



الفرقة الأولى



Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering Department			
Department Offering the Course	Basic Engineering Sciences Department			
Date of Specification Approval				
Course Title	Mathematics (2) (a)	Code	B1111	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	Fall Semester (First Year)			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	2	0	4

2. Professional Information:

2.1. Course description:

B 1111 Mathematics (2) (a)	س ١١١١ الرياضيات (٢) (أ)
Differential Equations (A): Classification, formation and types of solutions of ordinary differential equations. First order differential equations (separable, homogeneous, exact and linear equations). Orthogonal trajectories, nth order linear differential equations with constant coefficients. Particular solution of non-homogeneous equations by operators and variation of parameters methods. Euler's equations. Reduction of order. Linear systems of differential Equations. Gamma and Beta functions.	المعادلات التفاضلية أ : تصنيف وتكوين المعادلات التفاضلية الاعتيادية . المعادلات التفاضلية من الرتبة الأولى (فصل المتغيرات ، المتجانسة ، والتامة ، والخطية) المسارات المتعامدة . المعادلات التفاضلية الخطية من الرتبة النونية ذات المعاملات الثابتة . الحلول الخاصة للمعادلات غير المتجانسة بطرق المؤثرات وتغيير البارامتر . معادلة أويلر . اختزال رتبة المعادلة . نظام المعادلات التفاضلية الخطية . دوال جاما وبيتا .
Multivariable Calculus (A): Surfaces and curves in three dimensions. Vector functions of one variable. Scalar functions of several variables, partial derivatives. Directional derivatives, total derivatives. Applications (tangent planes and normal lines. Taylor expansions, maxima and minima, Lagrange's multipliers).	الدوال متعددة المتغيرات أ : المساحات والمنحنيات في ثلاثة أبعاد . الدوال الاتجاهية في متغير واحد . الدوال القياسية في متغيرات متعددة والتفاضل الجزئي . التفاضل الإتجاهي والتفاضل الكلي . التطبيقات على (المستوى المماس والعمودى عليه ، مفكوك تايلور والنهائية العظمى والصغرى ومضروبات لاجرانج) .

2.2. Course Objectives (CO):

Program objective		Course objective	
PO1	Apply a wide spectrum of engineering knowledge, science,	CO1	Evaluate and apply wide sets of mathematical methods to identify and

	and specialized skills with analytic, critical, and systemic thinking to identify and solve engineering problems in real-life situations.		solve the differential equations arising from engineering problems in real-life situations.
		CO2	Evaluate, apply and identify some special functions of several variables and their properties which arising from engineering problems in real-life situations.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.	CLO1	Solve linear and non-linear first order ordinary differential equations (ODEs). (Apply)
		CLO2	Solve higher order ODEs and Linear systems of ODEs. (Apply)
		CLO3	Evaluate surfaces and curves in three dimensions, partial derivatives of functions of several variables, tangent planes, normal lines, Taylor expansions, maxima, minima, and Lagrange's multipliers. (Evaluate)
PLO2	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.	CLO4	Apply the basic rules of integration and differentiation to solve the ODEs. (Apply)
		CLO5	Analyze the final solutions for any problem. (Analyze)

2.4. Course Topics:

2.5. Lab Topics:

Course Topics	Week	Course LO's Covered				
		CLO1	CLO2	CLO3	CLO4	CLO5
Introduction to ordinary differential equations (ODEs)	1	√				

Solve linear and non-linear first order ODEs (separable, homogeneous, exact and linear equations).	2,3,4	√			√	√
Solve higher order ODEs (nth order linear differential equations with constant coefficients. Solution of nonhomogeneous equations).	5,6		√		√	√
Methods of variation of parameters	7		√		√	√
Midterm Exam	8					
Euler's equations. Reduction of order. Linear systems of differential Equations.	9		√		√	√
Gamma and Beta functions.	10			√	√	√
Surfaces and curves in three dimensions.	11			√	√	√
Vector functions of one variable. Scalar functions of several variables, partial derivatives	12			√	√	√
Directional derivatives, total derivatives.	13			√	√	√
Applications (tangent planes and normal lines. Taylor expansions, maxima and minima, Lagrange's multipliers)	14			√	√	√
Oral and Practical exam	15					
Final Exam	16					
Total		4	4	6	13	13

2.6 Teaching and Learning Methods

Teaching and Learning Methods: Methods	Course LO's Covered				
	CLO1	CLO2	CLO3	CLO4	CLO5
1. Lecture	√	√	√	√	√
2. Tutorials	√	√	√	√	√
3. Problem-based Learning	√	√	√	√	√
4. Discussion	√	√	√	√	√
5. Computer-based Instruction	√	√	√	√	√
6. Report	√	√	√	√	√
Teaching and Learning Methods for Students with Special Needs:					
Methods					
1. Discussion Session					
2. Extra Lectures					
3. Provide different levels of books and materials					

2.7 Assessment Methods

Assessment Methods:		Course LOs Covered				
Methods		CLO1	CLO2	CLO3	CLO4	CLO5
Formative Assessment Method						
Tests	Midterm Exam	√	√		√	√
Discussions		√	√	√	√	√
Assignments		√	√	√	√	√
Report		√	√	√	√	√
Summative Assessment Method						
Final Exam		√	√	√	√	√

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method		Week	Weighting of Asses.
Formative Assessment Method			
Tests	Midterm Exam	8	25
Discussions		1, 2, 3, ..., 15	10
Assignments		2, 3, ..., 15	10
Report		10	5
Summative Assessment Method			
Final Exam		16	75
Total			125

2.8. List of Reference:

Course Notes:	Ordinary differential equations, Prof. Dr. Aly N. Elwakeil, 17351, 2009.
Recommended Books:	ERWIN KREYSZIG, ADVANCED ENGINEERING MATHEMATICS, 2011 John Wiley & Sons (Asia) Pte Ltd.

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO1	√	√

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes				
	CLO1	CLO2	CLO3	CLO4	CLO5
CO1	√	√		√	√
CO2			√	√	√

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes				
	CLO1	CLO2	CLO3	CLO4	CLO5
PLO1	√	√	√		
PLO2				√	√

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO1	PO1	CLO1	Lecture	Midterm Exam, Final Exam
			Tutorials	
			Problem-based Learning	Discussions, Assignments
			Discussion	
			Report	
		CLO2	Lecture	Midterm Exam, Final Exam
			Tutorials	
			Problem-based Learning	Discussions, Assignments
			Discussion	
			Report	
	Lecture	Midterm Exams, Final Exam		

		CLO3	Tutorials	
			Problem-based Learning	Discussions, Assignments
			Discussion	Discussions
PLO2	PO1	CLO4	Computer-based Instruction	Assignments
		CLO5	Computer-based Instruction	Assignments

Course Coordinator: Dr. Doaa Ahmed Abd-Elwahab Hammady



Head of Department: Prof. Ahmed Saeed Debaiky



Date: / 9/2022



Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering Department			
Department Offering the Course	Basic Sciences Department			
Date of Specification Approval				
Course Title	Technical English	Code	U1111	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	1 st Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	-	2	-	2

2. Professional Information:

2.1. Course description:

English for Science is an ESP (English for Specific Purposes) course directed to students of civil engineering. It runs in the first semester of every year. The course is offered in 14 weeks with a 2-hour-per-week teaching plan.

The main aim of this ESP (English for Specific Purposes) course is to equip students with the language essential for their scientific divisions by providing them with subject-specific language and terminology. Overall, it develops the language and skills that the students need to succeed in their programs. It integrates all language skills, reading, writing, listening, and speaking as well as scientific terminology.

2.2. Course Objectives (CO):

The students will be able to:

Program objective		Course objective	
PO1	Master self-learning and life-long learning strategies to communicate effectively in academic/professional fields.	CO1	Use written and oral communication in a range of situation with an emphasis on academic communication.
		CO2	Identify academic terminologies related to their field of specialization.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO5	Practice research techniques and methods of investigation as an inherent part of learning.	CLO1	Apply basic research skills through constructing a project related to an engineering or science related situation.
		CLO2	Understand abstract ideas and arguments from a range of texts.
PLO8	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	CLO3	Recognize appropriate written and oral communication in different situations in English.
		CLO4	Communicate efficiently to convey ideas verbally.
PLO10	Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.	CLO5	Use vocabulary as a key ingredient in developing advanced written skills.
		CLO6	Practice a range of grammatical structures and vocabulary accurately and effectively.

2.4. Course Topics:

Course Topics	Week	Course LO's Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Introduction to course content	1		*	*	*		
Will & be going to	2						*
Working, forming and heat treating metal	3					*	
Prefixes	4		*			*	
Minerals and ceramics	5						
Subject –verb agreement (1)	6						*
Subject –verb agreement (2)	7						*
Midterm Exam	8						
Design solutions	9	*			*	*	
Adjectives	10						*
Dimensions of circles	11	*		*			
Compounds	12	*		*			
Interconnection	13					*	*
Non-ferrous metals	14					*	*
Oral and Practical exam	15						
Final Exam	16						
Total		3	2	3	2	5	6

2.5 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
1. Tutorials	*	*		*	*	
2. Discussion	*		*		*	
3. Interactive Learning			*	*		*
4. Self- learning	*	*				*
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Discussion Session						
2. Extra Lectures						
3. Provide different levels of books and materials						

2.6 Assessment Methods

Assessment Methods:	Course LOs Covered					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Formative Assessment Method						
1. Tests	Oral Test		*	*		
	Midterm Exam		*		*	*
2. Discussions		*		*	*	
3. Reports		*			*	
4. Observation				*	*	*
Summative Assessment Method						
Final Exam		*		*		*

2.6.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Mid-term Exam	Week # 8	30%
Oral Test	Week # 9	10%
Discussions	Week # 9,11,12	4%
Reports	Week # 9,11,12	6%
Final Exam	Scheduled by the faculty council	50%
Total		100%

2.7. List of Reference:

Essential Books (Textbooks):	Folse, Keith, April Muchmore-Vokoun and Elena Vestri Solomon. Great Essays. 3rd ed. U.K.: Heinle Cengage Learning, 2010.
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Recommended Books:	Murphy, R. and Smalzer, W., 2000. Grammar in use. Cambridge: Cambridge University Press
	Mulvey, D., 2002. Grammar the easy way. Hauppauge, N.Y.: Barron's
Periodicals, Web Sites, ... etc:	http:// www.duolingo.com https://elt.oup.com

2.8. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Data show
White board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO1	*	*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
CO1	*	*	*			
CO2				*	*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
PLO5	*	*				
PLO8			*	*		
PLO10					*	*

3.4. Assessment Alignment Matrix

PLO's	PO's	CLO's	Teaching M.	Assessment M.
PLO5	PO1	CLO1 CLO2	1. Tutorials 2. Discussion 3. Self- learning	1. Discussions 2. Reports 3. Final Exam
PLO8	PO1	CLO3 CLO4	1. Tutorials 2. Interactive Learning 3. Discussion 4. Self- learning	1. Oral Test 2. Discussions 3. Observation 4. Final Exam 5. Midterm Exam
PLO10	PO1	CLO5 CLO6	1. Tutorials 2. Discussion 3. Interactive Learning 4. Self- learning	1. Discussions 2. Reports 3. Midterm Exam 4. Observation 5. Final Exam

**Course Coordinator: Dr. Yasmin Mohamed Essaid
Dr. Mohamed Abd El-Ghany**



Head of Department: Prof. Ahmed Saeed Debaiky

Date: 17/11 /2022





Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering Department			
Department Offering the Course	Electrical Engineering Department			
Date of Specification Approval				
Course Title	Electrical Engineering Technology	Code	E1105	
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>	
Semester	First Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	1	0	1

2. Professional Information:

2.1. Course description:

The course topics are: -

1. **Introduction: elements of electrical circuits - Linear circuits- circuit concepts.**
2. **DC circuits and network theorems.**
3. **AC Circuits: Capacitance- inductance - Sinusoidal alternating current circuits at steady state - Balanced 3-phase circuits and power calculations.**
4. **Electronics: diode circuits - transistors Op-amplifiers circuits - integrated circuits.**
5. **Basics of Electrical distribution: Transmission lines – underground cables - electrical installations in buildings.**

2.2. Course Objectives (CO):

Program objective		Course objective	
PO ¹	Apply a wide spectrum of engineering knowledge, science, and specialized skills with analytic, critical, and systemic thinking to identify and solve engineering problems in real life situation.	CO ¹	Analyze simple (DC and AC) electric circuits and simple (diode, transistor, and Op-amplifier) electronic circuits.
		CO ²	Describe the basics of electrical distribution
PO ³	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations.	CO3	Design a part of electrical installations in buildings.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO ¹	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	CLO1	Define the DC and AC variables and components.
		CLO2	Use network theorems to analyze DC circuits and AC single and 3-phase circuits.
		CLO3	Analyze simple diode, transistor, and Op-amplifier electronic circuits.
		CLO4	Compare between transmission lines and underground cables.
PLO ²	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.	CLO5	Design the electrical illumination system in buildings.

2.4. Course Topics:

Course Topics	Week	Course LO's Covered				
		CLO1	CLO2	CLO3	CLO4	CLO5
Elements of electrical circuits - Linear circuits- circuit concepts.	1	*				
DC circuits and network theorems.	2,3,4		*			
Single phase and 3-phase AC circuits: Capacitance- inductance - Sinusoidal alternating current circuits at steady state - Balanced 3-phase circuits and power calculations.	5,6,7		*			
Mid term	8					
Electronics: Diode circuits – Transistors - Op-amplifiers circuits - Integrated circuits	9,10			*		
Basics of Electrical distribution: Transmission lines - Underground cables	11,12				*	
Electrical installations in buildings	13,14					*
Oral and Practical exam	15					
Final Exam	16					
Total		1	6	2	2	2

2.5. Lab Topics: *Not applicable*

Lab Topics	Week	Course LO's Covered				
		CLO1	CLO2	CLO3	CLO4	CLO5
Total						

2.6 Teaching and Learning Methods

Teaching and Learning Methods:		Course LO's Covered				
Methods		CLO1	CLO2	CLO3	CLO4	CLO5
1. Lecture		*	*	*	*	*
2. Tutorials		*	*	*	*	*
3. Report		*	*	*	*	*
4. Discussion						*
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Discussion Session						
2. Extra Lectures						
3. Provide different levels of books and materials						

2.7 Assessment Methods

Assessment Methods:		Course LOs Covered				
Methods		CLO1	CLO2	CLO3	CLO4	CLO5
Formative Assessment Method						
Tests	Midterm Exam		*	*		
	Quiz 1	*	*			
	Quiz 2			*		
				*		
Summative Assessment Method						
Final Exam			*	*	*	*

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Quiz 1	4	2.5%
Midterm	8	20%
Quiz 2	12	2.5%
Final Exam	16	60%
Semester work	1-15	15%
Total		100%

2.8. List of Reference: (max. five years ago)

Course Notes:	
Essential Books (Textbooks):	JAMES W. NILSSON, "Electric circuits"
Recommended Books:	Therja, "Basic Electrical Engineering"
Periodicals, Web Sites, ... etc:	

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective		
	CO1	CO2	CO3
PO1	*	*	
PO3			*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes				
	CLO1	CLO2	CLO3	CLO4	CLO5
CO1	*	*	*		
CO2				*	
CO3					*


3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes				
	CLO1	CLO2	CLO3	CLO4	CLO5
PLO1	*	*	*	*	
PLO3					*

3.4. Assessment Alignment Matrix

PO	PLO	CLO	Teaching M.	Assessment M.
PO1	PLO1	1,2,3,4	• Lecture	• Quiz
			• Tutorials	• Midterm
PO6	PLO3	5	• Report	• Final Exam
			• Discussion	• Semester work

**Course Coordinator: Assoc.Prof. Wael A. Mohamed
Dr. Khamis Allam**



**Head of Department: Prof. Ahmed Al Debiki
Date: 02/11 /2022**





Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering Department			
Department Offering the Course	Civil Engineering Department			
Date of Specification Approval				
Course Title	Engineering Applications (1 - b) *	Code	C1106	
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>	
Semester	1st Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	1	-	2	2

2. Professional Information:

2.1. Course description:

The Main Elements of Structures, Construction Techniques, Building by Bricks, Soil Investigation, Types of Foundations, Retaining Works, Excavation Works, Foundation Planning, Filling Works.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO1	Apply a wide spectrum of engineering knowledge, science and specialized skills with analytic, critical and systemic thinking to identify and solve engineering problems in real life situation.	CO1	Mastering different types of Building Structures, precautions of execution, Steel types, usage, bending list and formworks
PO2	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations.	CO2	Inventory works, Calculations of quantities of all types of civil work (excavation, concrete works, insulation,etc).

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO6	Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	CLO1	Understanding Plan, supervise and monitor implementation of buildings primary works. (Understand)
		CLO2	Calculate quantities and cost of materials for buildings primary works. (Apply) .
PLO11	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.	CLO3	Applying engineering techniques to understanding of standard specification and quality control for materials of buildings. (Apply) .
		CLO4	Use rate of implementation of construction execution to Calculate required the number of workers, technicians, and duration time. (Apply) .

2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Introduction of Form Works	1	*	*		
Foundation Form works	2	*	*		
Shuttering of Columns, Slabs,.....etc	3,4,5	*	*	*	*
Quiz	6		*		
Inventory Works	7	*	*	*	
Mid term	^				
Brick Types	9,10	*	*	*	
Brick Usage / Inventory Works	11,12,13	*	*	*	
Water & Heat Insulation	14	*	*		
Practical and Oral Exam	15				
Final Exam	16				
Total		12	13	9	3

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Shuttering	4	*	*	*	
Brick works	12	*	*	*	
Total	2				

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered			
Methods	CLO1	CLO2	CLO3	CLO4
1. Lecture	*	*	*	*
2. Tutorials		*		*
3. Practical-based Learning			*	*
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				
2. Extra Lectures				
3. Provide different levels of books and materials				

2.7 Assessment Methods

Assessment Methods:	Course LOs Covered			
Methods	CLO1	CLO2	CLO3	CLO4
Formative Assessment Method				
Tests	Quiz		*	*
	Midterm Exam	*	*	*
Assignments		*	*	*
Summative Assessment Method				
Oral and Practical exam		*	*	*

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Assignments	2&3&5&11&12	20 %
Quiz	7	10 %
Mid-term exam	9	30 %
Oral and Practical exam	16	40 %
Total		100 %

2.8. List of Reference: (max. five years ago)

Course Notes:	- Staff lectures notes
Recommended Books:	Encyclopedia El-Bakary
Periodicals, Web Sites, ... etc:	

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
laboratory Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO1	*	
PO ₂		*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
CO1			*	*
CO2	*	*		

3.3. Program Learning Outcomes VS Course Learning Outcomes

	Course Learning Outcomes
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Program Learning Outcomes	CLO1	CLO2	CLO3	CLO4
PLO6	*	*		
PLO11			*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO ¹	PO ¹	CLO1	<ul style="list-style-type: none"> Lecture. Practical-based Learning. 	<ul style="list-style-type: none"> Written Exams. Assignments. Oral and Practical exam
		CLO2	<ul style="list-style-type: none"> Lecture. Tutorials. 	<ul style="list-style-type: none"> Written Exams. Assignments.
PLO ¹¹	PO ¹	CLO3	<ul style="list-style-type: none"> Lecture. Practical-based Learning. 	<ul style="list-style-type: none"> Assignments. Oral and Practical exam
		CLO4	<ul style="list-style-type: none"> Lecture. Tutorials. 	<ul style="list-style-type: none"> Written Exams. Assignments.

Course Coordinator: Dr. Moustafa Hamdy Mansour
Dr. Amir Sabry Ibrahim



Head of Department: Prof. Ahmed El-Debaiky
Date: 11/0²/2022





Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the program	Civil Engineering Department			
Department Offering the course	Civil Engineering Department			
Date of Specification Approval				
Course Title	Fluid Mechanics	Code	C 1141	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	1 st Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	1	1	4

2. Professional Information:

2.1. Course description:

Dimension and units - Properties of liquids – Fluid statics - Type of flow - Flow over weirs – Flow through orifices - Continuity equation - Bernoulli's equation - Momentum equation - Losses.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO1	Apply a wide spectrum of engineering knowledge, science, and specialized skills with analytic, critical and systemic thinking to identify and solve engineering problems in real life situation.	CO1	Apply the fundamental principles of fluid mechanics for the solution of practical civil Engineering problems.
		CO2	Solve practical Civil Engineering problems of water conveyance in pipes and pipe networks

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO2	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.	CLO1	Conduct experiments on hydraulic laboratory devices
		CLO2	Assess the results from physical equations and compare it with the experimental tests.

PLO11	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.	CLO3	Apply different techniques of fluid mechanics, for solving civil engineering problems.
		CLO4	Analyze fluid flow problems using Mass, Energy and Momentum equations

2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Introduction & Dimensions and Units	1			*	
Properties of liquids	2	*	*	*	
Fluid statics and pressure measurements	3			*	
Forces on Submerged Surface	4			*	
Buoyancy and Floatation	5			*	
Fluids in Relative Equilibrium	6			*	
Types of flow	7			*	
Midterm exam	8				
Continuity equation	9			*	*
Bernoulli's equation	10	*	*	*	*
Flow over weirs & Flow through orifices	11	*	*	*	*
Momentum equation	12	*	*	*	*
Flow in pipes and losses	13	*	*	*	
Available software packages to solve flow problems	14			*	
Oral and Practical exam	15				
Final Exam	16				
Total		5	5	13	4

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Determine Densities, and Specific	2	*	*		

Gravities.					
Determine Weights and Viscosity.	3	*	*		
Bernoulli's Theorem Demonstration.	10	*	*		
Flow through sharp edged Orifice.	11	*	*		
Flow over Rectangular and Triangular Weir	12	*	*		
Analysis of flow in pipes and pipe networks	14	*	*		
Total	6	6	6	-	-

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered			
Methods	CLO1	CLO2	CLO3	CLO4
1. Lectures			*	*
2. Tutorials		*	*	*
3. Practical-based Learning	*	*		
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Repeat the explanation of some of the material and tutorials.				
2. Give them specific tasks and assign a teaching assistance to follow up the performance of this group of students.				
3. Provide different levels of books and materials				

2.7 Assessment Methods

Assessment Methods:		Course LOs Covered			
Methods		CLO1	CLO2	CLO3	CLO4
Formative Assessment Method					
Tests	Oral Test		*		*
	Midterm Exam			*	*
	Experimental	*	*		
	Quizzes			*	*
Reports			*	*	
Summative Assessment Method					
Final Exam				*	*

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Quizzes	At end of each topic	2%
Experimental	2, 3, 10, 11, 12, and 14	5%
Midterm Exam	8	20%
Reports	14	3%
Oral Test	15	10%
Final Exam	16 and above	60%
Total		100%

2.8. List of Reference:

Course Notes:	
Essential Books (Textbooks):	A Brief Introduction to Fluid Mechanics, sixth Edition by Donald F. Young, Bruce R. Munson, Theodore H. Okiishi, Wade W. Huebsch, Wiley 2010, ISBN: 0470596791, 9780470596791
Recommended Books:	<ul style="list-style-type: none"> • Frank M. White, Fluid Mechanics, 8th Edition, McGraw Hill, 2013. ISBN13: 9780073398273 Copyright: 2016 • Fundamentals of Fluid Mechanics, Bruce R. Munson, Donald F. Young, Theodore H. Okiishi, and Wade W. Huebsch, Wiley co., SI Version, 6th Edition, 2010., ISBN: 978-0-470-39881-4 • Solving Problems in Fluid Mechanics, volume 1& 2, J.F.Douglas, Longman scientific and technical, Longman group UK Ltd, Longman house, Burnt Mill, Harlow, Essex CM20 2JE, England.
Periodicals, Web Sites, ... etc:	-

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Data Show
White Board
laboratory Usage

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO1	*	*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
CO1	*	*		
CO2			*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
PLO2	*	*		
PLO11			*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO2	PO1	CLO1	<ul style="list-style-type: none"> • Practical-based Learning 	<ul style="list-style-type: none"> • Experimental Exam
		CLO2	<ul style="list-style-type: none"> • Tutorials • Practical-based Learning 	<ul style="list-style-type: none"> • Oral Test • Experimental Exam • Reports
CLO3		<ul style="list-style-type: none"> • Lecture • Tutorials 	<ul style="list-style-type: none"> • Quizzes • written Exam • Reports 	
CLO4		<ul style="list-style-type: none"> • Lecture • Tutorials 	<ul style="list-style-type: none"> • written Exam • Oral Test • Quizzes 	
PLO11				

Course Coordinator: Dr. Fahmy Salah Abdelhaleem
Dr. Amir Sabry Ibraheem



Head of Department: Prof. Ahmed Saeed Debiky
Date: 05/11/2022





Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering Department			
Department Offering the Course	Civil Engineering Department			
Date of Specification Approval				
Course Title	Civil Drawing (b)	Code	C 1104	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	2 nd Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	1	0	2	2

2. Professional Information:

2.1. Course description:

Technical expressions of reinforced concrete structures - Projection of RC sections and joints -
 Technical expressions of steel structures - Projection of steel sections and joints.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO4	Use techniques, skills, and modern engineering tools necessary for engineering practice.	CO1	Classify steel structures, Projection of steel sections and joints, and Connections Details.
PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations.	CO2	Analyze the Reinforced Concrete structures, Projection of RC sections and joints, and the Reinforcement Details for Each RC Elements.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO6	Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	CLO1	Define Steel elements and Difference in its Objective in Steel Structures (Remember)
		CLO2	Draw different Steel Elements Frames., Trusses, Space Trusses, and Space Frames. (Analyze)
		CLO3	Model a proposal of Steel Column Base (Frames and Trusses) (Apply)
PLO8	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	CLO4	Describe different kinds of Reinforced Concrete Elements and Difference in their Objective in Concrete Structures. (Remember)
		CLO5	Diagram the Reinforcement Details for RC sections (Analyze)

2.4. Course Topics:

Course Topics	Week	Course LOs Covered				
		CLO1	CLO2	CLO3	CLO4	CLO5
Introduction to Steel Structures	1	*				
Steel Beams Connections	2		*			
Steel Beams-Columns Connections	3		*			
	4		*			
Steel Column Base (Frames and Trusses)	5			*		
	6			*		
General Steel Layout	7		*			
Midterm exam	8					
Steel Bridges Connections (Frames and Trusses)	9		*			
	10		*			
Introduction to Concrete Structures and Reinforced Concrete Foundation	11				*	
Reinforced Concrete Floor Plan	12					*
Reinforced Concrete Columns and Foundation Details	13					*
Reinforced Concrete Slabs and Beams Details	14					*

Practical and Oral Exam	15					
Final Exam	16					
Total		1	6	2	1	3

2.5. Lab Topics:

Lab Topics	Week	Course LOs Covered				
		CLO1	CLO2	CLO3	CLO4	CLO5
Introduction to Steel Structures	1	*				
Steel Beams Connections	2		*			
Steel Beams-Columns Connections	3		*			
	4		*			
Steel Column Base (Frames and Trusses)	5			*		
	6			*		
General Steel Layout	7		*			
Midterm exam	8	*	*			
Steel Bridges Connections (Frames and Trusses)	9		*			
	10		*			
Introduction to Concrete Structures and Reinforced Concrete Foundation	11				*	
Reinforced Concrete Floor Plan	12					*
Reinforced Concrete Columns and Foundation Details	13					*
Reinforced Concrete Slabs and Beams Details	14					*
Laboratory exam	15	*	*		*	*
Total	15	2	6	2	1	3

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered				
Methods	CLO1	CLO2	CLO3	CLO4	CLO5
1. Lecture	*	*	*	*	*
2. Tutorials	*	*		*	*
3. Project-based Learning			*		
Teaching and Learning Methods for Students with Special Needs:					
Methods					
1. Discussion Session					
2. Extra Lectures					
3. Provide different levels of books and materials					

2.7 Assessment Methods

Assessment Methods:		Course LOs Covered				
Methods		CLO1	CLO2	CLO3	CLO4	CLO5
Formative Assessment Method						
Tests	Oral Test	*	*		*	*
	Midterm Exam	*	*			
	Experimental	*	*		*	*
Projects	Mini Projects			*		
Assignments		*	*	*	*	*
Summative Assessment Method						
Final Exam						

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Assignments	1 to 7 & 9 to 14	35 %
Midterm exam	8	25 %
Mini Projects	15	10 %
Oral	15	10 %
Experimental	15	20 %
Total		100 %

2.8. List of Reference:

Course Notes:	Dr. Amr R. Elgamal Notes
Essential Books (Textbooks):	<ul style="list-style-type: none"> ● M. G. Shah, C. M. Kale, S. Y. Patki, Building Drawing: With an Integrated Approach to Built Environment, Tata McGraw-Hill, 2002 ● Ying-Kit Choi, Principles of Applied Civil Engineering Design: Producing Drawings, Specifications, and Cost Estimates for Heavy Civil Projects, American Society of Civil Engineers, 2017

Recommended Books:	<ul style="list-style-type: none"> David L. Goetsch, Structural, Civil and Pipe Drafting, Cengage Learning, 2013
Periodicals, Web Sites, ... etc:	Not used

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
laboratory Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO4	*	
PO6		*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes				
	CLO1	CLO2	CLO3	CLO4	CLO5
CO1	*	*	*		
CO2				*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes

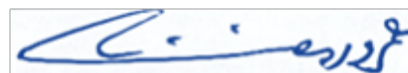
Program Learning Outcomes	Course Learning Outcomes
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	CLO1	CLO2	CLO3	CLO4	CLO5
PLO6	*	*	*		
PLO8				*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO6	PO4	CLO1	<ul style="list-style-type: none"> ● Lecture ● Tutorials 	<ul style="list-style-type: none"> ● Oral & Experimental Exam ● Midterm Exam ● Assignments
		CLO2	<ul style="list-style-type: none"> ● Lecture ● Tutorials 	<ul style="list-style-type: none"> ● Oral & Experimental Exam ● Midterm Exam ● Assignments
		CLO3	<ul style="list-style-type: none"> ● Lecture ● Tutorials ● Project-based Learning 	<ul style="list-style-type: none"> ● Mini Projects ● Assignments
PLO8	PO6	CLO4	<ul style="list-style-type: none"> ● Lecture ● Tutorials 	<ul style="list-style-type: none"> ● Oral & Experimental Exam ● Assignments
		CLO5	<ul style="list-style-type: none"> ● Lecture ● Tutorials 	<ul style="list-style-type: none"> ● Oral & Experimental Exam ● Assignments

Course Coordinator: Dr. Amr Ramadan Elgamal
Dr. Ahmed Abo Alfotoh
Dr. Ahmed Khater



Head of Department: Prof. Dr. Ahmed Saeed Debaiky



Date: 09/02/2023



Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering Department			
Department Offering the Course	Civil Engineering Department			
Date of Specification Approval				
Course Title	Properties and Testing of Materials	Code	C 1121	
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>	
Semester	1st Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	1	1	4

2. Professional Information:

2.1. Course description:

Properties and Testing of Materials: Types of tests and Testing machine - Behavior of Engineering Materials under Static Tension Load - Behavior of Engineering Materials under Static Compression Load - Behavior of Engineering Materials under Static Bending Load - Behavior of Engineering Materials under Static Shear Forces - Behavior of Engineering Materials under Static Torsion Load - Behavior of Engineering Materials under Impact Load.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO1	Apply a wide spectrum of engineering knowledge, science and specialized skills with analytic, critical and systemic thinking to identify and solve engineering problems in real life situation.	CO1	Apply the necessary tests on different types of materials and how to test them.
PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations.	CO2	Design of Engineering structural items under different types of static forces.



