiz		√		√		√			
Lab Exam									
Take-Home Exam									
Research Assignment									√
Reporting Assignment									
Project Assignment									
In-Class Questions							√	√	

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**	-	-
End of term Oral exam	**-**	-	-
Reports/presentation (*Term Work*)	**20**	-	-
Quizzes/electronic exams (Term Work)	**20**	Every 2 weeks	About 15 min.
Total Mark	**100**		

9- Facilities Required:

A- White board
B- Data Show
C- MS teams

10- List of References:

10.1.Course Notes:

- Lecture notes

10.2.Required Textbooks and Additional References:

- Design of reinforced concrete structures: Dr. M. Goneem
- Reinforced Concrete: Park and Puly

10.3.Recommended Books:

-W.d.callister, david g. Rethwisch, Materials science and engineering an introduction, Wiley , ISBN: 14485, 2007.
-B.onouye, Satics and strength of materials for architecture and building construction, Pearson, ISBN 14712, 2007.
-Soutso M., construction materials, Routledge (Taylor&Francis Group), ISBN 9781498741101, 2018.

Course Directors	Name	Signature
Teaching staff		
Course coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 345: Computer Applications in Structural Engineering

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Computer Applications in Structural Engineering			**Course Code:**		CIV 345	
Program / level	Civil Engineering			Senior (2)			
Term/ Academic year:	Oct.-Jan. 2023 - 2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	-----
Pre-Requisite	Department Approval						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- To provide an Exercise for generating computer programs to solve indeterminate structures (Frames –Trusses –Beams). By using the Stiffness Matrix Method. For finding: -Internal force member.-Member deflection -Structure deformation. -Reactions.

- Generating computer programs to establish different forms and sizes of stiffness matrix.
- Generating computer programs to design process of reinforced concrete and steel members.
- Generating computer programs to numerical methods, , concrete mix-design and quality control.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. To identify the basis of finite element modelling, to recognize of different types of modelling elements, and to understand the major differences between modelling elements and the advantages and disadvantages of each element type.

CLO 2. To express ideas in computer modeling of structure, and to express ideas for creating simple models for complicated structures, and to carry out modeling of different types of complicated structures.

CLO 3. Evaluate obtained results both from computer or using classical theories of structural analysis.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 345
Program Academic Standards that the course contributes in achieving	A3, A4, A6	B1, B2

4- Mapping Course Los to NARS

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
	A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	**LO 1.** Construct the student analysis, problem identification, capability of creative thinking and obtaining solutions to Carry out modeling of different types of complicated structures. **LO 2**. Use mathematical, and theories formulae to Analyze

		for system elements by using sap 2000 application.
	A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	**LO 3**. Apply the different solutions of expected and unexpected technical problems related to annotated topics.
	A6. Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	**LO 4.** Design and engineering sense. Structural-design application sense
COMPETENCIES of CIV 345	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures, and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 5.** Define the different modeling types
	B2. Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbours; or any other emerging field relevant to the discipline.	**LO 6**. Design of reinforced concrete or steel structures

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Solving indeterminate structures (Frames –Trusses –Beams). By using: - the Stiffness Matrix Method.For finding: -Internal force member. -Member deflection. -Structure deformation. Reactions.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact Hrs.*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Introduction to finite element method, types of structural elements.	3	2	1	0	**LO 1, LO5**
Week-2	Introduction of SAP 2000 program: definition of material properties, section properties, load cases, and boundary conditions.	3	2	1	0	**LO 1, LO5**
Week-3	Modeling and analysis of beams by using SAP program	3	2	1	0	**LO 2**
Week-4, 5	Modeling and analysis of frames by using SAP program	3	2	1	0	**LO 2, LO 3, LO 4**
Week-6	Modeling and analysis of trusses by using SAP program.	3	2	1	0	**LO 2, LO 3, LO 4**
Week-7	Statical system and construct DXF file	3	2	1	0	**LO 2, LO 3, LO 4, LO 6**
Week-8	**Midterm Exam.**					
Week-9	Introduction of SAFE 2016 program: definition of material properties, section properties, load cases, and boundary conditions.	3	2	1	0	**LO 2, LO 3, LO 4, LO 6**
Week-10	Modeling of shell elements by using SAFE program.	3	2	1	0	**LO 2, LO 3, LO 4, LO 6**
Week-11, 12	Analysis, design and drawing reinforcement details of solid slabs, flat slabs , beams and columns by using SAFE and excel programs.	3	2	1	0	**LO 2, LO 3, LO 4, LO 6**
Week-13	Analysis and design of raft foundations.	3	2	1	0	**LO 2, LO 3, LO 4, LO 6**
Week 14	**Final Exam.**					

5.3. Experiment Topics: (NA)

Serial	Experiment	Laboratory hrs.
1st	NA	

6- Matrix of Course Objective and Los

Course Learning Objectives	Learning Outcomes (LOs)					
	LO1	LO2	LO3	LO4	LO5	LO6
CLO 1	√	√			√	√
CLO 2			√	√		
CLO 3				√	√	√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome* (LOs)					
	General				CIV 345	
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
Face-to-Face Lecture	√	√	√			√
Electronic Education	√	√	√			√
Tutorial/ Exercise	√	√	√			√
Group Discussion		√	√	√	√	√
Laboratory						
Site Visit						
Presentation			√	√	√	√
Mini Project			√	√	√	√
Research and Reporting			√	√	√	√
Brain Storming			√	√	√	
Self-Learning			√	√	√	√

8-Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome* (LOs)					
	General				CIV 345	
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
Written Exam	√	√	√			√
Electronic Exam	√	√	√			√
Oral Exam	√	√	√	√	√	√
Quiz	√	√	√			√
Lab Exam						
Take-Home Exam						
Research Assignment			√	√	√	√
Reporting Assignment			√	√	√	√
Project Assignment				√	√	
In-Class Questions		√	√			√

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	7th	60 min.
End of term laboratory exam (*Lab*)	**---**	---	---
End of term Oral exam	**---**	---	---
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/ Electronic exams (*Term Work*)	**10**	According to the schedule	---
Report	**10**	14th	---
Total Mark	**100**		

8- Facilities Required:

A- White Board.
B- Data Show.
C- MS Teams.

9- List of References:

10.1. Course Notes:

- Lecture notes available (handed to students part by part).

10.2. Required Text Books and Additional References:

1. McGuire, W., Gallagher, R. H., & Ziemian, R. D. (2015). Matrix Structural Analysis. Createspace Independent Publishing Platform, ISBN 81507585139.

2. Nyhoff, L. R., & Leestma, S. (1995). Fortran 77 and numerical methods for engineers and scientists. Macmillan, ISBN 0-02-388741-9.

10.3. Recommended Books:

10.4. Web Sites:

- **http://www.experiencefestival.com/structural_analysis_-_mechanics_of_materials_methods**
- https://ww2.mathworks.cn/en/

Course Directors	Name	Signature
Teaching staff	Dr. Morcos Farid	
Course coordinator	Dr. Morcos Farid	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 347: Plastic Structural Analysis

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Plastic Structural Analysis			**Course Code:**		CIV 347	
Program / level	Civil Engineering			Senior (2)			
Term/ Academic year:	Oct.-Jan. 2023 - 2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	-----
Pre-Requisite	Department Approval						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- To demonstrate the ability of calculating the plastic collapse loads of complex two dimensional frame structures.
- To identify the independent mechanisms and combine them to find the true collapse load.
- To produce engineering designs of frame structures based on plastic collapse analysis.
- To demonstrate the ability to calculate the yield line collapse load of reinforced concrete slabs of complex geometry with isotropic and orthotropic reinforcement using the upper bound theorem.
- To apply the plasticity method to the proportioning of reinforcement in a slab.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Calculate ultimate plastic loads for different types of structures.

CLO 2. Evaluate plastic hinges development in concrete and steel structures.

CLO 3. Recognize all possible plastic mechanisms of different structures.

CLO 4. Evaluate the basics of plastic analysis of concrete slabs using yield line theory.

CLO 5. Emphasizing plastic analysis and design concepts.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 245
Program Academic Standards that the course contributes in achieving	A2,A8	B1

4- *Mapping Course Los to NARS*

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
	A2. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 1.** Analyze the principals to calculate plastic capacities of different structural elements. **LO 2.** Developing of plastic mechanisms for beams 2D portal frames. **LO 3.** Evaluate the yield line mechanism of concrete slabs
	A8. Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	**LO 4.** Discuss the mini-project output in front of the judging committee established from the course teachers and other students.
COMPETENCIES of CIV 347	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or	**LO 5.** Able to select the suitable solving technique whether manual or using computer to solve plastic problems.

	physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Plastic hinge and plastic collapse concepts; plastic moment of resistance. Basic theorems. Plastic collapse loads of beams and portal frames. Effect of normal and shear forces. Load-displacement relationship. Plastic design

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Review on elastic concepts in the analysis of framed structures.	3	2	1	-	**LO 1.**
Week-2	Ductility and plastic hinge concept in reinforced concrete beams and columns.	3	2	1	-	**LO 1. , LO 2.**
Week-3	Moment-curvature relationships.	3	2	1	-	**LO 1. , LO 2. , LO 3.**
Week-4	Influence of axial force and confining reinforcement.	3	2	1	-	**LO 1. , LO 2. , LO 3.**
Week5	Plastic hinge length and rotation capacity.	3	2	1	-	**LO 1. , LO 2. , LO 3. , LO 5.**
Week-6	Plastic collapse of frames under static loading.	3	2	1	-	**LO 1. , LO 2. , LO 3.**
Week-7	Collapse mechanisms and plastic limit load.	3	2	1	-	**LO 1. , LO 2. , LO 3.**
Week-8	**Midterm Exam.**					
Week-9	The mechanism method of plastic limit analysis.	3	2	1	-	**LO 1. , LO 2. , LO 3. , LO 5.**
Week-10	Linear program for identifying the critical mechanism and plastic limit load.	3	2	1	-	**LO 1. , LO 2. , LO 3. , LO 5.**

Week-11	The equilibrium method of plastic limit analysis.	3	2	1	-	**LO 1. , LO 2. , LO 3. , LO 5.**
Week-12	The yield line collapse load of reinforced concrete slabs.	3	2	1	-	**LO 1. , LO 2. , LO 3. , LO 5.**
Week-13	Computer method to solve plastic problems.	3	2	1	-	**LO 1. , LO 2. , LO 3. , LO 5.**
Week-14	Introduction to push-over analysis.	3	2	1	-	**LO 1. , LO 3. , LO 4. , LO 5.**
Week 15	**Final Exam.**					

5.3. Experiment Topics: (NA)

Serial	Experiment	Laboratory hrs.
1st	NA	

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)				
	LO1	LO2	LO3	LO4	LO5
CLO 1	√	√	√	√	√
CLO 2	√	√			√
CLO 3		√	√		
CLO 4				√	√
CLO 5		√	√	√	√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)				
	General				CIV 347
	LO 1	LO 2	LO 3	LO 4	LO 5
Face-to-Face Lecture	√	√	√		√
Electronic Education	√	√	√		√
Tutorial/ Exercise	√	√	√		√
Group Discussion		√	√	√	√
Laboratory					
Site Visit					
Presentation			√	√	√
Mini Project			√	√	√
Research and Reporting			√	√	√
Brain Storming			√	√	
Self-Learning			√	√	√

8-Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)				
	General				CIV 347
	LO 1	LO 2	LO 3	LO 4	LO 5
Written Exam	√	√	√		√
Electronic Exam	√	√	√		√
Oral Exam	√	√	√	√	√
Quiz	√	√	√		√
Lab Exam					
Take-Home Exam					
Research Assignment			√	√	√
Reporting Assignment			√	√	√
Project Assignment				√	

In-Class Questions		√	√		√

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	7th	60 min.
End of term laboratory exam (*Lab*)	**---**	---	---
End of term Oral exam	**---**	---	---
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/ Electronic exams (*Term Work*)	**10**	According to the schedule	---
Report	**10**	14th	---
Total Mark	**100**		

8- Facilities Required:

A- White Board.
B- Data Show.

9- List of References:

10.1. Course Notes:

- Lecture notes available (handed to students part by part).

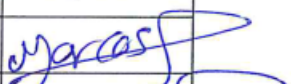
10.2. Required Text Books and Additional References:

Reference name	*Author*	*ISBN*	*Library Ref.*
PROGRAMMING THE DYNAMIC ANALYSIS OF STRUCTURE	**P BHATT**	**9780367863494**	**11060**
ANALYSIS OF STRUCTURES V1, V2	**V.N.VAZIRANI**	**9788174091406**	**1179 & 8343**
ADVANCED STRUCTURAL ANALYSIS	**JAN J. TUMA**	**0070654263**	**8322**
THEORY OF STRUCTURES	**R.S. KHURMI**	**9788121905206**	**8385**

10.3. Recommended Books:

10.4. Web Sites:

https://courses.structure.education/collections
https://www.aboutcivil.org/plastic-analysis-definition-principles.html

Course Directors	Name	Signature
Teaching staff	Dr. Morcos Farid Samaan	
Course coordinator	Dr. Morcos Farid Samaan	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	
Course Specification	
CIV 349: Selected Topics in Structural Analysis	

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information								
Course Title:	**Selected Topics in Structural Analysis**			**Course Code:**		CIV 349		
Program / level	Civil Engineering			Senior year (2)				
Term/ Academic year:	Oct.-Jan. 2023 - 2024			**Credit Hours:**		2		
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	-----	
Pre-Requisite	Department Approval							
Academic standards	(NARS 2018)							
Bylaw Approval	2016							

1- *Course Aims:*

- To provide an introductory overview for the finite element modeling of simple and complex structures using SAP2000 software.
- To act as a transition course, which takes structural analysis courses for the student from theory to application through computer modeling.

2- *Course Learning Objectives (CLO):*

At the end of this course, the student should be able to :

CLO 1. To express ideas for creating simple models for complicated structures.

CLO 2. To carry out modeling of different types of complicated structures.

CLO 3. To Use obtained analysis results from the computer model as a quantitative structural design inputs.

3-Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 225
Program Academic Standards that the course contributes in achieving	A2,A9	B1

4- Mapping Course Los to NARS

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A2.** Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 1.** Knowledge of the basis of finite element modeling. **LO 2.** Knowledge of different types of modeling elements **LO 3.** Understanding the major differences between modeling elements. **LO 4.** . Evaluate and analyze obtained results both from computer or using classical theories of structural analysis.
	A9. Use creative innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	**LO 5**. Using obtained analysis results from the computer model as a quantitative structural design inputs.

COMPETENCIES of CIV 349	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 6.** Judge on the safety of structure .

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Selected topics from the following: analysis of space structures, soil structures interaction, finite element methods, finite strip methods, elastic plastic analysis, and analysis of structures subjected to cyclic and dynamic loading, analysis of multistory buildings, boundary elements method.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Revision for the classical structural analysis theories.	3	2	1	-	LO 1.
Week-2	Introduction to finite element method, types of structural elements.	3	2	1	-	LO 1. , LO 2. , LO 3., LO 4., LO 5., LO 6.
Week-3	SAP2000 environment, definition of material properties, section properties, load cases, and boundary conditions.	3	2	1	-	LO 1. , LO 2. , LO 3. LO 4.
Week-4	Modeling of Beams and Frames.	3	2	1	-	LO 1. , LO 2. , LO 3.
Week5	Modeling of Trusses.	3	2	1	-	LO 1., LO 4., LO 6., LO 7.
Week-6	Modeling of shell elements.	3	2	1	-	LO 1. , LO 3. , LO 4.
Week-7	Midterm Exam.					
Week-8	Application: Analysis of a complicated slab and beam type roof including a RC stair.	3	2	1	-	LO 2., LO 3., LO 4., LO 5.