2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO2	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.	CLO1	• Define engineering materials, and its types of engineering materials properties.
		CLO2	• Conclude the mechanical properties of engineering materials and factors affecting them.
PLO11	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.	CLO3	• Perform necessary tests to check the validity of engineering materials.
		CLO4	• Work in a team and communicate with others.

2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Introduction	1	*			
Behavior of Engineering Materials under Static Tension Load	2,3		*	*	
Behavior of Engineering Materials under Static Compression Load	4		*	*	*
Behavior of Engineering Materials under Static Bending Load	5,6		*	*	
Behavior of Engineering Materials under Static Shear forces.	7		*	*	
Mid-term exam	8				
Behavior of Engineering Materials under Static Shear forces (contin.)	9,10		*	*	*
Behavior of Engineering Materials under Static Torsion Load	11,12		*	*	



Behavior of Engineering Materials under Impact Load	13,14		*	*	
Oral and Practical exam	15				
Final Exam	16				
Total		1	12	12	3

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Tension test	3		*	*	*
Compression test	4		*	*	*
Bending test	6		*	*	*
Total	3				

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered			
Methods	CLO1	CLO2	CLO3	CLO4
1. Lectures	*	*	*	*
2. Tutorials		*	*	
3. Practical-based Learning		*	*	
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				
2. Extra Lectures				
3. Provide different levels of books and materials				

2.7 Assessment Methods

Assessment Methods:	Course LOs Covered			
Methods	CLO1	CLO2	CLO3	CLO4
Formative Assessment Method				
Tests	Oral Test	*		
	Midterm Exam	*	*	*
	Experimental		*	
Assignments	*	*	*	*
Summative Assessment Method				
Final Exam	*	*	*	

2.7.1. Assessment Schedule & Grades Distribution



Assessment Method	Week	Weighting of Asses.
Assignments	2 to 6 and 9 to 12	10%
Mid-term exam	8	20%
Oral & Experimental	14	10%
Final exam	15	60 %
Total		100%

2.8. List of Reference: (max. five years ago)

Course Notes:	Lecture Notes
Essential Books (Textbooks):	المواصفات القياسية المصرية
Recommended Books:	١- "المواد الهندسية مقاومتها واختبارها" (الجزء الأول والثاني) ا.د. عبد الكريم عطا - ا.د. احمد العريان. ٢- "مقاومة واختبار المواد" د. عبد الوهاب محمد عوض - د. إبراهيم على درويش.
Periodicals, Web Sites, ... etc:	

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
laboratory Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO1	*	
PO6		*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
CO1	*	*		



CO2			*	*
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3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
PLO2	*	*		
PLO11			*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO2	PO1	CLO1	<ul style="list-style-type: none">LecturesTutorials	<ul style="list-style-type: none">Midterm Exam
		CLO2	<ul style="list-style-type: none">LecturesTutorialsPractical-based Learnings	<ul style="list-style-type: none">Midterm ExamExperimental
PLO11	PO6	CLO3	<ul style="list-style-type: none">LecturesTutorialsPractical-based Learnings	<ul style="list-style-type: none">Oral TestMidterm ExamExperimental
		CLO4	<ul style="list-style-type: none">Practical-based Learnings	<ul style="list-style-type: none">Oral Test

Course Coordinator: Dr. Ibrahim Mohamed Ibrahim El-Sayed El-Shenawy
Dr. Ibrahim Ali Ibrahim El-Azab

Head of Department: Prof. Dr. Ahmed Saeed Debaiky

Date: 7 / 11 / 2022



Course Specification

1. Basic Information:

Program Title	Civil Engineering Program		
Department Offering the Program	Civil Engineering Department		
Department Offering the Course	Civil Engineering Department		
Date of Specification Approval			
Course Title	Computer Applications-(1-b)	Code	C1102
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>	
Semester	Spring Semester		
Teaching Hours	Lec.	Tut.	Credit hours
	0	0	1

2. Professional Information:

2.1. Course description:

Application of AutoCAD in drawing different types of civil structures (Irrigation structures - Reinforced concrete structures - Steel structures) - Selected Computer Language.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO4	Use techniques, skills, and modern engineering tools necessary for engineering practice.	CO1	Apply techniques, and skills, using selected computer language in different types of application of civil structures

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles	CLO1	Draw Irrigation, reinforced concrete and steel structures projects using AutoCAD
		CLO2	Choose suitable function of excel program for civil applications
PLO12	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.	CLO3	Identify main function of excel
		CLO4	Use excel program in civil applications

2.4. Lab Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Review on AutoCAD	1,2	√			
Introduction to Microsoft Excel	3,4			√	
Date and Time Functions	5,6		√		
Formatting Values	7		√		
Mid-Term	8				
If function	9		√		
Convert	10		√		
VLOOKUP	11		√		
Approximation Functions.	12		√		
Application	13-14				√
Practical and Oral Exam	15				
Final Exam	16				
Total		2	7	2	2

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered			
Methods	CLO1	CLO2	CLO3	CLO4
1. Computer-based Instruction	√	√	√	
2. Project-based Learning				√
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				
2. Extra Lectures				
3. Provide different levels of books and materials				

2.7 Assessment Methods

Assessment Methods:		Course LOs Covered			
Methods		CLO1	CLO2	CLO3	CLO4
Formative Assessment Method					
Test	Experimental	√	√	√	
Mini Projects					√
Summative Assessment Method					
Practical		√	√	√	

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Experimental Test (Mid-Term)	8	40 % (20Degree)
Mini Projects	14	20 % (10Degree)
Practical Exam (Final Exam)	15	40% (20 Degree)
Total		100% (50Degree)

2.8. List of Reference:

Course Notes:	<ul style="list-style-type: none"> AutoCAD Fundamentals. (Manual).
Recommended Books:	<ul style="list-style-type: none"> A Textbook of Engineering Drawing: Along with an Introduction to AutoCAD, International Publishing House, 2015. ISBN 9789384588687

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Laboratory Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective
	CO1
PO4	√

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
CO1	√	√	√	√

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes			
	CL1	CL2	CL3	CL4
PLO4	√	√		
PLO12			√	√

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment
PLO4	PO4	CLO1	Computer-based Instruction	Experimental, Practical
		CLO2	Computer-based Instruction	Experimental, Practical
PLO12		CLO3	Computer-based Instruction	Experimental, Practical
		CLO4	Project-based Learning	Mini Projects

Course Coordinator: Dr. Ahmed Youssef Kamal El-Deen

Head of Department: Prof. Dr. Ahmed Said El-Debaky

Date: 20/2 /2023





Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Mechanical Engineering Department			
Department Offering the Course	Mechanical Engineering Department			
Date of Specification Approval				
Course Title	Mechanical Engineering Technology	Code	M1104	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	Spring Semester (First Year)			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	1	0	3

2. Professional Information:

2.1. Course Description:

Applications of mechanical engineering in civil engineering. Thermodynamics: Definitions and basic concepts – Properties of pure substances (pure substance, phase change process, properties diagram and tables, ideal gas)- First law of thermodynamics (closed system, open systems, applications) – Second law of thermodynamics (Heat engines, heat pump air conditioning and refrigerators). Heat Transfer: Introduction to Heat Transfer – Modes of heat transfer (conduction, convection, and radiation) – one dimensional steady heat conduction- Extended surfaces- Introduction to convection heat transfer (Free and forced) – Applications on civil work equipment.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO\	Apply a wide spectrum of engineering knowledge, science, and specialized skills with analytic, critical, and systemic thinking to identify and solve engineering problems in real-life situations.	CO1	Apply the first and second law of thermodynamics.
	Use techniques, skills, and modern engineering tools necessary for engineering practice.	CO2	Apply the basic fundemenl of heat transfer modes.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	CLO1	Identify the basic principles of thermodynamics.
		CLO2	Apply the first law of thermodynamics to closed and open systems.
		CLO3	Apply the first law of thermodynamics to engineering systems.
		CLO4	Apply the second law of thermodynamics
PLO10	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.	CLO5	Evaluate the thermal efficiency of heat engines and COP of the refrigerator cycle.
		CLO6	Identify the different modes of heat transfer and composite walls.
		CLO7	Characterize to convection heat transfer (Free and forced).
		CLO8	Describe Extended surfaces

2.4. Course Topics:

Course Topics	Week	Course LO's Covered							
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
Introduction to thermodynamics	1,2	√							
Calculate work and heat	3	√	√						
First law of thermodynamics for closed systems	4,5	√	√	√	√	√			
First law of thermodynamics for open systems	6,7	√	√	√					
Midterm-Exam	8								
Second law of thermodynamics	9,10		√	√	√	√			
Introduction to heat transfer	11						√		
one dimensional steady heat conduction	12						√		√
Convection heat transfer (free and forced)	13						√	√	√
Extended surfaces	14						√	√	√
Practical and Oral Exam	15								
Final Exam	16								
Total		8	8	7	4	4	4	2	3

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered							
Methods	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
1. Lecture	√	√	√	√	√	√	√	√
2. Tutorials		√	√	√	√	√	√	
3. Assignment	√	√	√	√	√	√	√	√
5. Reports		√	√	√	√	√	√	√
Teaching and Learning Methods for Students with Special Needs:								
Methods								
1. Discussion Session								
2. Extra Lectures								
3. Provide different levels of books and materials								

2.7 Assessment Methods

Assessment Methods:	Course LOs Covered							
Methods	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
Formative Assessment Method								
	Midterm Exam	√	√	√				
	Quiz	√	√	√	√			
Assignments		√	√	√	√	√	√	√
Report			√	√	√	√	√	
Summative Assessment Method								
Final Exam		√	√			√	√	√

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Formative Assessment Method		
Tests	Quiz	4, 12
	Midterm-exam	8
Report	7,13	5%
Assignments	3,6,10,13	5%
Final Exam	Scheduled by the faculty council	60%
Total		100%

2.8. List of Reference:

Essential Books (Textbooks):	Fundamentals of Thermal-Fluid Sciences, by Yunus Cengel and Robert Turnerm McGraw-Hill Education; 4th edition.
Recommended Books:	Thermodynamics: An Engineering Approach 8th Edition by Yunus Cengel (Author), Michael Boles.

2.9. Facilities required for Teaching and Learning

Different Facilities	
Lecture Hall	√
Library Usage	√
Data Show	√
White Board	√

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO1	√	√

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes							
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
CO1	√	√	√	√	√			
CO2						√	√	√

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes							
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
PLO1	√	√	√	√				
PLO3					√	√	√	√

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO1	PO1	CLO1	• 1. Lecture	• Midterm exam and final exam
			• 2. Tutorials	
			• 3. Assignment	
		CLO2	• 1. Lecture	• Midterm exam and final exam
			• 2. Tutorials	
			• 3. Assignment	
		CLO3	• 1. Lecture	• Midterm exam and final exam
			• 2. Tutorials	
			• 3. Assignment	
		CLO4	• 1. Lecture	• Midterm exam and final exam
			• 2. Tutorials	
			• 3. Assignment	
PLO3	PO1	CLO5	• 1. Lecture	• Midterm exam and final exam
			• 2. Tutorials	
			• 3. Assignment	
		CLO6	• 1. Lecture	• Midterm exam and final exam
			• 2. Tutorials	
			• 3. Assignment	
		CLO7	• 4. Reports	• Discussion
			• 1. Lecture	• Midterm exam and final exam
		• 2. Tutorials		
		CLO8	• 3. Assignment	• Midterm exam and final exam
			• 1. Lecture	
			• 2. Tutorials	
• 5. Reports	• Discussion			

Course Coordinator: Prof Saleh Kaytbay

Dr. Abdelgalil Mohamed

Dr. Radwan Elzoheiry



Head of Department: Prof. Dr. Ahmed Debaiky



Date: 15 / ٢ / 2023



Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering Department			
Department Offering the Course	Civil Engineering Department			
Date of Specification Approval				
Course Title	Structural Analysis (1 -a)	Code	C1111	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	First Semester (First Year)			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	2	0	4

2. Professional Information:

2.1. Course Description:

Principals of plane statics - Loads and reactions - Stability of structures - Normal force, shear force, and bending moment for beams - Normal force, shear force and bending moment for frames - Trusses - Arches.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO1	Apply a wide spectrum of engineering knowledge, science, and specialized skills with analytic, critical, and systemic thinking to identify and solve engineering problems in real-life situations.	CO1	Use engineering knowledge to identify structural problems.
		CO2	Apply a wide spectrum of engineering, and specialized skills with analytic, critical, and systemic thinking to solve structural problems.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO1	Identity, formulate and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	CLO1	Identify the structures and different types of structural elements.
		CLO2	Explain the determinacy and stability of structures
PLO11	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.	CLO3	Analyze the structure and its support conditions.
		CLO4	Determine the internal forces in determinate structural elements using classical methods

2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Principle of Plane Statics	1,2	√			
Loads and Reactions.	3,4	√		√	
Stability of structures	5,6		√		
Analysis of Determinate Beam.	7			√	√
Mid term	8				
Analysis of Determinate Beam.	9,10			√	√
Analysis of Determinate Frame.	11,12			√	√
Analysis of Determinate Truss.	13,14			√	√
Oral and Practical exam	15				
Final Exam	16				
Total		5	3	10	8

2.5 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered			
Methods	CLO1	CLO2	CLO3	CLO4
1. Lecture	√	√	√	√
2. Tutorials		√	√	√
Teaching and Learning Methods for Students with Special Needs:				

Methods
1. Discussion Session
2. Extra Lectures
3. Provide different levels of books and materials

2.6 Assessment Methods

Assessment Methods:		Course LOs Covered			
Methods		CLO1	CLO2	CLO3	CLO4
Formative Assessment Method					
Test	Mid-Term Exam	√	√	√	√
	Quizzes			√	√
Summative Assessment Method					
Final Exam		√	√	√	√

2.6.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	The weighting of Assessment %
Formative Assessment Method		
Tests	Mid-Term Exam	8 20 %(25 Degree)
	Quizzes	9-14 20 %(25 Degree)
Summative Assessment Method		
Final Exam	16	60%(75 Degree)
Total		100

2.7. List of References:

Essential Books (Textbooks):	<ul style="list-style-type: none"> • "Solved Examples in Determinate Structures", Dar-Elmaarefa, Egypt, Dr. Ahmed Youssef Kamal El-Deen, ISBN 21638/2016
Recommended Books:	<ul style="list-style-type: none"> • Structural Analysis by Russell C. Hibbeler, Pearson, 9th Edition, 2014, ISBN-13:978-0-13-394284-2. • George, N. Frantziskonis. "Essentials of the Mechanics of Materials, Second Edition". USA: Destech Publications, Inc. 2013. ISBN 13: 9781605950983 • Pytel, A. and Kiusalaas, J. "Mechanics of Materials Second Edition". Cengage Learning 2012. ISBN-13: 978-0-495-66775-9

2.8. Facilities required for Teaching and Learning

Different Facilities	
Lecture Hall	√
Data Show	√
White Board	√

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objectives	
	CO1	CO2
PO1	√	√

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CL1	CL2	CL3	CL4
CO1	√	√		
CO2			√	√

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes			
	CL1	CL2	CL3	CL4
PLO1	√	√		
PLO11			√	√

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment
PLO1	PO1	CLO1	Lecture	Midterm Exam, Final Exam
		CLO2	Lecture Tutorials	Midterm Exam, Final Exam
CLO3		Lecture	Midterm Exam, Final Exam.	
		Tutorials	Quizzes, Midterm Exam, Final Exam.	
PLO11		CLO4	Lecture	Midterm Exam, Final Exam.
			Tutorials	Quizzes, Midterm Exam, Final Exam.

Course Coordinator: Dr. Ahmed Youssef Kamal El-Deen



Head of Department: Prof. Dr. Ahmed Debaiky



Date: 5/11 / 2022



Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the program	Civil Engineering Department			
Department Offering the course	Civil Engineering Department			
Date of Specification Approval				
Course Title	Plane Surveying	Code	C1132	
Type	Compulsory <input checked="" type="checkbox"/>	Elective	<input type="checkbox"/>	
Semester	second Semester (first Year)			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	1	1	4

2. Professional Information:

2.1. Course description:

Introduction to surveying and mapping - History - Definitions - Classifications - Units - Scales - Coordinates - Reconnaissance - Sketch drawing - Distance measurement - Electronic distance measurement - Angle and direction measurement - Theodolites - Vertical angle measurements - Horizontal angle measurements - Traverse - Traverse adjustment - Area measurements.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO1	Apply a wide spectrum of engineering knowledge, science, and specialized skills with analytic, critical, and systemic thinking to identify and solve engineering problems in real-life situations.	CO1	Apply practical and theoretical skills in the surveying and setting out of buildings and solve surveying problems in real-life situations.
PO ^o	Master self-learning and life-long learning strategies to communicate effectively in academic/professional fields.	CO2	Apply the student's sense and capabilities in performing plane surveying measurement techniques and instruments to establish horizontal and vertical control with the necessary adjustment.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO2	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.	CLO5	Use theodolite instrument for angle measurements.
		CLO6	Apply the basic principles of the EDM instrument.
PLO5	Practice research techniques and methods of investigation as an inherent part of learning	CLO7	Practice research about Surveying Maps
PLO11	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	CLO1	Identify the basic principles of plane survey.
		CLO2	Calculate Tacheometry measurements,
		CLO3	Solve the Traverse computations and adjustment
		CLO4	Apply Scale and area computation

2.4. Course Topics:

Course Topics	Week	Course LO's Covered						
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7
Review of plane survey -History - Definitions - Classifications – Units	1	√						
Scale and area computation	2,3		√				√	
Main Directions -A bearing of a line in surveying	4,5	√						√
Theodolites -Vertical angle measurements - Horizontal angle measurements	6,7		√			√		
Midterm exam	8							
Tacheometry measurements - Classification of Tacheometry	9	√						
Electromagnetic Distance Measurement	10,11	√					√	
Traverse definitions- Types of Traverses- Traverse computations and adjustment	12,13			√				
Surveying Maps	14				√			√
Practical and Oral Exam	15							
Final Exam	16							
Total		6	4	2	1	2	1	3

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered						
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7
Theodolite instrument	5,6,7	√	√			√		
Practical Exam	15					√	√	
Total	३	1	1			2	1	

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered						
Methods	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7
1. Lecture	√	√	√	√			
2. Tutorials	√	√	√	√			
3. Practical-based Learning					√	√	
4. Reports							√
Teaching and Learning Methods for Students with Special Needs:							
Methods							
1. Discussion Session							
2. Extra Lectures							
3. Provide different levels of books and materials							

2.7 Assessment Methods

Assessment Methods:	Course LOs Covered						
Methods	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7
Formative Assessment Method							
Tests	Midterm Exam	√	√				
Discussion		√	√	√			
Report							√
Summative Assessment Method							
Practical Exam					√	√	
Oral Exam							√
Final Exam	√	√	√	√			

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	The weighting of Assessment %
Formative Assessment Method		
Tests	Mid-Term	8
Discussion		16%(20degree)
Report	2,4,6,7,10,12	4%(5degree)
	15	4%(5degree)
Summative Assessment Method		
Practical Exam	15	12%(15degree)
Oral Exam	15	4%(5degree)
Final Exam	16	60%(75degree)
Total		125

2.8. List of Reference:

Essential Books (Textbooks):	<ul style="list-style-type: none"> Breaks, T. (2011), " A complete system of land-surveying: both in theory and practice", Printed by T. Saint for W. Charnley and J. Murray in London, 1771.
Recommended Books:	<ul style="list-style-type: none"> El Maghraby, S. (2012), "E-Learning Courses in Engineering Surveying", Azhar. University, Cairo.EL-Fiky G. S. (2014), "Plane Surveying". Faculty of Engineering, Zagazig University, pp 310.

2.9. Facilities required for Teaching and Learning

Different Facilities	
Lecture Hall	√
Laboratory Usage	√
Data Show	√
White Board	√

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objectives	
	CO1	CO2
PO1	√	
PO5		√

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes						
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7
CO1	√	√	√	√			
CO2					√	√	√

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes						
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7
PLO2					√	√	
PLO5							√
PLO11	√	√	√	√			

3.4. Assessment Alignment Matrix

PLO	PO	CLOs	Teaching M.	Assessment
PLO2	PO5	CLO5	Practical-based Learning	Practical Exam
		CLO6	Practical-based Learning	Practical Exam
PLO5	PO5	CLO7	Reports	Oral Exam
				Report
PLO11	PO1	CLO1	Lecture	Midterm Exam, Final Exam
			Tutorials	
		CLO2	Lecture	Midterm Exam, Final Exam
			Tutorials	
		CLO3	Lecture	Final Exam
			Tutorials	
		CLO4	Lecture	Final Exam
			Tutorials	

Course Coordinator: Dr. Ahmed Saber



Head of Department: Prof. Dr. Ahmed Debaiky



Date: 20/2 / 2023



Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering Program			
Department Offering the Course	Civil Engineering Program			
Date of Specification Approval				
Course Title	Engineering Applications (1 - a)	Code	C1105	
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>	
Semester	1st Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	1	-	2	2

2. Professional Information:

2.1. Course description:

The Main Elements of Structures, Construction Techniques, Building by Bricks, Soil Investigation, Types of Foundations, Retaining Works, Excavation Works, Foundation Planning, Filling Works.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO1	Apply a wide spectrum of engineering knowledge, science and specialized skills with analytic, critical and systemic thinking to identify and solve engineering problems in real life situation.	CO1	Mastering different types of Building Structures, precautions of execution, Steel types, usage, bending list and formworks
PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations.	CO2	Inventory works, Calculations of quantities of all types of civil work (excavation, concrete works, insulation,etc).

2.3. Course Learning Outcomes(CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO6	Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	CLO1	Understanding Plan, supervise and monitor implementation of buildings primary works.(Understand)
		CLO2	Calculate quantities and cost of materials for buildings primary works.(Apply).
PLO11	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.	CLO3	Applying engineering techniques to understanding of standard specification and quality control for materials of buildings.(Apply).
		CLO4	Use rate of implementation of construction execution to Calculate required the number of workers, technicians and duration time. (Apply).

2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Introduction of Different Projects	1	*	*		
Civil Buildings – Materials used	2	*	*		
Excavation works & Precations	3,4,5	*	*	*	*
Cement	6	*	*	*	
Aggregates	7	*	*	*	*
Mid term	8				
Concrete buildings perfection	9,10	*	*	*	
Steel works and forming	11,12	*	*		
Form works	13,14	*	*		
Oral and Practical exam	15				
Final Exam	16				
Total		13	13	7	4

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Steel forming	11	*		*	
Form works	13	*		*	
Total	2				

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered			
Methods	CLO1	CLO2	CLO3	CLO4
1. Lecture	*	*	*	*
2. Tutorials		*		*
3. Practical-based Learning	*		*	
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				
2. Extra Lectures				
3. Provide different levels of books and materials				

2.7 Assessment Methods

Assessment Methods:		Course LOs Covered			
Methods		CLO1	CLO2	CLO3	CLO4
Formative Assessment Method					
Tests	Quiz		*		*
	Midterm Exam	*	*		*
Assignments		*	*	*	*
Summative Assessment Method					
Oral and Practical exam		*		*	

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Assignments	2&3&5&11&12	20 %
Quiz	7	10 %
Mid-term exam	9	30 %
Oral and Practical exam	14,15	40 %
Total		100 %

2.8. List of Reference: (max. five years ago)

Course Notes:	- Staff lectures notes
Recommended Books:	Encyclopedia El-Bakary
Periodicals, Web Sites, ... etc:	

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
laboratory Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO1	*	
PO6		*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
CO1			*	*
CO2	*	*		

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
PLO6	*	*		
PLO11			*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO6	PO6	CLO1	<ul style="list-style-type: none"> ● Lecture. ● Practical-based Learning. 	<ul style="list-style-type: none"> ● Written Exams. ● Assignments. ● Oral and Practical exam
		CLO2	<ul style="list-style-type: none"> ● Lecture. ● Tutorials. 	<ul style="list-style-type: none"> ● Written Exams. ● Assignments.
PLO11	PO1	CLO3	<ul style="list-style-type: none"> ● Lecture. ● Practical-based Learning. 	<ul style="list-style-type: none"> ● Assignments. ● Oral and Practical exam
		CLO4	<ul style="list-style-type: none"> ● Lecture. ● Tutorials. 	<ul style="list-style-type: none"> ● Written Exams. ● Assignments.

Course Coordinator: Dr. Moustafa Hamdy Mansour
Dr Ahmed Abouelfetouh Abdelaziz



Head of Department: Prof. Ahmed El-Debaiky



Date: 9/12/2022



Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering Department			
Department Offering the Course	Civil Engineering Department			
Date of Specification Approval				
Course Title	Technology of Building Materials	Code	1122	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	Second Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	1	1	4

2. Professional Information:

2.1. Course description:

Specifications and standard specifications of materials and products - Main properties of engineering materials - Building Rocks - Mineral binding materials {Lime, Gypsum & Cement} - Concrete aggregates - Steel reinforcement - Bricks - Fiber - Composite materials.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO1	Behave professionally and adhere to engineering ethics and standards and work to develop the profession and the community and promote sustainability principles.	CO1	Evaluation and judgment of construction materials.
PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations.	CO2	Design and application of construction materials.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO2	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.	CLO1	Conducting appropriate experiments on building materials. (Evaluation)
		CLO2	Judgment of the experimental results. (Evaluation)
PLO11	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.	CLO3	Choosing suitable materials and techniques for civil engineering applications. (Creation)
		CLO4	Determination the properties of construction materials. (Creation)
PLO13	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.	CLO5	Manage appropriate construction techniques. (Creation)
		CLO6	Assessment the quality of construction materials. (Evaluation)

2.4. Course Topics:

Course Topics	Week	Course LO's Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Fundamental properties of constructions materials	1			*	*	*	*
Building rocks (I)	2	*	*	*	*	*	*
Building rocks (II)	3	*	*	*	*	*	*
Mineral binder materials	4	*	*	*	*	*	*
Air Lime	5	*	*	*	*	*	*
Gypsum	6	*	*	*	*	*	*
Cement (I)	7	*	*	*	*	*	*

Cement (II)	8	*	*	*	*	*	*
Mid-term Exam	9						
Concrete aggregates (I)	10	*	*	*	*	*	*
Concrete aggregates (II)	11	*	*	*	*	*	*
Reinforcement steel	12			*	*	*	*
Bricks	13	*	*	*	*	*	*
Fiber reinforced polymers	14	*	*	*	*	*	*
Practical and Oral Exam	15						
Final Exam	16						
Total		11	11	13	13	13	2

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Cement tests (I)	7	*	*		*		*
Cement tests (II)	8	*	*		*		*
Concrete aggregates tests	11	*	*		*		*
Total	3	1	3		3		

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered					
Methods	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
1.Lecture	*	*	*	*	*	*
2.Tutorial	*	*	*	*	*	*
3.Practical-based Learning	*	*		*		
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Discussion Session						
2. Extra Lectures						
3. Provide different levels of books and materials						

2.7 Assessment Methods

Assessment Methods:	Course LOs Covered					
Methods	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Formative Assessment Method						
Tests	Oral Exam	*	*	*	*	*
	Midterm Exam	*	*	*	*	*
	Experimental	*	*		*	
Assignments	*	*	*	*	*	*
Summative Assessment Method						

Final Exam	*	*	*	*	*	*
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2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Assignments	2 to 8 & 10 to 14	5%
Midterm Exam	9	20%
Experimental	7, 8 & 11	5%
Oral Exam	15	10%
Final Exam	16	60%
Total		100%

2.8. List of Reference: (max. five years ago)

Course Notes:	Used
Essential Books (Textbooks):	<p>١- الكود المصري لتصميم وتنفيذ المنشآت الخرسانية - ٢٠٣.</p> <p>٢- الكود المصري لأسس تصميم واشتراطات تنفيذ البوليمرات المسلحة بالألياف في مجالات التشييد - ٢٠٨.</p> <p>٣- الملحق الثالث للكود المصري لتصميم وتنفيذ المنشآت الخرسانية (دليل الاختبارات المعملية لمواد الخرسانة).</p>
Recommended Books:	<p>1- Construction Materials Their Nature and Behaviour, Fifth Edition, Edited By Marios Soutsos, Peter Domone, ISBN 9781498741101.</p> <p>2- Building Materials (THIRD REVISED EDITION), S. K. Duggal, NEW AGE INTERNATIONAL (P) LIMITED PUBLISHERS, ISBN-13: 978-81-224-2975-6.</p> <p>٤- "خواص واختبار المواد" (الجزء الأول والثاني) أ.د. عبد الكريم عطا أ.د. أحمد العريان.</p>
Periodicals, Web Sites, ... etc:	<p>https://www.buildingmaterials.co.uk/</p> <p>https://www.sciencedirect.com/journal/construction-and-building-materials</p>

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
laboratory Usage
Data Show

White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO1	*	
PO6		*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
CO1	*	*		*		*
CO2			*	*	*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
PLO2	*	*				
PLO11			*	*		
PLO13					*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO2	PO1	CLO1	<ul style="list-style-type: none"> Lecture Tutorial Practical-based Learning 	<ul style="list-style-type: none"> Written exam Assignments Oral exam Experimental
		CLO2	<ul style="list-style-type: none"> Lecture Tutorial Practical-based Learning 	<ul style="list-style-type: none"> Written exam Assignments Oral exam Experimental
PLO11	PO6	CLO3	<ul style="list-style-type: none"> Lecture Tutorial 	<ul style="list-style-type: none"> Written exam Assignments Oral exam

		CLO4	<ul style="list-style-type: none"> • Lecture • Tutorial • Practical-based Learning 	<ul style="list-style-type: none"> • Written exam • Assignments • Oral exam • Experimental
PLO13		CLO5	<ul style="list-style-type: none"> • Lecture • Tutorial 	<ul style="list-style-type: none"> • Written exam • Assignments • Oral exam
		CLO6	<ul style="list-style-type: none"> • Lecture • Tutorial 	<ul style="list-style-type: none"> • Written exam • Assignments • Oral exam

Course Coordinator: Prof. Dr\ Khaled Mohamed El-Sayed



Head of Department: Prof. Dr\ Ahmed El-Debeiky



Date: 15/2/2023



Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering Department			
Department Offering the Course	Civil Engineering Department			
Date of Specification Approval				
Course Title	Civil Drawing (a)	Code	C 1103	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	1 st Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	1	0	2	2

2. Professional Information:

2.1. Course description:

Technical expressions in civil drawing - Earth works and their projection - Types of retaining walls and abutments - Projection of different kinds of bridges - Projection of irrigation structures at water way intersections.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO4	Use techniques, skills, and modern engineering tools necessary for engineering practice.	CO1	Classify the Earth works and their projection & Types of retaining walls and abutments
PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations.	CO2	Analyze the different kinds of bridges and irrigation structures at water way intersections.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO6	Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	CLO1	Define channel sections and change in its levels and roads intersection (Remember)
		CLO2	Draw different kinds of Retaining walls, Abutment and bridges. (Analyze)
PLO8	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	CLO3	Diagram the irrigation structures (Syphon and Culvert) (Analyze)
		CLO4	Describe different kinds of irrigation structures (Reg., Weirs and Aqued. (Remember)