Week-9	Application: Analysis and design of a flat slab type roof, and extending the application to the RC mats.	3	2	1	-	LO 1., LO 3., LO 5., LO 6.
Week-10	Introduction to seismicity and analysis of earthquake resisting structures using classical theories.	3	2	1	-	LO 1. , LO 3. , LO 5. , LO 6.
Week-11	Application: Analysis of a complete high rise structure, including its beams, flat slab roofs, stairs, column.	3	2	1	-	LO 1. , LO 3. , LO 4. , LO 5.
Week-12	Application: Analysis and design of raft foundations.	3	2	1	-	LO 1., LO 3., LO 4., LO 5.
Week-13	Application: Analysis and design of raft foundations.	3	2	1	-	LO 1., LO 3., LO 4., LO 6.
Week-14	Revision	3	2	1	-	LO 2., LO 3., LO 5., LO 6.
Week 15	**Final Exam.**					

5.3. Experiment Topics: (NA)

Serial	Experiment	Laboratory hrs.
1st	NA	---

6. *Matrix of Course Objective and LOs*

Course Learning Objectives	Learning Outcomes (LOs)					
	LO1	LO2	LO3	LO4	LO5	LO6
CLO 1	√		√			
CLO 2		√		√	√	√
CLO 3	√	√	√		√	√

7. *Course Teaching and Learning Methods:*

Teaching and Learning Methods	*Learning Outcome*(LOs)					
	General					CIV 349
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
Face-to-Face Lecture	√	√	√	√	√	√

Electronic Education	√	√	√	√	√	√
Tutorial/ Exercise	√	√	√	√	√	√
Group Discussion		√	√		√	√
Laboratory						
Site Visit						
Presentation						
Mini Project						
Research and Reporting					√	√
Brain Storming			√	√		√
Self-Learning			√		√	

8-Assessment

8.1 Course Assessment Methods:

Assessment Methods	***Learning Outcome*(LOs)**					
	General					**CIV 349**
	LO 1	**LO 2**	**LO 3**	**LO 4**	**LO 5**	**LO 6**
Written Exam	√	√	√	√	√	√
Electronic Exam		√			√	
Oral Exam	√	√	√	√	√	√
Quiz	√	√	√	√	√	√
Lab Exam						
Take-Home Exam						
Research Assignment			√	√	√	√
Reporting Assignment			√	√	√	√
Project Assignment						
In-Class Questions		√	√	√	√	√

8.2 Assessment Schedule and Grades Distribution:

Assessment Method	**Mark**	**Week**	**Exam Time**
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	7th	60 min.

End of term laboratory exam (*Lab*)	---	---	---
End of term Oral exam	---	---	---
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/ Electronic exams (*Term Work*)	**20**	According to the schedule	---
Report	**0**		---
Total Mark	**100**		

9- Facilities Required:

A- White Board.
B- Data Show.
C- MS Teams.

10 - List of References:

10.1 Course Notes:

- Lecture notes available (handed to students part by part).

10.2 Required Text Books and Additional References:

- Theory of structures Vol. 1, W.M.El-Dakhakhni, Dar El-Maaref, Cairo & Civil Engineering Department Library, H.T.I. of 10th of Ramadan.
- Advanced Theory of Structure, V.N.VAZIRAMI, Civil Engineering Department Library, H.T.I. of 10th of Ramadan.
- Analysis of Structures, V.N.VAZIRAMI, Civil Engineering Department Library, H.T.I. of 10th of Ramadan.
- Structural Analysis, J.C.MCCO., Civil Engineering Department Library, H.T.I. of 10th of Ramadan.
- Theory of Structures, R.S.KHURMI, Civil Engineering Department Library, H.T.I. of 10th of Ramadan.
- ASCE

10.3 Web Sites:

- **http://www.experiencefestival.com/structural_analysis_-_mechanics_of_materials_methods**
- **https://ka-engroup.com/2023/01/20/deflection-in-telecom-structure-analysis/**

Course Directors	Name	Signature
Teaching staff	Dr. Shymaa Mohamed Mukhtar	
Course coordinator	Dr. Morcos Farid Samaan	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	
Course Specification	
CIV 351: Pre-stressed Concrete	

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information							
Course Title:	Pre-stressed Concrete			**Course Code:**		CIV 351	
Program /level	Civil Engineering			**SENIOR (2)**			
Term/ Academic year:	Sep.-Jan. 2021 - 2022			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	-----
Pre-Requisite	Department Approval						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- Understanding the concept and ideas explicitly in terms of previous learning.
- Emphasize the relationship between conceptual understanding and design-solving approach.
- Provide students with a strong forecast of engineering-design practice.
- The students will be able to act professionally with sufficient knowledge of the analysis and design of pre-stressed concrete structures.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Analysis and design for pre-stressed structures.

CLO 2. Knowledge of Concepts and terminology of prestressing.

CLO 3. Knowledge of the manufacturing process of pre-stressed beams.

CLO 4. Analysis and design of pre-stressed cantilever beams.

CLO 5. Knowledge of uses of pre-stressed structures & methods prestressed continuous beams beam analysis.

3- Relationship between the course and the Competencies:

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 351
Program Academic Standards that the course contributes in achieving	A3, A4	B1, B2

4- *Mapping Course Los to NARS*

Field	Program (CBEs) that the course contributes in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A3.** Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	**LO 1.** Identify the concrete properties of flexure, shear members to solve engineering-based design problems by applying design formulas. **LO 2**. Conduct design parameters of flexure, shear and normal members. **LO 3**. Employ the Egyptian code in design of pre-stressed members.

	A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	**LO 7.** Utilize code practices and standard to design appropriate specials slabs system and beams.
COMPETENCIES of CIV 351	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 8**. Calculate the axial loads acting on sections. **LO 9**. Utilize the Egyptian code in the design and construction of pre-stressed concrete structures. **LO 10**. Select the appropriate structure system.
	B2. Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbors; or any other emerging field relevant to the discipline.	**LO 11.** Achieve optimum design of special pre-stressed slab-system and flexure, shear members. **LO 12**. Analyze the shear and torsion strength of concrete and the safe design of pre-stressed beam element.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Perform calculation notes on the design of pre-stressed concrete slabs and beam systems, Analysis of pre-stressed beams at ultimate stages of loading, Structural calculations of short pre-stressed cantilevers, Design of end blocks.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Introduction, different methods to obtain pre-stressed concrete (mechanical method, chemical method, electrical method), types of	3	2	1	---	**LO 1, LO 6, LO 7**

	pre-stressed concrete (linear or circular, internal or external, full or partial) pre-stressing.					
Week-2	Losses of pre-stressing force: initial losses (elastic shortening of concrete, anchorage slippage of cables, and friction), final losses (shrinkage, creep of concrete and relaxation of steel).	3	2	1	---	**LO 6, LO 7, LO 9**
Week-3	Distribution of stresses along beam length in transfer and final stages.	3	2	1	---	**LO 1, LO 11**
Week-4	Cable path, Beams with cantilevers (cases of max. +ve B. M., max. -ve B. M., and absolute B. M.).	3	2	1	---	**LO 1, LO 6 LO 7, LO 9**
Week5	Design of pre-stressed concrete sections using LEONHRDT curves (for symmetrical & unsymmetrical sections [R, box, I, U, and T sections].	3	2	1	---	**LO 1, LO 3, LO 11**
Week-6	Design of end blocks (in elevation and in plan), equivalent load due to pre-stressing.	3	2	1	---	**LO 1, LO 3, LO 5, LO 7, LO 10**
Week-7	**Midterm Exam.**					
Week-8	**Midterm Exam.**					
Week-9	Check for ultimate loads: check for ultimate moment.	3	2	1	---	**LO 2, LO4, LO 9**
Week-10	Check for ultimate loads: check for web shear and flexure shear.	3	2	1	---	**LO 3, LO 8**
Week-11	Pre-stressed continuous beams: primary moments, secondary moments, final moments, equivalent load due to pre-stressing force.	3	2	1	---	**LO 2, LO3**
Week-12	Pre-stressed continuous beams: Linear transportation of cables, T-line and C-line.	3	2	1	---	**LO 2, LO 8**
Week-13	Prestressed continuous beams: Check for web shear and flexure shear.	3	2	1	---	**LO 1, LO 3**
Week-14	Pre-stressed cantilever beams: Check for web shear and flexure shear.	3	2	1	---	**LO 1, LO 3**
Week 15	**Final Exam.**					

5.3. Experiment Topics:

Serial	Experiment	Laboratory hrs.
1st	NA	---

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)											
	General							CIV 351				
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO10	LO11	LO12
CLO 1	*	*				*	*		*	*		
CLO 2						*	*		*	*	*	
CLO 3	*	*	*									*
CLO 4				*	*	*	*		*	*		
CLO 5		*	*	*				*	*			
CLO 6			*				*		*	*		

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)											
	General							CIV 351				
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10	LO 11	LO 12
Face-to-Face Lecture	*	*	*	*	*	*	*	*	*	*	*	*
Online Education						*	*					
Tutorial/ Exercise	*	*	*	*	*	*	*	*	*	*	*	*
Group Discussion				*	*							
Laboratory												
Site Visit												
Presentation				*	*	*	*	*	*	*		
Mini Project				*	*	*	*	*	*	*		
Research and Reporting	*		*			*	*	*	*			
Brain Storming				*	*					*	*	
Self-Learning												*

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)											
	General							CIV 351				
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10	LO 11	LO 12
Written Exam	*	*	*	*	*	*	*	*	*	*	*	*
Online Exam												
Oral Exam												
Quiz												
Lab Exam												
Take-Home Exam												
Research Assignment	*				*	*	*					
Reporting Assignment	*	*	*	*	*			*				
Project Assignment		*	*	*		*	*	*	*	*		
In-Class Questions												

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**25**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**15**	According to the schedule	---
Total Mark	**100**		

9- *Facilities Required:*

A- White board
B- Data show
C- MS Teams

10- *List of References:*

10.1. Course Notes:

- Lecture notes

10.2. Required Text Books and Additional References:

- Design of reinforced concrete structures: Dr. M. Goneem
- Reinforced Concrete: Park and Puly
- Design and construction of reinforced concrete structures ECP-203-2018
- Loads applied on building ECP-208

10.3. Recommended Books:

- ACI-318: American concrete institure (American code for design of reinforced concrete structures.
- ASCE: American socaity of civil Engineering.
- BS-8110: British code for design of reinforced concrete structures.

10.4. Web Sites:

- **https://dokumen.tips/documents/design-of-reinforced-concrete-structure-volume-1-dr1-mashhour-a-ghoneim.html**
- **http://www.hbrc.edu.eg/**
- **https://www.concrete.org/middleeast.aspx**

Course Directors	Name	Signature
Teaching staff	Dr. Mohamed Asran	
Course coordinator	Prof. Essam Khalifa	
Program Coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 353: Advanced Reinforced Concrete

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Advanced Reinforced Concrete			**Course Code:**		CIV 353	
Program / level	Civil Engineering			**SENIOR (2)**			
Term/ Academic year:	Sep.-Jan. 2021 - 2022			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	-----
Pre-Requisite	Department Approval						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- Understanding the concept and ideas explicitly in terms of previous learning.
- Emphasize the relationship between conceptual understanding and design-solving approach.
- Provide students with a strong forecast of engineering-design practice.
- To provide sufficient knowledge of the last versions of the most common design codes for concrete structure (Egyptian Code: ECP 203-2018, American Concrete Institute: ACI 318-05, and the British Standard 8110-03.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Analysis and design different sections using these codes.

CLO 2. Knowledge of Concepts and terminology of these codes.

CLO 3. Knowledge of Details and philosophy of these codes.

CLO 4. Analysis and design different elements using these codes.

CLO 5. Knowledge of uses of structures & methods of beam analysis.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 153
Program Academic Standards that the course contributes in achieving	A3, A4	B1, B2

3- Mapping Course Los to NARS

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A3.** Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	**LO 1.** Identify the concrete properties of flexure, torsion members to solve engineering-based design problems by applying design formulas. **LO 2**. Conduct design parameters of flexure, torsion, shear and normal members. **LO 3**. Employ the different codes in design of flexure, torsion, shear and normal members.

	A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	**LO 4**. List the design methodologies for design of columns. **LO 5.** Describe Deep flexural members.
		LO 6. Apply design process of reinforced concrete flat and hollow block slabs system to produce cost-effective design. **LO 7.** Utilize code practices and standard to design appropriate specials slabs system, column and stairs.
COMPETENCIES of CIV 244	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 8**. Calculate the axial loads acting on columns. **LO 9**. Utilize the Egyptian code in design and construction of reinforced concrete structures. **LO 10**. Select appropriate structure system.
	B2. Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbors; or any other emerging field relevant to the discipline.	**LO 11.** Achieve optimum design of special Shear friction, brackets, corbels and beam ledges. **LO 12**. Analyse flexure and axial load, design for biaxial loading, design for slenderness effects.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Perform calculation notes on the design of pre-stressed concrete slabs and beam systems, Analysis of pre-stressed beams at ultimate stages of loading, Structural calculations of short pre-stressed cantilevers, Design of end blocks.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			LOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction, scope, philosophy of codes, general requirements, materials and concrete quality.	3	2	1	---	**LO 1, LO 6, LO 7**
Week-2	Details of reinforcement, development and splices of reinforcement, design methods and strength requirements, general principles of strength design.	3	2	1	---	**LO 6, LO 7, LO 9**
Week-3	Distribution of flexural reinforcement, deflections, moment redistribution, design for flexure.	3	2	1	---	**LO 1, LO 11**
Week-4	Design for flexure and axial load, design for biaxial loading, design for slenderness effects.	3	2	1	---	**LO 1, LO 6 LO 7, LO 9**
Week5	Design for shear and torsion.	3	2	1	---	**LO 1, LO 3, LO 11**
Week-6	Shear friction, brackets, corbels and beam ledges	3	2	1	---	**LO 1, LO 3, LO 5, LO 7, LO 10**
Week-7	**Midterm Exam.**					
Week-8	**Midterm Exam.**					
Week-9	Deep flexural members.	3	2	1	---	**LO 2, LO4, LO 9, LO 12**
Week-10	Flat slabs: direct design method, equivalent frame method.	3	2	1	---	**LO 3, LO 8**
Week-11	Special provisions for seismic design	3	2	1	---	**LO 2, LO3**
Week-12	Pre-stressed concrete.	3	2	1	---	**LO 2, LO 8**
Week-13	Precast concrete.	3	2	1	---	**LO 1, LO 3**

Week-14	Lateral loads on structures.	3	2	1	---	**LO 1, LO 3**
Week 15	**Final Exam.**					

5.3. Experiment Topics:

Serial	Experiment	Laboratory hrs.
1st	NA	---

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)											
	General							CIV 353				
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO10	LO11	LO12
CLO 1	*	*				*	*		*	*		
CLO 2						*	*		*	*	*	
CLO 3	*	*	*									*
CLO 4				*	*	*	*		*	*		
CLO 5		*	*	*				*	*			
CLO 6			*				*		*	*		

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome* (LOs)											
	General							CIV 353				
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10	LO 11	LO 12
Face-to-Face Lecture	*	*	*	*	*	*	*	*	*	*	*	*
Online Education						*	*					
Tutorial/ Exercise	*	*	*	*	*	*	*	*	*	*	*	*
Group Discussion				*	*							
Laboratory												
Site Visit												
Presentation				*	*	*	*	*	*	*		
Mini Project				*	*	*	*	*	*	*		
Research and Reporting	*		*			*	*	*	*			
Brain Storming				*	*					*	*	
Self-Learning												*

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome* (LOs)											
	General							CIV 353				
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10	LO 11	LO 12
Written Exam	*	*	*	*	*	*	*	*	*	*	*	*
Online Exam												
Oral Exam												
Quiz												
Lab Exam												
Take-Home Exam												
Research Assignment	*				*	*	*					
Reporting Assignment	*	*	*	*	*			*				
Project Assignment		*	*	*		*	*	*	*	*		
In-Class Questions												

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**25**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**15**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- White board
B- Data show
C- MS Teams

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Textbooks and Additional References:

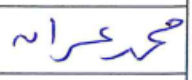
- Design of reinforced concrete structures: Dr. M. Goneem
- Reinforced Concrete: Park and Puly
- Hilal, M. , Fundamentals of Reinforced and Prestressed Concrete
- Design and construction of reinforced concrete structures ECP-203-2018
- Loads applied on building ECP-208
- ECP 203-2018
- ACI 318-2005
- BS 8110-2003

10.3. Recommended Books:

- ACI-318: American concrete institute (American code for design of reinforced concrete structures.
- ASCE: American society of civil Engineering.
- BS-8110: British code for design of reinforced concrete structures.

10.4. Web Sites:

- **https://dokumen.tips/documents/design-of-reinforced-concrete-structure-volume-1-dr1-mashhour-a-ghoneim.html**
- **http://www.hbrc.edu.eg/**
- **https://www.concrete.org/middleeast.aspx**

Course Directors	Name	Signature
Teaching staff	Dr. Mohamed Asran	
Course coordinator	Prof. Essam Khalifa	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	
Course Specification	
CIV 355: Bridge Engineering	

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information							
Course Title:	Bridge Engineering			**Course Code:**		CIV 355	
Program / level	Civil Engineering			Senior (2)			
Term/ Academic year:	OCT-Jan2023-2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	----
Pre-Requisite	Department Approval						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- To build an understanding of concepts and ideas explicitly in terms of previous learning.
- To emphasize the relationship between conceptual understanding and problems solving approaches for Bridge engineering.
- To provide students with a strong foretaste of engineering practices

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO1. Understand sufficient knowledge of analysis and design of bridge engineering**.**

CLO2: Use the Previous design procedure to understand. Fundamental behavior and practical design of shallow superstructures, with emphasis on slab-on-girder deck systems.

CLO3: Study the different methods for Design of composite sections.