2.4. Course Topics:

Course Topics	Week	Course LOs Covered			
		CLO1	CLO2	CLO3	CLO4
Introduction to irrigation structures	1	*			
Channel section	2	*			
Change in levels	3	*			
Roads intersections	4	*			
Retaining walls& Abutment	5		*		
	6		*		
Bridges	7		*		
Midterm exam	8				
Culvert	9			*	
	10			*	
Syphon	11			*	
Aqued.	12				*
Reg.	13				*
Weirs	14				*
Oral and Practical exam	15				
Final Exam	16				
Total		4	3	3	3

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Introduction to irrigation structures	1	*			
Channel section	2	*			
Change in levels	3	*			
Roads intersections	4	*			
Retaining walls& Abutment	5		*		
Bridges	7		*		
Midterm exam	8				
Culvert	9			*	
	10			*	
Syphon	11			*	
Aqued.	12				*
Reg.	13				*
Weirs	14				*
Oral and Practical exam	15				
Total		4	2	3	3

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered			
Methods	CLO1	CLO2	CLO3	CLO4
1. Lecture	*	*	*	*
2. Tutorials	*	*	*	*
3. Project-based Learning	*	*	*	*
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				
2. Extra Lectures				
3. Provide different levels of books and materials				

2.7 Assessment Methods

Assessment Methods:		Course LOs Covered			
Methods		CLO1	CLO2	CLO3	CLO4
Formative Assessment Method					
Tests	Oral Test	*	*	*	*
	Midterm Exam	*	*		
	Experimental	*	*	*	*
Projects	Mini Projects	*	*	*	*
Assignments		*	*	*	*
Summative Assessment Method					
Final Exam		*	*	*	*

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Assignments	1 to 7 & 9 to 14	35 %
Midterm exam	8	25 %
Mini Projects	15	10 %
Oral	15	10 %
Experimental	15	20 %
Total		100 %

2.8. List of Reference:

Course Notes:	Dr. Amr R. Elgamal Notes
Essential Books (Textbooks):	<ul style="list-style-type: none"> M. G. Shah, C. M. Kale, S. Y. Patki, Building Drawing: With an Integrated Approach to Built Environment, Tata McGraw-Hill, 2002 Ying-Kit Choi, Principles of Applied Civil Engineering Design: Producing Drawings, Specifications, and Cost Estimates for Heavy Civil Projects, American Society of Civil Engineers, 2017
Recommended Books:	<ul style="list-style-type: none"> David L. Goetsch, Structural, Civil and Pipe Drafting, Cengage Learning, 2013
Periodicals, Web Sites, ... etc:	Not used

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
laboratory Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO4	*	
PO6		*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
CO1	*	*		
CO2			*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
PLO6	*	*		
PLO8			*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO6	PO6	CLO1	<ul style="list-style-type: none">● Lecture● Tutorials● Project-based Learning	<ul style="list-style-type: none">● Oral & Experimental Exam● Midterm Exam● Mini Projects● Assignments
		CLO2	<ul style="list-style-type: none">● Lecture● Tutorials● Project-based Learning	<ul style="list-style-type: none">● Oral & Experimental Exam● Midterm Exam● Mini Projects● Assignments
PLO8	PO4	CLO3	<ul style="list-style-type: none">● Lecture● Tutorials● Project-based Learning	<ul style="list-style-type: none">● Oral & Experimental Exam● Mini Projects● Assignments
		CLO4	<ul style="list-style-type: none">● Lecture● Tutorials● Project-based Learning	<ul style="list-style-type: none">● Oral & Experimental Exam● Mini Projects● Assignments

Course Coordinator: Dr. Amr Ramadan Elgamal
Dr. Ahmed Khater



Head of Department: Prof. Dr. Ahmed Saeed Debaiky



Date: 17/11/2022



Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering Department			
Department Offering the Course	Civil Engineering Department			
Date of Specification Approval				
Course Title	Structural Analysis (1 -b)	Code	C1112	
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>	
Semester	Second Semester (First Year)			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	2	0	4

2. Professional Information:

2.1. Course Description:

Influence lines for beams, Frames and Trusses - Properties of cross sections - Normal stresses - Shear stresses - Torsional Stresses - Combined stresses.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO1	Apply a wide spectrum of engineering knowledge, science, and specialized skills with analytic, critical, and systemic thinking to identify and solve engineering problems in real-life situations.	CO1	Apply principles of engineering to detect issues related to the structure.
		CO2	Classify a wide-ranging of engineering principles, techniques, and specialized skills, coupled with a rigorous and thorough approach to analysis, critical thinking, and holistic problem-solving, to accurately diagnose and by calculating the stresses on the structural sections.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO1	Identify, formulate and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	CLO1	Identify the Influence lines structures and different types of structural elements.
		CLO2	Apply knowledge of cross-sectional properties, such as area moment of inertia, centroid, and radius of gyration, to determine normal stresses in complex cross sections.
PLO11	Select appropriate and sustainable technologies for the construction of	CLO3	Calculate shear stresses in various types of structural members under

	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.		different loading conditions, such as shear loading, bending, and torsion as well as evaluating the suitability of different materials and cross-sectional shapes for specific applications, based on their shear strength and stiffness properties.
		CLO4	<ul style="list-style-type: none"> ▪ Calculate the combined stresses in various types of structural members under different loading conditions, such as axial loading, bending, and torsion

2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Influence lines for beams, Frames and Trusses	1,2,3	√			
Properties of cross sections	4,5		√		
Normal stresses	6,7		√		
Mid-Term Exam	8				
Shear stresses	9,10			√	
Torsional Stresses	11,12			√	
Combined stresses.	13,14				√
Oral and Practical exam	15				
Final Exam	16				
Total		5	3	10	8

2.5 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered			
Methods	CLO1	CLO2	CLO3	CLO4
1. Lecture	√	√	√	√
2. Tutorials	√	√	√	√
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				
2. Extra Lectures				
3. Provide different levels of books and materials				

2.6 Assessment Methods

Assessment Methods:		Course LOs Covered			
Methods		CLO1	CLO2	CLO3	CLO4
Formative Assessment Method					
Test	Mid-Term Exam	√	√		
	Quizzes		√	√	√
Summative Assessment Method					
Final Exam		√	√	√	√

2.6.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	The weighting of Assessment %
Formative Assessment Method		
Tests	Mid-Term Exam	8
	Quizzes	9-14
Summative Assessment Method		
Final Exam	16	60%(75 Degree)
Total		100

2.7. List of References:

Essential Books (Textbooks):	<ul style="list-style-type: none"> "Solved Examples in Determinate Structures", Dar-Elmaarefa, Egypt, Dr. Ahmed Youssef Kamal El-Deen, ISBN 21638/2016
Recommended Books:	<ul style="list-style-type: none"> Structural Analysis by Russell C. Hibbeler, Pearson, 9th Edition, 2014, ISBN-13:978-0-13-394284-2. George, N. Frantziskonis. "Essentials of the Mechanics of Materials, Second Edition". USA: Destech Publications, Inc. 2013. ISBN 13: 9781605950983 Pytel, A. and Kiusalaas, J. "Mechanics of Materials Second Edition". Cengage Learning 2012. ISBN-13: 978-0-495-66775-9

2.8. Facilities required for Teaching and Learning

Different Facilities	
Lecture Hall	√
Data Show	√
White Board	√

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objectives	
	CO1	CO2
PO1	√	√

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CL1	CL2	CL3	CL4
CO1	√	√		
CO2			√	√

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes			
	CL1	CL2	CL3	CL4
PLO1	√	√		
PLO11			√	√

3.4. Assessment Alignment Matrix

PLO	CL	Teaching M.	Assessment M.
PLO1	CLO1	Lecture	Quizzes, Midterm Exam, Final Exam
	CLO2	Lecture Tutorials	Quizzes, Midterm Exam, Final Exam
PLO11	CLO3	Lecture	Final Exam.
		Tutorials	Quizzes, Final Exam.
	CLO4	Lecture	Final Exam.
		Tutorials	Quizzes, Final Exam.

Course Coordinator: Dr. Ahmed Youssef Kamal El-Deen

Dr. Ibrahim Ali Ibrahim Elazab



Head of Department: Prof. Dr. Ahmed Debaiky



Date: 24/02 / 2023



Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the program	Civil Engineering			
Department Offering the course	Civil Engineering			
Date of Specification Approval				
Course Title	Computer Applications-(1-a)	Code	C1101	
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>	
Semester	Fall Semester (Second Level)			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	0	0	2	1

2. Professional Information:

2.1. Course Description:

Introduction to AutoCAD - Drawing Elements (Line - Circle - Polygon - ...etc.)

2.2. Course Objectives (CO):

Program objective		Course objective	
PO4	Use techniques, skills, and modern engineering tools necessary for engineering practice.	CO1	Use techniques, and skills, in AutoCAD, which are necessary for engineering Projects.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles	CLO1	Use AutoCAD Software to draw Irrigation structures projects. (APPLY)
		CLO2	Use AutoCAD Software to draw reinforced concrete and steel structures projects. (APPLY)
PLO12	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.	CLO3	Explain drawing commands. (Understand)
		CLO4	Explain modifying commands, and (orthogonal, relative, hatch, Array....) options, layers, dimensions, text, and blocks. (Understand)

2.4. Course Topics:

Lab Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Introduction.	1			√	
Drawing Commands	2-5			√	
Modifying Commends	6,7				√
Midterm exam	8				
Dimensions, Text, Modify text.	9,10				√
Layers, Block.	11				√
Irrigation structures drawing.	12	√			
Reinforced concrete structures drawing	13		√		
Steel structures drawing	14		√		
Oral and Practical exam	15				
Final Exam	16				
Total	16	2	3	6	6

2.5 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered			
	CLO1	CLO2	CLO3	CLO4
1. Computer-based Instruction	√	√	√	√
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				
2. Extra Lectures				
3. Provide different levels of books and materials				

2.6 Assessment Methods:

Assessment Methods:		Course LOs Covered			
Methods		CLO1	CLO2	CLO3	CLO4
Formative Assessment Method					
Test	Experimental			√	√
Assignment		√	√		
Summative Assessment Method					
Practical				√	√

2.6.1. Assessment Schedule & Grades Distribution

Assessment Method		Week	The weighting of Assessment %
Formative Assessment Method			
Tests	Experimental	8	40 % (20 Degree)
Assignment		12,15	20 % (10 Degree)
Summative Assessment Method			
Practical		16	40% (20 Degree)
Total			100% (50 Degree)

2.7. List of References:

Course Notes:	<ul style="list-style-type: none"> AutoCAD Fundamentals. (Manual).
Recommended Books:	<ul style="list-style-type: none"> A Textbook of Engineering Drawing: Along with an Introduction to AutoCAD, International Publishing House, 2015. ISBN 9789384588687

2.8. Facilities required for Teaching and Learning

Different Facilities	
Laboratory Usage	√
Data Show	√
White Board	√

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objectives
	CO1
PO4	√

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
CO1	√	√	√	√

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes			
	CL1	CL2	CL3	CL4
PLO4	√	√		
PLO12			√	√

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment
PLO4	PO4	CLO1	Computer-based Instruction	Assignment
		CLO2	Computer-based Instruction	
PLO12		CLO3	Computer-based Instruction	Experimental, Practical,
		CLO4	Computer-based Instruction	

Course Coordinator: Dr. Ahmed Youssef Kamaldeen El



Head of Department: Prof. Dr. Ahmed Said El-Debaky



Date: 8/11 /2022



Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering Department			
Department Offering the Course	Basic Engineering Sciences Department			
Date of Specification Approval				
Course Title	Mathematics (2 - b)	Code	B 1`12	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	Second Semester (Third level)			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	2	0	4

2. Professional Information:

2.1. Course description:

Differential Equations (B): Series solution of differential equations. Special functions of mathematical physics (Legendre polynomials and Bessel functions). Laplace transforms with applications, Fourier series with applications. Partial Differential Equations (Classification and types of solutions, solution of linear partial differential equations with constant coefficients, canonical and standard forms, solution of some initial-boundary value problems).

Multivariable Calculus (B): Double integrals with applications. Triple integrals with applications, cylindrical and spherical polar coordinates. Line and surface integrals with applications. Vector analysis.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO1	Apply a wide spectrum of engineering knowledge, science, and specialized skills with analytic, critical, and systemic thinking to identify and solve engineering problems in real-life situations.	CO1	Explain Series solution of differential equations. Special functions of mathematical physics.
		CO2	Evaluate applied engineering problems by selected a suitable item.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics	CLO1	Identify the basic items of the course.
		CLO2	Explain how to use all items of the course in applied engineering problems
PLO2	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	CLO3	Evaluate the suitable solution methods for various mathematics elements
		CLO4	Analyze the different problems and verifications

2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Series solution of differential equations. Special functions of mathematical physics (Legendre polynomials and Bessel functions).	1&2	√	√		
Laplace transforms with applications,	3		√		√
Partial Differential Equations (Classification and types of solutions, solution of linear partial differential equations with constant coefficients, canonical and standard forms, solution of some initial-boundary value problems) .	4&5	√			
Double integrals with applications	6&7	√	√		√
Midterm Exam	8				
Fourier series with applications.	9&10	√			√
Triple integrals with applications	11	√	√	√	
Cylindrical and spherical polar coordinates	12,13		√	√	
Line and surface integrals with applications. Vector analysis.	14	√			√
Practical and Oral Exam	15				
Final Exam	16				
Total		10	8	3	6

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered			
Methods	CLO1	CLO2	CLO3	CLO4
1. Lecture	√	√	√	√
2. Tutorials	√	√	√	√
3. Problem-based Learning		√	√	
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				
2. Extra Lectures				
3. Provide different levels of books and materials				

2.7 Assessment Methods

Assessment Methods:	Course LOs Covered			
Methods	CLO1	CLO2	CLO3	CLO4
Formative Assessment Method				
Tests	Midterm Exam	√	√	
	Quizzes	√	√	
Discussion	√	√		
Summative Assessment Method				
Final Exam	√	√	√	√

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Midterm Exam	8	30%
Discussion	3,6,9,11	10%
Final Exam	16	60%
Total		100%

2.8. List of Reference:

Course Notes:	Lecture notes
Essential Books (Textbooks):	1. Applied Engineering Analysis, Tai-Ran Hsu, published by John Wiley & Sons, 2018 (ISBN 97811119071204)
Periodicals, Web Sites, ... etc:	1. https://byjus.com 2. https://ncert.nic.in

2.9. Facilities required for Teaching and Learning

Different Facilities	
Lecture Hall	√
Library Usage	√
Data Show	√
White Board	√

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO1	√	√

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
CO1	√	√		
CO2			√	√

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
PLO1	√	√		
PLO2			√	√

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO1	PO1	CLO1	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Midterm Exam, Final Exam
			<ul style="list-style-type: none"> Problem-based Learning 	<ul style="list-style-type: none"> Discussion
CLO2		<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Midterm Exam, Final Exam 	
		<ul style="list-style-type: none"> Problem-based Learning 	<ul style="list-style-type: none"> Discussion 	
PLO2		CLO3	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Midterm Exam, Final Exam
			<ul style="list-style-type: none"> Problem-based Learning 	<ul style="list-style-type: none"> Discussion
CLO4	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Midterm Exam, Final Exam 		
	<ul style="list-style-type: none"> Problem-based Learning 	<ul style="list-style-type: none"> Discussion 		

Course Coordinator: Dr/Wageda ibrahim



Head of Department: Prof. Dr. Ahmed Debaiky



Date:1/2 /2023



الفرقة الثانية



Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the program	Civil Engineering Department			
Department Offering the course	Basic Engineering Department			
Date of Specification Approval				
Course Title	Mathematics (5 - a)	Code	B 1217	
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>	
Semester	Fall Semester (Third level)			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	2	0	4

2. Professional Information:

2.1. Course description:

Functions of a Complex variable: Complex numbers and the complex plane. Cauchy-Riemann conditions and analytic functions. Complex differentiation. Conformal transformations. Some elementary transformations (linear function, rational and bilinear functions, irrational functions, the exponential function, trigonometric functions). Complex integration. Taylor's and Laurent's series. Contour integration. Applications for steady state heat distribution and elasticity. Mathematical Programming Problems: Graphical approach of linear programming. The simplex method. Application to the transportation problem.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO1	Apply a wide spectrum of engineering knowledge, science, and specialized skills with analytic, critical, and systemic thinking to identify and solve engineering problems in real-life situations.	CO1	Explain Complex numbers and the complex plane. Cauchy-Riemann conditions and analytic functions. Complex differentiation. Conformal transformations. Some elementary transformations (linear function, rational and bilinear functions, irrational functions, the exponential function, trigonometric functions)..
		CO2	Select a suitable item to evaluate applied engineering problems.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	CLO1	Identify the basic items of the course.
		CLO2	Explain how to use all items of the course in applied engineering problems
PLO2	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.	CLO3	Evaluate the suitable solution methods for various mathematics elements

2.4. Course Topics:

Course Topics	Week	CLO1	CLO2	CLO3
Functions of a Complex variable: Complex numbers and the complex plane.	1&2	√	√	
Cauchy-Riemann conditions and analytic functions.	3		√	
Complex differentiation.	4&5	√		
Conformal transformations. Complex integration.	6&7	√	√	
Midterm Exam	8			
Some elementary transformations (linear function, rational and bilinear functions, irrational functions, the exponential function, trigonometric functions).	9	√		√
Taylor's and Laurent's series.	10	√		
Contour integration	11		√	√
Some elementary transformations (linear function, rational and bilinear functions, irrational functions, the exponential function, trigonometric functions).	12	√	√	√
Applications for steady state heat distribution and elasticity. Mathematical Programming Problems.	13		√	√
Graphical approach of linear programming. The simplex method. Application to the transportation problem.	14	√		
Practical and Oral Exam	15			
Final Exam	16			
Total		10	8	4

2.6 Teaching and Learning Methods

Teaching and Learning Methods:		Course LO's Covered			
Methods		CLO1	CLO2	CLO3	
1. Lecture		√	√	√	
2. Tutorials		√	√	√	
3. Problem-based Learning			√	√	
Teaching and Learning Methods for Students with Special Needs:					
Methods					
1. Discussion Session					
2. Extra Lectures					
3. Provide different levels of books and materials					

2.7 Assessment Methods

Assessment Methods:		Course LOs Covered			
Methods		CLO1	CLO2	CLO3	
Formative Assessment Method					
Tests	Midterm Exam	√	√		
	Quizzes		√	√	
Discussion		√	√	√	
Final Exam					
Final Exam		√	√	√	

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Midterm Exam	8	30%
Discussion	3,6,9,11	10%
Final Exam	16	60%
Total		100%

2.8. List of Reference:

Course Notes:	Lecture notes
Essential Books (Textbooks):	1. Applied Engineering Analysis, Tai-Ran Hsu, published by John Wiley & Sons, 2018 (ISBN 97811119071204)
Periodicals, Web Sites, ... etc:	1. https://byjus.com 2. https://ncert.nic.in

2.9. Facilities required for Teaching and Learning

Different Facilities	
Lecture Hall	√
Library Usage	√
Data Show	√
White Board	√

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO1	√	√

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CLO1	CLO2	CLO3	
CO1	√	√		
CO2			√	

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes			
	CLO1	CLO2	CLO3	
PLO1	√	√		
PLO2			√	

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO1	PO1	CLO1	• Lecture	• Midterm Exam, Final Exam
			• Tutorials	• Discussion
CLO2		• Lecture	• Midterm Exam, Final Exam	
		• Tutorials	• Discussion	
PLO2	CLO3	• Problem-based Learning	• Midterm Exam, Final Exam	
		• Lecture	• Discussion	
		• Tutorials		
		• Problem-based Learning		

Course Coordinator: **Dr. Mohamed R. Ali**

Ass Prof. Mohamed Abdel Fattah Elsisy

Head of Department: **Prof. Ahmed Saeed Debaiky**

Date: 12 /11 /2022



Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering			
Department Offering the Course	Mechanical Engineering			
Date of Specification Approval				
Course Title	Industrial Safety	Code	M1283	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	First Semester (Fourth Year)			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	2	0	0	2

2. Professional Information:

2.1. Course description:

Introduction - Principles of Industrial safety – Risk sources safety requirements (Gases, Dust and Fire)–Occupational diseases and occupational health–Safety regulations for industrial facilities–Prevention and control of industrial risks, accidents and fire – Safety procedures, rescue and evacuation –Safety improvement – Performance evaluation.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO1	Apply a wide spectrum of engineering knowledge, science and specialized skills with analytic, critical and systemic thinking to identify and solve engineering problems in real life situation.	CO1	To protect engineer and trained manpower from work injuries and accidents. From this standpoint, protecting workers and providing them with a safe and healthy work environment was a humanitarian duty and an inevitable responsibility.
PO2	Behave professionally and adhere to engineering ethics and standards and work to develop the profession and the community and promote sustainability principles.	CO2	Teaching industrial safety aims to increase the student's awareness of accidents that he may encounter while working after graduation and ways to prevent them.
PO4	Use techniques, skills, and modern engineering tools	CO3	The scope of safety is unlimited, as it includes all areas of public life wherever a person is located.

necessary for engineering practice.	However, the need for it is increasing in the areas of training and work in factories, workshops and establishments due to the high rate of risks leading to accidents.
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2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO1	Identify, formulate, and solve complex engineering problems by applying engineering, fundamentals, basic science, and mathematics.	CLO1	<p>Recognize the basic principles and concepts of industrial safety.</p> <ul style="list-style-type: none"> - Understand the general objectives of occupational safety. - Understand the causes of accidents. - Understand the correct ways to avoid accidents.
		CLO2	<ul style="list-style-type: none"> • Understand with the meaning of the work environment and Analyze of the appropriate environment for work performance. • Apply of the requirements of the ideal work environment. • Understand the damages resulting from poor work environment. • Understand with the correct methods to obtain a safe and secure work environment.
PLO3	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.	CLO3	<p>Recognize the dangers of hand tools, mechanical machines, welding and ways to prevent them.</p> <ul style="list-style-type: none"> • Understand the dangers of hand tools, mechanical machines and welding. • Identify ways to prevent its dangers.
		CLO4	<p>Understand the dangers of electricity and how to prevent them.</p> <ul style="list-style-type: none"> - Recognize the causes of accidents. - Identify the effects of electrical accidents. - Apply the correct ways to avoid electrical accidents. - Recognize the correct ways to deal with electricity.
PLO4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements,	CLO5	<p>Understand the correct methods of transporting materials and the dangers associated with it.</p> <ul style="list-style-type: none"> - Recognize the correct methods of transporting materials. - Analyze the dangers of transporting

environmental issues, and risk management principles		<p>materials manually and automatically and ways to prevent them.</p> <ul style="list-style-type: none"> - Identify how to safely transport materials manually.
		<p>Recognize of the dangers of chemicals (gaseous, liquid and solid) and how to prevent them</p> <ul style="list-style-type: none"> - Understand the dangers of gaseous, liquid and solid chemicals. - Identify ways to prevent its dangers. - Analyze the correct ways to deal with chemicals
	CLO6	<p>Recognize the types of fires and the means of prevention.</p> <ul style="list-style-type: none"> . Definition of combustion and fire. . Describe the dangers associated with fire. . Identify the fires into their different types. . Apply Fire and explosion prevention.
		<p>Understand the fire extinguishing methods, types of fire extinguishers and ways of using them.</p> <ul style="list-style-type: none"> . Apply of firefighting methods. . Describe the type of fire. . Understand the fire extinguishers. . Extinguish the fire in the correct way. . Familiarity with first aid. • Know the most important first aid.

2.4. Course Topics:

Course Topics	Week	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
- Introduction to Professional Safety	1	√					
- Working Environment	2		√				
- Dealing with equipments, tools and machines	3			√			
- Electricity Hazards	4-5				√		
- Safety in the field of material transportation	5-6				√		
- Handling of Chemical Materials	6-7					√	
Midterm Exam	8						
- Types of fires and their prevention methods	9						√
- Firefighting methods and types of fire extinguishers	10-11						√
- First Aid	12-14						√
Practical Exam	Not Applicable						
Final Exam							
Total		1	1	1	4	2	6

2.5. Lab Topics: Not Applicable

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered					
Methods	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
1. Lectures.	√	√	√	√	√	√
2. Tutorials.		√	√	√	√	√
3. Discussions.			√	√	√	√
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Discussion Session						
2. Extra Lectures						
3. Provide different levels of books and materials						

2.7 Assessment Methods

Assessment Methods:		Course LOs Covered					
Methods		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Formative Assessment Method							
Tests	Midterm Exam	√	√	√	√	√	√
	Reports		√		√	√	√
Summative Assessment Method							
Final Exam		√	√	√	√	√	√

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Reports	at the end of the term	20%
Mid-term exam	Week # 8	20%
Final written exam	Scheduled by the faculty council	60%
Total		100%

2.8. List of Reference: (max. five years ago) مرجع حديث

Course Notes:	
Essential Books (Textbooks):	<ul style="list-style-type: none"> - Althouse, A. "Modern Refrigeration and Air Conditioning" Goodheart-Wilcox - Tenenbaum, D. "Air Conditioning and Refrigeration Toolbox Manual" Arco's on the Job Reference Series
Recommended Books:	- Laboratory Manual "Refrigeration and Air Conditioning" Prentice Hall
Periodicals, Web Sites, ... etc:	N/A

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective
PO1	CO1
PO2	CO2
PO4	CO3

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course LOs
CO1	CLO1
	CLO2
CO2	CLO3
	CLO4
CO3	CLO5
	CLO6

3.3. Program Learning Outcomes VS Course Learning Outcomes

PLO1	CLO1
	CLO2
PLO3	CLO3
	CLO4
PLO4	CLO5
	CLO6

3.4. Assessment Alignment Matrix

PLOs	CLOs	Teaching M.	Assessment M.
PLO1	CLO1	Lectures	Final Term Exam
	CLO2	Lectures	Final Term Exam
PLO3	CLO3	Lectures	Final Term Exam
	CLO4	Lectures	Final Term Exam
PLO4	CLO5	Lectures	Final Term Exam
	CLO6	Lectures	Final Term Exam

Course Coordinator: Assoc. Prof./ Wisam Mohamed Farouk

Head of Department: Prof. Dr. Ahmed Debaiky



Date: 13/ 11/2022



Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering			
Department Offering the Course	Civil Engineering			
Date of Specification Approval				
Course Title	Engineering Applications (2 - a)	Code	C1205	
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>	
Semester	First Semester (Second Year)			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	1	-	2	2

2. Professional Information:

2.1. Course description:

Thermal insulation - Water proofing - Plastering - Painting - Flooring - Doors and windows - Sanitary works.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO1	Apply a wide spectrum of engineering knowledge, science and specialized skills with analytic, critical and systemic thinking to identify and solve engineering problems in real life situation.	CO1	Understanding of implementation specification and engineering skills for buildings finishes.
PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations.	CO2	Use specifications standard of codes to specify safety risks, health, economic, environmental, considerations.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO6	Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	CLO1	Understanding Plan, supervise and monitor implementation of buildings finishes. (Understand)
		CLO2	Calculate quantities and cost of materials for buildings finishes. (Apply).
PLO11	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.	CLO3	Applying engineering techniques to understanding of standard specification and quality control for materials of buildings. (Apply).
		CLO4	Use rate of implementation of construction finishes to Calculate required number of workers, technicians and duration time. (Apply).

2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Thermal insulation	1	*	*		
Water proofing	2	*	*		
Plastering	3,4,5	*	*	*	*
Painting	6, 7	*	*	*	
Midterm Exam	8				
Flooring	9		*	*	*
Flooring	10		*	*	*
Doors and windows	11,12	*	*		
Sanitary works	13,14	*	*		
Practical Exam	15				
Final Exam	16	Not Applicable			
Total	15	11	13	7	5

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Plastering	5	*		*	
Flooring	7	*		*	
Sanitary works	12	*		*	
Total	3	3		3	

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered			
Methods	CLO1	CLO2	CLO3	CLO4
1. Lecture	*	*	*	*
2. Tutorials		*		*
3. Practical-based Learning	*		*	
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				
2. Extra Lectures				
3. Provide different levels of books and materials				

2.7 Assessment Methods

Assessment Methods:		Course LOs Covered			
Methods		CLO1	CLO2	CLO3	CLO4
Formative Assessment Method					
Tests	Quiz		*		*
	Midterm Exam	*	*		*
Assignments		*	*	*	*
Summative Assessment Method					
Oral and Practical exam		*		*	

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Assignments	2&3&5&11&12	20 %
Quiz	7	10 %
Mid-term exam	9	30 %
Oral and Practical exam	15	40 %
Total		100 %

2.8. List of Reference: (max. five years ago)

Course Notes:	- Staff lectures notes
Recommended Books:	Encyclopedia El-Bakary
Periodicals, Web Sites, ... etc:	

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
laboratory Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO1	*	
PO6		*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
CO1	*		*	
CO2		*		*

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
PLO6	*	*		
PLO11			*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO6	PO1	CLO1	<ul style="list-style-type: none">Lecture.Practical-based Learning.	<ul style="list-style-type: none">Written Exams.Assignments.Oral and Practical exam
		CLO2	<ul style="list-style-type: none">Lecture.Tutorials.	<ul style="list-style-type: none">Written Exams.Assignments.
PLO11	PO6	CLO3	<ul style="list-style-type: none">Lecture.Practical-based Learning.	<ul style="list-style-type: none">Assignments.Oral and Practical exam
		CLO4	<ul style="list-style-type: none">Lecture.Tutorials.	<ul style="list-style-type: none">Written Exams.Assignments.

Course Coordinator: Dr. Ayman Abd-allah Zaky

أيمان عبد الله زكي

Head of Department: Prof. Ahmed debaiky

د. أحمد دبايكي

Date: 7/11/2022



Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering Department			
Department Offering the Course	Civil Engineering Department			
Date of Specification Approval				
Course Title	Profession and Society	Code	C 17.4	
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>	
Semester	2 nd Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	0	0	3

2. Professional Information:

2.1. Course description:

Basic concepts in the study of human social behavior - The labor force - Social structures of the workplace - Relation between profession and society - The role of civil engineer - The society problems with respect to the field of Civil engineering (Housing - Water - Sewage - Traffic and transportation - New communities).

2.2. Course Objectives (CO):

Program objective		Course objective	
PO3	Work in and lead a heterogeneous team and display leadership qualities, business administration, and entrepreneurial skills.	CO1	Build strong relationships with team members and promote collaboration and teamwork.
PO4	Use techniques, skills, and modern engineering tools necessary for engineering practice.	CO2	Apply the engineering principles and their applications in civil engineering sites, to gain practical experience in using a range of modern engineering tools.
PO5	Master self-learning and life-long learning strategies to communicate effectively in academic/professional fields.	CO3	Apply a set of skills and habits that allow individuals to continuously learn and adapt to new information and challenges in their chosen field.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.	CLO1	Recognize the environmental issues related to civil engineering projects.
		CLO2	Identify Social structures of the workplace
PLO5	Practice research techniques and methods of investigation as an inherent part of learning.	CLO3	Recognize the codes of practice and standards related to civil engineering projects.
		CLO4	Recognize The society problems with respect to the field of Civil engineering
PLO7	Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.	CLO5	Apply the profession principles related to civil engineering projects.
		CLO6	Identify Relation between profession and society
PLO10	Acquire and apply new knowledge, and practice self, lifelong and other learning strategies.	CLO7	Apply knowledge, and ethics in different civil engineering projects.
		CLO8	Identify The role of civil engineer

2.4. Course Topics:

Course Topics	Week	Course LO's Covered							
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
Basic concepts in the study of human social behavior.	1, 2	√	√	√					
The labor force	3, 4			√	√				
Social structures of the workplace	5, 6	√				√	√		
Relation between profession and society	7		√		√		√		
Midterm Exam	8								
The role of civil engineer	9	√						√	√
The society problems with respect to (Housing – Water)	10,11					√			√
The society problems with respect to Sewage - Traffic and transportation)	12,13		√					√	
The society problems with respect to New communities.	14	√					√		√
Practical and Oral Exam	15								
Final Exam	16								
Total		7	6	4	3	4	4	3	5

2.5. Lab Topics: *Not applicable*

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered							
Methods	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
1. Lecture	√	√						
2. Report			√	√	√	√	√	√
3. Presentation			√	√				
Teaching and Learning Methods for Students with Special Needs:								
Methods								
1. Discussion Session								
2. Extra Lectures								
3. Provide different levels of books and materials								

2.7 Assessment Methods

Assessment Methods:	Course LOs Covered							
Methods	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
Formative Assessment Method								
Tests	Midterm	√	√					
	Exam							
Reports				√	√	√	√	√
Presentation				√	√			
Summative Assessment Method								
Final Exam		√	√					

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Midterm exam	8	13%
Report	4, 12	10%
Presentation	4, 12	10%
Final exam	16	67%
Total		100%

2.8. List of Reference:

Essential Books (Textbooks):	قواعد واخلاقيات ممارسة مهنة الهندسة. نبيل عبدالرازق جاسم، ٢٠١٣، دار مكتبة البصائر، بيروت، لبنان.
Recommended Books:	مدخل إلى اخلاقيات مهنة الهندسة، يحيى خليف، جامعة الملك فهد للبترول والمعادن

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
laboratory Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective		
	CO1	CO2	CO3
PO3	√		
PO4		√	
PO5			√

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes							
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
CO1					√	√		
CO2	√	√						
CO ³			√	√			√	√

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes							
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
PLO4	√	√						
PLO5			√	√				
PLO7					√	√		
PLO10							√	√

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO4	PO ¹	CLO1	• Lecture	• Written Exam
		CLO2	• Lecture	• Written Exam
PLO5	PO ²	CLO3	• Presentation • Report	• Presentation • Report
		CLO4	• Presentation • Report	• Presentation • Report
PLO7	PO ³	CLO5	• Report	• Report
		CLO6	• Report	• Report
PLO10	PO ²	CLO7	• Report	• Report
		CLO8	• Report	• Report

Course Coordinator: Dr. Ahmed Elhadary

Dr. Ibrahim Elazab

Dr. Ayman Abd Elhamid

Head of Department: Prof. Dr. Ahmed Saeed Debaiky

Date: 9 / 2 / 2023






Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering Department			
Department Offering the Course	Civil Engineering Department			
Date of Specification Approval				
Course Title	Engineering Applications (2 - b)	Code	C1206	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	2st Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	1	-	2	2

2. Professional Information:

2.1. Course description:

Construction of Steel Structures (Cutting - Drilling - Shaping - Welding - Bolts - Erection – Cladding).

2.2. Course Objectives (CO):

Program objective		Course objective	
PO1	Apply a wide spectrum of engineering knowledge, science and specialized skills with analytic, critical and systemic thinking to identify and solve engineering problems in real life situation.	CO1	Apply of implementation specification and engineering skills for construction of steel structures.
PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations.	CO2	Use specifications standard of codes to specify safety risks, health, economic, environmental, considerations.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO6	Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	CLO1	Understand Plan, supervise and monitor implementation of steel structures. (Understand)
		CLO2	Calculate quantities and cost of materials for steel. (Apply).
PLO11	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.	CLO3	Apply engineering techniques to understanding of standard specification and quality control for steel materials. (Apply).
		CLO4	Use rate of implementation of steel structures to calculate duration time of project. (Apply).

2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Construction of Steel Structures (Layout)	1	*			
Construction of Steel Structures (Calculate of different loads)	2	*			
Cutting	3,4	*	*		*
Drilling	5,6	*	*		*
Shaping	7	*	*	*	*
Mid term	8				
Welding	9,10	*	*	*	*
Bolts	11,12	*	*		*
Erection – Cladding	13,14	*	*	*	*
Oral and Practical exam	15				
Final Exam	16				
Total		13	11	5	11

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Cutting	5	*		*	
Drilling	7	*		*	
Welding	12	*		*	
Total	3				

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered			
Methods	CLO1	CLO2	CLO3	CLO4
1. Lecture	*	*	*	*
2. Tutorials		*		*
3. Practical-based Learning	*		*	
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				
2. Extra Lectures				
3. Provide different levels of books and materials				

2.7 Assessment Methods

Assessment Methods:	Course LOs Covered			
Methods	CLO1	CLO2	CLO3	CLO4
Formative Assessment Method				
Tests	Quiz		*	*
	Midterm Exam	*	*	*
Assignments	*	*	*	*
Summative Assessment Method				
Oral and Practical exam	*		*	

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Assignments	2&3&5&11&12	20 %
Quiz	7	10 %
Mid-term exam	9	30 %
Oral and Practical exam	15	40 %
Total		100 %

2.8. List of Reference: (max. five years ago)

Course Notes:	- Staff lectures notes
Recommended Books:	Steel structures design by Prof Dr. Abdelrahim Khalil Dessouki
Periodicals, Web Sites, ... etc:	

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
laboratory Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO1	*	
PO6		*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
CO1			*	*
CO2	*	*		

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
PLO6	*	*		
PLO11			*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO6	PO6	CLO1	<ul style="list-style-type: none"> Lecture. Practical-based Learning. 	<ul style="list-style-type: none"> Written Exams. Assignments. Oral and Practical exam
		CLO2	<ul style="list-style-type: none"> Lecture. Tutorials. 	<ul style="list-style-type: none"> Quiz Written Exams. Assignments.
PLO11	PO1	CLO3	<ul style="list-style-type: none"> Lecture. Practical-based Learning. 	<ul style="list-style-type: none"> Assignments. Oral and Practical exam
		CLO4	<ul style="list-style-type: none"> Lecture. Tutorials. 	<ul style="list-style-type: none"> Quiz Written Exams. Assignments.

Course Coordinator: Dr. Ayman Abd-allah Zaky
Dr. Amir Sabry

أيهان عبد الله زكي

Head of Department: Prof. Ahmed debaiky

د. أيمن

Date: 7/2/2022



Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering Department			
Department Offering the Course	Civil Engineering Department			
Date of Specification Approval	2012			
Course Title	Hydraulics	Code	C 1241	
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>	
Semester	1st Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	1	1	4

2. Professional Information:

2.1. Course description:

Basic concepts of open channel flow - Uniform flow in open channel - Velocity distribution and flow measurements - Non-uniform flow in open channel - Hydraulic jump - Gradually varied flow - Dimensional analysis - Modeling - Hydraulic turbines - Pumps.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations.	CO1	Apply wide sets of civil engineering knowledge to identify and solve different problems related to hydraulic engineering
		CO2	Identify different types of flow, dimensional analysis, modelling turbines and pump

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO2	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	CLO1	Understand different types of flow such as uniform flow and non uniform flow
		CLO2	Evaluate different types of flow such as gradual varied

	conclusions.		flow
PLO11	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.	CLO3	Understand dimensional analysis and modelling
		CLO4	Identify different types of turbines and pump

2.4. Course Topics:

Course Topics	Week	Course LOs Covered			
		CLO1	CLO2	CLO3	CLO4
Basic concepts of open channel flow	1	*			
Uniform flow in open channel	2	*			
Velocity distribution and flow measurements	3	*			
	4	*			
Non-uniform flow in open channel	5	*			
Non-uniform flow in open channel	6	*	*		
Hydraulic jump	7				
Midterm exam	8				
Dimensional analysis	9			*	
Gradually varied flow	10		*		
	11		*		
Modeling	12			*	
Hydraulic turbines	13				*
Pumps	14				*
Oral and Practical exam	15				
Final Exam	16				
Total		6	3	2	2

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Uniform Flow in Open Channel	4	*			
Calibration of Critical Depth Meters	6	*			
Energy-Depth Relationship in Open Channel at Constant Discharge	8	*			
Discharge- Depth Relationship in Open Channel at Constant specific Energy	10		*		
Application of Specific Energy and	12		*		

Momentum Functions					
Total	3				

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered			
Methods	CLO1	CLO2	CLO3	CLO4
1. Lecture	*	*	*	*
2. Tutorials	*	*	*	*
3. Project-based Learning				
4. Practical-based Learning				
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				
2. Extra Lectures				
3. Provide different levels of books and materials				

2.7 Assessment Methods

Assessment Methods:		Course LOs Covered			
Methods		CLO1	CLO2	CLO3	CLO4
Formative Assessment Method					
Tests	Oral Test	*	*		*
	Midterm Exam	*	*	*	*
	Experimental	*	*		*
Projects	Mini Projects				
Assignments		*	*	*	*
Summative Assessment Method					
Final Exam		*	*	*	*

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Assignments	2 to 6 & 9 to 13	5 %
Midterm exam	8	20 %
Oral & Experimental	15	15 %
Final exam	16 and above	60 %
Total		100 %

2.8. List of Reference: (max. five years ago)

Course Notes:	Not used
Essential Books (Textbooks):	<ul style="list-style-type: none"> Hydraulics of open channel flow, Chanson Butterworth–Heinemann, Oxford, UK, 2018, ISBN-13: 978-0750659789
Recommended Books:	
Periodicals, Web Sites, ... etc:	

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
laboratory Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO6	*	*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
CO1	*	*	*	
CO2			*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
PLO2	*	*		
PLO11			*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO2	PO6	CLO1	<ul style="list-style-type: none"> • Lecture • Tutorials 	<ul style="list-style-type: none"> • Written Exam • Mini Projects • Assignments
		CLO2	<ul style="list-style-type: none"> • Lecture • Tutorials 	<ul style="list-style-type: none"> • Written Exam • Assignments
PLO11		CLO3	<ul style="list-style-type: none"> • Lecture • Tutorials 	<ul style="list-style-type: none"> • Written Exam • Assignments
		CLO4	<ul style="list-style-type: none"> • Lecture • Tutorials 	<ul style="list-style-type: none"> • Written Exam • Assignments • Experimental Exam • Oral Test

Course Coordinator: Dr. Tarek Hemdan

Dr. Ahmed Abou el-fetouh



Head of Department: Prof. Dr. Ahmed Saeed Debaiky

Date: 12/11/2022





Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering Department			
Department Offering the Course	Civil Engineering Department			
Date of Specification Approval				
Course Title	Computer Applications (2 - b)	Code	C1202	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	2 nd Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	0	0	3	1

2. Professional Information:

2.1. Course description:

Computer Applications for Design of Reinforced Concrete Structures (Design of columns and beams) - Data Base Forming - Curves and Charts Drawing – Optimization.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO1	Apply a wide spectrum of engineering knowledge, science and specialized skills with analytic, critical and systemic thinking to identify and solve engineering problems in real life situation.	CO1	Discover a excel program tool
		CO2	Construct excel sheet to help civil engineer
PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations.	CO3	Find the optimization in excel

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO2	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.	CLO1	Simulate different equation (Create)
		CLO2	Analyze different element (Create)
PLO12	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.	CLO3	Apply different curves and charts (Create)
		CLO4	Explore data base forming (Create)

2.4. Course Topics: **Not applicable.**

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Learn how use equation	1	*			
Simulate and analyze equation of columns	2,3,4&5	*	*		
Simulate and analyze equation of beams	6&7	*	*		
Midterm exam	8				
Simulate and analyze equation of beams	9&10	*	*		
Simulate different curves and charts	11&12			*	
Explore data base forming	13&14				*
Practical exam	15				
Final exam	16				
Total		9	8	2	2

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered			
	CLO1	CLO2	CLO3	CLO4
1. Computer-based Instruction	√	√	√	√
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				
2. Extra Lectures				
3. Provide different levels of books and materials				

2.7 Assessment Methods

Assessment Methods:		Course LOs Covered			
Methods		CLO1	CLO2	CLO3	CLO4
Formative Assessment Method					
Tests	Quizzes			*	*
	Midterm Exam			*	
	Assessment	*	*		
Summative Assessment Method					
Practical		*	*	*	*

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Quizzes	9,10,11,12,13,14	20%
Assessment	4,6	10%
Midterm Exam	8	30%
Practical	15	40%
Total		100%

2.8. List of Reference:

Periodicals, Web Sites, ... etc:	https://www.csiamerica.com/
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2.9. Facilities Required for Teaching and Learning

Different Facilities
laboratory Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective		
	CO1	CO2	CO3
PO1	*	*	
PO6			*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
CO1	*	*		
CO2	*	*		
CO3		*	*	*

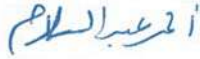

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
PLO2	*	*		
PLO12			*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO2	PO1	CLO1	• Computer-based Instruction	• Assessment • Practical
		CLO2	• Computer-based Instruction	• Assessment • Practical
PLO12	PO6	CLO3	• Computer-based Instruction	• Quizzes • Midterm Exam • Practical
		CLO4	• Computer-based Instruction	• Quizzes • Practical

Course Coordinator: Dr. Ahmed Abdelsalam
Head of Department: Prof. Dr. Ahmed Saeed Debaiky
Date: 11/3/2023



Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering Department			
Department Offering the Course	Civil Engineering Department			
Date of Specification Approval				
Course Title	Topographic Surveying	Code	C1231	
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>	
Semester	First Semester (Second Year)			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	1	1	4

2. Professional Information:

2.1. Course description:

Vertical control – Leveling - Definitions - Methods of determining relative heights - Bench marks Errors - Profile level notes - Topographic maps -contours - Ordinary level - Precise leveling - Grid leveling - Contour lines and volume computations -Trigonometric leveling - Horizontal and vertical curves - Intersection and Resection.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO1	Apply a wide spectrum of engineering knowledge, science, and specialized skills with analytic, critical, and systemic thinking to identify and solve engineering problems in real-life situations.	CO1	Apply wide sets of surveying knowledge, science, and specialized skills with analytic, critical, and systemic thinking to identify and solve surveying problems in real-life situations.
		CO2	Use the surveying techniques and skills using modern surveying instruments effectively in academic/professional fields
PO5	Master self-learning and life-long learning strategies to communicate effectively in academic/professional fields	CO3	Practice the research techniques and self-learning in the survey applications.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO2	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.	CLO5	Use theodolite instrument for trigonometric leveling.
		CLO6	Apply the basic principles of the Level instrument.
PLO5	Practice research techniques and methods of investigation as an inherent part of learning	CLO7	Practice research techniques in the principles of contour map.
		CLO8	Practice research techniques in vertical curves.
PLO11	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	CLO1	Identify the basic principles of topographic survey.
		CLO2	Calculate the reduced level of points and volume of earthwork
		CLO3	Solve the intersection and resection problems.
		CLO4	Apply the techniques of survey and setting out for curves

2.4. Course Topics:

Course Topics	Week	Course LO's Covered							
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
Review of plan survey	1					√			
Levelling	2,3	√	√				√		
Gridding and contour lines	4	√						√	
Volumes and Earth – Work Quantities	5,6		√						
Trigonometric Levelling	7	√				√			
Midterm Exam	8								
Trigonometric Levelling	9	√					√		
Intersection and Resection	10,11			√					
Curves	12,13,14				√				√
Practical Exam	15								
Final Exam	16								
Total	13	5	4	2	3	2	3	1	3

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered							
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
Theodolite instrument	1,7,15					√			
Level instrument.	3,9,15						√		
Practical Exam	15					√	√		
Total	6					3	3		

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered							
Methods	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
1. Lecture	√	√	√	√				
2. Tutorials	√	√	√	√				
3. Practical-based Learning					√	√		
4. Problem-based Learning	√	√	√	√				
5. Co-operative Learning					√	√		
6. Interactive learning					√	√		
7. Reports							√	√
Teaching and Learning Methods for Students with Special Needs:								
Methods								
1. Discussion Session								
2. Extra Lectures								
3. Provide different levels of books and materials								

2.7 Assessment Methods

Assessment Methods:	Course LOs Covered							
Methods	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
Formative Assessment Method								
Tests	Midterm Exam	√	√					
Discussion		√	√	√	√			
Observation					√	√		
Report							√	√
Summative Assessment Method								
Practical Exam					√	√		
Oral Exam							√	√
Final Exam		√	√	√	√			

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method		Week	The weighting of Assessment %
Formative Assessment Method			
Tests	Mid-Term	8	16%(20degree)
Discussion		2,4,6,8,10,12	4%(5degree)
Observation		1,3,7,9	3.2%(4degree)
Report		15	4%(5degree)
Summative Assessment Method			
Practical Exam		15	8%(10degree)
Oral Exam		15	4.8%(6degree)
Final Exam		16	60%(75degree)
Total			125

2.8. List of Reference:

Essential Books (Textbooks):	<ul style="list-style-type: none"> • Surveying for Civil and Mine Engineers Theory, Workshops, and Practicals-John Walker Joseph L. Awange-2018-ISBN 978-3-319-53128-1- ISBN 978-3-319-53129-8 (eBook)
Recommended Books:	<ul style="list-style-type: none"> • Elementary Surveying - An Introduction to Geomatics - Thirteenth Edition-2012-CHARLES D. GHILANI-ISBN-13: 978-0-13-255434-3- ISBN-10: 0-13-255434-8 • Surveying Engineering & Instruments- Valeria Shank- First Edition-2012- ISBN 978-81-323-4403-2

2.9. Facilities required for Teaching and Learning

Different Facilities	
Lecture Hall	√
laboratory Usage	√
Data Show	√
White Board	√

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objectives		
	CO1	CO2	CO3
PO1	√	√	
PO5			√

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes							
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
CO1	√	√	√	√				
CO2					√	√		
CO3							√	√

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes							
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
PLO2					√	√		
PLO5							√	√
PLO11	√	√	√	√				

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment
PLO2	PO1	CLO5	Practical-based Learning	Practical Exam
			Co-operative Learning	Observation
			Interactive learning	
		CLO6	Practical-based Learning	Practical Exam
			Co-operative Learning	Observation
			Interactive learning	
PLO5	PO5	CLO7	Reports	Oral Exam
			Report	Report
		CLO8	Report	Oral Exam
			Report	Report
PLO11	PO1	CLO1	Lecture	Midterm Exam, Final Exam
			Tutorials	
			Problem-based Learning	Discussion
		CLO2	Lecture	Midterm Exam, Final Exam
			Tutorials	
			Problem-based Learning	Discussion
		CLO3	Lecture	Final Exam
			Tutorials	
			Problem-based Learning	Discussion
		CLO4	Lecture	Final Exam
			Tutorials	
			Problem-based Learning	Discussion

Course Coordinator: Dr.Rasha Mohey Al-Deen



Head of Department: Dr. Ahmed Debaiky



Date: 5/11 / 2022



Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering Department			
Department Offering the Course	Architecture Engineering Department			
Date of Specification Approval				
Course Title	Architecture Design	Code	C1208	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	2 nd Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	2	0	4

2. Professional Information:

2.1. Course description:

The architectural elements of buildings (Function - Finishes - Building materials) - Types of covering (Plan roofs - Inclined roofs - Domes) - Service elements (Stairs - Elevators) - Openings (Doors - Windows - Dimensions according to their function - Construction materials) - Introduction to architectural drawings (Axes - Interior and exterior dimensions - Finishes tables).

2.2. Course Objectives (CO):

At the end of course, the student will be able to:

Program objective		Course objective	
PO5	Master self-learning and life-long learning strategies to communicate effectively in academic/professional fields.	CO1	Identify techniques and modern engineering tools of construction and finishing materials.
		CO2	Develop students' abilities to make decisions in the architectural issues.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO5	Practice research techniques and methods of investigation as an inherent part of learning.	CLO1	Identify all necessary construction, technology and architectural drawings that meet technical requirements.
		CLO2	Identify the constraints of: project financing.
PLO8	Communicate effectively –graphically, verbally and in writing – with a range of audiences using contemporary tools.	CLO3	Identify the methods and mechanisms of architectural drawings.
		CLO4	Developing graphically, verbally and in writing communication skills

2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Introduction to course content	1	*		*	*
Explain how to draw working plans	2,3,4	*	*	*	*
Explain how to draw working sections	5,6	*	*	*	*
Mid-term Exam	8				
Explain how to draw working elevations	9	*	*	*	*
Explain how to draw working layout	10,11	*	*	*	*
Explain how to draw working wall sections	12	*		*	*
Explain how to draw working details	13,14	*		*	*
Practical and Oral Exam	15				
Final Exam	16				
Total		13	8	13	13

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered			
	CLO1	CLO2	CLO3	CLO4
1. Lecture			*	*
2. Tutorials			*	*
3. Projects			*	*
4. presentation		*		
5. Self-Learning	*			
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				

2. Extra Lectures			
3. Provide different levels of books and materials			

2.7 Assessment Methods

Assessment Methods:		Course LOs Covered			
Methods		CLO1	CLO2	CLO3	CLO4
Formative Assessment Method					
Tests	Midterm Exam			*	*
Projects	Projects	*	*	*	
Assignments				*	*
Summative Assessment Method					
Final Exam		*		*	*

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Mid-term Exam	Week # 8	12%
Oral-Projects	Week # 15	20%
Assignments	Week # 2,3,4,5,6,7,9,10,11, 12, 13	8%
Final Exam	Scheduled by the faculty council	60%
Total		100%

2.8. List of Reference:

Essential Books (Textbooks):	محمد أحمد عبد الله. ٢٠١٨. الرسومات التنفيذية والتفاصيل المعمارية. مكتبة الأنجلو المصرية. مصر.
Recommended Books:	R Conway and Roenisch, 1987, Understanding Architecture, Routledge of Keegan, London
Periodicals, Web Sites, ... etc:	http:// www.greatbuilding.com http:// www.architecture.com

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO5	*	*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
CO1	*	*		
CO2			*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
PLO5	*	*		
PLO8			*	*


3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO5	PO5	CLO1 CLO2	<ul style="list-style-type: none">• Self-learning.• Presentation.	<ul style="list-style-type: none">• Projects• Final exam
PL08		CLO3 CLO4	<ul style="list-style-type: none">• Lectures• Tutorials• Projects	<ul style="list-style-type: none">• Assignments• Projects• Final exam

Course Coordinator: Dr Ahmed Elsaadany

Head of Department: Prof. Dr. Ahmed Eldebaiky

Date: 14/3/2023





Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering Department			
Department Offering the Course	Civil Engineering Department			
Date of Specification Approval				
Course Title	Hydrology	Code	C 124 ^Y	
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>	
Semester	2 nd Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	2	0	4

2. Professional Information:

2.1. Course description:

Introduction: (Hydrologic cycle – Environment and hydrology – Importance of hydrology) – Hydrometeorology: (Solar energy – Temperature – Vapor pressure – Humidity – Wind – Evaporation – evapotranspiration) – Precipitation – Rainfall – Infiltration – Hydromorphology: (Watershed – Characteristics – Morphological parameters – Time parameters) – Surface runoff – Soil erosion and sedimentation - Protection works against flash floods – Subsurface hydrology – Water quality and pollution control – Introduction to application of remote sensing and GIS in hydrological studies.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO1	Apply a wide spectrum of engineering knowledge, science and specialized skills with analytic, critical and systemic thinking to identify and solve engineering problems in real life situation.	CO1	Identify the Egyptian water resources, the cause of water shortage, challenges and initiatives to counter the shortage for sustainability.
		CO2	Solve real engineering problems in surface and groundwater hydrology.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	CLO1	Identify hydrological components like precipitation, evaporation, infiltration, runoff, and subsurface flow.
		CLO2	Solve practical problems in surface hydrology and groundwater hydrology
PLO11	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.	CLO3	Apply the available software to perform exercises.
		CLO4	Analyze in quantitative terms the processes of the surface and groundwater hydrology for solving civil engineering problems

2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Introduction- Hydrologic cycle	1	*			
Hydrometeorology	2	*			
Precipitation – Rainfall	3	*	*	*	*
Evaporation	4	*	*		*
Infiltration	5	*	*		*
Hydro-morphology	6	*			
Surface Runoff and Stream Flow Hydrograph	7	*	*	*	*
Midterm	8				
Soil erosion and sedimentation	9	*			
Flow Measurements	10	*	*	*	*
Hydrology of the Nile basin	11	*			
Groundwater Hydrology	12	*			*
Constructions and design of wells;	13		*	*	*
Methods of Groundwater Investigations	14		*		*

Introduction to application of remote sensing and GIS in hydrological studies	14			*	
Practical and Oral Exam	15				
Final Exam	16				
Total		1\	v	5	^

2.5 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered			
Methods	CLO1	CLO2	CLO3	CLO4
1. Lectures	*	*		*
2. Tutorials		*	*	*
3. Simulation	*		*	*
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Repeat the explanation of some of the material and tutorials.				
2. Give them specific tasks and assign a teaching assistance to follow up the performance of this group of students.				
3. Provide different levels of books and materials				

2.6 Assessment Methods

Assessment Methods:	Course LOs Covered			
Methods	CLO1	CLO2	CLO3	CLO4
Formative Assessment Method				
Tests	Oral Test	*	*	
	Midterm Exam	*	*	*
	Quizzes	*	*	*
Mini project			*	*
Summative Assessment Method				
Final Exam	*	*		*

2.6.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Quizzes	At end of each topic	5%
Midterm Exam	8	20%
Mini project	14	5%
Oral Test	15	10%
Final Exam	16 and above	60%
Total		100%

2.7. List of Reference:

Course Notes:	
Essential Books (Textbooks):	Mays, L.W., Ground and surface water hydrology. John Wiley & Sons, Inc., 2012. ISBN: 978-0-470-16987-2
Recommended Books:	Subramanya, K., Engineering Hydrology. 4 th Edition 2017.
Periodicals, Web Sites, ... etc:	Journal of Hydrology. Elsevier B.V. https://www.sciencedirect.com/journal/journal-of-hydrology

2.8. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO1	*	*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
CO1	*	*		
CO2			*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
PLO1	*	*		
PLO11			*	*

3.4. Assessment Alignment Matrix


PLO	PO	CLO	Teaching M.	Assessment M.
PLO1	PO1	CLO1	<ul style="list-style-type: none"> • Lecture • Simulation 	<ul style="list-style-type: none"> • Oral Test • written Exam • Quizzes
		CLO2	<ul style="list-style-type: none"> • Lecture • Tutorial 	<ul style="list-style-type: none"> • Oral Test • written Exam • Quizzes
PLO11		CLO3	<ul style="list-style-type: none"> • Tutorials • Simulation 	<ul style="list-style-type: none"> • Quizzes • Mini project
		CLO4	<ul style="list-style-type: none"> • Lecture • Tutorials • Simulation 	<ul style="list-style-type: none"> • written Exam • Mini project • Quizzes

Course Coordinator: Dr. Fahmy Salah Abdelhaleem

Dr. Amir Sabry Ibrahim

Head of Department: Prof. Ahmed Saeed Debaiky

Date: 01/02/2023



Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering Department			
Department Offering the Course	Civil Engineering Department			
Date of Specification Approval				
Course Title	Concrete Technology	Code	1221	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	First Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	2	1	4

2. Professional Information:

2.1. Course description:

Introduction to concrete as a structural material (History - Advantages - Disadvantages - Components - Quality of concrete) - Mixing water - Concrete manufacture (Batching - Mixing - Transportation - Placing - Compacting - Surface finishing, Repair and curing) - Properties of fresh concrete (Consistency - Workability - Segregation and bleeding) - Properties of hardened concrete (Strength - Shrinkage - Elasticity - creep) - Durability of concrete - Mix design (Empirical methods - Engineered methods) - Non-destructive testing (Rebound hammer - Ultrasonic Pulse velocity and core) - Statistical analysis to judge concrete quality - Concrete admixtures - Special concretes.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO1	Behave professionally and adhere to engineering ethics and standards and work to develop the profession and the community and promote sustainability principles.	CO1	Evaluation and judgment of existed reinforced concrete structures.
PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations.	CO2	Construction reinforced concrete structures.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO2	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.	CLO1	Conducting appropriate experiments on fresh concrete. (Evaluation)
		CLO2	Conducting appropriate experiments on hardened concrete. (Evaluation)
PLO11	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.	CLO3	Choosing suitable materials and techniques for concrete manufacturing. (Creation)
		CLO4	Determination the properties of fresh and hardened concrete. (Creation)
PLO13	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.	CLO5	Design of concrete mix to fulfill specific requirements. (Creation)
		CLO6	Judgment concrete quality. (Evaluation)

2.4. Course Topics:

Course Topics	Week	Course LO's Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Introduction to concrete as a structural material	1			*			*
Mixing water	2			*			
Concrete manufacture	3						
	4						
Properties of fresh concrete	5	*			*		
Properties of hardened concrete	6		*		*		
	7		*		*		
Midterm Exam	8						
Durability of concrete	9		*	*			
Mix design	10					*	
	11					*	

Statistical analysis to judge concrete quality	12						*
Concrete admixtures	13			*			
Special concretes	14			*			
Oral and Practical exam	15						
Final Exam	16						
Total	15	1	3	5	3	2	2

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Fresh Concrete tests	4	*	*		*		
Hardened Concrete tests	6		*		*		
Non-destructive testing	10		*		*		
Total	3	1	3		3		

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered					
Methods	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
1.Lecture	*	*	*	*	*	*
2.Tutorial	*	*	*	*	*	*
3.Practical-based Learning	*	*		*		
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Discussion Session						
2. Extra Lectures						
3. Provide different levels of books and materials						

2.7 Assessment Methods

Assessment Methods:	Course LOs Covered					
Methods	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Formative Assessment Method						
Tests	Oral Exam	*	*	*	*	*
	Midterm Exam	*	*	*	*	*
	Experimental	*	*		*	
Assignments	*	*	*	*	*	*
Summative Assessment Method						
Final Exam	*	*	*	*	*	*

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Assignments	2 to 6 & 9 to 14	5%
Midterm Exam	8	20
Experimental	4, 6 & 10	5%
Oral Exam	15	10%
Final Exam	16 or more	60%
Total		100%

2.8. List of Reference: (max. five years ago)

Course Notes:	Used
Essential Books (Textbooks):	١- الكود المصري لتصميم وتنفيذ المنشآت الخرسانية - ٢٠٣. ٢- الملحق الثالث للكود المصري لتصميم وتنفيذ المنشآت الخرسانية (دليل الاختبارات المعملية لمواد الخرسانة).
Recommended Books:	1- Concrete Technology, AM Neville, JJ Brooks, Longman, ISBN-10: 0273732196, ISBN-13: 978-0273732198. 2- Properties of Concrete and Structures, P.K. Mehta, Prentice Hall, ISBN-10: 0131671154, ISBN-13: 978-0131671157. 3- تكنولوجيا الخرسانة" (الجزء الأول والجزء الثاني)، أ.د. أحمد العريان - أ.د. عبد الكريم عطا.
Periodicals, Web Sites, ... etc:	https://www.concrete.org https://www.cement.org

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
laboratory Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO1	*	
PO6		*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
CO1	*	*		*		*
CO2	*	*	*	*	*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
PLO2	*	*				
PLO11			*	*		
PLO13					*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO2	PO1	CLO1	<ul style="list-style-type: none"> • Lecture • Tutorial • Practical-based Learning 	<ul style="list-style-type: none"> • Written exam • Assignments • Oral exam • Experimental
		CLO2	<ul style="list-style-type: none"> • Lecture • Tutorial • Practical-based Learning 	<ul style="list-style-type: none"> • Written exam • Assignments • Oral exam • Experimental
PLO11	PO6	CLO3	<ul style="list-style-type: none"> • Lecture • Tutorial 	<ul style="list-style-type: none"> • Written exam • Assignments • Oral exam
		CLO4	<ul style="list-style-type: none"> • Lecture • Tutorial • Practical-based Learning 	<ul style="list-style-type: none"> • Written exam • Assignments • Oral exam • Experimental
PLO13		CLO5	<ul style="list-style-type: none"> • Lecture • Tutorial 	<ul style="list-style-type: none"> • Written exam • Assignments • Oral exam
		CLO6	<ul style="list-style-type: none"> • Lecture • Tutorial 	<ul style="list-style-type: none"> • Written exam • Assignments • Oral exam

Course Coordinator: Prof. Dr\ Khaled Mohamed El-Sayed

Head of Department: Prof. Dr\ Ahmed El-Debeiky

Date: 5/1/2022



Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering Department			
Department Offering the Course	Civil Engineering Department			
Date of Specification Approval				
Course Title	Design of Concrete Structures (I)	Code	C 1202	
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>	
Semester	I nd Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	2	0	4

2. Professional Information:

2.1. Course description: Properties of concrete materials - Ultimate limit states design method - Design of section under pure bending moment (Rectangular, L & T - sections) using ultimate limit state method - Load distribution - Check of shear - Simple and continuous beams - Design of one-way and two-ways solid slabs - Design of short columns.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO2	Behave professionally and adhere to engineering ethics and standards and work to develop the profession and the community and promote sustainability principles.	CO1	Behave professionally and adhere to engineering ethics and standards.
PO4	Use techniques, skills, and modern engineering tools necessary for engineering practice.	CO2	Use techniques, skills and modern engineering tools for reinforced concrete structures.
PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations.	CO3	Design the Concrete Structures geometrically & structure

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO3	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.	CLO1	Apply knowledge to choose the better type of structural system.
		CLO2	Apply the Principals of designing reinforced concrete elements.
PLO4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.	CLO3	Utilize Egyptian codes for reinforced concrete structures.
		CLO4	Use different structural systems for planning the RC buildings.
PLO12	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.	CLO5	Analyze the different RC structure elements.
		CLO6	Design the different reinforcement concrete structural elements according to ECP.