CLO4: identify the main steps to Use of relevant codes.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of Civil
Program Academic Standards that the course contributes in achieving	A3, A4, A10	B1, B2, B3

4- *Mapping Course Los to NARS*

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A3.** Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	**LO 1.** Discover all the information on Types and components of bridges
	A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	**LO 2.** Conduct analysis of bridges and evaluate the Loads on bridges.

	A10. Acquire and apply new knowledge, and practice self, lifelong and other learning strategies.	**LO 3.** Choose the suitable method to implement the. Fundamental behavior and practical design of shallow superstructures, with emphasis on slab-on-girder deck systems
COMPETENCIES of CIV 355	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 4.** Plan to use different Use of relevant codes. .
	B2. Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbors; or any other emerging field relevant to the discipline.	**LO 5**. Use procedure of design of the composite sections.
	B3. Plan and manage construction processes; address construction defects, instability and quality issues; maintain safety measures in construction and materials; and assess environmental impacts of projects.	**LO 6.** Predict the required design section using relevant codes. **LO 7.** Determine the required. Bridge substructures.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Types and components of bridges. Loads on bridges. Fundamental behavior and practical design of shallow superstructures, with emphasis on slab-on-girder deck systems. Design of composite sections. Bridge substructures. Bridge rating. Use of relevant codes.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Credits hour*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Types and components of bridges according to material (timber, R.C. , Prestressed concrete, steel, and cable stayed) bridges & according to function (foot, roadway, and road way) bridges	3	2	1	0	**LO 1**
Week -2	Types and components of bridges, Classification according to cross section type: slab type (solid, hollow core, and cellular) slabs, girder type (R.C. and Prestressed concrete), and box girders	3	2	1	0	**LO 1**
Week -3	Statical system: Determinate (simple, floating bay, three hinged frame or arch).	3	2	1	0	**LO 4**
Week- 4	Statical system: Indeterminate (continuous spans, frames, two hinged arch, cable stayed, and suspension) bridges.	3	2	1	0	**LO 4**
Week -5	Sub-structures: Piers [walls, columns (simple & multiple)] and abutments (solid walls, spill-through, and piles).	3	2	1	0	**LO 6**
Week -6	Determine the loads on bridges, superimposed loads) , live loads, breaking force, centrifugal force					**LO 6**
Week-7	**Midterm Exam.**					
Week-8	Fundamental behavior and practical design of shallow superstructures	3	2	1	0	**LO3, LO5**
Week-9	Discuss the types of slab-on-girder deck systems for bridge system	3	2	1	0	**LO 7**
Week -10	Design of composite sections-P1	3	2	1	0	**LO 7**
Week-11	Design of composite sections-P2	3	2	1	0	**LO 7**
Week-12	Design of Bridge substructures components	3	2	1	0	**LO 2**
Week-13	Use of relevant local codes.	3	2	1	0	**LO2**

Week-14	Use of relevant international codes.	3	2	1	0	**LO2**
Week 15	**Final Exam.**					

5.3. Experiment Topics: (Not applicable)

6- Matrix of Course Objective and Los

Course Learning Objectives	**Learning Outcomes (LOs)**						
	General			**CIV 355**			
	LO 1	**LO 2**	**LO 3**	**LO 4**	**LO 5**	**LO 6**	**LO 7**
CLO 1	√						
CLO 2				√	√	√	
CLO 3			√				√
CLO 4		√					

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	**Learning Outcome(LOs)**						
	General			**CIV 355**			
	LO 1	**LO 2**	**LO 3**	**LO 4**	**LO 5**	**LO 6**	**LO 7**
Face-to-Face Lecture	√	√	√	√	√	√	√
Online Education			√	√	√		
Tutorial/ Exercise	√	√	√	√	√	√	√
Group Discussion							
Laboratory							
Site Visit							
Presentation							

Mini Project				√			
Research and Reporting		√					
Brain Storming	√		√		√		
Self-Learning	√						

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	***Learning Outcome*(LOs)**						
	General				**CIV 355**		
	LO 1	**LO 2**	**LO 3**	**LO 4**	**LO 5**	**LO 6**	**LO7**
Written Exam	√	√	√	√	√	√	√
Online Exam							
Oral Exam							
Quiz	√	√	√	√	√	√	√
Lab Exam							
Take-Home Exam							
Research Assignment							
Reporting Assignment							
Mini Project				√			
In-Class Questions	√	√	√	√	√	√	√

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	**Mark**	**Week**	**Exam Time**
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	50 min.
End of term laboratory exam (*Lab*)	**-**	14th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**20**	weekly	---

Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**	According to the schedule	**90 min.**

9- Facilities Required:

A- White board
B- Projector
C- Egyptian code

10- List of References:

10.1. Course Notes:

- Lecture notes.

10.2. Required Text Books and Additional References:

1. Baker, R. M., and Puckett, J. A., "DESIGN OF HIGHWAY BRIDGES - Based on AASHTO LRFD, Bridge Design Specifications.

10.3. Recommended Books:

1. Baker, R. M., and Puckett, J. A., "DESIGN OF HIGHWAY BRIDGES - Based on AASHTO LRFD, Bridge Design Specifications
2. Egyptian Code.

Course Directors	Name	Signature
Teaching staff	Dr. Mohamed Fahmy	
Course coordinator	Dr. Morcos Farid Samaan	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	

2023/2024 Date of approval

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 357: Quality Control of Construction Materials

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information							
Course Title:	Quality Control of Construction Materials			**Course Code:**		CIV 357	
Program /Level	Civil Engineering			SENIOR (2)			
Term/ Academic year:	OCT-Jan 2023-2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	0
Pre-Requisite	Department Approval						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- Principles and practices of the construction material specifications and test procedures
- Learn the statistical parameters and distributions needed for making statistical analysis to measure the variability of construction materials.
- Studying reliability as an important statistical tool for making reliability-based design codes
- To learn methods for the development of quality assurance specifications and acceptance criteria.

2- Course Learning Objectives (CLO):

At the end of this course, the student should be able to:

CLO 1. Study the statistical parameters and distributions needed for making statistical analysis to measure the variability of construction materials

CLO 2. Study reliability as an important statistical tool for making reliability-based design codes.

CLO 3. Practice the application of the learned methods on field data. sampling, and product quality control

CLO 4. Study how to use specifications and test procedures to evaluate material characteristics.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	**COMPETENCIES of CIV 357**
Program Academic Standards that the course contributes to achieving	A2, A4, A9	B1, B3

4- Mapping Course Los to NARS

Field	Program (CIV) that the course contributes to achieving	Learning Outcomes(Los)
COMPETENCIES of ENGINEERING	**A2.** use statistical analyses and objective engineering judgment to draw conclusions.	**LO 1.** Conduct a comprehensive review of the specifications and test procedures. **LO 2.** Develop a comprehensive review on the construction material specifications. **LO3.** Conduct the basics required for quality control tests needed for construction material. **LO4.** Choose the proper statistical distribution for the material under consideration.
	A3. Utilize contemporary technologies, codes of practice and standards, quality guidelines for quality control analysis.	**LO 5**. Illustrates the four types of quality control process control, control charts, acceptance sampling, and product quality control. **LO 6**. Develop Sampling methods, data collection.
	A4. Use creative, innovative and flexible thinking to anticipate and respond to new situations in statical analysis.	**LO 7.** Apply statistical analysis to field data. **LO 8.** The design of computer programs for making statistical analysis and reliability calculations.
COMPETENCIES of CIV 357	**B1.** Applying a full range of civil engineering concepts and techniques for Select appropriate and sustainable technologies for construction of buildings	**LO 9.** Study the principles of Quality Control and Quality Assurance
	B3. Plan and manage instability and quality issues.	**LO 10.** Study the different quality Control charts Certificates and technical approvals.

5- Course Content:

5.1. Course Description (As indicated in the program Bylaw):

Construction material specifications and test procedures. Sampling methods, data collection, and statistical data distributions. Quality control charts. Development of quality assurance specifications and acceptance plans. Applications on field data.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			LOS Covered by Course
			Let.	Tut.	Lab.	
Week -1	Identify an introduction about Construction material specifications and test procedures	3	2	1	0	**LO 1**
Week-2	Specifications and test procedures	3	2	1	0	**LO2, LO3**
Week-3	Study of Construction material specifications and test procedures	3	2	1	0	**LO2, LO3**
Week-4	Study of Sampling methods, data collection, and statistical data distributions	3	2	1	0	**LO4, LO5, LO6**
Week5	Study of Sampling methods, data collection, and statistical data distributions	3	2	1	0	**LO4, LO5, LO6**
Week-6	Study of Sampling methods, data collection, and statistical data distributions	3	2	1	0	**LO4, LO5, LO6LO4, LO5**
Week-7	Revision before Midterm	3	2	1	0	**LO1, LO2, LO3, LO4**
Week-8	**Midterm Exam.**					
Week-9	Illustrate Quality control charts	3	2	1	0	**LO7, LO8**
Week-10	Monte Carlo simulation for measuring reliability	3	2	1	0	**LO7, LO8**
Week-11	Development for quality	3	2	1	0	**LO7, LO8**
Week-12	Application of field data	3	2	1	0	**LO7, LO8, LO9, LO10**
Week-13	Application of field data	3	2	1	0	**LO7, LO8, LO9, LO10**
Week-14	Revision	3	2	1	0	**LO4, LO5, LO6, LO7**
Week 15	**Final Exam**					

5.3. **Experiment Topics:**

- ***Not Applicable***

6- Matrix of Course Objectives and Los

Course Learning Objectives	*Learning Outcome(Los)*									
	General								CIV 357	
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO9	LO10
CLO 1	√	√			√	√	√			
CLO 2		√	√	√		√	√	√	√	√
CLO 3			√	√				√	√	√
CLO 4			√	√						

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	Learning Outcome (Los)									
	General								CIV 357	
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO9	LO10
Face-to-Face Lecture	√	√	√	√	√	√	√	√	√	√
Online Education										
Tutorial/ Exercise				√	√		√			
Group Discussion										
Laboratory										
Site Visit										
Presentation			√			√				
Mini Project							√	√		
Research and Reporting										
Brainstorming										
Self-Learning										

8. Assessment

8.1. Course Assessment Methods:

Assessment Methods	Learning Outcome (Los)									
	General					CIV 357				
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO9	LO10
Written Exam	√	√	√	√	√	√	√	√	√	√
Online Exam										
Oral Exam										
Quiz				√	√		√			
Lab Exam										
Take-Home Exam										
Research Assignment		√		√						
Reporting Assignment										
Project Assignment		√					√	√		
In-Class Questions									√	√

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End-of-term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9-Facilities Required:

A- Data Show (Projector).
B- White Board.
C- MS Teams.

10-List of References:

10.1. Course Notes:

- Lecture notes.

10.2. Recommended Books:

-Andrzej S. Nowak, Kevin R. Collins, Reliability of Structures, Routledge (Taylor & Francis Group), ISBN 9780367866273, 2013.
- Andrew V. Metcalfe, Statistics in Civil Engineering, Hodder Education Publishers, ISBN-10: 0340676604, 1997.

Course Directors	Name	Signature
Teaching staff		
Course coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Program Coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	
Course Specification	
CIV 359: Design of building systems	

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information							
Course Title:	Design of building systems			**Course Code:**		CIV 359	
Program /level	Civil Engineering			Senior (2)			
Term/ Academic year:	OCT-Jan2023-2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	----
Pre-Requisite	Civ 213-Civ 225- Civ 226						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- To build an understanding of concepts and ideas explicitly in terms of previous learning.
- To emphasize the relationship between conceptual understanding and problems solving approaches for Analysis and design for system elements
- To provide students with a strong foretaste of engineering practices.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO1. Understand sufficient knowledge of Types, functions and components of building systems.

CLO2: Use the Previous design procedure to Initiation of analysis-design process, Estimation of gravity, wind and earthquake loads, Load pattern combinations. Live load reduction

CLO1: Study the different methods for Design and detailing building system requirements.

CLO4: identify the main steps to Use Computer application revelent to design buildings.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 359
Program Academic Standards that the course contributes in achieving	A2, A4, A9	B1, B3

4- *Mapping Course Los to NARS*

Field	Program (CBEs) that the course contributes in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A2.** Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 1.** Discover all the information on Types , functions, and components of building systems. **LO 2.** Conduct analysis of design process, Estimation of gravity, wind and earthquake loads, Load pattern combinations.

	A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.	**LO 3.** Choose the suitable method to Design and detailing requirements of building System.
	A9. Use creative, innovative, and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	**LO. 4** Plan to use Force redistribution in R.C building system.
COMPETENCIES of CIV 359	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures, and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 5**. Use Computer application revelent to design buildings. **Lo 6.** Predict the required design section using relevant codes. .
	B3. Plan and manage construction processes; address construction defects, instability and quality issues; maintain safety measures in construction and materials; and assess environmental impacts of projects.	LO 7**.** Determine Design and detailing requirements.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Types, functions, and components of building systems; idealization. Initiation of analysis-design process. Estimation of gravity, wind and earthquake loads. Load pattern combinations. Live load reduction. Force redistribution in R.C. buildings. Design and detailing requirements. Computer application. Group term project

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Credits hour*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Introduction to different structural systems, components of building systems	3	2	1	0	**LO 1**
Week -2	Types, functions, and components of building systems	3	2	1	0	**LO 1**
Week -3 to Week- 4	Initiation of analysis-design process statical system, Traditional arched girder system; design and details-Paneled beam system.	3	2	1	0	**LO 4**
Week -5	Estimation of gravity, wind and earthquake loads. Load pattern combinations	3	2	1	0	**LO 6**
Week -6	Force redistribution in R.C. buildings					**LO 6**
Week-7	**Midterm Exam.**					
Week-8	Computer application.	3	2	1	0	**LO3, LO5**
Week-9 to Week -10	Design and detailing requirements of Pre-stressed flat slab system with wide spans design process.	3	2	1	0	**LO 7**
Week-11	Design and detailing requirements of shell structures and domes	3	2	1	0	**LO 7**
Week-12	Design and detailing requirements of shell structures and domes	3	2	1	0	**LO 2**
Week-13to Week-14-	Design and detailing requirements pre-cast concrete building system	3	2	1	0	**LO2**
Week 15	**Final Exam.**					

5.3. Experiment Topics: (Not applicable)

6- Matrix of Course Objective and Los

Course Learning Objectives	Learning Outcomes (LOs)						
	General				CIV 359		
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
CLO 1	√						
CLO 2				√	√	√	
CLO 3			√				√
CLO 4		√					

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	Learning Outcome (LOs)						
	General				CIV 359		
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
Face-to-Face Lecture	√	√	√	√	√	√	√
Online Education			√	√	√		
Tutorial/ Exercise	√	√	√	√	√	√	√
Group Discussion							
Laboratory							
Site Visit							
Presentation							
Mini Project				√			
Research and Reporting		√					
Brain Storming	√		√		√		
Self-Learning	√						

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)						
	General				Civ 359		
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO7
Written Exam	√	√	√	√	√	√	√
Online Exam							
Oral Exam							
Quiz	√	√	√	√	√	√	√
Lab Exam							
Take-Home Exam							
Research Assignment							
Reporting Assignment							
Mini Project				√			
In-Class Questions	√	√	√	√	√	√	√

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	50 min.
End of term laboratory exam (*Lab*)	**-**	14th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**	According to the schedule	**90 min.**

9- *Facilities Required:*

A- White board
B- Projector
C- Egyptian code

10- *List of References:*

10.1. Course Notes:

- Lecture notes.
- Design of reinforced concrete structures: Dr. M. Goneem
- Reinforced Concrete: Park and Puly
- Hilal, M. , Fundamentals of Reinforced and Prestressed Concrete
- Design and construction of reinforced concrete structures ECP-203-2018
- Loads applied on building ECP-208
- ECP 203-2018
- ACI 318-2005
- BS 8110-2003

10.2. Required Textbooks and Additional References:

- ACI-318: American concrete institute (American code for design of reinforced concrete structures.
- ASCE: American Society of civil Engineering.
  BS-8110: British code for design of reinforced concrete structures.

10.3 web sites … etc.

- **https://dokumen.tips/documents/design-of-reinforced-concrete-structure-volume-1-dr1-mashhour-a-ghoneim.html**
- **http://www.hbrc.edu.eg/**
- **https://www.concrete.org/middleeast.aspx**

Course Directors	Name	Signature
Teaching staff	Dr. Mohamed Asran	
Course coordinator	Prof. Essam Khalifa	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023-2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	
Course Specification	
CIV 361: Earthquake Resistant Design	

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

	A– Basic information							
	Course Title:	Earthquake Resistant Design			**Course Code:**		CIV 361	
	Program / level	Civil Engineering			Senior (2)			
OCT-Jan2023-2024	**Term/ Academic year:**	OCT-Jan2023-2024			**Credit Hours:**		2	
	Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	-----
	Pre-Requisite	Department Approval						
	Academic standards	(NARS 2018)						
	Bylaw Approval	2016						

1- Course Aims:

- To understand the fundamentals of structure dynamics and seismic design.
- To perform seismic analysis of buildings manually and using computer modeling.
- To apply the seismic provisions of the Egyptian code.
- To demonstrate the ability to apply the concept of capacity design.
- To apply the seismic analysis to design seismic-resistant steel and reinforced concrete buildings and structures.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO 1. Calculate seismic loads for different structures.