2.4. Course Topics:

Course Topics	Week	Course LOs Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Properties of concrete materials.	1	*	*				
Ultimate limit states design method.	2		*				
	3	*					*
Design of section under pure bending moment (Rectangular, L & T - sections) using ultimate limit state method.	4	*	*				
	5		*				
	6		*	*			*
Load distribution.	7				*	*	
Midterm Exam	8						
Check of shear.	9			*			*

Design Simple and continuous beams.	10		*	*			
	11		*	*			
	12			*		*	*
Design of one-way and two-ways solid slabs.	13	*	*		*		
Design of short columns.	14		*	*			*
Practical and Oral Exam	15						
Final Exam	16						
Total		4	9	6	2	2	5

2.5 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered					
Methods	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
1. Lecture	*	*	*	*	*	*
2. Tutorials	*	*	*	*	*	*
3. Project-based Learning	*		*			*
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Discussion Session						
2. Extra Lectures						
3. Provide different levels of books and materials						

2.6 Assessment Methods

Assessment Methods:	Course LOs Covered					
Methods	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Formative Assessment Method						
Tests	Discussion	*	*		*	*
	Midterm Exam	*	*	*	*	*
Projects	Mini Projects	*		*		*
Assignments		*	*	*	*	*
Summative Assessment Method						
Final Exam		*	*	*	*	*

2.6.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Assignments	2 to 6 & 9 to 13	8 %
Midterm exam	8	24 %
Mini Projects	7	4 %
Discussion	2 to 6 & 9 to 15	4%
Final exam	16 and above	60 %
Total		100 %

2.7. List of Reference: (max. five years ago)

Course Notes:	Not used
Essential Books (Textbooks):	<ul style="list-style-type: none"> • Shaker elbehary handbook. • ECP203-2020. • Design of RC Structure halls – DR.M. Hilal • lectures
Recommended Books:	<ul style="list-style-type: none"> • Design of RC Structure - V. 2 - DR. Mashhour A. Ghoneim.

2.8. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective		
	CO1	CO2	CO3
PO2	*		
PO4		*	
PO6			*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
CO1	*	*				
CO2			*	*		
CO3					*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
PLO3	*	*				
PLO4			*	*		
PLO12					*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO3	PO2	CLO1	<ul style="list-style-type: none"> Lecture Tutorials Project-based Learning 	<ul style="list-style-type: none"> Written Exam Mini Projects Assignments Discussion
		CLO2	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Written Exam Assignments Discussion
PLO4	PO4	CLO3	<ul style="list-style-type: none"> Lecture Tutorials Project-based Learning 	<ul style="list-style-type: none"> Written Exam Assignments Mini Projects
		CLO4	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Written Exam Assignments Mini Projects Discussion
PLO12	PO6	CLO5	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Written Exam Assignments Discussion
		CLO6	<ul style="list-style-type: none"> Lecture Tutorials Project-based Learning 	<ul style="list-style-type: none"> Written Exam Assignments Mini Projects

Course Coordinator: Dr. Ahmed Saeed Debaiky



Head of Department: Prof. Dr. Ahmed Saeed Debaiky

Date: 19/02/2023





Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering Department			
Department Offering the Course	Civil Engineering Department			
Date of Specification Approval				
Course Title	Structural Analysis (2 - a)	Code	C1211	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	1 st Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	2	-	4

2. Professional Information:

2.1. Course description:

- The analysis of the deflection for the determine structures like beams by:
 - Double integration method
 - Elastic weight method
 - Conjugate method
- Using the virtual work method to analyze the deformation for the determine and indeterminate structures like beams, frames and trusses.
- Using the three moment equations to analysis the indeterminate structures
- Study the buckling of columns.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO1	Apply a wide spectrum of engineering knowledge, science and specialized skills with analytic, critical and systemic thinking to identify and solve engineering problems in real life situation.	CO1	Apply the principles of mathematics, science and technology in problem and solving scenarios in mechanical engineering
PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations.	CO2	Solving engineering problems of building technologies, structure & construction methods

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	CLO1	applying engineering fundamentals
		CLO2	Analyzing the data complex engineering problems (analyze)
PLO11	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.	CLO3	solving the problems (evaluate)
		CLO4	Ability to define, analyze and solve civil engineering problems to reach proper solutions.

2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
What is the deformation in structures and how to analyze it	1				
Double integration method	2	*	*	*	
Elastic weight method	3	*	*	*	
Conjugate beam method	4	*	*	*	
Virtual work method to analyzing the deformation of beam	5	*	*	*	
Virtual work method to analyzing the deformation of frames	6	*	*	*	
Virtual work method to analyzing the deformation of trusses	7	*	*	*	
Midterm exam	8				
Virtual work method to analyzing the deformation of no-load effect	9	*	*	*	
Using the three-moment equation to analyze the indeterminate beams.	10			*	*
Using the three-moment equation to analyze the indeterminate frames.	11			*	*
Make a desiccation about applying sap program.	12				

Studying the buckling of columns.	13			*	*
Revision.	14				
Oral and Practical exam	15				
Final Exam	16				
Total		7	7	10	3

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered			
Methods	CLO1	CLO2	CLO3	CLO4
1.lecture	*	*	*	*
2. tutorials	*	*	*	*
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				
2. Extra Lectures				
3. Provide different levels of books and materials				

2.7 Assessment Methods

Assessment Methods:		Course LOs Covered			
Methods		CLO1	CLO2	CLO3	CLO4
Formative Assessment Method					
Tests	Oral Test	*	*	*	*
	Midterm Exam	*	*		
Assignments		*	*	*	*
Summative Assessment Method					
Final Exam		*	*	*	*

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
assignments	2-6&9-12	10%
Midterm Exam	8	25%
Oral Test	13	5%
Final Exam	15	60%
Total		100%

2.8. List of Reference: (max. five years ago)

Course Notes:	Not used
Essential Books (Textbooks):	Structural analysis text book
Recommended Books:	Dr/Kassem book & dr/ Hassan hegab book and el dakhakhny book and bazaraa
Periodicals, Web Sites, ... etc:	-

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO1	*	
PO6		*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
CO1	*	*		
CO2			*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
PLO1	*	*		
PLO11			*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO1	PO1	CLO1	<ul style="list-style-type: none"> Lecture tutorials 	<ul style="list-style-type: none"> Oral Test Midterm Exam Assignments
		CLO2	<ul style="list-style-type: none"> .lecture tutorials 	<ul style="list-style-type: none"> Oral Test Midterm Exam Assignments
PLO11	PO6	CLO3	<ul style="list-style-type: none"> .lecture tutorials 	<ul style="list-style-type: none"> Oral Test Assignments
		CLO4	<ul style="list-style-type: none"> .lecture tutorials 	<ul style="list-style-type: none"> Oral Test Assignments

Course Coordinator: Prof./ hala Mohamed refaat



Head of Department: Prof. Dr. / ahmed saeed el debaiky



Date: 20 /11 /2022



Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering Department			
Department Offering the Course	Civil Engineering Department			
Date of Specification Approval				
Course Title	Structural Analysis (2 - b)	Code	C1212	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	2 nd Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	2	-	4

2. Professional Information:

2.1. Course description:

The analysis of the Indeterminate Structures like beams and frames by Slope Deflection Method. Using the Moment Distribution Method to analyze the indeterminate structures like beams, and frames. Using the Force Method to analysis the indeterminate structures. Studying the Deflection in all the methods.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO1	Apply a wide spectrum of engineering knowledge, science, and specialized skills with analytic, critical and systemic thinking to identify and solve engineering problems in real life situation.	CO1	Apply scenarios in Civil Engineering.
PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations.	CO2	Evaluate Civil Engineering problems of building Apply the principles of mathematics, science and technology in problem and sols technologies, Structures, and construction methods.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	CLO1	Apply engineering fundamentals to Solve complex engineering problems (Apply)
		CLO2	Analyze the data to solve complex engineering problems (Analyze)
PLO11	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.	CLO3	Select an appropriate Method to solve Civil Engineering problems (Select)
		CLO4	Analyze civil engineering problems to reach proper solutions. (Analyze)

2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
What is the difference between the determinate and the indeterminate structures, and what is the fixed end moment by giving examples.	1	*			
Solving the indeterminate beams by the slope deflection method	2		*		
Solving the indeterminate frames by the slope deflection method	3		*		
Solving the indeterminate frames with sidesway by the slope deflection method	4		*		
Solving the indeterminate beams by the moment distribution method	5			*	
Solving the indeterminate frames by the moment distribution method	6			*	
Solving the indeterminate frames with sidesway by the moment distribution method	7			*	
Midterm Exam	8				

Applying examples for the deflection in beams and frames.	9	*		*	
Using the force method to analyze the indeterminate beams.	10				*
Using the force method to analyze the indeterminate frames.	11				*
Using the force method to analyze the indeterminate trusses.	12				*
Using the force method to analyze the indeterminate Composite Structures	13				*
Applying examples for the deformation in beams and frames.	14	*			*
Practical and Oral Exam	15				
Final Exam					
Total	13	۳	۳	۴	5

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered			
Methods	CLO1	CLO2	CLO3	CLO4
1. Lecture	*	*	*	
2. Tutorials		*	*	*
3. Discussion	*	*	*	
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				
2. Extra Lectures				
3. Provide different levels of books and materials				

2.7 Assessment Methods

Assessment Methods:	Course LOs Covered			
Methods	CLO1	CLO2	CLO3	CLO4
Formative Assessment Method				
Tests	Quiz	*	*	*
	Midterm Exam	*	*	*
assignments	*	*	*	
Summative Assessment Method				
Final Exam	*	*	*	*

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Assignments	2-6&9-12	10%
Midterm Exam	8	20%
Quiz	13	10%
Final Exam	15	60%
Total		100%

2.8. List of Reference: (max. five years ago)

Course Notes:	Not used
Essential Books (Textbooks):	<i>Structural analysis</i>, R.C. Hibbeler, 10th Edition, Pearson Prentice Hall, 2017
Recommended Books:	<ul style="list-style-type: none"> - <i>Structural Analysis</i>, Aslam Kassimali, 6th Edition, Cengage Learning Hall, 2018 - <i>Structural Analysis</i>, Felix Undoeyo, 6th Edition, Temple University Press, 2020 - Dr/Kassem book & dr/ Hassan hegab book and el dakhakhny book and bazaraa

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO1	*	

PO6		*
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3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
CO1	*	*		
CO2			*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
PLO1	*	*		
PLO11			*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO1	PO1,6	CLO1	<ul style="list-style-type: none"> ● Lecture ● Discussion 	<ul style="list-style-type: none"> ● Midterm Exam ● Assignments
		CLO2	<ul style="list-style-type: none"> ● lecture ● tutorials ● Discussion 	<ul style="list-style-type: none"> ● Quizzes ● Midterm Exam ● Assignments
PLO11		CLO3	<ul style="list-style-type: none"> ● lecture ● tutorials ● Discussion 	<ul style="list-style-type: none"> ● Quizzes ● Midterm Exam ● Assignments
		CLO4	<ul style="list-style-type: none"> ● tutorials ● Discussion 	<ul style="list-style-type: none"> ● Quizzes

**Course Coordinator: Prof./Hala Mohamed Refaat d
Dr./ Amr Ramadan El-Gamal**



Head of Department: Prof. Dr. / Ahmed Saeed El-Debaiky



Date: 10 /٢ /2023



Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the program	Civil Engineering Department			
Department Offering the course	Civil Engineering Department			
Date of Specification Approval				
Course Title	Computer Applications (2 - a)	Code	C1201	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	1st Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	0	0	3	1

2. Professional Information:

2.1. Course description:

Computer Applications for Structural Analysis: Determination of internal forces in statically determinate and indeterminate structures (beams, frames & trusses) - Structural deformations - Thermal effect on structures.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO1	Apply a wide spectrum of engineering knowledge, science and specialized skills with analytic, critical and systemic thinking to identify and solve engineering problems in real life situation.	CO1	Discover a finite element program tool
		CO2	Solve determinate and indeterminate problems
PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations.	CO3	Find the thermal effect and deformation effect on structural element

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO2	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.	CLO1	Simulate different structural element in finite element program (Create)
		CLO2	Apply different shape of loads (Create)
PLO12	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.	CLO3	Analyze different structural element (Create)
		CLO4	Explore defoamed shape for different structural element (Create)

2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Learn how use finite element program	1	*			
Simulate simple beam	2	*			
Simulate indeterminate beams	3	*			
Simulate frame	4	*	*		
Simulate truss	5	*	*		
Apply point load	6	*	*		
Apply distributed load	7	*	*		
Midterm exam	8				
Learn how display normal force	9			*	
Learn how display shear force	10			*	
Learn how display bending moment	11			*	
Display beam deformed shape	12				*
Display frame deformed shape	13				*
Display truss deformed shape	14				*
Oral and Practical exam	15				
Final Exam	16				

Total		7	4	3	3
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2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered			
Methods	CLO1	CLO2	CLO3	CLO4
1.Computer-based Instruction	*	*	*	*
2.Simulation	*	*	*	*
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				

2.7 Assessment Methods

Assessment Methods:		Course LOs Covered			
Methods		CLO1	CLO2	CLO3	CLO4
Formative Assessment Method					
Tests	Quizzes	*	*	*	*
	Midterm Exam	*	*		
Summative Assessment Method					
Final Exam		*	*	*	*

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Quizzes	2,3,4,5,6,7,9,10,11,12,13,14	30%
Midterm Exam	8	30%
Final Exam	15	40%
Total		100%

2.8. List of Reference:

Periodicals, Web Sites, ... etc:	https://www.csiamerica.com/
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2.9. Facilities required for Teaching and Learning

Different Facilities
laboratory Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective		
	CO1	CO2	CO3

PO1	*	*	
PO6			*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
CO1	*	*		
CO2	*	*		
CO3			*	*

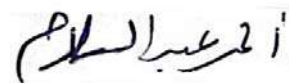
3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
PLO2	*	*		
PLO12			*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO2	PO1	CLO1	<ul style="list-style-type: none"> • Computer-based Instruction • Simulation 	<ul style="list-style-type: none"> • Quizzes
		CLO2	<ul style="list-style-type: none"> • Computer-based Instruction • Simulation 	<ul style="list-style-type: none"> • Quizzes
PLO12	PO6	CLO3	<ul style="list-style-type: none"> • Computer-based Instruction • Simulation 	<ul style="list-style-type: none"> • Quizzes
		CLO4	<ul style="list-style-type: none"> • Computer-based Instruction • Simulation 	<ul style="list-style-type: none"> • Quizzes

Course Coordinator: Dr. Ahmed Abdelsalam



Head of Department: Prof. Dr. Ahmed Saeed Debaiky



Date: 8/11/2022



الفرقة الثالثة



Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering Department			
Department Offering the Course	Civil Engineering Department			
Date of Specification Approval				
Course Title	Design of Concrete Structures (2 - b)	Code	C 1352	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	2 nd Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	2	0	4

2. Professional Information:

2.1. Course description:

Design of Concrete Structures: Analysis of columns - Shear walls - Halls - Indirect lighting roofs (saw-tooth) - Arched systems (slab -girder) - Trusses - Vierendeel - Prestressed beams (simple beams) - Serviceability limit states (deflection - crack width) - Types of joints (construction - shrinkage - expansion)- Short cantilever - Deep beam.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO2	Behave professionally and adhere to engineering ethics and standards and work to develop the profession and the community and promote sustainability principles.	CO1	Behave professionally and adhere to engineering ethics and standards.
PO4	Use techniques, skills, and modern engineering tools necessary for engineering practice.	CO2	Use techniques, skills and modern engineering tools for reinforced concrete structures.
PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations.	CO3	design the Concrete Structures geometrically & structure

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO3	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.	CLO1	Apply knowledge to choose the better type of structural system.
		CLO2	Apply knowledge to choose the most economical system.
PLO4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.	CLO3	Use different structural systems for planning the RC buildings.
		CLO4	Utilize Egyptian codes for reinforced concrete structures.
PLO12	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.	CLO5	Analyze the different RC structure elements.
		CLO6	Design the different reinforcement concrete structural elements according to ECP.

2.4. Course Topics:

Course Topics	Week	Course LOs Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Analysis of columns	1	*	*	*			
	2				*	*	*
Prestressed beams (simple beams)	3	*	*	*			
	4				*	*	*
Halls + Indirect lighting roofs (saw-tooth)	5	*	*		*		*
Arch slab	6	*	*		*		*

Arch girder	7		*		*	*	*
Mid-term exam	8						
Trusses	9			*	*		*
Vierendeel	10			*	*		*
Shear walls	11		*		*	*	*
Short cantilever + Deep beam	12			*	*		*
Serviceability limit states (deflection - crack width)	13		*		*		*
Types of joints (construction - shrinkage - expansion).	14	*	*		*	*	*
Oral and Practical exam	15						
Final Exam	16						
Total		5	8	5	11	5	11

2.5 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered					
Methods	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
1. Lecture	*	*	*	*	*	*
2. Tutorials	*	*	*	*	*	*
3. Project-based Learning	*	*		*		*
4. Practical-based Learning						
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Discussion Session						
2. Extra Lectures						
3. Provide different levels of books and materials						

2.6 Assessment Methods

Assessment Methods:	Course LOs Covered					
Methods	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Formative Assessment Method						
Tests	discussion	*	*	*		*
	Midterm Exam	*	*	*	*	*
Projects	Mini Projects	*	*		*	*
Assignments		*	*	*	*	*
Summative Assessment Method						
Final Exam		*	*	*	*	*

2.6.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Assignments	2 to 6 & 9 to 13	8 %
Midterm exam	8	24 %
Mini Projects	7	4 %
Discussion	2 to 6 & 9 to 15	4 %
Final exam	16 and above	60 %
Total		100 %

2.7. List of Reference: (max. five years ago)

Course Notes:	Not used
Essential Books (Textbooks):	<ul style="list-style-type: none"> • Shaker elbehary handbook. • Egyptian code ECP203-2020. • Design of RC Structure halls – DR.M. Hilal • lectures
Recommended Books:	<ul style="list-style-type: none"> • Design of RC Structure - DR. Mashhour A. Ghoneim.

2.8. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective		
	CO1	CO2	CO3
PO2	*		
PO4		*	
PO6			*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
CO1	*	*				
CO2			*	*		
CO3					*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
PLO3	*	*				
PLO4			*	*		
PLO12					*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO3	PO2	CLO1	<ul style="list-style-type: none"> Lecture Tutorials Project-based Learning 	<ul style="list-style-type: none"> Written Exam Mini Projects Assignments Discussion
		CLO2	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Written Exam Assignments Mini Projects Discussion
PLO4	PO4	CLO3	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Written Exam Assignments Discussion
		CLO4	<ul style="list-style-type: none"> Lecture Tutorials Project-based Learning 	<ul style="list-style-type: none"> Written Exam Mini Projects Assignments Mini Projects
PLO12	PO6	CLO5	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Written Exam Assignments Mini Projects Discussion
		CLO6	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Written Exam Assignments

Course Coordinator: Prof. Dr. Gamal Ismail



Head of Department: Prof. Dr. Ahmed Saeed Debaiky

Date: 7/3/2023





Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering			
Department Offering the Course	Civil Engineering			
Date of Specification Approval				
Course Title	Transportation Planning & Traffic Engineering	Code	C 1381	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	First Semester (Third Year)			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	1	1	4

2. Professional Information:

2.1. Course description:

Transportation Planning: Introduction to transportation planning - Transportation problem definition and defining study area - Data collection (Origin and destination studies) - Travel forecast (Trip generation - Trip distribution - Modal split - traffic assignment) - Transportation evaluation.

Traffic Engineering: Introduction (Human characteristics and vehicle characteristics) - Traffic volume - Traffic speed - Traffic density – Travel time and delay studies - Traffic flow characteristics - Highway capacity (Two-lane highway) – Parking studies - Traffic control devices – Intersections control (Conflict points at intersections, Types of intersection control) - Traffic signals design - Weaving for intersections, freeways, and expressways.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO5	Master self-learning and life-long learning strategies to communicate effectively in academic/professional fields.	CO1	Evaluate transportation planning process with respect to design, financing, regulations and policies, environmental related issues, land use and contemporary issues.

PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations.	CO2	Design traffic signal, plan parking area, and evaluate traffic operation
-----	--	-----	--

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO5	Practice research techniques and methods of investigation as an inherent part of learning.	CLO1	Describe study area and the methods of data surveying required for transportation planning. (Understand)
		CLO2	Predict travel demand (Apply)
		CLO3	Evaluate transportation project (Evaluate)
PLO13	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.	CLO4	Calculate Human characteristics and vehicle characteristics (Apply)
		CLO5	Collect traffic data (Apply)
		CLO6	Analyze traffic data (Analyze)
		CLO7	Analyze traffic flow characteristics & highway capacity (Analyze)
PLO12	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.	CLO8	Plan parking area (Create)
		CLO9	Design of traffic signal (Create)

2.4. Course Topics:

Course Topics	Week	Course LOs Covered								
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8	CLO9
Introduction to transportation planning - Transportation problem- Definition and defining study area - Data collection (Origin and destination studies)	1	1								
Travel forecast (Trip generation - Trip distribution - Modal split - traffic assignment)	2		1							
	3		1							
Transportation evaluation	4			1						
Human characteristics and vehicle characteristics	5				1					
Traffic data collection	6					1				
Traffic data analyzing	7						1			
Midterm exam	8									
Traffic flow characteristics	9							1		
Highway capacity	10							1		
Parking studies	11								1	
Intersections control	12									1
Traffic signals design	13									1
Weaving for intersections	14									1
Practical exam	15									
Final Exam	16									
Total		1	2	1	1	1	1	2	1	3

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered								
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8	CLO9
Traffic data collection	9					*				
	10					*				
	11					*				
Total	3					3				

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered								
Methods	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8	CLO9
1. Lecture	*	*	*	*	*	*	*	*	*
2. Tutorials		*	*	*		*	*	*	*
3. Practical-based Learning					*				
4. Report	*								
Teaching and Learning Methods for Students with Special Needs:									
Methods									
1. Discussion Session									
2. Extra Lectures									
3. Provide different levels of books and materials									

2.7 Assessment Methods

Assessment Methods:		Course LOs Covered								
Methods		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8	CLO9
Formative Assessment Method										
Tests	Oral Test					*	*	*	*	*
	Midterm Exam	*	*	*	*					
Assignments		*	*	*	*					
Discussion		*								
Mini project						*				
Summative Assessment Method										
Final Exam		*	*			*		*	*	

2.7.1. Assessment Schedule & Grades Distribution (total mark from 125)

Assessment Method	Week	Weighting of Asses.
Oral exam	15	8 %
Mini project	15	8 %
Discussion	15	4 %
Practical and Oral		20 %
Assignments	2to 7	4 %
Midterm exam	8	16 %
Assignments & Midterm exam		20 %
Final exam	16 and above	60 %
Total		100 %

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO5	PO5	CLO1	<ul style="list-style-type: none"> • Lectures • Report 	<ul style="list-style-type: none"> • Midterm Exam • Discussion
		CLO2	<ul style="list-style-type: none"> • Lectures • Tutorials 	<ul style="list-style-type: none"> • Assignments • Midterm Exam • Final Exam
		CLO3	<ul style="list-style-type: none"> • Lectures • Tutorials 	<ul style="list-style-type: none"> • Assignments • Midterm Exam • Final Exam
PLO13	PO6	CLO4	<ul style="list-style-type: none"> • Lectures • Tutorials 	<ul style="list-style-type: none"> • Assignments • Midterm Exam • Final Exam
		CLO5	<ul style="list-style-type: none"> • Lectures • Practical-based Learning 	<ul style="list-style-type: none"> • Oral test • Mini project
		CLO6	<ul style="list-style-type: none"> • Lectures • Tutorials 	<ul style="list-style-type: none"> • Assignments • Final Exam
		CLO7	<ul style="list-style-type: none"> • Lectures • Tutorials 	<ul style="list-style-type: none"> • Assignments • Final Exam
PLO12		CLO8	<ul style="list-style-type: none"> • Lectures • Tutorials 	<ul style="list-style-type: none"> • Assignments • Final Exam
		CLO9	<ul style="list-style-type: none"> • Lectures • Tutorials 	<ul style="list-style-type: none"> • Assignments • Final Exam

Course Coordinator: Dr Mohamed Samir
Dr Moustafa Abdelsalam Saad

Head of Department: Prof. Dr. Ahmed Saeed Debaiky

Date: 9/11/2022



Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering Department			
Department Offering the Course	Civil Engineering Department			
Date of Specification Approval				
Course Title	Design of Steel Structures (1 - a)	Code	C1371	
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>	
Semester	First Semester (Third Year)			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	2	-	4

2. Professional Information:

2.1. Course description:

Steel as a construction material - Material properties and steel sections - Steel design codes and the Allowable Stress Design method (ASD) - Design of tension members. Design of axially loaded compression members - Behavior of short columns - Behavior of slender columns - Elastic and inelastic buckling - Design of columns - Effective length concept - Columns in braced and unbraced frames - Design of flexure members - Types and classification of beam cross sections - Bending strength of compact and non-compact cross sections - Design of laterally supported beams - Lateral-torsional buckling - Design of laterally unsupported beams - Design of beam-columns (combined axial and flexural forces) - Design of bolted connections - Bearing type and friction type bolted connections - Design of welded connections.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO2	Behave professionally and adhere to engineering ethics and standards and work to develop the profession and the community and promote sustainability principles.	CO1	Using a structural analysis principles to get a critical cases for design steel element.

PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations.	CO2	Construction, design of steel elements according to standard codes.
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2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO3	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.	CLO1	Apply specified consideration to planning the steel structure.
		CLO2	Apply of different loads, structural analysis of steel structure.
PLO4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.	CLO5	Utilize codes of practice and standards of steel structural to check the allowable stresses.
		CLO6	Utilize codes of practice and standards of steel structural to check safety requirements (serviceability & deflection)
PLO12	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.	CLO3	Calculate the critical straining action for elements.
		CLO4	Using an optimum design for Steel Structure elements. By end this lesson, the student will be able to design the Structure steel elements.

2.4. Course Topics:

Course Topics	Week	Course LO's Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Steel as a construction material - Material properties and steel sections	1	*					
Steel design codes and the Allowable Stress Design method (ASD)	2		*	*			
Design of tension members	3				*	*	*
Design of axially loaded compression members	4				*	*	*
Design of flexure members - Types and classification of beam cross sections - Bending strength of compact and non-compact cross sections	5				*	*	*
Design of laterally supported beams	6,7			*	*	*	*
Midterm Exam	8						
Lateral-torsional buckling - Design of laterally unsupported beams	9				*	*	*
Design of welded connections.	10,11			*	*	*	
Design of bolted connections (Bearing type)	12			*	*	*	
Design of bolted connections (Friction type)	13			*	*	*	
Computer application by excel	14			*	*		
Practical Exam	15	Not Applicable					
Final Exam	16						
Total		1	1	8	11	10	6

2.5. Lab Topics: Not Applicable

Lab Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Total					

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered					
Methods	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
1. Lecture	*	*	*	*	*	*
2. Tutorials	*	*	*	*	*	*
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Discussion Session						
2. Extra Lectures						
3. Provide different levels of books and materials						

2.7 Assessment Methods

Assessment Methods:		Course LOs Covered					
Methods		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Formative Assessment Method							
Tests	Quiz	*			*	*	*
	Midterm Exam	*	*	*	*		
Assignments		*	*	*	*	*	*
Summative Assessment Method							
Final Exam			*	*	*	*	*

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Assignments	4&7&10&12&13	5 %
Quiz	5&9&11	10 %
Mid-term exam	8&14	25 %
Final exam	16 and above	60 %
Total		100 %

2.8. List of Reference: (max. five years ago)

Course Notes:	- Staff lectures notes
Essential Books (Textbooks):	1- Egyptian code for design of steel structure 2- Steel structures design by Prof Dr. Abdelrahim Khalil Dessouki
Recommended Books:	1- Steel design hand book by. Prof Dr. Bahaa M. Mashaly Part 1 1- Steel design hand book by. Prof Dr. Bahaa M. Mashaly Part 3
Periodicals, Web Sites, ... etc:	

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
laboratory Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO2	*	
PO6		*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
CO1	*	*	*			
CO2				*	*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
PLO3	*	*				
PLO4					*	*
PLO12			*	*		

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO3	PO2	CLO1	<ul style="list-style-type: none">• Lecture.• Tutorials.	<ul style="list-style-type: none">• Midterm Exam.• Quiz.• Assignments.
		CLO2	<ul style="list-style-type: none">• Lecture.• Tutorials.	<ul style="list-style-type: none">• Midterm Exam.• Final Exam.• Assignments.
PLO4	PO6	CLO5	<ul style="list-style-type: none">• Lecture.• Tutorials.	<ul style="list-style-type: none">• Quiz.• Final Exam.• Assignments.
		CLO6	<ul style="list-style-type: none">• Lecture.• Tutorials.	<ul style="list-style-type: none">• Quiz.• Final Exam.• Assignments.
PLO12	PO6	CLO3	<ul style="list-style-type: none">• Lecture.• Tutorials.	<ul style="list-style-type: none">• Midterm Exam.• Final Exam.• Assignments.
		CLO4	<ul style="list-style-type: none">• Lecture.• Tutorials.	<ul style="list-style-type: none">• Quiz.• Midterm Exam.• Final Exam.• Assignments.

Course Coordinator: Assoc. Prof. Nader Nabih Khalil

Dr. Ibrahim El-shenawy

Dr. Ayman Abd-allah Zaky

Head of Department: Prof. Ahmed debaiky

Date: 7/11/2022





Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering Department			
Department Offering the Course	Civil Engineering Department			
Date of Specification Approval				
Course Title	Geotechnical Engineering (a)	Code	C 1361	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	First Semester (Third Year)			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	1	1	4

2. Professional Information:

2.1. Course description:

Introduction to Geotechnical Engineering -Definitions and Relationships - Index properties of Soil - Permeability and Seepage - Seepage through Earth Dams - Stress Distribution in Soil - Shear strength of Soil.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO1	Apply a wide spectrum of engineering knowledge, science, and specialized skills with analytic, critical, and systemic thinking to identify and solve engineering problems in real-life situations.	CO1	Develop a fundamental understanding of the nature and properties of soil and its different types and study the effect of water on its behavior in different situations, through the application of engineering principles and skills and laboratory experiments.
		CO2	Apply the laws and engineering sciences learned through understanding the behavior of soil and the use of analytical and critical thinking to solve the surrounding realistic engineering problems and study the soil-

			structure interaction to reach the best design conditions.
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2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO2	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.	CLO1	Analyze the index properties of soils and soil classification of the different types of soils. (Analyze)
		CLO2	Determine the soil permeability coefficient due to variable permeability tests. (Evaluate)
		CLO3	Determine the soil shear parameters due to variable shear tests. (Evaluate)
PLO11	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.	CLO4	Evaluate the variable soil parameters according to the knowledge of soil properties and classifications. (Evaluate)
		CLO5	Evaluate the seepage of water in the soil and the flow nets. (Evaluate)
		CLO6	Evaluate the stresses on soil due to different loads. (Evaluate)
		CLO7	Evaluate the shear strength of a soil mass. (Evaluate)

2.4. Course Topics:

Course Topics	Week	Course LOs Covered						
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7
• Introduction to Geotechnical Engineering	1				*			
• Definitions and Relationships	2				*			
• Index properties of Soil	3				*			
	4	*			*			
	5	*			*			
• Permeability and Seepage	6					*		
• Seepage through Earth Dams	7		*			*		
Midterm Exam								
• Stress Distribution in Soil	9						*	
	10						*	
	11						*	
• Shear strength of Soil	12							*
	13			*				*
	14							*
Practical Exam	15							
Final Exam	16							
Total		2	1	1	5	2	3	3

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered						
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7
Determination of water content and unit weight.	4	*						
Determination of plastic, liquid limits, and classification of soil.	5	*						
Constant and Falling head permeability test.	7		*					
Direct shear box test, Triaxial test, and Unconfined test.	13			*				
Total	4							

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered						
Methods	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7
Lecture				*	*	*	*
Tutorials				*	*	*	*
Practical-based Learning	*	*	*				
Teaching and Learning Methods for Students with Special Needs:							
Methods							
1. Discussion Session							
2. Extra Lectures							
3. Provide different levels of books and materials							

2.7 Assessment Methods

Assessment Methods:	Course LOs Covered						
Methods	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7
Formative Assessment Method							
Tests	Midterm Exam				*	*	
	Oral Test	*	*	*			
	Experimental	*	*	*			
Assignments					*	*	*
Summative Assessment Method							
Final Exam					*	*	*

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Assignments	2 to 6 & 9 to 13	4 %
Midterm exam	8	16 %
Oral & Experimental	15	20 %
Final exam	16 and above	60 %
Total		100 %

2.8. List of References:

Course Notes:	Not used
Essential Books (Textbooks):	<ul style="list-style-type: none"> •El-Kasaby, E. A., Soil Mechanics, Dar Al-Kutub Al-Almia, Cairo, 5th Ed., (21371/2013), ISBN 978 – 977 – 726 – 041 – 1, 2014. •Hemed a, Advances in Soil Mechanics and Foundation Engineering, IntechOpen, London ISBN: 978-1-78984-290-6, 2020.
Recommended Books:	<ul style="list-style-type: none"> •Das, B. M, Soil Mechanics Laboratory Manual, Oxford University Press, 9th. Ed., ISBN 978 – 019 – 020 – 966 – 7, 2016.
Periodicals, Web Sites, ... etc:	https://www.geoengineer.org/education/karl-terzaghi/legacy-in-geotechnical-engineering

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
Laboratory Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO1	*	*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes						
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7
CO1	*	*	*	*	*		

CO2						*	*
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3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes						
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7
PLO2	*	*	*				
PLO11				*	*	*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO2	PO1	CLO1	<ul style="list-style-type: none"> Practical-based Learning 	<ul style="list-style-type: none"> Oral Test Experimental Exam
		CLO2	<ul style="list-style-type: none"> Practical-based Learning 	<ul style="list-style-type: none"> Oral Test Experimental Exam
		CLO3	<ul style="list-style-type: none"> Practical-based Learning 	<ul style="list-style-type: none"> Oral Test Experimental Exam
PLO11	PO1	CLO4	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Midterm Exam Final Exam Assignments
		CLO5	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Midterm Exam Final Exam Assignments
		CLO6	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Final Exam Assignments
		CLO7	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Final Exam Assignments

Course Coordinator: Ass. Prof. Dr. Alnos Aly Eissa

Dr. Mohab Roshdy Ahmed

Dr. Mahmoud Awaad Gomaa



Head of Department: Prof. Dr. Ahmed Saeed Debaiky



Date: 9/11/2022



Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering Department			
Department Offering the Course	Civil Engineering Department			
Date of Specification Approval				
Course Title	Design of Concrete Structures(2-a)	Code	C 1351	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	First Semester (Third Year)			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	2	0	4

2. Professional Information:

2.1. Course description:

Design of Concrete Structures: Design of hollow block slabs - Design of paneled beams - Design of flat slabs - Torsion - Design of sections subjected to bending moment and axial force - Check stresses for sections under bending moment and axial force - Frames - Design of stairs - Design of deep beams - Design of short cantilever.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO2	Behave professionally and adhere to engineering ethics and standards and work to develop the profession and the community and promote sustainability principles.	CO1	Behave professionally and adhere to engineering ethics and standards.
PO4	Use techniques, skills, and modern engineering tools necessary for engineering practice.	CO2	Use techniques, skills and modern engineering tools for reinforced concrete structures.
PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards,	CO3	design the Concrete Structures geometrically & structure

	economic, environmental, cultural, and societal considerations.		
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2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO3	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.	CLO1	Apply knowledge to choose the better type of structural system.
		CLO2	Apply knowledge to choose the most economical system.
PLO4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.	CLO3	Use different structural systems for planning the RC buildings.
		CLO4	Utilize Egyptian codes for reinforced concrete structures.
PLO12	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.	CLO5	Analyze the different RC structure elements.
		CLO6	Design the different reinforcement concrete structural elements according to ECP.

2.4. Course Topics:

Course Topics	Week	Course LOs Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
• Design of one-way hollow block slabs	1	*		*			*
• Design of two-ways hollow block slabs	2	*	*	*	*		*
• Design of hidden beams							
• Design of paneled beams	3	*		*	*		*

• Design of flat slabs	4		*		*		*
	5		*		*		*
	6		*		*		*
• Design the reinforced concrete structures subjected to torsion	7				*	*	*
Midterm Exam	8						
• Design the reinforced concrete structures subjected to bending moment and axial force	9				*	*	*
• Design the reinforced concrete frames	10				*	*	
	11		*			*	
• Design of stairs	12	*	*	*	*		*
• Design of short cantilever	13				*		*
• Design of deep beams	14				*		*
Practical Exam	15	Not Applicable					
Final Exam	16						
Total		4	6	4	11	4	11

2.5. Lab Topics: Not Applicable

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
1. Lecture	*	*	*	*	*	*
2. Tutorials	*	*	*	*	*	*
3. Project-based Learning	*	*	*	*	*	*
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Discussion Session						
2. Extra Lectures						
3. Provide different levels of books and materials						

2.7 Assessment Methods

Assessment Methods:		Course LOs Covered					
Methods		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Formative Assessment Method							
Tests	Oral Test	*	*		*	*	
	Midterm Exam	*	*	*	*	*	*
Projects	Mini Projects	*	*	*	*	*	*
Assignments		*	*	*	*	*	*
Summative Assessment Method							
Final Exam		*	*	*	*	*	*

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Assignments	2 to 6 & 9 to 13	5 %
Midterm exam	8	20 %
Mini Projects	7	5 %
Oral	15	10 %
Final exam	16 and above	60 %
Total		100 %

2.8. List of Reference: (max. five years ago)

Course Notes:	Not used
Essential Books (Textbooks):	<ul style="list-style-type: none"> • Shaker elbehary hand book, . • Egyptian code ECP203-2020. • Design of RC Structure halls – DR.M. Hilal • lectures
Recommended Books:	<ul style="list-style-type: none"> • Design of RC Structure - V. 2 - DR. Mashhour A. Ghoneim.

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective		
	CO1	CO2	CO3
PO2	*		
PO4		*	
PO6			*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
CO1	*	*				
CO2			*	*		
CO3					*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
PLO3	*	*				
PLO4			*	*		
PLO12					*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO3	PO2	CLO1	<ul style="list-style-type: none"> • Lecture • Tutorials • Project-based Learning 	<ul style="list-style-type: none"> • Midterm Exam • Oral Test • Final Exam • Assignments • Mini Projects
		CLO2	<ul style="list-style-type: none"> • Lecture • Tutorials 	<ul style="list-style-type: none"> • Midterm Exam • Oral Test • Final Exam • Assignments
PLO4	PO4	CLO3	<ul style="list-style-type: none"> • Lecture • Tutorials 	<ul style="list-style-type: none"> • Midterm Exam • Final Exam • Assignments
		CLO4	<ul style="list-style-type: none"> • Lecture • Tutorials • Project-based Learning 	<ul style="list-style-type: none"> • Midterm Exam • Oral Test • Final Exam • Assignments • Mini Projects
PLO12	PO6	CLO5	<ul style="list-style-type: none"> • Lecture • Tutorials 	<ul style="list-style-type: none"> • Midterm Exam • Oral Test • Final Exam • Assignments
		CLO6	<ul style="list-style-type: none"> • Lecture • Tutorials • Project-based Learning 	<ul style="list-style-type: none"> • Midterm Exam • Final Exam • Assignments • Mini Projects

Course Coordinator: Prof. Dr. Gamal Ismail



Head of Department: Prof. Dr. Ahmed Saeed Debaiky

Date: 7/11/2022





Course Specification

1. Basic Information:

Program Title	Civil Engineering program			
Department Offering the program	Civil Engineering Program			
Department Offering the course	Civil Engineering Program			
Date of Specification Approval				
Course Title	Photogrammetry and Geodesy	Code	C 1331	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	First Semester (Third Year)			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	1	1	4

2. Professional Information:

2.1. Course description:

Uses of photogrammetry - Types of Aerial photographs - Relief displacement on a vertical photograph - Stereoscope - Parallax - Flight planning - Triangulation and Trialteration - Choice of figures - Measurements of triangulation – Introduction to GPS- Theory of errors and their application in surveying.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO1	Apply a wide spectrum of engineering knowledge, science and specialized skills with analytic, critical and systemic thinking to identify and solve engineering problems in real life situation.	CO1	Apply wide sets of surveying knowledge, science, and specialized skills.
PO5	Master self-learning and life-long learning strategies to communicate effectively in academic/professional fields.	CO2	Identify and Evaluate surveying problems using different learning strategies in academic and professional fields.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO2	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.	CLO5	Apply the fundamental concepts of using Total Station and Stereoscope in lab.
PLO5	Practice research techniques and methods of investigation as an inherent part of learning.	CLO4	Apply the research techniques in application of photogrammetry in surveying.
PLO11	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.	CLO1	Identify the geodesy and photogrammetry techniques.
		CLO2	Evaluate the surveying observations by using the statistical analyses.
		CLO3	Determine suitable survey instrument and technique for surveying and staking out for engineering works

2.4. Course Topics:

Course Topics	Week	Course LO's Covered				
		CLO1	CLO2	CLO3	CLO4	CLO5
Introduction to geodesy	1	√				
Spherical triangles and towers	2	√				
Conditions	3		√			
Strength of figures	4	√				
Introduction to GPS	5	√				
Theory of errors	6,7		√			
Midterm Exam	8					
Total Station	9			√		√
Introduction to photogrammetry	10	√		√	√	√
Aerial Photogrammetry	11	√		√	√	√
Flight planning	12		√			
Parallax	13		√	√		√
Relief Displacement	14		√			
Practical Exam	15					
Final Exam	16					
Total		6	5	4	2	4

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered				
		CLO1	CLO2	CLO3	CLO4	CLO5
Total Station1	9					√
Total Station2	10					√
Stereoscopic Instrument1	11				√	√
Stereoscopic Instrument2	12				√	√
Total					2	4

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered				
	CLO1	CLO2	CLO3	CLO4	CLO5
1. Lecture	√	√	√	√	
2. Tutorials	√	√	√		
3. Practical-based Learning				√	√
Teaching and Learning Methods for Students with Special Needs:					
Methods					
1. Discussion Session					
2. Extra Lectures					
3. Provide different levels of books and materials					

2.7 Assessment Methods

Assessment Methods:	Course LOs Covered				
	CLO1	CLO2	CLO3	CLO4	CLO5
Formative Assessment Method					
Tests	Oral Exam				√
	Midterm Exam	√	√		
	Experimental Exam			√	
Summative Assessment Method					
Final Exam	√	√	√	√	√

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Midterm exam	8	20%
Oral & Experimental	15	20%
Final exam	16 and above	60%
Total		100%

2.8. List of Reference:

Essential Books (Textbooks):	Surveying and geomatics engineering, principles, technologies and applications. Surveying committee. 2022- ISBN 978-0-7844-1603-7 ISBN 978-0-7844-8422-7 (epub)
Recommended Books:	<ol style="list-style-type: none"> 1. Elementary Surveying - An Introduction to Geomatics - Thirteenth Edition-2012-CHARLES D. GHILANI- ISBN-13: 978-0-13-255434-3- ISBN-10: 0-13-255434-8 2. Surveying Engineering & Instruments- Valeria Shank- First Edition-2012- ISBN 978-81-323-4403-2

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Laboratory Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO1	√	
PO5		√

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes				
	CLO1	CLO2	CLO3	CLO4	CLO5
CO1				√	√
CO2	√	√	√		

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes				
	CLO1	CLO2	CLO3	CLO4	CLO5
PLO2					√
PLO5				√	
PLO11	√	√	√		

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO11	PO5	CLO1	<ul style="list-style-type: none"> • Lecture • Tutorials 	<ul style="list-style-type: none"> • Midterm Exam • Final Exam
		CLO2	<ul style="list-style-type: none"> • Lecture • Tutorials 	<ul style="list-style-type: none"> • Midterm Exam • Final Exam
		CLO3	<ul style="list-style-type: none"> • Lecture • Tutorials 	<ul style="list-style-type: none"> • Final Exam
PLO5	PO1	CLO4	<ul style="list-style-type: none"> • Lecture • Practical-based Learning 	<ul style="list-style-type: none"> • Experimental Exam • Final Exam
PLO2		CLO5	<ul style="list-style-type: none"> • Practical-based Learning 	<ul style="list-style-type: none"> • Oral Exam • Final Exam

Course Coordinator: Dr. Essam Ghanem
Dr. Ahmed Elhadary



Head of Department: Prof. Dr. Ahmed Saeed Debaiky



Date: 7/11 /2022



Course Specification

1. Basic Information:

Program Title	Civil Engineering program			
Department Offering the Program	Civil Engineering			
Department Offering the Course	Civil Engineering			
Date of Specification Approval				
Course Title	Personals Skills	Code	C 1301	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	First Semester (Third Year)			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	0	0	2	1

2. Professional Information:

2.1. Course description:

Communication - Critical thinking and problem solving - Leadership - Negotiation - Self-directed learning.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO3	Work in and lead a heterogeneous team and display leadership qualities, business administration, and entrepreneurial skills.	CO1	Apply Leadership skills, critical thinking and problem-solving skills and negotiation skills
PO5	Master self-learning and life-long learning strategies to communicate effectively in academic/professional fields.	CO2	Apply Self-directed learning and communicate effectively in academic/professional fields.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO8	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	CLO1	Apply the concept of communication that help the student to communicate by using contemporary tools
		CLO2	Apply Self-directed learning
PLO9	Use creative, innovative, and flexible thinking and acquire entrepreneurial	CLO3	Understand the concept of negotiation

	and leadership skills to anticipate and respond to new situations.	CLO4	Understand Critical thinking and problem solving
		CLO5	Apply the concept leadership

2.4. Course Topics:

Course Topics	Week	Course LOs Covered				
		CLO1	CLO2	CLO3	CLO4	CLO5
<ul style="list-style-type: none"> • Introduction includes: • Personal skill types. • How to identify your personal skills? • How to showcase your personal skills on a resume? • How to improve your personal skills? 	1	1				
<ul style="list-style-type: none"> • Communication types • Effective communication definition and strategies • How to improve communication skills? • How to be a better active listener • How to keep audiences engaged when you speak? 	2-3	2				
<ul style="list-style-type: none"> • Self-directed learning definition. • The importance of self-directed learning. • Self-directed learning process steps 	4-5		2			
<ul style="list-style-type: none"> • Negotiation: Definition, Stages, Skills, and Strategies 	6-7			2		
Midterm Exam (not included)	8	(Not included)				
<ul style="list-style-type: none"> • What is critical thinking? • Characteristics of critical thinking. • The importance of critical thinking skills. • Ways to start thinking critically 	9-10				2	

<ul style="list-style-type: none"> • Problem-solving definition and examples. • The steps to problem-solving. • Effective problem-solving strategies. • What skills do efficient problem solvers have? • How to improve your problem-solving skills 	11-12				2	
<ul style="list-style-type: none"> • What is leadership? • Qualities of a great leader. • What defines a good leader? • Negative leadership qualities. • How to improve your leadership skills? • How to use leadership qualities in the workplace? 	13-14					2
Practical Exam	15	(Not included)				
Final Exam		(Not included)				
Total		3	2	2	4	2

2.5. Lab Topics: Not Applicable

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered				
Methods	CLO1	CLO2	CLO3	CLO4	CLO5
Lecture	*	*	*	*	*
Report	*	*	*	*	*
Presentation	*	*	*	*	*
Discussion	*	*	*	*	*
Teaching and Learning Methods for Students with Special Needs:					
Methods					
1. Discussion Session					
2. Extra Lectures					
3. Provide different levels of books and materials					

2.7 Assessment Methods

Assessment Methods:	Course LOs Covered				
Methods	CLO1	CLO2	CLO3	CLO4	CLO5
Formative Assessment Method					
Report	*	*	*	*	*
Presentation	*	*	*	*	*

Discussion	*	*	*	*	*
Summative Assessment Method					
Oral Exam	*	*	*	*	*

2.7.1. Assessment Schedule & Grades Distribution (total mark from 50)

Assessment Method	Week	Weighting of Asses.
Report	2 to 7, 9 to 14	20 %
Presentation		20 %
Discussion		20 %
Oral exam	15	40 %
Total		100 %

2.8. List of Reference:

Essential Books (Textbooks):	<ul style="list-style-type: none"> • Mike Markel; Stuart Selber, "Technical Communication", Macmillan Learning, 13th edition, 2021 • Afsaneh Nahavandi, "Art and Science of Leadership", Pearson, 7th edition, 2015. • James M. Kouzes and Barry Z. Posner, " The Student Leadership Challenge: Five Practices of Exemplary Leaders", Jossey-Bass, 3rd edition, 2018, ISBN: 978-0-470-17705-1 • John Butterworth, Geoff Thwaites, "Thinking Skills: Critical Thinking and Problem Solving", 2nd edition, 2016, ISBN-13 : 978-1107606302
Recommended Books:	-----
Periodicals, Web Sites, ... etc:	<p>The student can use the internet network to collect data.</p> <p>https://www.zippia.com/advice/personal-skills/ https://www.betterup.com/blog/self-directed-learning https://www.betterup.com/blog/leadership-characteristics https://www.betterup.com/blog/problem-solving-strategies https://www.betterup.com/blog/critical-thinking-skills https://www.investopedia.com/terms/n/negotiation.asp</p>

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO3	*	
PO5		*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes				
	CLO1	CLO2	CLO3	CLO4	CLO5
CO1			*	*	*
CO2	*	*			

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes				
	CLO1	CLO2	CLO3	CLO4	CLO5
PLO 8	*	*			
PLO9			*	*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO8	PO5	CLO1	<ul style="list-style-type: none"> Lecture Report Presentation Discussion 	<ul style="list-style-type: none"> Report Presentation Discussion Oral exam
		CLO2	<ul style="list-style-type: none"> Lecture Report Presentation Discussion 	<ul style="list-style-type: none"> Report Presentation Discussion Oral exam
PLO9	PO3	CLO3	<ul style="list-style-type: none"> Lecture Report Presentation Discussion 	<ul style="list-style-type: none"> Report Presentation Discussion Oral exam
		CLO4	<ul style="list-style-type: none"> Lecture Report Presentation Discussion 	<ul style="list-style-type: none"> Report Presentation Discussion Oral exam
		CLO5	<ul style="list-style-type: none"> Lecture Report Presentation Discussion 	<ul style="list-style-type: none"> Report Presentation Discussion Oral exam

Course Coordinator: Dr Mostafa Abdelsalam

Head of Department: Prof. Dr. Ahmed Saeed D

Date: 30/11/2022



Course Specification

1. Basic Information:

Department Offering the Program	Civil Engineering Program			
Department Offering the Course	Civil Engineering			
Program Title	Civil Engineering			
Date of Specification Approval				
Course Title	Technical Report	Code	C 1300	
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>	
Semester	First Semester (Third Year)			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	0	0	2	1

2. Professional Information:

2.1. Course description:

Each student prepares a report about a selected topic of civil engineering. The report is submitted and discussed at the end of the term.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO5	Master Self-learning and life-long learning strategies to communicate effectively in academic/professional fields	CO1	Collect, analyze, document, and report research clearly, concisely, logically, and ethically.
PO3	Work in and lead a heterogeneous team and display leadership qualities, business administration, and entrepreneurial skills.	CO2	Develop and support professional work habits, including those necessary for effective collaboration and cooperation with other students, instructors, and Service.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO5	Practice research techniques and methods of investigation as an inherent part of learning.	CLO1	Realize the stages of the writing process, professional format features, the basic components of definitions, descriptions, process explanations, and other common forms of technical writing
		CLO2	Recognize the basic sources and methods of research and documentation on topics in technology, including on-line research.
		CLO3	Integrate material from primary and secondary sources with their own ideas in research papers.
PLO8	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	CLO4	Participate actively in writing report (individually and in collaboration) that model effective scientific and technical communication in the workplace.
PLO9	Use creative, innovative, and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	CLO5	Prepare a professional presentation of the research.

2.4. Course Topics:

Course Topics	Week	Course LO's Covered				
		CLO1	CLO2	CLO3	CLO4	CLO5
Introduction to Technical Report Writing-What is a report? Purpose of Technical Report Writing, Characteristics of Technical Report Writing, Kinds of Reports	1-3	✓				
Different Parts of a Technical Report (Formatting) (Title Page, Letter of Transmittal, Abstract/Summary, Introduction, Background, Results, Discussion of Results, Conclusion, Recommendations, Figures and Tables, Appendix)	4-7		✓	✓		
Midterm Exam	8					
Discussion in Practice of Technical Report Writing	9-11				✓	
What is a Presentation?	12					✓
Discussion in a Presentation	13-14					✓
Practical Exam	15	Not Applicable				
Final Exam	16	Not Applicable				
Total						

2.5. Lab Topics: not applicable

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered				
Methods	CLO1	CLO2	CLO3	CLO4	CLO5
Tutorials	✓	✓			
Report			✓	✓	
Presentations					✓
Teaching and Learning Methods for Students with Special Needs:					
Methods					
1. Discussion Session					
2. Extra Lectures					
3. Provide different levels of books and materials					

2.7 Assessment Methods

Assessment Methods:	Course LOs Covered				
Methods	CLO1	CLO2	CLO3	CLO4	CLO5
Formative Assessment Method					
Reports	✓	✓	✓	✓	
Presentation					✓
Summative Assessment Method					
Oral Exam	✓	✓	✓		✓

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Reports	9-11	20 %
Presentation	13-14	20 %
Oral Exam	15	60 %
Total		100 %

2.8. List of Reference: (max. five years ago)

Course Notes:	
Essential Books (Textbooks):	Technical Writing Essentials: Introduction to Professional Communications in the Technical Fields by Suzan Last, University of Victoria, 2018, ISBN 9781550586657 - 31 pages.
Recommended Books:	
Periodicals, Web Sites, ... etc:	

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO3		✓
PO5	✓	

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes				
	CLO1	CLO2	CLO3	CLO4	CLO5
CO1	✓	✓	✓		
CO2				✓	✓

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes				
	CLO1	CLO2	CLO3	CLO4	CLO5
PLO5	✓	✓	✓		
PLO8				✓	
PLO9					✓

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO5	PO5	CLO1	• Tutorial	• Oral Exam • Report
		CLO2	• Tutorial	• Oral Exam • Report
		CLO3	• Report	• Oral Exam • Report
PLO8	PO3	CLO4	• Report	• Report
PLO9		CLO5	• Presentation	• Oral Exam • Presentation

**Course Coordinator: Prepared by Electrical Engineering Department and
modified by Dr Ahmed Gamal**



Head of Department: Prof. Dr. Ahmed Saeed Debaiky





Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering Department			
Department Offering the Course	Civil Engineering Department			
Date of Specification Approval				
Course Title	Structural Analysis-3	Code	C1311	
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>	
Semester	Fall Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	2	0	4

2. Professional Information:

2.1 Course description:

Matrix Structural Analysis for 2D and 3D structures (Stiffness method) - Using computers to perform 2D and 3D analysis of structures.

2.2 Course Objectives

Program objective		Course objective	
PO1	Apply a wide spectrum of engineering knowledge, science and specialized skills with analytic, critical and systemic thinking to identify and solve engineering problems in real life situation.	CO1	Apply engineering science on a lot of structures and analyze the structural elements to solve engineering problems

2.3 Course Learning Outcomes (CLOs)

Program Learning Outcomes		Course Learning Outcomes	
PLO1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	CLO1	Determine the unknowns of indeterminate structures for trusses. (Apply)
		CLO2	Analyze the indeterminate structures by stiffness method for beams. (Analyze)

PLO11	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.	CLO3	Illustrate the straining actions of indeterminate structures for frames and space trusses. (Analyze)
		CLO4	Compare the results of stiffness method with computer outputs. (Evaluate)

2.4 Course Topics:

Course Topics	Week	Course LOs Covered			
		CLO1	CLO2	CLO3	CLO4
Mathematical models of elements	1	*			
Introduction to matrix displacement method	2	*			
Analyze of beams by matrix method	3,4		*	*	*
Analyze of trusses	5,6,7		*	*	*
Mid term	8				
Analyze of frames	9,10		*	*	*
Space trusses	11,12	*		*	
Special topics	13,14	*		*	
Oral and Practical exam	15				
Final Exam	16				
Total		6	7	11	7

2.5 Teaching and Learning Methods

Teaching and Learning Methods:	Course LOs Covered			
	CLO1	CLO2	CLO3	CLO4
1.Lectures	*	*	*	
2.Tutorials	*	*	*	
3.Report				*
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				
2. Extra Lectures				

2.6.1. Assessment Methods

Assessment Methods:		Course LOs Covered			
Methods		CLO1	CLO2	CLO3	CLO4
Formative Assessment Method					
Test	Mid-Term Exam	*	*	*	
	Quizzes	*	*	*	
	Mini project				*
Assignments		*	*	*	
Summative Assessment Method					
Final Exam		*	*	*	

2.6.2. Assessment Schedule & Grades Distribution

Assessment Method		Week	Weighting of Asses.
Test	Mid-Term Exam	8	16% [20 Degree]
	Quizzes	5, 9, 11, 12	8% [10 Degree]
	Mini project	13	8% [10 Degree]
Assignments		2to 6& 9to 13	8% [10 Degree]
Final Exam		16	60% [75 Degree]
Total			100% [125 Degree]

2.7. List of Reference: (max. five years ago)

Recommended Books:	"Finite Element Applications", Springer Tracts in Mechanical Engineering, Michael Okereke & Simeon Keates, ISBN 978-3-319-67124-6
Periodicals, Web Sites, ... etc:	https://doi.org/10.1007/978-3-319-67125-3

2.8. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Data Show
White Board
PDF Notes

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective
	CO1
PO1	*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
CO1	*	*	*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
PLO1	*	*		
PLO11			*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO1	PO1	CLO1	• Lecture, Tutorials.	• Assignments, Quizzes, Mid-term, Final Exam
		CLO2		
		CLO3		
PLO11		CLO4	• Report	• Mini project

Course Coordinator: Prof. Asharf Mohamed Abourayan

Dr. Ibrahim El-Azab

Program Coordinator: Dr. Ahmed Gamal

Head of Department: Prof. Ahmed Saeed Debaiky

Date: 10/11/2022



Course Specification

1. Basic Information:

Department Offering the program	Civil Engineering Program			
Department Offering the course	Civil Engineering Department			
Date of Specification Approval				
Course Title	Pollution and Environment	Code	C 1304	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	Second Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	1	1		2

2. Professional Information:

2.1. Course description:

Pollution and Environment: Philosophy of Environmental Controls - Introduction to National and International Regulatory Structures - Emissions Control - Environmental Impact Assessment - Ecological Sanitation - Nature and Sources of Air Pollution (Chemical and Biological Aspects, Effects on Health and Environment) - Air Pollution Control and Reduction.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO4	Use techniques, skills, and modern engineering tools necessary for engineering practice.	CO1	Understand Philosophy of Environmental Controls, Emissions Control, Environmental Impact Assessment, Air Pollution, water pollution
PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations	CO2	Illustrate different pollutants for environmental (Soil pollution, noise pollution and solid waste management).