CLO 2. Evaluate dynamic effects in concrete and steel structures.

CLO 3. Recognize all possible seismic mechanisms of different structures.

CLO 4. Evaluate the basics of seismic analysis and design of buildings.

CLO 5. Develp seismic resistanse members within the stuctures.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 245
Program Academic Standards that the course contributes in achieving	A2,A8	B1,B2

4- *Mapping Course Los to NARS*

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A2.** Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 1.** Understanding of advanced concepts and theories, awareness of important current problems in the field of study, and understanding of computational and/or empirical methodologies to solve related problems.
		LO 2. Ability to apply knowledge in a rational way to analyze a particular problem. LO 3. Ability to use coherent approach to design a particular engineering system using existing design tools.

	A8. Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	**LO 4.** Discussing the mini-project output in front of the judging committee established from the course teachers and other students. Ability to communicate (oral and/or written) ideas, issues, results and conclusions clearly and effectively.
COMPETENCIES of CIV 361	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 5.** Able to select the suitable solving technique whether manual or using computer to solve seismic problems.
	B2. Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbors; or any other emerging field relevant to the discipline.	**LO 6**. Use procedure of design of the seismic effect.

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Seismicity, Code forces, distribution of shear and moments, dynamic effects, ductility; Seismic design in steel, concrete and masonry. Seismic analysis methods

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Earthquake Ground Motion Characteristics.	3	2	1	-	**LO 1.**
Week-2	Response of a Single Degree of Freedom System.	3	2	1	-	**LO 1. , LO 2.**

Week-3	Seismic Analysis of Multi Degrees of Freedom Structures.	3	2	1	-	**LO 1. , LO 2. , LO 3.**
Week-4	Code Procedures for Earthquake Resistant.	3	2	1	-	**LO 1. , LO 2. , LO 3.**
Week5	Seismic Analysis Using Computer Modeling.	3	2	1	-	**LO 1. , LO 2. , LO 3. , LO 5.**
Week-6	3D modeling for high-rise building subjected to earthquake loading	3	2	1	-	**LO 1. , LO 2. , LO 3.**
Week-7	Seismic behavior and design provisions of ductile moment resisting frames.	3	2	1	-	**LO 1. , LO 2. , LO 3.**
Week-8	**Midterm Exam.**					
Week-9	Seismic Design of Reinforced Concrete Buildings.	3	2	1	-	**LO 1. , LO 2. , LO 3. , LO 5. . , LO 6.**
Week-10	Seismic Behavior And Design Provisions of Ductile Moment Resisting Reinforced Concrete Frames.	3	2	1	-	**LO 1. , LO 2. , LO 3. , LO 5. . , LO 6.**
Week-11	Seismic Design of Steel Buildings.	3	2	1	-	**LO 1. , LO 2. , LO 3. , LO 5. . , LO 6.**
Week-12	Seismic Behavior And Design Provisions of Ductile Moment Resisting Steel Frames.	3	2	1	-	**LO 1. , LO 2. , LO 3. , LO 5. , LO 6.**
Week-13	Free and Forced vibrations.	3	2	1	-	**LO 1. , LO 2. , LO 3. , LO 5.**
Week-14	Introduction to Time History Analysis.	3	2	1	-	**LO 1. , LO 3. , LO 4. , LO 5.**
Week 15	**Final Exam.**					

5.3. Experiment Topics: (NA)

Serial	Experiment	Laboratory hrs.
1st	NA	

6- Matrix of Course Objective and LOs

Course Learning Objectives	Learning Outcomes (LOs)					
	LO1	LO2	LO3	LO4	LO5	LO6
CLO 1	√	√	√	√	√	
CLO 2	√	√			√	
CLO 3		√	√			
CLO 4				√	√	√
CLO 5		√	√	√	√	√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome*(LOs)					
	General				CIV 361	
	LO 1	LO 2	LO 3	LO 4	LO 5	LO6
Face-to-Face Lecture	√	√	√		√	√
Electronic Education	√	√	√		√	√
Tutorial/ Exercise	√	√	√		√	√
Group Discussion		√	√	√	√	√
Laboratory						
Site Visit						
Presentation			√	√	√	√
Mini Project			√	√	√	√
Research and Reporting			√	√	√	√
Brain Storming			√	√		
Self-Learning			√	√	√	√

8-Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)					
	General			CIV 361		
	LO 1	LO 2	LO 3	LO 4	LO 5	LO6
Written Exam	√	√	√		√	√
Electronic Exam	√	√	√		√	√
Oral Exam	√	√	√	√	√	√

Quiz	√	√	√		√	
Lab Exam						
Take-Home Exam						
Research Assignment			√	√	√	√
Reporting Assignment			√	√	√	√
Project Assignment				√		√
In-Class Questions		√	√		√	

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	7th	60 min.
End of term laboratory exam (*Lab*)	**---**	---	---
End of term Oral exam	**---**	---	---
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/ Electronic exams (*Term Work*)	**10**	According to the schedule	---
Report	**10**	14th	---
Total Mark	**100**		

8- Facilities Required:

A- White Board.
B- Data Show.

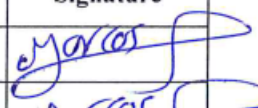
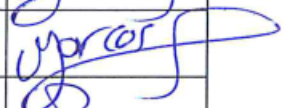
9- List of References:

10.1. Course Notes:

- Lecture notes available (handed to students part by part).

10.2. Required Text Books and Additional References:

- Chopra, A. K., DYNAMICS OF STRUCTURES Theory and Application to Earthquake Engineering.
- Sobaih M. E., Earthquake engineering (Volume 1 Seismic Analysis)

Course Directors	Name	Signature
Teaching staff	Dr. Morcos Farid Samaan	
Course coordinator	Dr. Morcos Farid Samaan	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 363: Structural Maintenance and Retrofitting

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Structural Maintenance and Retrofitting			**Course Code:**		CIV 363	
Program / level	Civil Engineering			SENIOR (2)			
Term/ Academic year:	OCT-Jan2023-2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	0
Pre-Requisite	Department Approval						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

- ***Course Aims:***

- To emphasize the relationship between conceptual understanding and problems solving approaches.
- To know the causes of defects and the methods and techniques for structures assessments.
- To evaluate the methods and techniques for retrofitting and to manipulate the data from technical inspections.
- To use data to perform full assessment and design steps.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1. Understand the difference between Maintenance, Repair, and Strengthening.

CLO 2. Understand Serviceability defects and structural defects, Passive and active cracks andmethodologies of repair.

CLO 3. Identify the Causes of structural defects.

CLO 4. To evaluate the most appropriate retrofitting techniques based on architectural,economic, environmental, and time efficiency parameters.

CLO 5. To apply the inspection techniques in order to evaluate and assess the required techniques and methods for repair and retrofitting of structures.

CLO 6. To use flexible thinking on deciding the most effective systems for retrofittingand strengthening of structural elements.

CLO 7. To select appropriate materials in the retrofitting or rehabilitation methodsused.

CLO 8. To achieve the optimum design, execution, and inspection until the retrofittingof structural element is complete.

3- Relationship between the course and the Competencies:

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	**COMPETENCIES of CIV 363**
Program Academic Standards that the coursecontributes in achieving	**A2, A3, A4, A9**	**B1, B2**

4- Mapping Course Los to NARS

Field	Program (CBEs) that the course contribute toachieving	Learning Outcomes (LOs)
	A2. Develop and conduct appropriate experimentation, analyze and interpret data, assess and evaluate findings, and engineering judgment to draw conclusions.	LO1. Conduct non-destructive filed tests for structuralelements. LO2. Analyze and interpret data from inspection process. LO3. Use objective engineering judgement to draw conclusions considering the most effective techniques.
	A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	LO4. Apply design process to produce cost, time,architectural, and environmental solutions that meet specified retrofitting, maintenance, or strengthening needs.
	A4. Utilize engineering technologies, codes of practice and standards, quality guidelines, health and safety requirements.	LO5. Utilize codes, and standards in the choice of concrete ingdts, retrofitting or strengthening elements.
	A9. Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	LO6. Use creative, innovative, and flexible thinking andacquire entrepreneurial and leadership skills to anticipate and respond to new situations during and after themaintenance, retrofitting, or strengthening program.
COMPETENCIES of CIV 363	**B1.** Select appropriate and sustainable technologies for retrofitting of buildings; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques.	LO7. Use testing of aggregates, cement, fresh concrete, and hard concrete as a requirement of properties and testing of materials.
	B2. Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures.	LO8. Achieve an optimum design of reinforced concrete and steel structures.

5.0. Course Content:

5.1. Course Description (As indicated in program Bylaw):

Repair, maintenance, or strengthening of concrete structures. Causes and positions of cracks. Materials used in repair, strengthening of structures and foundations. Repair and strengthening of steel structures.

5.2. Course Topics/hours/Los Matrix

WeekNo.	*Topic*	*total Hours*	*Contact hrs*			Los Coveredby Course
			Lec.	**Tut.**	**Lab.**	
Week -1	Introduction: difference between Maintenance, Repair, and Strengthening	3	2	1	0	LO3
Week-2	Serviceability defects and structural defects- (Non-destructive fields testing)	3	2	1	0	LO1
Week-3	Passive and active cracks and methodologies of repair- (non-destructive fields testing)	3	2	1	0	LO1
Week-4	Causes of structural defects - (non-destructive fields testing)	3	2	1	0	LO3
Week5	Inspection reports and field applications	3	2	1	0	LO1, LO2
Week-6	Actual case studies - (Non-destructive fields testing)	3	2	1	0	LO1
Week-7	Calculation sheet for strengthening of slabs using non-composite steel beams	3	2	1	0	LO2, LO3, LO3, LO5, LO6, LO7, LO8
Week-7	**Midterm Exam**					
Week-9	Calculation sheet for strengthening of slabs using composite sections	3	2	1	0	LO2, LO3, LO4, LO5, LO6, LO7, LO8
Week-10	Introduction to FRP (types- advantages- and disadvantages)	3	2	1	0	LO3
Week-11	Code review of FRP	3	2	1	0	LO4, LO5
Week-12	Examples of strengthening slabs using FRP in Shear	3	2	1	0	LO2, LO3, LO4, LO5, LO6, LO7, LO8
Week-13	Examples of strengthening slabs using FRP in Shear	3	2	1	0	LO2, LO3, LO4, LO5, LO6, LO7, LO8
Week-14	Examples of strengthening columns using FRP in compression	3	2	1	0	LO2, LO3, LO4, LO5, LO6, LO7, LO8
Week 15	**Final Exam**					

6- ***Matrix of Course Objective and Los***

Course Learning Objectives	Learning Outcomes (Los)							
	General						CIV 363	
	LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8
CLO 1			√					
CLO 2			√					
CLO 3	√	√	√					
CLO 4		√				√		√
CLO 5						√	√	√
CLO 6		√						√
CLO 7			√	√	√			
CLO 8				√	√	√	√	√

7- ***Course Teaching and Learning Methods:***

Teaching andLearning Methods	General						CIV 363	
	LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8
Face-to-FaceLecture	√	√	√	√	√	√	√	√
electronicEducation								
Tutorial/ Exercise				√	√			√
Group Discussion								
Laboratory								
Site Visit								
Presentation	√							
Mini Project								
Research and Reporting								
Brain Storming								
Self-Learning								

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	General							CIV 363	
	LO1	**LO2**	**LO3**	**LO4**	**LO5**	**LO6**	**LO7**	**LO8**	**LO9**
Written Exam	√	√	√	√	√	√	√	√	√
electronicExam	√	√							
Oral Exam									
Quiz	√	√							
Lab Exam									
Take-HomeExam									
Research Assignment							√		
Reporting Assignment			√						
Project Assignment									
In-Class Questions			√		√	√		√	

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Reports/presentation (*Term Work*)	**20**	---	---
Quizzes (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- White board
B- Data Show
C- MS teams

10- List of References:

10.1.Course Notes:

- Lecture notes

10.2.Required Textbooks and Additional References:

اسس تصميم واشتراطات التنفيذ لحماية المنشات ، اللجنة الدائمة، ISBN 5324K، 2000.

10.3.Recommended Books:

Stelios Antoniou, Seismic Retrofit of Existing Reinforced Concrete Buildings-ch4- Methods for Strengthening Reinforced Concrete Buildings, Wiley, https://doi.org/10.1002/9781119987352.ch4, 2023.

محمد عبد الله نجيب، اصلاح وحماية المنشأت الخرسانية المسلحة، دار الكتب العلمية ISBN 5620،2002.
شريف فهمى الشافعى ، الاساليب الفنية الحديثة لصيانة العناصرالا نشائية، ISBN 5629، 2003.

Course Directors	Name	Signature
Teaching staff	Ass. Prof. Sherif H. Al-Tersawy	
Course coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 364: Selected Topics in Concrete Design and Technology

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Selected Topics in Concrete Design and Technology			**Course Code:**		CIV 364	
Program / level	Civil Engineering			Senior (2)			
Term/ Academic year:	OCT-Jan2023-2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	0
Pre-Requisite	Department Approval						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- Understanding the application of statistical analysis of quality control and mix design of Special concrete and the most used methods of mix design of Special concrete.
- Studying the different kinds of Special concrete.
- Know different materials and techniques for concrete constructions repair

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1. Studying the properties of some kinds of special concrete

CLO 2. Cold and hot weather on concrete properties.

CLO 3. Design special concretes.

CLO 4. Quality control of production of concrete.

CLO 5. Modern curing techniques.

CLO 6. Selection and testing of materials used for repairing of concrete structures.

3- Relationship between the course and the Competencies:

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 364
Program Academic Standards that the course contributes in achieving	A3, A4	B1, B2

4- *Mapping Course Los to NARS*

Field	Program (CBEs) that the course contributes in achieving	Learning Outcomes(Los)
COMPETENCIES of ENGINEERING	**A3.** Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical, and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.x	**LO 1.** Identify fundamentals of special concrete **LO 2**. Formulate and understand mix design equations. **LO 3**. Apply engineering design processes to produce special concrete.
	A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	**LO 4**. Utilize codes, and standards in the choice of concrete ingredients and concrete manufacturing process. **LO 5**. Utilize codes, and standards in the choice of materials.
COMPETENCIES of CIV 364	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures, and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics,	**LO 6.** Select material properties according to design requirements and field conditions. **LO 7**. Use testing of materials used for repairing concrete structures

	Hydrology and Fluid Mechanics.	
	B2. Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures.	**LO 8.** Achieve an optimum design of structures using the special concrete during construction**.**

5- Course Content:

5.1 Course Description (As indicated in program Bylaw):

Design of special concrete mixes, curing methods, admixtures, fiber reinforced concrete, polymer concrete. Hot and cold weather concreting, concrete construction in hot weather with special reference to Middle Eastern constrains. Concrete deterioration, maintenance, and repairs. Precast concrete, concrete production.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*total Hours*	*Contact hrs*			**Los Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Studying the properties of high performance and high Strength concrete.	3	2	1	0	**LO 1, LO 2.**
Week-2	Studying the properties of high performance and high Strength concrete. (Cont.).	3	2	1	0	**LO 1, LO 2.**
Week-3	Modern curing techniques and it's applications	3	2	1	0	**LO 1, LO 2., LO 4**
Week-4	Cold weather concreting	3	2	1	0	**LO 4, LO 6.**
Week5	Hot weather concreting	3	2	1	0	**LO 4, LO 6.**
Week-6	Properties of materials used in repair	3	2	1	0	**LO 7**
Week-7	Properties of materials used in repair (Cont.)	3	2	1	0	**LO 7**
Week-8	**Midterm exam.**					
Week-9	Manufacturing of pre-cast concrete	3	2	1	0	**LO 3, LO 4.**

Week-10	Variability of materials	3	2	1	0	**LO 5.**
Week-11	Statistical Distribution of materials	3	2	1	0	**LO 5.**
Week-12	Mix design of special concrete	3	2	1	0	**LO 8.**
Week-13	Quality control of materials	3	2	1	0	**LO 5.**
Week-14	Quality control of materials (Cont.)	3	2	1	0	**LO 5.**
Week-15	**Final Exam**					

5.3. Experiment Topics:

Serial	Experiment	Laboratory hrs.
1st	physical and mechanical tests of concrete materials.	1
2nd	Effect of admixtures on fresh concrete properties	1
3ed	Curing methods	1