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.	CLO1	Review the national and international regulatory related to environment pollution and different Emissions which cause climate change and its Control - Environmental Impact Assessment - Ecological Sanitation.
		CLO2	Discuss nature and sources of air pollution and ways for control and reduction.
PLO13	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.	CLO3	Demonstrate nature and sources of water pollution,
		CLO4	Describe nature and sources of water pollution, Soil pollution, noise pollution, solid waste management and ways for control and reduction.

2.4. Course Topics:

Course Topics	Week	Course LOs Covered			
		CLO1	CLO2	CLO3	CLO4
Philosophy of environmental controls and introduction to national and international regulatory structures noise pollution Characteristics of wastewater	1	*			
	2	*			
Emissions control and environmental impact assessment	3	*			
	4		*		
Nature and sources of air pollution and air pollution control and reduction	5		*		
	6		*		
water pollution and ecological sanitation	7			*	
	8				*
noise pollution	9				*
	10				*
Soil pollution	11				*
	12				*
Solid wastes management	13				*
	14				*
Total	14	3	3	1	7

2.5 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered			
Methods	CLO1	CLO2	CLO3	CLO4
1. Lecture	*	*	*	*
2. Tutorials	*	*	*	*
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				
2. Extra Lectures				
3. Provide different levels of books and materials				

2.6 Assessment Methods

Assessment Methods:		Course LOs Covered			
Methods		CLO1	CLO2	CLO3	CLO4
Formative Assessment Method					
Tests	Quizzes	*	*	*	*
	Midterm Exam	*	*	*	
Assignments		*	*	*	*
Summative Assessment Method					
Final Exam		*	*	*	*

2.6.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Assignments	2 to 6 & 9 to 13	10 %
Midterm exam	8	20 %
Quizzes	3,5,7,9 to 13	10 %
Final exam	16 and above	60 %
Total		100 %

2.7. List of Reference:

Course Notes:	Not used
Essential Books (Textbooks):	<ul style="list-style-type: none"> Peavy, Rowe and Tchobangolous " Environmental Engineering" McGraw Hill Jeremy Colls, "Air Pollution", second edition, by Spon Press 2002 Prof. M. Bassuieny, "Pollution and Environment " (2019)

2.8. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
laboratory Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO4	*	
PO6		*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
CO1	*	*		
CO2			*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
PLO4	*	*		
PLO13			*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO4	PO4	CLO1	<ul style="list-style-type: none">• Lecture• Tutorials	<ul style="list-style-type: none">• Written Exam• Assignments• Quiz
		CLO2	<ul style="list-style-type: none">• Lecture• Tutorials	<ul style="list-style-type: none">• Written Exam• Assignments• Quiz
PLO13	PO6	CLO3	<ul style="list-style-type: none">• Lecture• Tutorials	<ul style="list-style-type: none">• Written Exam• Assignments• Quiz
		CLO4	<ul style="list-style-type: none">• Lecture• Tutorials	<ul style="list-style-type: none">• Written Exam• Assignments• Quiz

Course Coordinator:

prof. Dr. Mohamad Basiouny
Dr. Osama Abdelaziz Abosiada



Head of Department: Prof. Dr. Ahmed Saeed Debaiky

Date: 20/2/2023





Course Specification

1. Basic Information:

Department Offering the program	Civil Engineering Program			
Department Offering the course	Civil Engineering Program			
Date of Specification Approval				
Course Title	Water Supply Engineering	Code	C 1392	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	Second Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	2	1	4

2. Professional Information:

2.1. Course description:

Water Supply Engineering: Sources of water (surface and ground) - Water characteristics - Estimation of water consumption in the future - Design of water intakes - Sedimentation - Coagulation and Flocculation - Filtration - Disinfection - Storage - Water distribution system.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO1	. Apply a wide spectrum of engineering knowledge, science and specialized skills with analytic, critical and systemic thinking to identify and solve engineering problems in real life situation	CO1	Illustrate the sources of water, water characteristics and collection works which used as concept for water treatment.
PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations	CO2	Design the different units of WTP and water distribution system. .

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO2	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.	CLO1	Analyze the different data about water characteristics, future population and water consumption
		CLO2	Discuss the different data about collection works .
PLO12	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.	CLO3	Design of different water treatment unites (Sedimentation, Filtration and Storage tank)
		CLO4	planning the water distribution system.

2.4. Course Topics:

Course Topics	Week	Course LOs Covered			
		CLO1	CLO2	CLO3	CLO4
Population Projection	1	*			
Water Consumption	2	*			
Water Quality	3	*			
	4	*			
Collection Works for Surface Water	5		*		
Sedimentation	6			*	
Coagulation and Flocculation	7			*	
Filtration	8			*	
Filtration	9			*	
Disinfection	10			*	
Storage (Water Tanks)	11			*	
Water Distribution	12				*
Water Distribution	13				*
Water Distribution	14				*
Practical exam	15				
Total	15	4	1	6	3

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Turbidity, PH, Temperature, Total Dissolved Solids (TDS), Total Suspended Solids (TSS) and Volatile Solids (VS)	9	*			
Chloride, Iron and Manganese, Arsenic, Fluorides and total bacteria account	10	*			
Jar test	11			*	
Total	3				

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered			
Methods	CLO1	CLO2	CLO3	CLO4
1. Lecture	*	*	*	*
2. Tutorials	*	*	*	*
3. Project-based Learning				*
4. Practical-based Learning			*	*
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				
2. Extra Lectures				
3. Provide different levels of books and materials				

2.7 Assessment Methods

Assessment Methods:		Course LOs Covered			
Methods		CLO1	CLO2	CLO3	CLO4
Formative Assessment Method					
Tests	Quizzes	*	*	*	*
	Midterm Exam	*	*	*	
	Experimental	*		*	
Projects	Mini Projects				*
Assignments		*	*	*	*
Summative Assessment Method					
Final Exam		*	*	*	*

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Assignments	2 to 6 & 9 to 13	5 %
Midterm exam	8	10 %
Mini Projects	7	2.5 %
Quizzes	3,5,7,10,13	2.5 %
Experimental	15	20 %
Final exam	16 and above	60 %
Total		100 %

2.8. List of Reference:

Course Notes:	Not used
Essential Books (Textbooks):	<ul style="list-style-type: none">Water and Wastewater Technology: Pearson New International Edition ISBN-13: 9781292021041Water supply, prof. Dr. M. Basiouny (2019)شبكات المياه - الكود المصرى (2019)محطات تنقية مياه الشرب - الكود المصرى- (2019)

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
laboratory Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO1	*	
PO6		*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
CO1	*	*		
CO2			*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
PLO2	*	*		
PLO12			*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment
PLO2	PO1	CLO1	<ul style="list-style-type: none"> Lecture Tutorials Project-based Learning 	<ul style="list-style-type: none"> Written Exam Quiz Assignments Experimental Exam
		CLO2	<ul style="list-style-type: none"> Lecture Tutorials Project-based Learning 	<ul style="list-style-type: none"> Written Exam Quiz Assignments
PLO12	PO6	CLO3	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Written Exam Quiz Assignments Experimental Exam
		CLO4	<ul style="list-style-type: none"> Lecture Tutorials Practical-based Learning 	<ul style="list-style-type: none"> Written Exam Assignments Quiz Mini Projects

Course Coordinator:

prof. Dr. Mohamad Basiouny
Dr. Osama Abdelaziz Abosiada



Head of Department: Prof. Dr. Ahmed Saeed Debaiky



Date: 20/2/2023



Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the program	Civil Engineering Program			
Department Offering the course	Civil Engineering Program			
Date of Specification Approval				
Course Title	Irrigation & Drainage Engineering	Code	C 1342	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	2nd Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	2	1	4

2. Professional Information:

2.1. Course description:

Introduction - Methods of Irrigation and drainage – Alignment and design of canals and drains – Sprinkler irrigation system - Drip irrigation system - Canals lining - Ground water - Reclamation of soil.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO 6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, and economic, environmental, cultural, and societal considerations.	CO 1	Identify different water resources, Egyptian irrigation networks, the rotation irrigation system, the traditional irrigation, system and the modern irrigation systems
		CO 2	Evaluate the sprinkler irrigation system, drip irrigation system and well systems .

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO 1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	CLO 1	Identify different water resources of Nile River basin and different methods of irrigation in Egypt.
		CLO 2	Evaluate the modern irrigation systems.
PLO 12	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.	CLO 3	Design of canals, drains and different types of sprinkler and drip irrigation networks
		CLO 4	Design of canal lining and well system for ground water

2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Introduction	1	*			
Methods of Irrigation and drainage	2	*			
Water resources of Nile River basin	3	*			
History of irrigation and irrigation structures in Egypt	4	*			
Alignment of canals and drains	5		*	*	
design of canals and drains	6		*	*	
Synoptic diagram	7		*	*	
Mid term	8				
modern irrigation system	9		*	*	
Design of sprinkler irrigation network	10		*	*	
Design of Drip irrigation network	11		*	*	
Canals lining	12				*
Ground water and design of wells	13				*
Reclamation of soil	14				*
Practical and Oral Exam	15				
Final Exam	16				
Total		4	6	6	3

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Flow over weir			*	*	
Flow through gate			*	*	
Total					

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered			
Methods	CLO1	CLO2	CLO3	CLO4
1. Lectures	*	*	*	*
2. Tutorials	*	*	*	*
3. Reports			*	*
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				
2. Extra Lectures				
3. Provide different levels of books and materials				

2.7 Assessment Methods

Assessment Methods:		Course LOs Covered			
Methods		CLO1	CLO2	CLO3	CLO4
Formative Assessment Method					
Tests	Oral Test		*	*	*
	Midterm Exam	*	*	*	*
Assignments		*	*	*	*
Report			*	*	*
Summative Assessment Method					
Final Exam		*	*	*	*

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Midterm exam	8	15%
Report	6 to 10	10 %
Assignments	3&9 & 12	5 %
Oral exam	15	10 %
Final exam	16 and above	60 %
Total		

2.8. List of Reference: (max. five years ago)

Course Notes:	
Essential Books (Textbooks):	Irrigation Engineering by Reddy 2018 ISBN 81-89729-98-5
Recommended Books:	
Periodicals, Web Sites, ... etc:	

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
laboratory Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO 1	CO 2
PO 6	*	*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CLO 1	CLO 2	CLO 3	CLO 4
CO 1	*	*		
CO 2			*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes			
	CLO 1	CLO 2	CLO 3	CLO 4
PLO 1	*	*		
PLO 12			*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO 1	PO 1	CLO 1	<ul style="list-style-type: none">• Lecture• Tutorial	<ul style="list-style-type: none">• Oral Test• Written Exam• Report
		CLO 2	<ul style="list-style-type: none">• Lecture• Tutorial	<ul style="list-style-type: none">• Oral Test• Written Exam• Assignment
PLO 12	PO 6	CLO 3	<ul style="list-style-type: none">• Lecture• Tutorial• Report	<ul style="list-style-type: none">• Oral Test• Written Exam• Assignment
		CLO 4	<ul style="list-style-type: none">• Lecture• Tutorial• Report	<ul style="list-style-type: none">• Oral Test• Written Exam• Report

Course Coordinator: Dr. Tarek Hemdan Nasrallah
Dr. Ahmed Abouelfetoh



Head of Department: Prof. Dr. Ahmed Saeed Debaiky
Date: 09/ 02 /2023





Course Specification

1. Basic Information:

Department Offering the program	Civil Engineering Program			
Department Offering the course	Civil Engineering Program			
Date of Specification Approval				
Course Title	Highway Engineering	Code	C1382	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	2 nd Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	1	1	4

2. Professional Information:

2.1. Course description:

Geometric design:

Road classification - planning and road selection - Geometric design criteria Sight distance - Horizontal alignment - Vertical alignment - Cross section elements - Planning and design of at grade intersections design - Roundabout and interchange design.

Structural design:

Pavement types and components - Subgrade soil classification -Subgrade soil Strength- Soil stabilization - Stresses in flexible pavement - Stresses in rigid pavement -Traffic loads considerations - Flexible pavement design- Rigid pavement design.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO 1	Apply a wide spectrum of engineering knowledge, science, and specialized skills with. analytic, critical and systemic thinking to identify and solve engineering problems in real life situation.	CO 1	Evaluate soil strength
PO 4	Use techniques, skills, and modern engineering tools necessary for engineering practice.	CO 2	Choose the road dimensions and Calculate sigh distance.
PO 6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations.	CO 3	Design the alignment and the thickness of highway.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO 4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.	CLO1	Choose the road dimensions with respect to road and area classification according to Egyptian Code. (Apply)
		CLO2	Calculate sight distance as a road safety requirement for geometric design. (Analyze)
PLO 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.	CLO5	Evaluate soil characteristics. (Evaluate)
PLO 12	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.	CLO3	Design the different elements of highway (vertical alignment, horizontal alignment, and intersections). (Design)
		CLO4	Classify soil for highway construction. (Apply)
		CLO6	Apply practice research techniques to perform soil stabilization. (Apply)
		CLO7	Calculate Equivalent Single Axle Loads (ESAL) for designing the pavement. (Analyze)
		CLO8	Calculate the pavements of highway. (Analyze)

2.4. Course Topics:

Course Topics	Week	Course LO's Covered							
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO 8
Road classification – Planning and road selection - Cross section elements	1	√							
Sight distance	2		√						
Vertical alignment	3			√					
Horizontal alignment	4			√					
Planning and design of at grade intersections design	5			√					
Roundabout and interchange design	6			√					
Pavement types and components - Subgrade soil classification	7				√				
Midterm Exam	8	√	√	√					
Subgrade soil strength	9					√			
Stresses in pavement	10						√		
Soil stabilization	11						√		
Traffic loads considerations	12							√	
Pavement design	13								√
	14								√
Total		1	1	4	1	1	2	1	2

Summative Assessment Method								
Final Exam		√	√	√		√	√	√

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Assignments	1:7, 11	5
Mini Projects	14	5
Midterm Exam	8	15
Experimental Exam	15	15
Oral Exam	15	10
Final Exam	16 and after	75
Total		125 marks

2.8. List of Reference: (max. five years ago)

Course Notes:	According to lecturer
Essential Books (Textbooks):	Traffic and Highway Engineering, Nicholas Garber and Lester Hoel, Fifth Enhanced SI Edition, CENGAG Learning, 2020, ISBN-13: 978-1-337-63104-4.
Recommended Books:	Egyptian Codes for Highways.
Periodicals, Web Sites, ... etc:	https://www.mot.gov.eg/#/ https://highways.dot.gov/

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
laboratory Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective		
	CO 1	CO 2	CO 3
PO 1	√		
PO 4		√	
PO 6			√

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes							
	CLO 1	CLO 2	CLO 3	CLO 4	CLO 5	CLO 6	CLO 7	CLO 8
CO 1					√			
CO 2	√	√						
CO 3			√	√		√	√	√

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes							
	CLO 1	CLO 2	CLO 3	CLO 4	CLO 5	CLO 6	CLO 7	CLO 8
PLO 2					√			
PLO 4	√	√						

PLO 12			√	√		√	√	√
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3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
2	1	5	<ul style="list-style-type: none"> • Practical-based Learning 	<ul style="list-style-type: none"> • Experimental Exam • Oral Exam • Assignments
4	4	1	<ul style="list-style-type: none"> • Lecture • Tutorials 	<ul style="list-style-type: none"> • Midterm Exam • Assignments
		2	<ul style="list-style-type: none"> • Lecture • Tutorials 	<ul style="list-style-type: none"> • Midterm Exam • Assignments • Final Exam
12	6	3	<ul style="list-style-type: none"> • Lecture • Tutorials 	<ul style="list-style-type: none"> • Midterm Exam • Assignments • Final Exam
		4	<ul style="list-style-type: none"> • Lecture • Tutorials 	<ul style="list-style-type: none"> • Assignments • Final Exam
		6	<ul style="list-style-type: none"> • Lecture • Tutorials 	<ul style="list-style-type: none"> • Assignments • Final Exam
		7	<ul style="list-style-type: none"> • Lecture • Project-based Learning 	<ul style="list-style-type: none"> • Mini Projects • Final Exam
		8	<ul style="list-style-type: none"> • Lecture • Project-based Learning 	<ul style="list-style-type: none"> • Mini Projects • Final Exam

Course Coordinator: Dr Ahmed Gamal M. Morsi



Head of Department: Prof. Dr. Ahmed Saeed Debaiky



Date: 23 / 2 /2023



Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering Department			
Department Offering the Course	Civil Engineering Department			
Date of Specification Approval				
Course Title	Design of Steel Structures (1 - b)	Code	C1372	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	2st Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	2	-	4

2. Professional Information:

2.1. Course Description:

Introduction to composite construction - Design of composite floor beams (Strength requirement - Design of shear connectors - Use of formed metal deck) - Design of composite columns - Flexure design of slender sections - Connection classification and design (Flexible - Rigid - Semi-rigid) - Design of base plates and anchor bolts - Introduction to Load and Resistance Factor Design (LRFD) - Identification of Limit states (Strength limit state and Serviceability limit state) - Design of tension, compression and flexure members using LRFD approach.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO2	Behave professionally and adhere to engineering ethics and standards and work to develop the profession and the community and promote sustainability principles.	CO1	Using a structural analysis principles to get a critical cases for design steel element.
PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations.	CO2	Construction, design of steel elements according to standard codes.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO3	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.	CLO1	Apply specified consideration to understand composite sections and ultimate load design method LRFD.
		CLO2	Apply specified consideration to understand the properties of slender sections and their connections.
PLO4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.	CLO5	Utilize codes of practice and standards of steel structure to check the allowable stresses.
		CLO6	Utilize codes of practice and standards of steel structural to check safety requirements (serviceability & deflection)
PLO12	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.	CLO3	Calculate the critical straining action for elements.
		CLO4	Design of Steel Structure elements.

2.4. Course Topics:

Course Topics	Week	Course LO's Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Design of hinged bases	1				*	*	
Design of fixed bases	2				*	*	
Introduction to slender sections	3		*				
Flexure design of slender sections	4			*	*	*	*
Introduction to composite construction	5	*					
Design of composite floor beams (Strength requirement)	6			*	*	*	*
Design of composite floor beams (shear connectors)	7			*	*	*	*
Midterm	8						
Design of composite columns	9				*	*	
Connection classification and design (Flexible - Rigid - Semi-rigid)	10		*				
Introduction to (LRFD), Identification of Limit states (Strength limit state and Serviceability limit state)	11	*					
Design of tension members (LRFD).	12			*	*	*	*
Design of compression members (LRFD).	13			*	*	*	*
Design of flexure members (LRFD).	14			*	*	*	*
Practical and Oral Exam	15						
Final Exam	16						
Total		2	2	7	10	10	6

2.5. Lab Topics: *Not applicable*

Lab Topics	Week	Course LO's Covered			
Total					

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered					
Methods	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
1. Lecture	*	*	*	*	*	*
2. Tutorials	*	*	*	*	*	*
3. Report			*	*	*	
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Discussion Session						
2. Extra Lectures						
3. Provide different levels of books and materials						

2.7 Assessment Methods

Assessment Methods:		Course LOs Covered					
Methods		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Formative Assessment Method							
Tests	Quiz			*	*	*	*
	Midterm Exam	*	*	*	*	*	*
Assignments		*	*	*	*	*	*
Summative Assessment Method							
Final Exam		*	*	*	*	*	*

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Assignments	4&7&10&12&13	5 %
Quiz	5&9&11	5 %
Mid-term exam	8	30 %
Final exam	16 and above	60 %
Total		100 %

2.8. List of Reference:

Course Notes:	- Staff lectures notes
Essential Books (Textbooks):	1- Egyptian code for design of steel structure (ASD). 2- Egyptian Code of Practice for Steel Construction (LOAD and RESISTANCE FACTOR DESIGN), (LRFD). 3- Steel structures design by Prof Dr. Abdelrahim Khalil Dessouki. ISBN: 977-5423-65-1.
Recommended Books:	Steel design hand book by. Prof Dr. Bahaa M. Mashaly Part 1. Seventh Edition, ISBN: 977-223-549-8.
Periodicals, Web Sites, ... etc:	

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
laboratory Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO2	*	
PO6		*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
CO1	*	*				
CO2			*	*	*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
PLO3	*	*				
PLO4					*	*
PLO12			*	*		

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO3	PO2	CLO1	<ul style="list-style-type: none"> Lecture. Tutorials. 	<ul style="list-style-type: none"> Written Exams. Assignments.
		CLO2	<ul style="list-style-type: none"> Lecture. Tutorials. 	<ul style="list-style-type: none"> Written Exams. Assignments.
PLO4	PO6	CLO5	<ul style="list-style-type: none"> Lecture. Tutorials. Report 	<ul style="list-style-type: none"> Written Exams. Assignments. Quiz
		CLO6	<ul style="list-style-type: none"> Lecture. Tutorials. 	<ul style="list-style-type: none"> Written Exams. Assignments. Quiz
PLO12	PO6	CLO3	<ul style="list-style-type: none"> Lecture. Tutorials. Report. 	<ul style="list-style-type: none"> Written Exams. Assignments. Quiz
		CLO4	<ul style="list-style-type: none"> Lecture. Tutorials. Report. 	<ul style="list-style-type: none"> Written Exams. Assignments. Quiz

Course Coordinator: Assoc. Prof. Nader Nabih Khalil

Head of Department: Prof. Ahmed Debaiky

Date: 09/03/2023

نادر نبیح

احمد دبایکی



Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering Department			
Department Offering the course	Civil Engineering Department			
Date of Specification Approval				
Course Title	Geotechnical Engineering (b)	Code	C 1362	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	Second Semester (Third Year)			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	1	1	4

2. Professional Information:

2.1. Course Description:

Soil Compaction - Consolidation of Soil – Lateral Earth Pressure - Stability of Slopes - Difficult Soil - Ground Water and its Control - Stabilization and Improvement - Soil Exploration and Site Investigation.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO1	Apply a wide spectrum of engineering knowledge, science, and specialized skills with analytic, critical, and systemic thinking to identify and solve engineering problems in real-life situations.	CO1	Develop a fundamental understanding of the nature and properties of soil and its different types and study the effect of water on its behavior in different situations, through the application of engineering principles and skills and laboratory experiments.
		CO2	Evaluate the laws and engineering sciences learned through understanding the behavior of soil and the use of analytical and critical thinking to solve the surrounding realistic engineering problems and study the soil-structure interaction to reach the best design conditions.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO ^v	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.	CLO1	Determine the maximum dry density of soil corresponding to the optimum moisture content through compaction tests. (Evaluate)
		CLO2	Determine the soil consolidation parameters for estimating the settlement value. (Evaluate)
PLO11	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.	CLO3	Evaluate the lateral earth pressure. (Evaluate)
		CLO4	Evaluate the slopes by checking their stability by different methods. (Evaluate)
		CLO5	Illustrate most of the site problems, such as difficult soil, and suggestions solutions for them by making site investigations and soil improvement. (Evaluate)
		CLO6	Evaluate the soil settlement by studying soil compressibility and compaction. (Evaluate)
		CLO7	Evaluate the best method for dewatering from the site according to soil type and foundation level. (Evaluate)

2.4. Course Topics:

Course Topics	Week	Course LOs Covered						
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7
Lateral Earth Pressure	1			*				
Lateral Earth Pressure	2			*				
Stability of Slopes	3				*			
Stability of Slopes	4				*			
Soil Compaction	5	*					*	
Site Investigation and Soil improvement	6					*		
Site Investigation and Soil improvement	7					*		
Midterm	8							
Difficult soil	9					*		
Consolidation of Soil	10						*	
Consolidation of Soil	11		*				*	
Consolidation of Soil	12		*				*	
Ground Water and its Control	13							*
Ground Water and its Control	14							*
Practical Exam	15							
Final Exam	16							
Total	13	1	2	2	2	3	4	2

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered						
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7
Determination of the maximum dry density of soil and optimum moisture content.	5	*						
Determination of the soil consolidation parameters.	11,12		*					
Total	3							

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered						
Methods	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7
1. Lecture			*	*	*	*	*
2. Tutorials			*	*	*	*	*
3. Practical-based Learning	*	*					
Teaching and Learning Methods for Students with Special Needs:							
Methods							
1. Discussion Session							
2. Extra Lectures							
3. Provide different levels of books and materials							

2.7 Assessment Methods

Assessment Methods:	Course LOs Covered						
Methods	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7
Formative Assessment Method							
Tests	Midterm Exam			*	*		*
	Quiz			*	*		*
	Oral Test	*	*			*	*
	Experimental	*	*				
Assignments							
Summative Assessment Method							
Final Exam							
			*	*	*	*	*

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Assignments	2 to 6 & 9 to 13	0.8 %
Quiz	2 to 6 & 10 to 13	4.8%
Midterm exam	8	4.4 %
Oral Test	15	12 %
Experimental	15	8 %
Final exam	16 and above	60 %
Total		100 %

2.8. List of References:

Course Notes:	Not used
Essential Books (Textbooks):	<ul style="list-style-type: none"> • El-Kasaby, E. A., Soil Mechanics, Dar Al-Kutub Al-Almia, Cairo, 5th Ed., (21371/2013), ISBN 978 – 977 – 726 – 041 – 1, 2014. • El-Kasaby, E. A., Design and Construction of Deep and Special Foundations, Dar Al-Kutub Al-Almia, Cairo, 4th Ed., (10651/2016), ISBN 978 – 977 – 726 – 168 – 5, 2016. • Hemed a, Advances in Soil Mechanics and Foundation Engineering, IntechOpen, London ISBN: 978-1-78984-290-6, 2020.
Recommended Books:	<ul style="list-style-type: none"> • Das, B. M, Soil Mechanics Laboratory Manual, Oxford University Press, 9th. Ed., ISBN 978 – 019 – 020 – 966 – 7, 2016.
Periodicals, Web Sites, ... etc:	https://www.geoengineer.org/education/karl-terzaghi/legacy-in-geotechnical-engineering

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
Laboratory Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO1	*	*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes						
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7
CO1	*	*	*		*		

CO2				*		*	*
-----	--	--	--	---	--	---	---

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes						
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7
PLO2	*	*					
PLO11			*	*	*	*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO2	PO1	CLO1	<ul style="list-style-type: none"> Practical-based Learning 	<ul style="list-style-type: none"> Oral Test Experimental Exam
		CLO2	<ul style="list-style-type: none"> Practical-based Learning 	<ul style="list-style-type: none"> Oral Test Experimental Exam
PLO11	PO1	CLO3	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Midterm Exam Quiz Assignments Final Exam
		CLO4	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Midterm Exam Quiz Assignments Final Exam
		CLO5	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Written Exam Oral Test Final Exam
		CLO6	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Midterm Exam Quiz Assignments Final Exam
		CLO7	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Written Exam Oral Test Final Exam

Course Coordinator: Ass. Prof. Dr. Alnos Aly Eissa

Dr. Mohab Roshdy Ahmed

Dr. Mahmoud Awaad Gomaa

Head of Department: Prof. Dr. Ahmed Saeed Debaiky

Date: 23/2/2023






الفرقة الرابعة



Course Specification

1. Basic Information:

Department Offering the program	Civil Engineering Program			
Department Offering the course	Civil Engineering Program			
Date of Specification Approval				
Course Title	Steel Structures Design (2)	Code	C1472	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	2nd Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	4	2	-	5

2. Professional Information:

2.1. Course description:

Classical bridge types - Different bridge systems such as arches, trusses and suspension bridges - Design loads (Road way loading - Railway loading - Other loads on bridges) - Design of floor beams systems (Stringer - Cross girders - Floor connections) - Design for fatigue and stress range concepts - Design of plate girder bridges (Preliminary proportioning - Design for bending - Design for shear - Combined shear and moment - Buckling of plates - Longitudinal and transversal stiffeners - Load bearing stiffeners - Splices - Curtailment of flange plates - Details) - Wind bracing systems - Design of bridge bearings.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO2	Behave professionally and adhere to engineering ethics and standards and work to develop the profession and the community and promote sustainability principles.	CO1	Understanding design of the elements of the steel bridges.
PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations.	CO2	Understanding design of steel plate girders as a built-up section.
		CO3	Understanding buckling of the steel plates and its stiffeners.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO3	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.	CLO1	Apply specified consideration to planning the steel bridges.
		CLO2	Apply of different loads, structural analysis of steel structure.
PLO4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.	CLO5	Utilize codes of practice and standards of steel structures to check the allowable stresses.
		CLO6	Utilize codes of practice and standards of steel structural to check safety requirements (serviceability & deflection)
PLO12	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.	CLO3	Calculate the critical straining actions for bridge elements.
		CLO4	Design of Steel bridge elements.

2.4. Course Topics:

Course Topics	Week	Course LO's Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Introduction to Steel Bridges Classical bridge types - Different bridge systems such as arches, trusses and suspension bridges.	1	*					
Layout of road way steel bridges.	2	*					
Design of Stringers – Loads on stringers - Design for fatigue and stress range concepts.	3	*	*	*			
Design of stringer as a composite section.	4				*	*	*
Design of cross girders - Design for fatigue and stress range concepts.	5		*		*	*	*
Loads on Main-girder.	6		*				
Design of Main-girder as a plate girder - Design for bending, shear and Combined shear and moment - Buckling of plates.	7			*	*	*	*
Mid-term exam.	8						
Lateral Torsional Buckling.	9				*	*	
Curtailement of flange plates - Details.	10					*	*
Longitudinal and transversal stiffeners	11		*		*	*	*
- Load bearing stiffeners.	12		*				*
- Design of Splices	13		*		*	*	*
Design of Wind bracing systems.	14		*		*	*	*
Design of bridge bearings.	15						*
Total	15	3	7	2	7	8	9

2.5. Lab Topics: not applicable

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered					
Methods	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
1. Lectures.	*	*	*	*		
2. Tutorials.				*	*	*
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Discussion Session						
2. Extra Lectures						
3. Provide different levels of books and materials						

2.7 Assessment Methods

Assessment Methods:		Course LOs Covered					
Methods		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Formative Assessment Method							
Tests	Quizzes	*			*	*	
	Mid-term Exam	*	*	*	*	*	*
Assignments		*	*	*	*	*	*
Summative Assessment Method							
Final Exam			*	*	*	*	*

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Assignments	4&7&10&12&13	3.34 %
Quiz	5&9&11	10%
Mid-term exam	8	26.67 %
Final exam	16 and above	60 %
Total		100%

2.8. List of Reference:

Course Notes:	Staff lectures notes.
Essential Books (Textbooks):	1. Egyptian code for design of steel structures.
Recommended Books:	1- Design of bridge structures, T. R. Jagadeesh and M. A. Jayaram, third edition 2020, ISBN 978-9389347609.
Periodicals, Web Sites, ... etc:	

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
laboratory Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective		
	CO1	CO2	CO3
PO2	*		
PO6		*	*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
CO1	*	*			*	
CO2			*	*		
CO3	*	*				*

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
PLO3	*	*				
PLO4					*	*
PLO12			*	*		

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO3	PO2	CLO1	• Lectures.	• Written Exams. • Assignments.
		CLO2	• Lectures.	• Written Exams. • Assignments.
PLO4	PO6	CLO5	• Tutorials.	• Written Exams. • Assignments.
		CLO6	• Tutorials.	• Written Exams. • Assignments.
PLO12	PO6	CLO3	• Lectures.	• Written Exams. • Assignments.
		CLO4	• Lectures. • Tutorials.	• Written Exams. • Assignments.