6- Matrix of Course Objective and Los

Course Learning Objectives	Learning Outcomes (LOs)							
	General					CIV 364		
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8
CLO 1	√		√					√
CLO 2				√	√	√		
CLO 3		√	√					
CLO 4				√	√	√		
CLO 5				√	√	√		
CLO 6				√	√	√	√	

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	Learning Outcomes (LOs)							
	General					CIV 364		
	LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8
Face-to-Face Lecture	√	√	√	√	√	√	√	√
electronic Education								
Tutorial/ Exercise								√
Group Discussion		√				√		√
Laboratory							√	
Site Visit								
Presentation								
Mini Project								
Research and Reporting	√			√				
Brain Storming								
Self-Learning				√				

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	Learning Outcomes (LOs)							
	General					CIV 364		
	LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8
Written Exam	√	√	√	√	√	√	√	√
electronic Exam								
Oral Exam								
Quiz	√	√	√	√	√	√	√	√
Lab Exam		√					√	
Take-Home Exam								
Research Assignment	√	√						
Reporting Assignment								
Project Assignment								
In-Class Questions								

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Reports/presentation (*Term Work*)	**20**	---	---
Quizzes (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- White board
B- Data Show
C- Materials Lab
D- MS teams

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Textbooks and Additional References:

- 1 أ. د. محمود امام تكنولوجيا الخرسانة
- 2 أ. د. محمود امام. تكنولوجيا الخرسانة

الملحق الثالث للكود المصرى (دليل الإختبارلت ا ل م ع م ل ية)

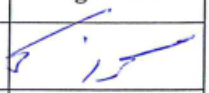
- الكود المصرى للتصميم وتنفيذ المنشآ

10.3. Recommended Books:

- Design **and** Control **of.** ConcreteMixtures**. fourteenth** edition **by Steven H. Kosmatka, Beatrix Kerkhoff, and William C. Panarese. 5420 Old Orchar**
- Concrete solutions, proceedings of concrete solutions, 6th international conference on concrete repair, thessaloniki, greece, 20–23 june 2016michael g. grantham

10.4. Web Sites:

https://www.pdfdrive.com/concrete-technology-books.html

Course Directors	Name	Signature
Teaching staff	Dr. Sahar Zakey	
Course coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Program Coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 371: Earth Dams

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Earth Dams			**Course Code:**		CIV 371	
Program / level	Civil Engineering			**senior**			
Term/ Academic year:	OCT-Jan2023-2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	0
Pre-Requisite	CIV 243-CIV 224						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

-This course provides the essential items to the choice of type of dam, stability analysis, compaction of fill, stress distribution and deformation within the dam the foundation strata, steady seepage and rapid draw down.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1. List types of earth dams. Explain Compaction of fill. Identify Soil permeability, water seepage and rapid draw down. Evaluate the drained and undrained stress-strain behavior.

CLO 2 Discuss the overall view of the slope stability with drained conditions. Transform the skillful of evaluating the stress-strain behavior of earth dams with drained and undrained conditions.

CLO 3. Developing in the student's analysis, problem identification, capability of creative thinking and obtaining solutions in the field of earth dams.

3- Relationship between the course and the Competencies:

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 371
Program Academic Standards that the course contributes in achieving	A2 , A3 , A10	B1, B2

4- Mapping Course Los to NARS

Field	Program (CBEs) that the course contributes in achieving	Learning Outcomes (LOs)
COMPETENCIES of ENGINEERING	**A10.** Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.	**LO 1.** Solve problem of earth dams' structures. Develop logical thinking
	A2. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 2**. Use mathematical, and theories formulae to Identify Methods of analysis, compaction of fill
	A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	**LO 3**. Apply the different solutions of expected and unexpected technical problems earth dams' structures
COMPETENCIES of CIV 371	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 4**. Select appropriate sustainable **Earth Dams**

	B2. Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbors; or any other emerging field relevant to the discipline	**LO 5.** Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; in Hydrology engineering structures.

5-Course Content:

5.1Course Description (As indicated in program Bylaw):

The principles of design and stability analysis. The choice of type of dam. Dam and highway fills. Compaction and water content. Stress distribution and deformation within the dam and the foundation strata. The circular arc method of stability analysis. Steady seepage and rapid draw down.

5.2-Course Topics/hours/Los Matrix

week	Topic	No. of hours	Lecture	Tutorial	LOs Covered by Course
1	Types of dams.	3	2	1	**LO 1, LO 2**
2	The principles of design.	3	2	1	**LO 1, LO 2**
3	Stability analysis.	3	2	1	**LO 1, LO 2**
4	Compaction and water content control.	3	2	1	**LO 2, LO 3**
5	Compaction and water content control (follow).	3	2	1	**LO 2, LO 3**
6	Permeability of soil	3	2	1	**LO 2, LO 3**
7	Permeability of soil (follow).	3	2- Exam	1	**LO 2, LO 3**
8	Mid term				
9	Stress distribution and deformation within the dam the foundation strata	3	2	1	**LO 2, LO 3 LO 4, LO 5**
10	Stress distribution and deformation within the dam the foundation strata (follow)	3	2	1	**LO 2, LO 3 LO 4, LO 5**
11	Stress distribution and deformation within the dam the foundation strata (follow)	3	2	1	**LO 2, LO 3 LO 4, LO 5**
12	Stress distribution and deformation within the dam the foundation strata (follow)	3	2	1	**LO 2, LO 3 LO 4, LO 5**

13	Water Seepage and rapid draw down.	3	2	1	**LO 2, LO 3 LO 4, LO 5**
14	Water Seepage and rapid draw down (follow).	3	2	1	**LO 4, LO 5 LO 4, LO 5**
15	Final term exam	2	--	--	--

6- Matrix of Course Objective and LOs

Course Learning Objectives	**Learning Outcomes (LOs**				
	General			**CIV 371**	
	LO 1	**LO 2**	**LO 3**	**LO 4**	**LO 5**
CLO 1	√	√	√		
CLO 2				√	√
CLO 3				√	√
CLO 4				√	√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	***Learning Outcome* (LOs) General CIV 371**				
	General			**CIV**	
	LO 1	**LO 2**	**LO 3**	**LO 4**	**LO 5**
Face-to-Face Lecture	√	√	√	√	√
Tutorial/ Exercise	√	√	√	√	√
Mini Project	√	√	√	√	√
Research and Reporting	√	√	√	√	
Self-Learning	√	√	√	√	√

8- Assessment

8.1 Course Assessment Methods:

Assessment Methods	***Learning Outcome* (LOs) General CIV**	
	General	**CIV 371**

	LO 1	LO 2	LO 3	LO 4	LO 5
Written Exam		√	√	√	√
Quiz		√	√	√	√
Research Assignment	√	√	√		
Reporting Assignment	√		√	√	√
Project Assignment	√	√	√	√	√
In-Class Questions	√	√	√	√	√

8.2-Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Reports/presentation (*Term Work*)	**20**	---	---
Quizzes (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9-Facilities Required:

A- White board
B- Data Show
C- MS teams

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Textbooks and Additional References:

1. Christian Kutzner, " Earth and Rockfill Dams Principles for Design and Construction", ISBN 9789054106821, 1977

10.3.Recommended Books:

1. HENRY H. THOMAS, “THE ENGINEERING OF LARGE DAMS part 1”ISBN 9780835769846 ;1976
2. Egyptian Code

10.3. Recommended web site:

1. https://britishdams.org/about-dams/dam-information/designing-dams/

Course Directors	Name	Signature
Teaching staff	Dr. Ahmed Nabil	
Course coordinator	Dr. Ahmed Nabil	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 373: Geology and Site Investigation

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Geology and Site Investigation			**Course Code:**		CIV 373	
Program / level	Civil Engineering			Senior (2)			
Term/ Academic year:	OCT-Jan2023-2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	----
Pre-Requisite	Department approval						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- To build an understanding of concepts and ideas explicitly in terms of previous learning.
- To emphasize the relationship between conceptual understanding and problems solving approaches.
- To provide students with a strong foretaste of engineering practices.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to :

CLO1:, Understand the purpose of Site Exploration.

CLO2: Use the content of the soil report to understand the soil types, settlements, and properties.

CLO3: Study the different methods of advancing boreholes and get soil samples.

CLO4: identify the main steps to implement the field.

3- Relationship between the course and the Competencies :

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of Civil
Program Academic Standards that the course contributes in achieving	A2,A5,A6	B1

4- *Mapping Course Los to NARS*

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
	A2. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 1.** Discover all the information on foundation soil from the engineering standpoint of view. **LO 2**. Conduct field tests on foundation soil and evaluate the gained data to get the physical properties of the soil.
	A5. Practice research techniques and methods of investigation as an inherent part of learning.	**LO 3.** Choose the suitable method to implement the site exploration

	A6. Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements	**LO. 4** Plan the number and depth of boreholes on the simple sketch of the project layout.
COMPETENCIES of Civil	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO 5**. Use the physical measurement from field tests to identify soil subsurface types. **Lo 6.** Predict foundation soil settlement under the isolated footing LO 7. Determine the required soil sample types to perform laboratory soil tests .

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*total hour*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Purpose of Site Investigation	3	2	1		**LO 1**
Week -2	Subsurface Exploration Program	3	2	1		**LO 1**
Week -3	Determine the depth, Number and Distribution of Boreholes	3	2	1		**LO 4**
Week- 4	Examples on determination of number and depth of boreholes	3	2	1		**LO 4**
Week -5	Predict the different types of settlement of foundation soil.	3	2	1		**LO 6**

Week -6	Continue the topic in week 5	3	2	1		**LO 6**
Week-7	**Midterm Exam.**					
Week-8	Identify The main components of site investigation report. Methods of Advancing Boreholes: 1. Test Pits (Open Pits) 2. Manual Boreholes 3. Continuous Flight Auger 4. Wash Boring 5. Percussion Drilling	3	2	1		**LO3, LO5**
Week-9	Discuss the types of Soil Samples 1. Disturbed sample 2. Undisturbed sample The laboratory test types carried out on each type	3	2	1		**LO 7**
Week-10	Methods of Soil Sampling	3	2	1		**LO 7**
Week-11	Field test: SPT & CPT	3	2	1		**LO 2**
Week-12	Field test: CPT	3	2	1		**LO 2**
Week-13	Plate loading test and vane shear test	3	2	1		**LO2**
Week-14	Geophysical investigation	3	2	1		**LO3, LO5**
Week 15	**Final Exam.**					

5.3. Experiment Topics: (Not applicable)

6- Matrix of Course Objective and Los

Course Learning Objectives	Learning Outcomes (LOs)						
	General				CIV 373		
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
CLO1	√						
CLO2				√	√	√	
CLO3			√				√
CLO4		√					

7 Course Teaching and Learning Methods:

Teaching and Learning Methods	Learning Outcome (LOs)						
	General				CIV 373		
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7
Face-to-Face Lecture	√	√	√	√	√	√	√
Online Education			√	√	√		
Tutorial/ Exercise	√	√	√	√	√	√	√
Group Discussion							
Laboratory							
Site Visit							
Presentation							
Mini Project				√			
Research and Reporting		√					
Brain Storming	√		√		√		
Self-Learning	√						

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)						
	General				CIV 373		
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO7
Written Exam	√	√	√	√	√	√	√
Online Exam							
Oral Exam							
Quiz	√	√	√	√	√	√	√
Lab Exam							
Take-Home Exam							
Research Assignment							
Reporting Assignment							
Mini Project				√			
In-Class Questions	√	√	√	√	√	√	√

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	50 min.
End of term laboratory exam (*Lab*)	**20**	14th	30 min
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**10**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**10**	According to the schedule	---
Total Mark	**100**		

9- *Facilities Required:*

A- White board
B- Projector
C- Egyptian code

10- *List of References:*

10.1. Course Notes:

- Lecture notes

10.2. Required Text Books and Additional References:

1. Myint Win Bo " Geotechnical Ground Investigation", ISBN 978-981-12-3674-7, 2022

10.3. Recommended Books:

1. CR Clayton , MC Matthews , and NE Simons, "Site Investigation", Wiley-Blackwell, ISBN 978-0632029082, 1995
2. Egyptian Code.

10.4. Web Sites:

- https://www.crestrealestate.com/the-importance-of-site-investigation-with-new-construction/

Course Directors	Name	Signature
Teaching staff	Dr. Ahmed Nabil	
Course coordinator	Dr. Ahmed Nabil	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023-2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 375: Rock Mechanics

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Rock Mechanics			**Course Code:**		CIV 375	
Program / level	Civil Engineering			Bachelor			
Term/ Academic year:	Oct. – Jan. 2022 – 2023			**Credit Hours:**		2	
Contact Hours:	**Lecture:**	2		**Tutorial:**	1	**Laboratories:**	
Pre-Requisite	Department Approval						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- *Course Aims:*

1-To build an understanding of the different types of rocks.

2-To emphasize the application of rock mechanics to civil engineering problems, characteristics of local limestone.

3- To provide the essential items to geological and mechanical classification of rocks, physical and mechanical properties of rocks (elastic, brittle and creep behavior), effect of stresses on rocks and foundation tests in rocks (measurement of static and dynamic properties in field and laboratory)

2- ***Course Learning Objectives (CLO):***

At the end of this course, student should be able to :

CLO1: Evaluation of different types of rocks.

CLO2: Discussing the overall view of the different types of rocks on various practical civil engineering problems.

3- ***Relationship between the course and the Competencies:***

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of Civil
Program Academic Standards that the course contributes in achieving	A2, A3	B1, B3

4- Mapping Course Los to NARS

Field	Program (CBEs) that the course contributes in achieving	Learning Outcomes (LOs)
	A2. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess, and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO1.** Identify the geological and mechanical types of rocks and characteristics of local limestone. **LO2.** Evaluate the different types of rocks.
	A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical, and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	**LO3.** Apply in the student's analysis, problem identification, capability of creative thinking and obtaining solutions in the field of rock mechanics.

COMPETENCIES of Civil	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures, and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics. .	**LO4.** Test the foundation in rocks.
	B3. Plan and manage construction processes; address construction defects, instability, and quality issues; maintain safety measures in construction and materials; and assess environmental impacts of projects	**LO5.** Address the overall view of the different types of rocks on various practical civil engineering problems.

5-***Course Content:***

5.1. Course Description (As indicated in program Bylaw):

Physical basis of strength in rock. Elastic, plastic, brittle and creep behavior. Measurement of static and dynamic properties in field and laboratory. Application of rock mechanics to civil engineering problems. General characteristics of Local limestone.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Credits hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Geological classification of rocks	3	2	1	-	**LO1**
Week -2	Geological classification of rocks (follow)	3	2	1	-	**LO2**
Week -3	Mechanical classification of rocks and characteristics of local limestone	3	2	1	-	**LO3**
Week -4	Mechanical classification of rocks and characteristics of local limestone (follow)	3	2	1	-	**LO4**
Week -5	Mineralogical composition and rock structures.	3	2	1	-	**LO1**
Week -6	Mineralogical composition and rock structures (follow)	3	-	1	-	**LO2**
Week -7	Secondary structure of rocks.	3	2	1		**LO3**
Week -8	**Midterm Exam**					
Week -9	Physical properties of rocks.	3	2	1	-	**LO4**
Week -10	Mechanical properties of rocks and effect of stress.	3	2	1	-	**LO5**
Week -11	Foundation on rocks and application of rock mechanics to civil engineering problems	3	1	-	-	**LO2**
Week -12	Foundation on rocks and application of rock mechanics to civil engineering problems (follow)	3	1	2	-	**LO3**
Week -13	Foundation tests in rocks and measurement of static and dynamic properties in field and laboratory	3	2	1	-	**LO4**
Week -14	Foundation tests in rocks and measurement of static and dynamic properties in field and laboratory	3	2	1	-	**LO5**
Week - 15	**Final term exam**					

6- *Matrix of Course Objective and Los*

Course Learning Objectives	Learning Outcomes (LOs)				
	General			CIV 375	
	LO 1	LO 2	LO 3	LO 4	LO 5
CLO1	√			√	
CLO2		√	√		√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	Learning Outcome (LOs)					
	General			CIV 375		
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
Face-to-Face Lecture	√	√	√	√	√	
Online Education						
Tutorial/ Exercise	√	√	√	√	√	
Group Discussion						
Laboratory						
Site Visit						
Presentation						
Mini Project						
Research and Reporting						
Brain Storming	√		√		√	
Self-Learning	√					

8-*Assessment*

8.1.*Course Assessment Methods:*

Assessment Methods	*Learning Outcome*(LOs)					
	General			CIV		
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6
Written Exam	√	√	√	√	√	√
Online Exam						
Oral Exam						
Quiz	√	√	√	√	√	√
Lab Exam						
Take-Home Exam						
Research Assignment						
Reporting Assignment						
Mini Project						
In-Class Questions	√	√	√	√	√	√

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.

Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**	-	-
End of term Oral exam	**-**	-	-
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- ***Facilities Required:***

A- White board
B- Projector
C- Egyptian code

10- ***List of References:***

10.1. Course Notes:

Lecture notes

10.2. Required Textbooks and Additional References:

1. Nagaratnam Sivakugan, Sanjay Kumar Shukla, Braja M. Das, "Rock Mechanics", CRC Press, ISBN 9780367866754, 2019

10.3. Recommended Books:

1. FRED G.BELL, "ENGINEERING PROPRTIES OF SOILS AND ROCKS", ISBN 0750604891, 1992
2. Egyptian Code.

10.4. Web Sites:

- **https://www.routledge.com/Rock-Mechanics-An-Introduction/Sivakugan-Shukla-Das/p/book/9780367866754**

Course Directors	Name	Signature
Teaching staff	Dr. Ahmed Nabil- Dr. Ahmed Abd Latif	
Course coordinator	Dr. Ahmed Nabil	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 379: Selected topics in geotechnical engineering

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Selected topics in geotechnical engineering.		**Course Code:**		CIV 379	
Program / level	Civil Engineering		Senior (2)			
Term/ Academic year:	Oct. – Jan. 2022 – 2023		**Credit Hours:**		2	
Contact Hours:	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	1
Pre-Requisite	Department Approval					
Academic standards	(NARS 2018)					
Bylaw Approval	2016					

1- ***Course Aims:***

To build an understanding of the different types of problematic soils.

To emphasize study the different types of problematic soils, soil grouting and stabilization, field compaction, and reinforced soil system.

To provide the overall view of the different soil treatment methods on various practical civil engineering problems.

2- ***Course Learning Objectives (CLO):***

At the end of this course, student should be able to :

CLO1: Identify, and evaluate, the methods of treatment of problematic soils.

CLO2: Develop the students skills in analysis, problem identification, capability of creative thinking and obtaining solutions in the field of problematic soils.

CLO3: Study the different methods of soil improvement, like Grouting, deep compaction, and soil reinforcement.

Relationship between the course and the Competencies:

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of Civil
Program Academic Standards that the course contributes in achieving	A3, A4, A5	B1, B2

3- Mapping Course Los to NARS

Field	Program (CBEs) that the course contributes in achieving	Learning Outcomes (LOs)
	A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical, and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	**LO1.** evaluate, the treatment methods used to enhance the properties of problematic soils. **LO2.** Design Foundation rested on swelling and collapsible soil.
	A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles	**LO3.** Utilize the different types of Grouting process, deep compaction, and preloading techniques to solve soil problems related to bearing capacity and settlement.

	A5. Practice research techniques and methods of investigation as an inherent part of learning	**LO4:** Use the method self-learning to investigate another different method in soil improvement.
COMPETENCIES of Civil	**B1.** Select appropriate and sustainable technologies for construction of buildings, infrastructures, and water structures; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics, Properties and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.	**LO5.** Predict the heave or settlement values using physical measurements according to Egyptian code. **LO6.** Use the odometer test to determine the accurate value of heave or settlement.
	B2. Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbors; or any other emerging field relevant to the discipline.	**LO7.**Calculate the maximum tensile strength of geogrid and length. **LO8.** Check stability of reinforced earth retaining wall according to Egyptian code

5-*Course Content:*

5.1. Course Description (As indicated in program Bylaw):

A Selection Made From: Soil Stabilization Using Conventional Stabilizers, such as Cement, Bituminous Materials and Chemicals. Soil Improvement by: Compaction, Vibroprobes, Preloading etc. Desert Soil Characteristics Including Swelling and Shrinkage, Desiccation, Collapse, Erosion and Cementation. Salt-bearing Soils, Cemented Sands and Wind-Blown Sands. Influence of water Table Fluctuation on Soil Properties. Soil Properties by Field Tests. Use of Geomembranes and Geotextiles.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Credits hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Swelling soils: Definition, Types, Occurrence, Identification, Treatment, Foundation on swelling soils.	3	2	1	-	**LO1, LO5**
Week -2	Swelling soils (follow): Definition, Types, Occurrence, Identification test, Treatment, Foundation on swelling soils.	3	2	1	-	**LO2, LO6**
Week -3	Compaction: Definition, Objectives, Factors affecting compaction, Quality control, Equipment used in the field.	3	2	1	-	**LO3, LO4**
Week -4	Compaction (follow): Definition, Objectives, Factors affecting compaction, Quality control, Equipment used in the field.	3	2	1	-	**LO3, LO4**
Week -5	Collapsible soils: Definition, Types, Occurrence.	3	2	1	-	**LO2**
Week -6	Collapsible Soil Teats	3	-	1	-	**LO5, LO6**
Week -7	Collapsible soils: Identification, Treatment, Foundation on collapsible soils	3	2	1		**LO1,LO2**
Week -8	**Midterm Exam**					
Week -9	Grouting: Definition, Objectives, Methods used in the field.	3	2	1	-	**LO3**
Week -10	Continue to the topic in week 9	3	2	1	-	**LO3**
Week -11	Reinforced soil: Mechanism, Objectives, Types, Methods and Material used.	3	1	-	-	**LO7, LO8**
Week -12	Examples on earth reinforced wall	3	1	2	-	**LO7, LO8**
Week -13	Preloading Definition, Objectives, Methods used in the field.	3	2	1	-	**LO3,LO4**
Week -14	Continue to the topic in week 13	3	2	1	-	**LO3,LO4**
Week - 15	Final term exam					

6- *Matrix of Course Objective and Los*

Course Learning Objectives	Learning Outcomes (LOs)							
	General				CIV 379			
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8
CLO1	√	√	√	√				
CLO2					√	√	√	√
CLO3	√		√					

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	Learning Outcome (LOs)							
	General				CIV 379			
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8
Face-to-Face Lecture	√	√	√		√	√	√	√
Online Education								
Tutorial/ Exercise	√	√	√		√	√	√	√
Group Discussion								
Laboratory								
Site Visit								
Presentation								
Mini Project								
Research and Reporting				√				
Brain Storming	√		√		√		√	√
Self-Learning				√				

8-*Assessment*

8.1.*Course Assessment Methods:*

Assessment Methods	*Learning Outcome* (LOs)							
	General				CIV			
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8
Written Exam	√	√	√		√	√	√	√
Online Exam								
Oral Exam				√				
Quiz	√	√	√		√	√	√	√
Lab Exam								
Take-Home Exam								
Research Assignment								
Reporting Assignment								
Mini Project								
In-Class Questions	√	√	√		√	√	√	√

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.

Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**	-	-
End of term Oral exam	**-**	-	-
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- ***Facilities Required:***

A- White board
B- Projector
C- Egyptian code

10- ***List of References:***

10.1. Course Notes:

Lecture notes

10.2. Required Textbooks and Additional References:

Farmer, I.W. Engineering Properties of Rocks, Spon, London, (1986). Leonard, O., and W. Duvall,

10.3. Recommended Books:

1- Egyptian Code.
2- Peter G. Nichlson, "Soil improvement and ground modification methods", ISBN 978-0-12-408076-8, 2015

10.4. Web Sites:

- **https://link.springer.com/chapter/10.1007/978-1-4020-6778-5_9**

Course Directors	Name	Signature
Teaching staff	Dr. Ahmed Nabil - Dr. Ahmed Abd Latif	
Course coordinator	Dr. Ahmed Nabil	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023-2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 381: Advanced Technologies for Construction

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information

Course Title:	Advanced Technologies for Construction			**Course Code:**		CIV 381	
Program / Level	Civil Engineering			**senior**			
Term/ Academic year:	OCT-Jan2023-2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	-
Pre-Requisite	Department approval						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- A survey of the construction industry, nature, scope, and general characteristics of the industry with an emphasis on careers, safety, and typical contracting methods.
- Studying advanced technologies including microcomputer systems.
- Study the expert systems and their application in the construction industry.

2- Course Learning Objectives (CLO):

At the end of this course, the student should be able to :

CLO 1. Offers a rather comprehensive introduction to the field of managing construction projects.

CLO 2. Study the traditional industry methods and innovative new practices.

CLO 3. Study and deal with the Artificial Intelligence areas in construction projects.

CLO 4. Study the expert systems Components, Applications, and Limitations.

CLO 5. Develop systems acquisition, communications, and networking.

CLO 6. Study the construction Process

*3- **Relationship between the course and the Competencies:***

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of MEC
Program Academic Standards that the course contributes to achieving	A2,A3,A4	B1, B2

4- *Mapping Course Los to NARS*

Field	Program (MEC) that the course contributes to achieving	Learning Outcomes(Los)
COMPETENCIES of ENGINEERING	**A2.** Study of the Advanced construction technology	**LO 1.** Identify the general characteristics of the construction industry. **L02.** Illustrate the traditional industry methods and innovative new practices **L03.** Developing advanced construction technology into practice can increase levels of quality, efficiency, safety, sustainability, and value for money. **L04**. Study the different types of advanced technology.
	A3. Review the applied Artificial Intelligence (AI)	**LO5.** Illustrate Artificial Intelligence areas (Computerized speech recognition, Natural language processing, Computer vision, and expert systems)
	A4. Study the expert systems and their application in the construction industry	**LO 6**. Study the expert systems Components. **LO7.** Study the expert systems applications such as high-risk credit decisions, advertising decision-making, and manufacturing decisions. **LO8.** Illustrate benefits of Expert Systems **LO9**. Study the limitations of Expert Systems in the construction industry.
COMPETENCIES of CIV 381	**B1**. Review of systems acquisition, communications, and networking.	**LO 10.** Understand the Networks Components Functionality
	B2. Illustrate the construction process followed from project inception to closeout.	**LO 11.** Illustrate the construction process **LO 12.** Study the responsibilities of all project parties in the construction process

5- Course Content:

5.1. Course Description (As indicated in the program Bylaw):

Advanced technologies include microcomputer systems, management information systems, automation technologies, computer-aided design, and expert systems and their application in the construction industry. Overview of systems acquisition, communications, and networking.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOS Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Introduction to the general characteristics of the construction industry.	3	2	1	0	**LO 1**
Week-2	Study of the Advanced construction technology.	3	2	1	0	**LO2, LO3, LO 4**
Week-3	Study of the Advanced construction technology.	3	2	1	0	**LO2, LO3, LO 4**
Week-4	Review the applied Artificial Intelligence (AI).	3	2	1	0	**LO1, LO5**
Week5	Study the expert systems and their application in the construction industry.	3	2	1	0	**LO1, LO6, LO7, LO8, LO9**
Week-6	Study the expert systems and their application in the construction industry.	3	2	1	0	**LO1, LO6, LO7, LO8, LO9**
Week-7	Revision before Midterm.	3	2	1	0	**LO2, LO3, LO4**
Week-8	**Midterm Exam.**					
Week-9	Review of systems acquisition, communications, and networking.	3	2	1	0	**LO10**
Week-10	Review of systems acquisition, communications, and networking.	3	2	1	0	**LO10**
Week-11	The construction process is followed from project inception to closeout.	3	2	1	0	**LO11, LO12**
Week-12	The construction process is followed from project inception to closeout.	3	2	1	0	**LO11, LO12**
Week-13	The construction process is followed from project inception to closeout.	3			0	**LO11, LO12**
Week-14	Revision before the final exam.	3	2	1	0	**LO4, LO5, LO6, LO7, LO11,**
Week 15	**Final Exam.**					

5.3. **Experiment Topics:**

- ***Not Applicable***

6- Matrix of Course Objectives and Los

Course Learning Objectives	*Learning Outcome* (Los)											
	General									CIV 381		
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10	LO 11	LO 12
CLO 1	√	√										
CLO 2		√	√	√	√	√						
CLO 3			√	√	√	√	√	√	√			
CLO 4			√	√				√	√	√		
CLO 5										√	√	√
CLO 6											√	√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	*Learning Outcome* (Los)											
	General									CIV 381		
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10	LO11	LO 12
Face to-Face Lecture	√	√	√	√	√	√	√	√	√	√	√	√
Online Education												
Tutorial/ Exercise			√	√	√	√	√			√		√
Group Discussion						√	√					
Laboratory												
Site Visit												
Presentation			√			√			√	√		
Mini Project				√		√	√				√	√
Rese rch and Reporting				√		√						
Brain Storming		√	√									
Self-Learning						√	√				√	

8.1. Course Assessment Methods:

Assessment Methods	***Learning Outcome*** **(Los)**											
	General									**CIV 381**		
	LO 1	**LO 2**	**LO 3**	**LO4**	**LO5**	**L06**	**LO7**	**LO8**	**LO9**	**LO 10**	**LO 11**	**LO 12**
Written Exam	√	√	√	√	√	√	√	√	√	√	√	√
Online Exam												
Oral Exam												
Quiz	√		√		√	√					√	√
Lab Exam												
Take-Home Exam		√		√		√						√
Research Assignment			√		√		√			√		
Reporting A assignment		√					√			√		
Project Assignment				√								
In-Class Questions											√	√

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End-of-term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

8- Facilities Required:

A- Data Show (Projector)
B- White Board
C- Printed Notes

10.1. Course Notes:

- Lecture notes (handed to students part by part).

10.2. Required Text Books and Additional References:

- Introduction to Construction Management; Fred Sherratt, 2015, Routledge Publishing ,ISBN (9781032007441)
- Handbook of Construction Management: Scope, Schedule, and Cost Control; Abdul Razzak Ruman; 2016, Publisher CRC Press, ISBN (1482226642)

10.3. Recommended Books:

- الكود المصري لإشراف على تنفيذ مشروعات التشييد كود رقم 311 – 2009 – وزارة الإسكان والمرافق والتنمية العمرانية– المركز القومي لبحوث الاسكان

10.4. Web Sites:

American Society of Civil Engineering, https://www.asce.org/

Course Directors	Name	Signature
Teaching staff	Dr: Mahmoud Malek Olwan	
Course coordinator	Dr: Mahmoud Malek Olwan	
Program Coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	
Course Specification	
CIV 383: Construction management	

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information							
Course Title:	construction management			**Course Code:**		CIV 383	
Program / Level	Civil Engineering			**BSc.**			
Term/ Academic year:	1st Semester 2023-2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	-----
Pre-Requisite	CIV 227						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

- Deal with Construction equipment and methods, work improvement in construction management Study the advanced technologies including microcomputer systems
- Study the Factors affecting the selection of construction equipment
- Study the Safety in construction. And control its factors
- Know the Value of increasing Equipment Productivity

2- Course Learning Objectives (CLO):

At the end of this course, the student should be able to :

CLO 1. Study of Construction Administration
CLO 2. Study the Factors affecting the selection of construction equipment
CLO 3. Study and deal with Construction equipment and methods, work improvement in construction management
CLO 4. Study the Safety in construction. and control its factors

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIVIL
Program Academic Standards that the course contributes to achieving	A2,A3,A4, A10	B1, B2,B4

3- ***Mapping Course Los to NARS***

Field	Program (CIVIL) that the course contributes to achieving	Learning Outcomes(Los)
COMPETENCIES of ENGINEERING	**A2.** Study of Construction Administration and nature of the construction industry	**L01.** identify the different phases in the construction project life cycle **L02.** Explains selecting the type of contracts **L03**. Illustrate the overlapping between different phases.
	A3. Study the Factors affecting the selection of construction equipment	**LO4.** Illustrate Purchasing with cash factors **LO5.** Illustrate financing through loan factors **LO6.** Illustrate renting and leasing factors.
	A4. Construction equipment and methods, work improvement in construction management	**LO 7**. Understand the value of equipment **LO8.** Study the key ways for improving equipment productivity.
	A10. Acquire and apply new technology; and practice self; lifelong; and other learning strategies	**L09.** Apply the different topic of planning on Primavera tool and on actual case studies.
COMPETENCIES of CIVIL	**B1**. Illustrate Cost estimation methods	**LO 10.** Understanding and computing the project costs depend on different cost estimation methods
	B2. Illustrate the Safety in construction.	**LO 11.** Illustrate The leading safety hazards on construction sites **LO 12.** Study the different ways to prevent injuries and improve safety
	B4. Deal with biddings, contracts and financial issues including project insurance and guarantees	**LO 13.** Develop the Knowledge of construction contracts on project insurance and guarantees

5- Course Content:

5.1. Course Description (As indicated in the program Bylaw):

The nature of the construction industry. Construction administration. Factors affecting the selection of construction equipment. Construction equipment and methods, work improvement in construction management. Cost estimation. Concrete forms. Safety in construction.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Identify The nature of the construction .industry	3	2	1	0	**LO 1**
Week-2	Study of different phases in the construction project life cycle	3	2	1	0	**LO2, LO3, LO 4**
Week-3	Study of selecting the type of contracts and Illustrate the .overlapping between different phases	3	2	1	0	**LO2, LO3, LO 4**
Week-4	Study the Factors affecting the selection of construction equipment	3	2	1	0	**LO51, LO6**
Week5	Study the Factors affecting the selection of construction equipment	3	2	1	0	**LO5, LO6, LO7,**
Week-6	Study the Factors affecting the selection of construction equipment	3	2	1	0	**LO1, LO5, LO6, LO7,**
Week-7	Revision before Midterm	3	2	1	0	**LO2, LO3, LO4, LO7,**
Week-8	**Midterm Exam.**					
Week-9	Study of Construction equipment and methods, work improvement in construction management	3	2	1	0	**LO8, LO9**
Week-10	Study of Construction equipment and methods, work improvement in construction management	3	2	1	0	**LO8, LO9**
Week-11	Illustrate Cost estimation methods (Parametric Methods)	3	2	1	0	**LO10, LO11**
Week-12	Illustrate Cost estimation methods (Bottom- UP Methods, Analogue)	3	2	1	0	**LO10, LO11**
Week-13	Study the Safety in construction.	3	2	1	0	**LO12**
Week-14	Revision before the final exam	3	2	1	0	**LO4, LO5, LO6, LO7, LO11,**
Week 15	**Final Exam.**					

5.3. **Experiment Topics:**

- ***Not Applicable***

6- Matrix of Course Objectives and Los

Course Learning Objectives	General									CIVIL 383			
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10	LO 11	LO 12	LO 13
CLO 1	√	√											
CLO 2		√	√	√	√	√							
CLO 3			√	√	√	√	√	√	√				
CLO 4			√	√				√	√	√			
CLO 5										√		√	√
CLO 6											√	√	√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	General									CIVIL 383			
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10	LO11	LO12	LO13
Face to-Face Lecture	√	√	√	√	√	√	√	√	√	√		√	√
Online Education													
Tutorial/ Exercise			√	√	√	√	√			√			
Group Discussion						√	√						
Laboratory													
Site Visit													
Presentation			√			√			√	√	√		
Mini Project				√		√	√					√	
Rese rch and Reporting				√		√							
Brain Storming		√	√										
Self-Learning						√	√					√	√

8.1. Course Assessment Methods:

Assessment Methods	General									CIVIL 383			
	LO 1	LO 2	LO 3	LO4	LO5	L06	LO7	LO8	LO9	LO 10	LO 11	LO 12	LO 13
Written Exam	√	√	√	√	√				√	√	√		
Online Exam													
Oral Exam													
Quiz	√		√		√	√					√		
Lab Exam													
Take-Home Exam		√		√		√							
Research Assignment		√	√		√		√			√			
Reporting A assignment		√			√		√			√	√		
Project Assignment		√		√								√	√
In-Class Questions											√	√	√

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End-of-term laboratory exam (*Lab*)	**-**	15th	Committee
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

8- Facilities Required:

A- Data Show (Projector)
B- White Board
C- Printed Notes

9- List of References:

10.1. Course Notes:

- Lecture notes (handed to students part by part).

10.2. Required Text Books and Additional References:

- Introduction to Construction Management; Fred Sherratt, 2015, Routledge Publishing ,ISBN (9781032007441)
- Handbook of Construction Management: Scope, Schedule, and Cost Control; Abdul Razzak Ruman; 2016, Publisher CRC Press, ISBN (1482226642)

10.3. Recommended Books:

- الكود المصري لإشراف مشروعات التشييد كود رقم 311 – 2009 – وزارة الاسكان والمرافق والتنمية العمرانية – المركز القومي لبحوث الاسكان

10.4. Web Sites:

Web Sites:

- **Construction Management Association of America;** https://www.cmaanet.org/ (1982-now)
- **Project Management Institute; https://www.pmi.org/** (1969- now)

Course Directors	Name	Signature
Teaching staff	Dr: Mahmoud Malek Olwan Dr. Asmaa Ahmed Soliman	
Course coordinator	Dr: Mahmoud Malek Olwan	
Program Coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

The Higher Technological Institute (HTI)	
Department: Department of Civil Engineering	

Course Specification

CIV 385: Selected Topics in Construction Engineering

Program(s) on which this course is given	Civil Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering

A– Basic information							
Course Title:	Selected Topics in Construction Engineering			**Course Code:**		CIV 385	
Program / level	Civil Engineering			**SENIOR (2)**			
Term/ Academic year:	OCT-Jan2023-2024			**Credit Hours:**		2	
Contact Hours:	3	**Lecture:**	2	**Tutorial:**	1	**Laboratories:**	0
Pre-Requisite	Department Approval						
Academic standards	(NARS 2018)						
Bylaw Approval	2016						

1- Course Aims:

This course introduces students to construction productivity and equipment management:

1. Modelling of projects, Construction Equipment. Erection Methods, Design and Application of construction. Materials with Emphasis on construction phase. Value Engineering.
2. Construction Materials with Emphasis on Concrete. Value Engineering and Logistics.
3. Construction productivity management and logistics.

2- Course Learning Objectives (CLO):

At the end of this course, student should be able to:

CLO 1. Offers a rather comprehensive introduction to the field of managing for construction productivity and equipment management.

CLO 2. Learn the behaviour construction phase.

CLO 3. Study and deal with construction resources productivity

CLO 4. Study and deal with construction equipment

*3- **Relationship between the course and the Competencies :***

Field	National Academic Reference Standard (NARS)	
	COMPETENCIES of ENGINEERING	COMPETENCIES of CIV 227
Program Academic Standards that the course contributes in achieving	A2, A3, A4, A5, A7	B3, B4

4- *Mapping Course Los to NARS*

Field	Program (CBEs) that the course contribute in achieving	Learning Outcomes(LOs)
COMPETENCIES of ENGINEERING	**A2.** Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**LO 1**. Identify the Express ideas in different construction phases. **LO 2**. Use mathematical, and theories formulae to solve construction equipment economics, modelling and design.
	A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	**LO 3**. Apply the different solutions of expected and unexpected technical problems related to annotated topics.
	A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	**LO 4**. Describe the construction resource engineering projects. **LO 5.** State the productivity and equipment for construction financial analysis
	A5. Practice research techniques and methods of investigation as an inherent part of learning.	**LO 6.** Illustrate the productivity and equipment for construction
	A6. Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	**LO 7.** Plan and schedule construction resources
COMPETENCIES of CIV 385	**B3.** Plan and manage construction processes; address construction defects, instability and quality issues; maintain safety measures in construction and materials; and assess environmental impacts of projects.	**LO 8**. Develop the Knowledge of construction resource management, and its applications

	B4. Deal with Bidding, Contracts and financial issues including project insurance and guarantees	**LO 9**. Apply the different solutions of expected and unexpected technical problems related Bidding, Contracts specially insurance and guarantees of construction heavy equipment

5- Course Content:

5.1. Course Description (As indicated in program Bylaw):

Construction productivity and equipment management. Modelling of projects, Construction Equipment. Erection Methods, Design and Application of construction. Materials with Emphasis on construction phase. Value Engineering. Construction Materials with Emphasis on Concrete. Value Engineering and Logistics. Through Construction productivity management and logistics.

5.2. Course Topics/hours/Los Matrix

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**LOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Construction resource productivity	3	2	1	0	**LO 1, LO 7, LO 8**
Week-2	Construction resource productivity	3	2	1	0	**LO 2**
Week-3	Introduction to equipment construction	3	2	1	0	**LO 3, LO 9**
Week-4	Introduction to equipment construction	3	2	1	0	**LO 3**
Week5	Techniques for equipment construction cycle.	3	2	1	0	**LO 4, LO 5**
Week-6	Techniques for equipment construction cycle.	3	2	1	0	**LO 4, LO 5**
Week-7	Revision and Midterm Exam	3	2	1	0	**LO 4, LO 5**
Week-8	**Midterm Exam.**					
Week-9	Economics in construction equipment	3	2	1	0	**LO 4, LO 5**
Week-10	economics in construction equipment	3	2	1	0	**LO 2, L O 9**
Week-11	economics in construction equipment	3	2	1	0	**LO 6**

Week-12	economics in construction equipment	3	2	1	0	**LO 6**
Week-13	economics in construction equipment	3	2	1	0	**LO 4, LO 5 LO 10**
Week-14	economics in construction equipment	3	2	1	0	**LO 4, LO 5,**
Week 15	Final Exam					

5.3. Experiment Topics:

Not Applicable

6- Matrix of Course Objective and LOs

Course Learning Objectives	**Learning Outcomes (LOs)**								
	General							**CIV385**	
	LO 1	**LO 2**	**LO 3**	**LO 4**	**LO 5**	**LO 6**	**LO 7**	**LO 8**	**LO 9**
CLO 1	√	√	√				√	√	
CLO 2				√	√	√			
CLO 3				√	√	√			√
CLO 4				√	√			√	√

7- Course Teaching and Learning Methods:

Teaching and Learning Methods	***Learning Outcome* (LOs)**								
	General							**CIV385**	
	LO 1	**LO 2**	**LO 3**	**LO 4**	**LO 5**	**LO 6**	**LO 7**	**LO 8**	**LO 9**
Face-to-Face Lecture	√	√	√	√	√	√	√	√	√
Online Education									
Tutorial/ Exercise		√		√	√		√	√	√
Group Discussion	√						√	√	
Laboratory		√		√					
Site Visit									
Presentation									
Mini Project		√				√			
Research and Reporting	√						√	√	
Brain Storming	√								
Self-Learning									√

8- Assessment

8.1. Course Assessment Methods:

Assessment Methods	*Learning Outcome*(LOs)								
	General CIVIL								
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9
Written Exam	√	√	√	√	√	√	√	√	√
Online Exam									
Oral Exam									
Quiz				√	√	√			
Lab Exam									
Take-Home Exam									
Research Assignment	√								
Reporting Assignment	√						√	√	
Project Assignment									
In-Class Questions	√	√	√		√	√			√

8.2. Assessment Schedule and Grades Distribution:

Assessment Method	Mark	Week	Exam Time
Final Exam (*written*)	**40**	15th	90 min.
Midterm written Exam (*Term Work*)	**20**	8th	60 min.
End of term laboratory exam (*Lab*)	**-**	---	---
End of term Oral exam	**-**	15th	Committee
Tutorial and report assessment (*Term Work*)	**20**	weekly	---
Quizzes/reports/presentation (*Term Work*)	**20**	According to the schedule	---
Total Mark	**100**		

9- Facilities Required:

A- Projector
B- White board
C- Personal Computer

10- List of References:

10.1. Course Notes:

- Lecture notes

10.2. Required Text Books and Additional References:

- Handbook of Construction Management: Scope, Schedule, and Cost Control; Abdul Razzak Ruman; 2016, Publisher CRC Press, ISBN (1482226642)
- Construction Planning, Equipment, and Methods, Ninth Edition 9th Edition; Robert L. Peurifoy - et al; 2018, Publisher McGraw-Hill Education, ISBN (9781260108804)
- Construction Equipment Management; Schaufelberger, John E.- Migliaccio, Giovanni C.; 2019, Routledge Publishing ,ISBN (9781351117463)
- Building Construction Costs With RSMeans Data 2022 (Means Building Construction Cost Data) Annual Edition; Matthew Doheny; 2022, Publisher **R S Means Co,** ISBN(**195534101X)**
- Contractor's Pricing Guide with RSMeans Data 2022: Residential Repair & Remodeling Costs (Means Contractor's Pricing Guide: Residential Repair & Remodeling Costs); Thomas Lane; 2022, R S Means Co Publisher, ISBN-10 (**1955341699)**
- أ. د. علي محمد فريج - موسوعة إدارة القواعد الهندسية وعقود المقاولات ثلاث أجزاء -الناشر: دار الطلائع للنشر والتوزيع– مصر

10.3. Recommended Books:

- الكود المصري لأعمال شروط التشييد كود رقم 311 – 2009 – وزارة الاسكان والمرافق والتنمية العمرانية– المركز القومي لبحوث الاسكان

10.4. Web Sites:

- Construction Equipment **Association** (CEA); https://thecea.org.uk (2008-now)
- Construction Management **Association** of America; https://www.cmaanet.org/ (1982-now)
- Project Management **Institute**; https://www.pmi.org/ (1969- now)
- American Society of Civil Engineers; https://www.Asce.org/ (1852 to now)

Course Directors	Name	Signature
Teaching staff	Dr. Asmaa Ahmed Soliman	(signed)
Course coordinator	Dr. Mahmoud Malek Olwan	
Program coordinator	Ass. Prof. Sherif H. Al-Tersawy	
Head of the Department	Ass. Prof. Sherif H. Al-Tersawy	
Date of approval	2023/2024	

الكود: HUM204

المعهد التكنولوجي العالي (HTI)

القسم: قسم العلوم الأساسية

توصيف مقرر

مبادىء التفاوض: HUM 204

أ – الانتماء (إنتساب المقرر)

البرنامج المانح :	جميع البرامج الهندسية
القسم المقدم للبرنامج:	جميع الأقسام الهندسية
القسم الذي يقوم بتدريس المقرر:	قسم العلوم الأساسية

ب – المعلومات الأساسية

عنوان المقرر	مبادئ التفاوض			كود المقرر			HUM 204
المستوي الدراسي	مرحلة البكالوريوس			الساعات المعتمدة			2
ساعات الإتصال الكلية	2	محاضرة	2	سكشن	0	مختبر	0
المتطلب السابق	لا يوجد						

2- أهداف المقرر: يهدف المقرر الي تزويد الطالب بالاتي :

- يدرك الطالب القدرة علي مفهوم التفاوض وخصائصه ومبادئه.
- يتفهم الطالب أهمية العملية التفاوضية سواء على مستوى الأفراد أو المنظمة أو الدولة.
- يدرك الطالب العناصر الأساسية للعملية التفاوضية وشروطها وأنواعها ومراحلها
- يتعرف الطالب على إستراتيجيات وتكتيكات التفاوض و آليات التفاوض الدولي

3- الأهداف التعلمية المقرر (CLO):

في نهاية هذا المقرر، يجب أن يكون الطالب قادرا على:

CLO 1	معرفة وإدراك المفاهيم العامة لإدارة العملية التفاوضية و الشعور بأهمية وتعظيم دور التفاوض بشأن أي قضايا عالقة بين طرفين أو أكثر بينهم مصالح مشتركة
CLO 2	التعرف علي المعايير الأساسية الواجب إتباعها من قبل فريق التفاوض أثناء إدارة العملية التفاوضية.
CLO 3	القدرة على التفكير بطريقة منطقية ومربحة لأطراف التفاوض و القدرة على تحليل المواقف الحياتية وبصفة خاصة في مجال العمل.

3- العلاقة بين المقرر و الجدارات (الكفاءات) الهندسية :

نطاق الإرتباط	المعيار المرجعي الأكاديمي الوطني (NARS)
	الكفاءات الهندسية الأساسية (As)
المعايير الأكاديمية للبرنامج التي يساهم المقرر في تحقيقها	A3, A4, A5, A6, A10

4.1 - مخرجات التعلم (LOs) :

عند الانتهاء من دراسة المقرر ، يجب أن يكون لدى الطالب القدرة على

LO 1	معرفة أنواع التفاوض.
LO 2	فهم دور التفاوض في العصر الحالي.
LO 3	إدراك تطور أداء العملية التفاوضية.
LO 4	معرفة المعايير الأساسية الواجب إتباعها من قبل فريق التفاوض أثناء إدارة العملية التفاوضية.
LO 5	المقارنة بين دور التفاوض في الوقت الراهن والتفاوض سابقًا.
LO 6	القدرة على التفكير بطريقة منطقية ومربحة لأطراف التفاوض و إكتساب القدرة على تحليل المواقف الحياتية والعملية
LO 7	توظيف المعارف والمهارات التي حصل عليها والعمل بحب وإتقان داخل المنظمة و الاستمتاع بالعملية التفاوضية
LO 8	إستخدام التكنولوجيا الحديثة في جمع المعلومات عن لإتمام العمليات التفاوضية
LO 9	تعزيز العديد من السلوكيات والمهارات داخل وخارج نطاق العمل بحيث يعمل ضمن فريق يظهر مهارات التواصل مع الآخرين، و كذلك قدرات التعلم الذاتي
LO10	إكتساب مهارات إدارة الوقت بكفاءة.

4.2 إرتباط نواتج التعلم للمقرر (LOs) والمعايير القياسية المرجعية الوطنية (NARS)

نطاق الإرتباط	نواتج التعلم لبرنامج الهندسية الميكانيكية	مخرجات التعلم للمقرر (LOs)									
		LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9	LO10
الجدارات الهندسية الأساسية	A1										
	A2										
	A3	✓	✓				✓				
	A4			✓	✓	✓		✓			
	A5				✓			✓			
	A6										
	A7										✓
	A8								✓		✓
	A9						✓			✓	
	A10										✓

5- محتوى المقرر:

توصيف المقرر (كما هو موضح في لائحة البرنامج):

يهدف المقرر الي تزويد الطالب بالمعرفة الحديثة حول مفهوم و طبيعة المبادئ وخصائص التفاوض الفعال، كذلك إستراتيجاته وتكتيكاته المختلفة، وتنمية مهارات الطالب الخاصة بالإعداد الجيد للتفاوض و مما رسته في المجالات المختلفة في المنظمات المعاصرة. ويتناول المقرر الموضوعات التالية: مفهوم وخصائص ومبادئ التفاوض- الطبيعة الديناميكية للتفاوض - العلاقات الاعتمادية - أخلاقيات التفاوض- الجوانب النفسية والاجتماعية لتفاوض الجيد - التفاوض التعاوني والتفاوض التنافسي - الإعداد الجيد للتفاوض - إستراتيجات وتكتيكات التفاوض - الجوانب التنظيمية للجلسة التفاوضية - النفوذ والتأثير في التفاوض - استخدام الأسئلة و الرد على الاعتراضات - التعامل مع المواقف الصعبة وحالات فشل التفاوض - أفضل الممارسات في التفاوض (حالات عمليه)

موضوعات المقرر

رقم الأسبوع	المواضيع	مجموع الساعات	ساعات الاتصال			LOs التي يحققها المقرر
			محاضرة	سكشن	المختبر	
1	تعريف الطالب بالمقرر الدراسي وعرض مقدمة علمه	2	2	0	0	LO 1
2	مفهوم التفاوض وطبيعته	2	2	0	0	LO 2
3	أهمية التفاوض وأهدافه	2	2	0	0	LO 1
4	العناصر الرئيسية للتفاوض وشروطه	2	2	0	0	LO
5	مراحل العملية التفاوضية	2	2	0	0	LO
6	صفات المفاوض الناجح	2	2	0	0	LO
7	معايير اختيار فريق التفاوض	2	2	0	0	LO
8	إمتحان منتصف الفصل الدراسي					
9	مهارات ومباريات التفاوض ونصائح للمفاوض أثناء العملية التفاوضية	2	2	0	0	LO
10	خطوات عملية التفكير التفاوضي والتعامل مع النزاع	2	2	0	0	LO
11	استراتيجيات وتكتيكات العملية التفاوضية	2	2	0	0	LO
12	دراسة تطبيقية لقضايا دولية ونتائج التفاوض بشأنها	2	2	0	0	LO
13	مراجعة عامة	2	2	0	0	LO
14	الإمتحان النهائي					

6- مصفوفة توافق أهداف المقرر الدراسي و نواتج (مخرجات) التعلم

أهداف تعلم المقرر	مخرجات التعلم (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
CLO 1	✓	✓							✓	
CLO 2			✓	✓			✓		✓	✓
CLO 3	✓		✓		✓	✓		✓		

7- طرق التدريس والتعلم :

طرق التعليم والتعلم	نتائج التعلم (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
محاضرة وجها لوجه	✓	✓	✓	✓	✓	✓				

التعليم عبر الإنترنت	✓	✓			✓					
واجبات منزلية		✓		✓		✓				
مناقشة جماعية	✓		✓		✓		✓	✓		
مختبر										
زيارة الموقع										
عروض تقديمية بالبوربوينت	✓		✓							
مشروع صغير										
أبحاث وإعداد التقارير							✓	✓		
العصف الذهني	✓	✓			✓	✓				
التعلم الذاتي			✓	✓						

8- التقييم

8.1 طرق تقييم المقرر:

طرق التقييم	نتائج التعلم (LOs)									
	مخرجات التعلم للمقرر (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
الإمتحان التحريري	✓	✓				✓	✓	✓		
إمتحان عبر الإنترنت										
الامتحان الشفوي			✓	✓						
مسابقات تنافسية									✓	✓
الامتحانات المعملية										
واجبات منزلية	✓		✓		✓					
مهمة بحثية				✓			✓	✓		
مهمة إعداد التقارير	✓		✓	✓		✓			✓	
تعيين المشروع										
الأسئلة داخل المحاضرة	✓	✓	✓	✓	✓	✓				

8.2. جدول التقييم وتوزيع الدرجات:

طريقة التقييم	الدرجة	التوقيت	وقت الامتحان
الامتحان النهائي	40	الاسبوع 14	90 دقيقة.
الامتحان التحريري لنصف الترم الدراسي	20	الاسبوع 8	60 دقيقة.
إمتحانات تقيمية و تحريرة قصيرة (خلال الترم الدراسي)	20	وفقا للجدول الزمني	---
اختبارات/تقارير/عرض تقديمي (خلال الترم)	20	وفقا للجدول الزمني	---

مجموع الدراجات	100		

9- المرافقات المطلوبة للتعليم والتعلم:

A- قاعة محاضرات مجهزة .
B- المكتبات المركزية والفرعية .
C- الوسائل التعليمية (داتا شو) وجهاز كمبيوتر محمول.
D- مُذكرة لتدريس المقرر وكشوف متابعة للطلاب

10-قائمة المراجع:

10.1. كتاب المقرر:

1- " مباديء مهارات التفاوض " مذكرات المقرر
2- وقضايا عملية مع نتائج للعملية التفاوضية.
3- عروض تقديمية (بوربوبينت) يعطى للطلاب جزء بجزء

10.2. الكتب المرجعية المطلوبة والمراجع الإضافية:

1- د.مجدي عبد الله شرارة، دليل المفاوض الناجح، العبير للنشر والتوزيع.1990
2- د. صديق محمد عفيفي، د. مصطفى محمود أبو بكر، التفاوض في الحياة والأعمال، مطابع الولاء الحديثة،1999.
3- لواء دكتور. جمال حواش، التفاوض في الأزمات والمواقف الطارئة، إيتراك للطباعة والنشر.1993
4- د.محمد عبد العظيم الشيمي، وسائل فض المنازعات 1987
5- محمد قدرى حسن مبادئ التفاوض 2019
6- محسن الخضيرى مبادئ التفاوض 2003
7- بيتر ساندر مبادئ التفاوض من تخطيط استراتيجيتك الى الحصول على ارضية مشتركة 2020

a. الكتب الموصى بها:

1- د. صديق محمد عفيفي، د. مصطفى محمود أبو بكر، التفاوض في الحياة والأعمال، مطابع الولاء الحديثة،1999.
2- Lewicki, J.R., Saunders, M.D., and Barey, B. ,Essentials of Negotiation, McGraw, 5th

a. المواقع الإلكترونية:

- https://ar.wikipedia.org/wiki
- http://www.du.edu.eg/
- https://www.youtube.com

القائمين علي مراجعة وتقيم المقرر	الإسم	توقيع
أعضاء هيئة التدريس	أ م د وليد رضوان أد/ خالد الشربينى	
منسق المقرر	د/ خالد الشربينى	

رئيس القسم	أ.د. عيد عبد الباسط عيد	
تاريخ الموافقة	Oct. 2023	

المعهد التكنولوجي العالي (HTI)

القسم: قسم العلوم الأساسية

توصيف مقرر

الحضارة الإسلامية ب : HUM 205

أ – الانتماء (إنتساب المقرر)

البرنامج المانح :	جميع البرامج الهندسية
القسم الذي يقدم البرنامج:	جميع الأقسام الهندسية
القسم الذي يقوم بتدريس المقرر:	قسم العلوم الأساسية

ب – المعلومات الأساسية

عنوان المقرر	مقدمة فى تاريخ الحضارات			كود المقرر			HUM 101
المستوي الدراسي	دبلوم			الساعات المعتمدة			2
ساعات الإتصال الكلية	٢	محاضرة	٢	سكشن	٠	مختبر	٠
المتطلب السابق	لا يوجد						

٢- أهداف المقرر:

يهدف المقرر إلي تعرف الطالب على نبذة عن تاريخ الحضارات التي مرت بتاريخ العالم بحيث يكون لدى الطالب المعرفة بمفهوم الحضارة والثقافة والتاريخ وبدايات أصول الحضارة الإنسانية فى العصور القديمة فى بلاد الشرق والغرب القديم – ويتناول المقرر الحضارة والثقافة فى العصور الوسطى وانتشار الديانة المسيحية وظهور طبقات الإقطاعين -كما يشرح المقرر الحضارة و الثقافة العربية فى العصور الإسلامية و كذلك الحضارة فى العصور الحديثة، و خاصة حقبة النهضة و يفسر المقرر ما يتعلق بالإصلاح الديني و التقدم العلمي.

٣- الأهداف التعلمية المقرر (CLO):

في نهاية هذا المقرر، يجب أن يكون الطالب قادرا على:

CLO ١	شرح ومقارنة بين مفهوم الحضارة الثقافة في العصور المختلفة.
CLO٢	معرفة مباديء أصول الحضارة الإنسانية فى العصور القديمة و الوسطي و الحديثة في الشرق والغرب
CLO٣	تفسير إنتشار الديانات السماوية والإصلاح الديني، و تطور العلوم في عصور الحضارة الإسلامية

٣- العلاقة بين المقرر و الجدارات (الكفاءات) الهندسية :

نطاق الإرتباط	المعيار المرجعي الأكاديمي الوطني (NARS)	
	الكفاءات الهندسية الأساسية (As)	كفاءات الهندسية لبرنامج الهندسة ------
المعايير الأكاديمية للبرنامج التي يساهم المقرر في تحقيقها	A3, A4, A5, A6, A10	Bs or Cs

٤.١ - مخرجات التعلم (LOs) :

عند الانتهاء من دراسة المقرر ، يجب أن يكون لدى الطالب القدرة على

LO 1	يشرح المعلومات والأحداث التى تتعلق بمفهوم الحضارة و أصولها الإنسانية فى العصور المختلفة.
LO 2	يتعرف على أهم المؤثرات التي ساهمت في الحضارة و الثقافة فى العصور المتعاقبة .
LO 3	يستنتج مدى التأثيروالتأثر بالأحداث التى مرت بها الحضارات المتعاقبة ويبين الإنجازات و الإخفاقات كل حقبة.
LO 4	يقيس تطور و تأثير و تأثر الثقافة و الحضارة فى العصور المختلفة .
LO 5	يستخدم المنهج التاريخى لتناول الأحداث الحضارية الهامة فى كل عصر و مصادر تلك الفترة.
LO 6	يستقرئ الربط بين تطور الأحداث و الملابسات الحضارية التى بتناول تلك العصور و مصادرها.
LO 7	يستخدم تكنولوجيا المعلومات بما يخدم الممارسة المهنية.
LO 8	يظهر مهارات إدارة الوقت بكفاءة .
LO 9	تعزيز العديد من السلوكيات والمهارات داخل وخارج نطاق العمل بحيث يعمل ضمن فريق .
LO10	القدرة علي قيادة المهنين والعمل كفريق لانجاز المهام العملية.

٤.٢ إرتباط نواتج التعلم للمقرر (LOs) والمعايير القياسية المرجعية الوطنية (NARS)

نطاق الإرتباط	نواتج التعلم لبرنامج الهندسية الميكانيكية	مخرجات التعلم للمقرر (LOs)									
		LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8	LO9	LO10
الجدارات الهندسية الأساسية	A1										
	A2										
	A3	✓	✓				✓				
	A4			✓	✓	✓		✓			
	A5				✓			✓			
	A6										
	A7										✓
	A8								✓		✓
	A9						✓			✓	
	A10										✓
الجدارات الهندسية الأساسية لبرنامج الهندسية الميكانيكية	B1										
	B2										
	B3										
	B4										
	B5										

٥- محتوى المقرر:

توصيف المقرر (كما هو موضح في لائحة البرنامج):

يشرح المقررمفهوم الحضارة و أصول الحضارة الإنسانية فى العصور القديمة ، بالإضافة إلى مفهوم الحضارة و الثقافة و تطوره فى العصور الوسطى ، ومن ثم يوضح الشكل المعاصرلمفهوم الحضارة و الثقافة فى العصور الحديثة .

موضوعات المقرر

رقم الأسبوع	المواضيع	مجموع الساعات	ساعات الاتصال			LOs التي يحققها المقرر
			محاضرة	سكشن	المختبر	
١	تعريف بالمقرر الدراسى ومقدمة عامه	٢	٢	0	0	LO
٢	مفهوم الحضارة - من حيث الثقافة و الحضارة	٢	٢	0	0	LO
٣	مفهوم الحضارة- من حيث التاريخ و الحضارة .	٢	٢	0	0	LO
٤	أصول الحضارة الإنسانية فى العصور القديمة،من حيث البدايات الحضارية الأولى .	٢	٢	0	0	LO
٥	أصول الحضارة الإنسانية فى العصور القديمة،من حيث الثقافة و الحضارة فى الشرق القديم .	٢	٢	0	0	LO
٦	أصول الحضارة الإنسانية فى العصور القديمة،من حيث الثقافة و الحضارة فى الغرب القديم ، لا سيما فى اليونان و الرومان .	٢	٢	0	0	LO
٧	الحضارة و الثقافة فى العصور الوسطى، و لا سيما المسيحية و طبقة الإقطاع و العرب.	٢	٢	0	0	LO
٨	إمتحان منتصف الفصل الدراسي					
٩	الحضارة و الثقافة فى العصور الإسلامية .	٢	٢	0	0	LO
١٠	الحضارة فى العصور الحديثة، و خاصة حقبة النهضة .	٢	٢	0	0	LO
١١	الحضارة فى العصور الحديثة ، فيما يتعلق بالإصلاح الدينى و تقدم العلوم .	٢	٢	0	0	LO
١٢	الحضارة فى العصور الحديثة ، فيما يتعلق بالفلسفة و الآداب و الفنون .	٢	٢	0	0	LO
١٣	مراجعة عامة	٢	٢	0	0	LO
١٤	إمتحان الفصل الدراسي النهائي					

٦- مصفوفة توافق أهداف المقرر الدراسي و نواتج (مخرجات) التعلم

أهداف تعلم المقرر	مخرجات التعلم (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
CLO ١	✓	✓							✓	
CLO ٢			✓	✓			✓		✓	✓
CLO 3	✓		✓		✓	✓		✓		

٧- طرق التدريس والتعلم :

طرق التعليم والتعلم	نتائج التعلم (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
محاضرة وجها لوجه	✓	✓	✓	✓	✓	✓				
التعليم عبر الإنترنت	✓	✓			✓					
واجبات منزلية		✓		✓		✓				

مناقشة جماعية	✓		✓		✓		✓	✓		
مختبر										
زيارة الموقع										
عروض تقديمية بالبوربوينت	✓		✓							
مشروع صغير										
أبحاث وإعداد التقارير							✓	✓		
العصف الذهني	✓	✓			✓	✓				
التعلم الذاتي			✓	✓						

٨- التقييم

٨.١ طرق تقييم المقرر:

طرق التقييم	نتائج التعلم (LOs)									
	مخرجات التعلم للمقرر (LOs)									
	LO 1	LO 2	LO 3	LO 4	LO 5	LO 6	LO 7	LO 8	LO 9	LO 10
الإمتحان التحريري	✓	✓				✓	✓	✓		
إمتحان عبر الإنترنت										
الامتحان الشفوي			✓	✓						
مسابقات تنافسية									✓	✓
الامتحانات المعملية										
واجبات منزلية	✓		✓		✓					
مهمة بحثية				✓			✓	✓		
مهمة إعداد التقارير	✓		✓	✓		✓			✓	
تعيين المشروع										
الأسئلة داخل المحاضرة	✓	✓	✓	✓	✓	✓				

٨.٢. جدول التقييم وتوزيع الدرجات:

طريقة التقييم	الدرجة	التوقيت	وقت الامتحان
الامتحان النهائي	٤٠	الاسبوع ١٤	٩٠ دقيقة.
الامتحان التحريري لنصف الترم الدراسي	٢٠	الاسبوع ٨	٦٠ دقيقة.
إمتحانات تقيمية و تحريرة قصيرة (خلال الترم الدراسي)	٢٠	وفقا للجدول الزمني	---
اختبارات/تقارير/عرض تقديمي (خلال الترم)	٢٠	وفقا للجدول الزمني	---
مجموع الدراجات	١٠٠		

٩- المرافقات المطلوبة للتعليم والتعلم:

A- قاعة محاضرات مجهزة .

B- المكتبات المركزية والفرعية .
C- الوسائل التعليمية (داتا شو) وجهاز كمبيوتر محمول.
D- مُذكرة لتدريس المقرر وكشوف متابعة للطلاب
١٠-قائمة المراجع:
١٠.١. كتاب المقرر:
١- "مقدمة فى تاريخ الحضارات " مذكرات المقرر ٢- عروض تقديمية (بوربوبينت) يعطى للطلاب جزء بجزء
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