Course Coordinator: Dr. Ayman Abd-allah Zaky

أيمان عبد الله زكي

Head of Department: Prof. Dr. Ahmed Saeed Debaiky

أحمد سعيد دبايكي

Date: 7 / 3 / 2023



Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering			
Department Offering the Course	Civil Engineering			
Date of Specification Approval				
Course Title	Legislations and Contracts	Code	U 1401	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	First Semester (Fourth Year)			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	2	0	0	2

2. Professional Information:

2.1. Course description:

Legislations and Contracts: Define contract documents, define priority of contract documents, regulations, construction law Plan and manage construction documents, deal with biddings and financial issues including project insurances, disputes.

Acquire knowledge and understanding the ability to prepare and analyse the bill of quantities for any specified project. The preparation and calculation of the on-going works quantities the ability to manage construction project.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO6	Work in and lead a heterogeneous team and display leadership qualities, business administration, and entrepreneurial skills	CO1	Analyze project insurances, bid, claims, disputes, and financial concerns.
PO7	Incorporate economics and business practices including project risk and change management into the practice of engineering and to understand their limitations.	CO2	Create and analyze the bill of quantities for any given project by acquiring the knowledge and understanding necessary.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO13	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.	CLO1	Analyze contract documents during project life cycle, (Understand)
		CLO2	Understand construction documents in biddings and financial issues (Understand)
PLO14	Deal with biddings, contracts and financial issues including project insurance and guarantees	CLO3	Describe the assessment of the administration process of contract and estimation (Evaluate)
		CLO4	Select how to improve the risk mitigation process during tendering. (Apply).

2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Define contract documents	1	*			
define priority of contract documents	2	*			
construction law Plan	3	*			
manage construction documents	4		*		
deal with biddings and financial issues	5		*		
project insurances, disputes.	6		*		
Responsibilities of the different project parties	7		*		
Midterm Exam	8				
Prepare the bill of quantities	9			*	
Analyse the bill of quantities	10			*	
Estimation of Construction Duration	11			*	
Creation of Construction Time Plan	12			*	
The preparation and calculation of the on-going works quantities	13				*
The ability to manage construction project.	14				*
Practical Exam	15	Not Applicable			
Final Exam	16				
Total		3	4	4	2

2.5. Lab Topics: Not Applicable

Lab Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Not Applicable					
Total		0	0	0	0

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered			
Methods	CLO1	CLO2	CLO3	CLO4
1. Lecture	*	*	*	*
2. Tutorials	Not applicable			
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				
2. Extra Lectures				
3. Provide different levels of books and materials				

2.7 Assessment Methods

Assessment Methods:	Course LOs Covered			
Methods	CLO1	CLO2	CLO3	CLO4
Formative Assessment Method				
Tests	Oral Test	Not Applicable		
	Midterm Exam			
	Experimental			
Projects	Mini Projects			
Assignments				
Summative Assessment Method				
Final Exam	*	*	*	*

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Final exam	15	100 %
Total		100 %

2.8. List of Reference: (max. five years ago)

Course Notes:	Not used
Essential Books (Textbooks):	<ul style="list-style-type: none">- Fidic contracts forms 2017 red book edition- law no 89 issue year 1998, civil law- law no 82/2018, civil law
Recommended Books:	<ul style="list-style-type: none">- Hinze, J. (1993). <i>Construction contracts</i> (pp. 1-2). New York: McGraw-Hill.
Periodicals, Web Sites, ... etc:	<ul style="list-style-type: none">- https://www.law.cornell.edu/wex/contract- https://www.britannica.com/topic/contract-law- https://ironcladapp.com/journal/contracts/what-is-a-contract/

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO6	*	
PO7		*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
CO1	*	*		
CO2			*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
PLO13	*	*		
PLO14			*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO13	PO6	CLO1	• Lecture	• Written Exam
		CLO2	• Lecture	• Written Exam
PLO14	PO7	CLO3	• Lecture	• Written Exam
		CLO4	• Lecture	• Written Exam

Course Coordinator: Associate Professor: Ahmed Nouh Meshref

Head of Department: Professor: Ahmed El Debekey

Date: 7 / 11 / 2022






Course Specification

1. Basic Information:

Department Offering the program	Civil Engineering Program			
Department Offering the course	Civil Engineering Program			
Date of Specification Approval				
Course Title	Modeling of Water & Wastewater Networks	Code	C 1594	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	Second Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	2	0	4

2. Professional Information:

2.1. Course description:

Modeling of Water & Wastewater Networks: Modeling of water distribution systems, Analysis and design of water networks using computer applications, Modeling of sewer systems, Analysis and design of Sewer Networks using computer applications and Applications.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO1	. Apply a wide spectrum of engineering knowledge, science and specialized skills with analytic, critical and systemic thinking to identify and solve engineering problems in real life situation	CO1	Apply knowledge about Modeling of water distribution systems and sewer system.
PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations	CO2	Analysis of water networks and sewer Networks using computer applications and applicatiions

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO2	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.	CLO1	Analyze modeling of water distribution systems.
		CLO2	Discuss the different data about modeling of sewer systems.
PLO11	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.	CLO3	Design of water networks using computer applications
		CLO4	Design of Sewer Networks using computer applications

2.4. Course Topics:

Course Topics	Week	Course LOs Covered			
		CLO1	CLO2	CLO3	CLO4
Modeling of water distribution systems	1	*			
	2	*			
	3	*			
Analysis and design of water networks using computer applications	4	*		*	
	5			*	
	6			*	
Modeling of sewer systems	7		*		
	8		*		
	9		*		
Analysis and design of Sewer Networks using computer applications	10				*
	11				*
	12				*
Applications	13				*
	14				*
Total		4	3	3	5

2.5 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered			
Methods	CLO1	CLO2	CLO3	CLO4
1. Lecture	*	*	*	*
2. Tutorials	*	*	*	*
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				
2. Extra Lectures				
3. Provide different levels of books and materials				

2.6 Assessment Methods

Assessment Methods:		Course LOs Covered			
Methods		CLO1	CLO2	CLO3	CLO4
Formative Assessment Method					
Tests	Quizzes	*	*	*	*
	Midterm Exam	*	*	*	
Assignments		*	*	*	*
Summative Assessment Method					
Final Exam		*	*	*	*

2.6.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Assignments	2 to 6 & 9 to 13	10 %
Midterm exam	8	20 %
Quizzes	3,5,7,9 to 13	10 %
Final exam	16 and above	60 %
Total		100 %

2.7. List of Reference:

Course Notes:	Not used
Essential Books (Textbooks):	<ul style="list-style-type: none"> • Haestad Methods Water Solutions , “Advanced Water Distribution Modeling and Management”, Haestad, 2003 • Haestad Methods Water Solutions , “Wastewater Collection System Modeling and Design”, Bentley institute press, 2007 • Different software package user guide manuals

2.8. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
laboratory Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO1	*	
PO6		*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
CO1	*	*		
CO2			*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
PLO12	*	*		
PLO13			*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO2	PO1	CLO1	<ul style="list-style-type: none"> • Lecture • Tutorials 	<ul style="list-style-type: none"> • Written Exam • Assignments • Quiz
		CLO2	<ul style="list-style-type: none"> • Lecture • Tutorials 	<ul style="list-style-type: none"> • Written Exam • Assignments • Quiz
PLO11	PO6	CLO3	<ul style="list-style-type: none"> • Lecture • Tutorials 	<ul style="list-style-type: none"> • Written Exam • Assignments • Quiz
		CLO4	<ul style="list-style-type: none"> • Lecture • Tutorials 	<ul style="list-style-type: none"> • Written Exam • Assignments • Quiz

Course Coordinator: **prof. Dr. Mohamad Basiouny**
Dr. Osama Abdelaziz Abosiada



Head of Department: Prof. Dr. Ahmed Saeed Debaiky



Date: 15/3/2023



Course Specification

1. Basic Information:

Department Offering the program	Civil Engineering Program			
Department Offering the course	Civil Engineering Program			
Date of Specification Approval				
Course Title	Advanced Sanitary Engineering	Code	C 1592	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	Second Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	2	0	4

2. Professional Information:

2.1. Course description:

Advanced Sanitary Engineering: Nitrogen removal and recovery, Phosphorous removal and recovery, membrane filtration, adsorption and ion exchange, reverse osmosis, air and flotation and Wastewater reuse .

2.2. Course Objectives (CO):

Program objective		Course objective	
PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations	CO1	Illustrate concept of Nitrogen removal and recovery, Phosphorous removal and recovery, membrane filtration .
		CO2	Design the different methods of adsorption and ion exchange, reverse osmosis, air and flotation and Wastewater reuse .

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO12	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.	CLO1	Analyze the different data about Nitrogen and membrane filtration.
		CLO2	Discuss the different data about Phosphorous removal and recovery.
PLO13	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.	CLO3	Design the different methods of adsorption and ion exchange, reverse osmosis
		CLO4	Use general knowledge about air and flotation and Wastewater reuse.

2.4. Course Topics:

Course Topics	Week	Course LOs Covered			
		CLO1	CLO2	CLO3	CLO4
Nitrogen removal and recovery	1	*			
	2	*			
	3	*			
Membrane filtration	4	*			
Phosphorous removal and recovery	5		*		
	6		*		
	7		*		
Adsorption and ion exchange	8			*	
	9			*	
Reverse osmosis	10			*	
Air and flotation	11				*
Wastewater reuse	12				*
	13				*
Wastewater reuse	14				*
Total		4	3	3	4

2.5 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered			
Methods	CLO1	CLO2	CLO3	CLO4
1. Lecture	*	*	*	*
2. Tutorials	*	*	*	*
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				
2. Extra Lectures				
3. Provide different levels of books and materials				

2.6 Assessment Methods

Assessment Methods:		Course LOs Covered			
Methods		CLO1	CLO2	CLO3	CLO4
Formative Assessment Method					
Tests	Quizzes	*	*	*	*
	Midterm Exam	*	*	*	
Assignments		*	*	*	*
Summative Assessment Method					
Final Exam		*	*	*	*

2.6.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Assignments	2 to 6 & 9 to 13	10 %
Midterm exam	8	20 %
Quizzes	3,5,7,9 to 13	10 %
Final exam	16 and above	60 %
Total		100 %

2.7. List of Reference:

Course Notes:	Not used
Essential Books (Textbooks):	<ul style="list-style-type: none"> • Metcalf & Eddy. "Wastewater Engineering: Treatment and Reuse", fourth edition , Tata McGraw- Hill edition 2003 • Hammer, M.j."Water and wastewater Technology", Prentice Hall, USA, 2008. • H.T. EL-Dessoky and H,M, Ettouney, “Fundamentals of Salt water desalination”,Elsevier 2002 • Valentina Lazarova, Akica Bahri, “Water reuse for Irrigation, Agriculture, landscapes and turf grass”, CRC press 2005. • Metcalf & Eddy, an AECOM Company, “Water Reuse: Issues, Technologies, and Applications”, McGraw- Hill edition 2007

2.8. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
laboratory Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO6	*	*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
CO1	*	*		
CO2			*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
PLO12	*	*		
PLO13			*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO12	PO6	CLO1	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Written Exam Assignments Quiz
		CLO2	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Written Exam Assignments Quiz
PLO13		CLO3	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Written Exam Assignments Quiz
		CLO4	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Written Exam Assignments Quiz

Course Coordinator:

prof. Dr. Mohamad Basiouny
Dr. Osama Abdelaziz Abosiada



Head of Department: Prof. Dr. Ahmed Saeed Debaiky



Date: 15/3/2023



Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the program	Civil Engineering Department			
Department Offering the course	Civil Engineering Department			
Date of Specification Approval				
Course Title	Simulation Models of Transportation and Traffic	Code	C 1084	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	1 st Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	2	.	4

2. Professional Information:

2.1. Course description:

Techniques of analytic and simulation modeling - Simulation methodology - Steps in developing a simulation model - Validation and analysis of Simulation modeling and results - Computer simulation models – Simulation modeling of signalized intersections

2.2. Course Objectives (CO):

Program objective		Course objective	
PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations.	CO1	fundamental concepts of simulation and its application in transport
		CO2	scientific principles and mathematical simulation framework

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO12	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.	CLO1	Steps in developing a simulation model. (Create)
		CLO2	Computer simulation models. (Create)
PLO13	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.	CLO3	Validation and analysis of Simulation modeling and results. (Evaluate)
		CLO4	Simulation methodology and solving traffic congestion problem (Create)

2.4. Course Topics:

Course Topics	Week	Course LOs Covered			
		CLO1	CLO2	CLO3	CLO4
<ul style="list-style-type: none"> Techniques of analytic and simulation modeling 	1	*			
	2	*			
<ul style="list-style-type: none"> Simulation methodology 	3				*
	4				*
<ul style="list-style-type: none"> Steps in developing a simulation model 	5	*			
	<ul style="list-style-type: none"> Validation and analysis of Simulation modeling and results 	6			*
7				*	
Midterm exam	8				
<ul style="list-style-type: none"> Computer simulation models 	9		*		
	10		*		
	11		*		
<ul style="list-style-type: none"> Simulation modeling of signalized intersections 	12				*
	13				*
	14				*
Practical exam	15				
	16				
Total	15	3	3	2	5

2.5 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered			
Methods	CLO1	CLO2	CLO3	CLO4
1. Lecture	*	*	*	*
2. Tutorials	*	*	*	*
3. Project-based Learning		*		*
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				
2. Extra Lectures				
3. Provide different levels of books and materials				

2.6 Assessment Methods

Assessment Methods:	Course LOs Covered			
Methods	CLO1	CLO2	CLO3	CLO4
Formative Assessment Method				
Tests	Oral Test			*
	Midterm Exam	*	*	*
Projects	Mini Projects		*	*
Assignments		*	*	*
Summative Assessment Method				
Final Exam	*	*	*	*

2.6.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Assignments	2 to 6 & 9 to 13	5 %
Midterm exam	8	20 %
Mini Projects	7	5 %
Oral	15	10 %
Final exam	16 and above	60 %
Total		100 %

2.7. List of Reference: (max. five years ago)

Course Notes:	Not used
Essential Books (Textbooks):	<ul style="list-style-type: none"> • S. M. Ross, Simulation, 4th edition, Elsevier, 2019 • A. M. Law and W. David Kelton, Simulation Modeling and Analysis, 4th edition, McGraw Hill, 2015. • R. Dowling, A. Skabardonis, and V. Alexiadis, Traffic Analysis Toolbox Volume III: Guidelines for Applying Traffic Microsimulation Modeling Software, FHWA-HRT-04-040.
Recommended Books:	<ul style="list-style-type: none"> • R. Roess, E. Prassas, and W. McShane, Traffic Engineering, 3rd edition, Prentice Hall, 2014. • S. Washington, M. Karlaftis, and F. Mannering, Statistical and Econometric Methods for Transportation Data Analysis, Chapman & Hall/CRC, 2017.

2.8. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO6	*	*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
CO1	*	*		
CO2			*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
PLO12	*	*		
PLO13			*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO12	PO6	CLO1	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Written Exam Assignments
		CLO2	<ul style="list-style-type: none"> Lecture Tutorials Project-based Learning 	<ul style="list-style-type: none"> Written Exam Assignments Mini Projects
PLO13	PO6	CLO3	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Written Exam Assignments
		CLO4	<ul style="list-style-type: none"> Lecture 	<ul style="list-style-type: none"> Written Exam

			<ul style="list-style-type: none">• Tutorials• Project-based Learning	<ul style="list-style-type: none">• Mini Projects• Assignments• Oral Test
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Course Coordinator: Dr Ahmed Gamal

Dr. Mostafa Abd Elsalam



Head of Department: Prof. Dr. Ahmed Saeed Debaiky



Date: 13/03/2023



Course Specification

1. Basic Information:

Program Title	Civil Engineering program			
Department Offering the Program	Civil Engineering			
Department Offering the Course	Civil Engineering			
Date of Specification Approval				
Course Title	Highway Construction Management and Quality control	Code	C 1582	
Type	Compulsory <input type="checkbox"/>	Elective <input checked="" type="checkbox"/>		
Semester	1st Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	2	0	5

2. Professional Information:

2.1. Course description:

Highway project management procedures and methodology - Application of highway project management - Application of value engineering in highway projects - Production management of asphalt mixture - Quality control and quality assurance.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO 4	Use techniques, skills, and modern engineering tools necessary for engineering practice.	CO 1	Evaluate the quality of pavement construction and the pavement condition index
PO 6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations.	CO 2	Design the intersection and the thickness of highway.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO6	Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	CLO1	Construction of pavement layers. (Apply)
		CLO2	Evaluate the initial recipient of the road (Evaluate)
		CLO3	Evaluate the final recipient of the road (Evaluate)
PLO13	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.	CLO4	Analyze the pavement condition (Analyze)
		CLO5	Choose the best way to maintain the road (Apply)
		CLO6	Choose the best way to construct the road with respect to life cycle cost (LCC) (Apply)
PLO12	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.	CLO7	Calculate the pavements of highway. (Analyze)
		CLO8	Design the Intersection of highway. (Design)

2.4. Course Topics:

Course Topics	Week	Course LOs Covered							
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
Construction of pavement layers (Subgrade Soil- Subbase layer – base layer)	1	1							
Construction of pavement layers (Prime coat-binder coarse layer – tack coat -wearing surface layer)	2	1							

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes							
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
PLO 6	*	*	*					
PLO13				*	*	*		
PLO12							*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO6	PO4	CLO1	<ul style="list-style-type: none"> • Lectures • Report 	<ul style="list-style-type: none"> • Midterm Exam • Discussion
		CLO2	<ul style="list-style-type: none"> • Lectures • Tutorials 	<ul style="list-style-type: none"> • Assignments • Midterm Exam • Final Exam
		CLO3	<ul style="list-style-type: none"> • Lectures • Tutorials 	<ul style="list-style-type: none"> • Assignments • Midterm Exam • Final Exam
PLO13		CLO4	<ul style="list-style-type: none"> • Lectures • Tutorials 	<ul style="list-style-type: none"> • Assignments • Oral test • Final Exam
		CLO5	<ul style="list-style-type: none"> • Lectures • Tutorials 	<ul style="list-style-type: none"> • Oral test • Final Exam
		CLO6	<ul style="list-style-type: none"> • Lectures • Tutorials 	<ul style="list-style-type: none"> • Oral test • Assignments • Final Exam
PLO12	PO6	CLO7	<ul style="list-style-type: none"> • Lectures • Tutorials 	<ul style="list-style-type: none"> • Assignments • Midterm Exam • Final Exam
		CLO8	<ul style="list-style-type: none"> • Lectures • Tutorials 	<ul style="list-style-type: none"> • Oral test • Assignments • Final Exam

Course Coordinator: Dr. Moustafa Abdelsalam Saad

Head of Department: Prof. Dr. Ahmed Saeed Debaiky

Date: 11/03/2023



Course Specification

1. Basic Information:

Department Offering the program	Civil Engineering Program			
Department Offering the course	Civil Engineering Program			
Date of Specification Approval				
Course Title	Advanced Steel Structures - Elective Course	Code	C1572	
Type	Compulsory <input type="checkbox"/>	Elective <input checked="" type="checkbox"/>		
Semester	2nd Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	2	-	5

2. Professional Information:

2.1. Course description:

Design of cold-formed sections - Plastic analysis and design (Plastic hinge concept - Determination of collapse mechanism - Plastic analysis and design of rigid frames) - Frame stability and second order effects - Direct analysis method - Design of open web steel joists and steel deck - Topics relevant to bridge design (Beam grids - Curved and skew bridges - Composite bridges - Temperature effect in bridges - Erection of bridges).

2.2. Course Objectives (CO):

Program objective		Course objective	
PO2	Behave professionally and adhere to engineering ethics and standards and work to develop the profession and the community and promote sustainability principles.	CO1	Understanding plastic analysis and design of rigid frames.
		CO2	Understanding of frame stability and direct analysis method.
PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations.	CO3	Design of steel cold-formed steel sections according to standard codes.
		CO4	Design of different elements of the steel bridges.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO3	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.	CLO1	Apply specified consideration to design the cold-formed steel sections.
		CLO2	Utilize the plastic analysis and design to calculate the shape factor of different steel cross-sections.
PLO4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.	CLO3	Utilize theory of elastic stability to check frame stability.
		CLO4	Understand the direct analysis method and design of open web steel joists.
PLO12	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.	CLO5	Utilize codes of practice and standards of steel structural to calculate the critical straining actions for bridge elements.
		CLO6	Utilize codes of practice and standards of steel structural to design bridge elements.

2.4. Course Topics:

Course Topics	Week	Course LO's Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Introduction to Cold-formed sections	1	*					
Partially stiffened cold-formed sections	2	*					
Design of Cold-formed Connections	3	*					
Plastic Analysis and design	4&5		*				
Introduction to theory of Elastic stability	6			*			
Frame stability	7			*			

Mid-term Exam	8	*	*	*			
Direct analysis method	9				*		
Design of open web steel joists and steel deck.	10	*					
Introduction to railway Bridges	11					*	*
Loads and design of stringer	12					*	*
Loads and design of cross girder	13					*	*
Design main girder	14					*	*
Reports	15				*		
Total	16	5	2	3	2	4	4

2.5. Lab Topics: not applicable

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered					
Methods	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
1. Lectures.	*	*	*		*	*
2. Tutorials.	*	*	*	*	*	*
3. Reports				*		
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Discussion Session						
2. Extra Lectures						
3. Provide different levels of books and materials						

2.7 Assessment Methods

Assessment Methods:		Course LOs Covered					
Methods		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Formative Assessment Method							
Tests	Quizzes	*	*			*	*
	Mid-term Exam	*	*	*			
Assignments		*	*	*	*	*	*
Reports					*		
Summative Assessment Method							
Final Exam			*	*	*	*	*

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Assignments	3&4&5&6&7	15 %
Quiz	9&10	5%
Mid-term exam	8	20 %
Final exam	16 and above	60 %
Total		100%

2.8. List of Reference:

Course Notes:	Staff lectures notes.
Essential Books (Textbooks):	1. Egyptian code for design of steel structures.
Recommended Books:	1- Design of bridge structures, T. R. Jagadeesh and M. A. Jayaram, third edition 2020, ISBN 978-9389347609.
Periodicals, Web Sites, ... etc:	

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
laboratory Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective			
	CO1	CO2	CO3	CO4
PO2	*	*		
PO6			*	*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
CO1			*			
CO2				*		
CO3	*					
CO4					*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
PLO3	*	*				
PLO4			*	*		
PLO12					*	*

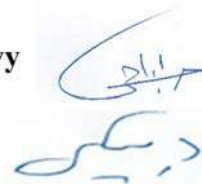
3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO3	PO2	CLO1	<ul style="list-style-type: none"> Lectures. Tutorials. 	<ul style="list-style-type: none"> Written Exams. Assignments.
		CLO2	<ul style="list-style-type: none"> Lectures. Tutorials. 	<ul style="list-style-type: none"> Written Exams. Assignments.
PLO4	PO6	CLO3	<ul style="list-style-type: none"> Lectures. Tutorials. 	<ul style="list-style-type: none"> Written Exams. Assignments.
		CLO4	<ul style="list-style-type: none"> Lectures. Tutorials. Reports. 	<ul style="list-style-type: none"> Written Exams. Assignments. Reports.
PLO12	PO6	CLO5	<ul style="list-style-type: none"> Lectures. Tutorials. 	<ul style="list-style-type: none"> Written Exams. Assignments.
		CLO6	<ul style="list-style-type: none"> Lectures. Tutorials. 	<ul style="list-style-type: none"> Written Exams. Assignments.

Course Coordinator: Dr. Ibrahim Mohamed El-Shenawy

Head of Department: Prof. Dr. Ahmed Saeed Debaiky

Date: 10 / 3 / 2023





Course Specification

1. Basic Information:

Department Offering the program	Civil Engineering Program			
Department Offering the course	Civil Engineering Program			
Date of Specification Approval				
Course Title	Special Foundation	Code	C1562	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	2nd Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	2	-	4

2. Professional Information:

2.1. Course Description:

Introduction to the numerical analysis of shallow and deep foundations - Modern foundations (Design and Construction) - Reinforced earth structures - Foundations for offshore structures - Introduction to construction and design of tunnels and underground structures - Introduction to foundations subjected to dynamic loads.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations.	CO1	Evaluate the principles of reinforced ground structures, marine structures, and underground structures such as tunnels to select an appropriate type of support system appropriate to safety criteria considering economic and societal factors.
		CO2	Design the various types of modern foundations with modern design methods, considering safety risks, applicable standards, and economy.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO3	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.	CLO1	Illustrate the construction techniques of underground structures. (Apply)
		CLO2	Choose the most appropriate support system for tunnel construction methods to safety criteria considering economic and societal factors. (Evaluate)
PLO12	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.	CLO3	Design the reinforced earth structures and offshore structures. (Create)
		CLO4	Design the modern foundations, and foundations subjected to dynamic loads by numerical analysis. (Create)

2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
• Introduction to the construction of the underground structures	1	*			
• Construction considerations in supporting the underground structures	2	*			
• Construction Methods of tunnels	3		*		
• Construction Methods of tunnels	4		*		
• Tunnels in Egypt	5		*		
• Reinforced earth structures	6			*	
• Reinforced earth structures	7			*	
• Midterm Exam	8				
• Reinforced earth structures	9			*	
• Introduction to the numerical analysis of foundations	10				*
• Construction considerations of modern foundations and foundations subjected to dynamic loads	11				*
• Design of modern foundations	12				*
• Offshore structures	13			*	
• Offshore structures	14			*	
• Final Exam					
Total	13	2	3	5	3

2.5 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered			
Methods	CLO1	CLO2	CLO3	CLO4
1. Lecture	*	*	*	*
2. Tutorials			*	*
3. Reports	*	*		
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				
2. Extra Lectures				
3. Provide different levels of books and materials				

2.6 Assessment Methods:

Assessment Methods:	Course LOs Covered			
Methods	CLO1	CLO2	CLO3	CLO4
Formative Assessment Method				
Tests	Midterm Exam	*	*	*
Assignments			*	*
Reports		*	*	
Summative Assessment Method				
Final Exam		*	*	*

2.6.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
Reports	2, 5	10 %
Assignments	6, 11, 13	10 %
Midterm exam	8	10 %
Final exam	16 and above	60%
Total		100%

2.7. List of References:

Essential Books (Textbooks):	<ul style="list-style-type: none"> El-Kasaby, E. A., Engineering of Surface Foundations, Dar Al-Kutub Al-Almia, Cairo, 5th Ed., (1944/2015), ISBN 978 – 977 – 726 – 139 – 5, 2015. El-Kasaby, E. A., Design and Construction of Deep and Special Foundations, Dar Al-Kutub Al-Almia, Cairo, 4th Ed., (10651/2016), ISBN 978 – 977 – 726 – 168 – 5, 2016.
Recommended Books:	<ul style="list-style-type: none"> Bowles, J., Foundation Analysis and Design, McGraw - Hill, 5th. Ed., ISBN 978 – 007 - 912 – 247 – 7, 2009.

2.8. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO6	*	*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
CO1	*	*		
CO2			*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
PLO3	*	*		
PLO12			*	*


3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO3	PO6	CLO1	<ul style="list-style-type: none">• Lecture• Reports	<ul style="list-style-type: none">• Written Exams• Reports
		CLO2	<ul style="list-style-type: none">• Lecture• Reports	<ul style="list-style-type: none">• Written Exams• Reports
PLO12	PO6	CLO3	<ul style="list-style-type: none">• Lecture• Tutorials	<ul style="list-style-type: none">• Written Exams• Assignments
		CLO4	<ul style="list-style-type: none">• Lecture• Tutorials	<ul style="list-style-type: none">• Written Exams• Assignments

Course Coordinator: Prof. Dr. El-Sayed Abdel Fattah El-Kassaby

Dr. Mohab Roshdy Ahmed

Dr. Mahmoud Awaad Gomaa



Head of Department: Prof. Dr. Ahmed Saeed Debaiky



Date: 20/02/2023



Course Specification

1. Basic Information:

Department Offering the program	Civil Engineering Program			
Department Offering the course	Civil Engineering Program			
Date of Specification Approval				
Course Title	Special Concrete Structures	Code	C 1554	
Type	Compulsory <input type="checkbox"/>	Elective <input checked="" type="checkbox"/>		
Semester	2 nd Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	2	0	5

2. Professional Information:

2.1. Course description:

Design of Concrete Structures: Pre-stressed concrete (Continuous beams) - Design of high-rise buildings (Loads - Resisting systems - Design of structural elements - Reinforcement details) - Types of R.C. bridges - Design of R.C. bridges (Slab type - Girder type - Box-girder type).

2.2. Course Objectives (CO):

Program objective		Course objective	
PO2	Behave professionally and adhere to engineering ethics and standards and work to develop the profession and the community and promote sustainability principles.	CO1	Behave professionally and adhere to engineering ethics and standards and work.
PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations.	CO2	design the Concrete Structures geometrically & structure.
PO7	Incorporate economics and business practices including project risk and change management into the practice of engineering and to understand their limitations.	CO3	Incorporate economic and business practices into reinforced concrete structures.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO3	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.	CLO1	Apply knowledge to choose the better type of structural system.
		CLO2	Apply the Principles of designing to the reinforced concrete structural elements.
PLO12	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.	CLO3	Evaluate Types of R.C. structures
		CLO4	Analyze the different RC structure elements using Egyptian codes for reinforced concrete structures.
		CLO5	Design the different reinforcement concrete structural elements according to ECP.
		CLO6	Achieve an optimum system for planning the RC buildings.

2.4. Course Topics:

Course Topics	Week	Course LOs Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
• Design of Pre-stressed concrete (Continuous beams)	1		*		*		
• Continue Design of Pre-stressed concrete (Continuous beams)	2		*			*	*
• Design of high-rise buildings (Loads)	3	*	*				
• Design of high-rise buildings (Resisting systems)	4		*		*	*	*
• Design of high-rise buildings (Design of structural elements)	5		*				
	6		*	*			*
• Design of high-rise buildings (Reinforcement details)	7		*	*	*		

Midterm exam	8	*	*	*	*	*	*
• Types of R.C. bridges	9	*	*	*	*		
• Design of R.C. bridges (Slab type)	10			*	*		
	11					*	*
• Design of R.C. bridges (Girder type -)	12				*	*	*
• Design of R.C. bridges (Box-girder type)	13				*	*	*
• Design of R.C. bridges (Reinforcement details)	14				*	*	*
Practical exam	15	*	*	*	*	*	*
Total	15	۲	8	4	8	6	7

2.5 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered					
	Methods	CLO1	CLO2	CLO3	CLO4	CLO5
1. Lecture	*	*	*	*	*	*
2. Tutorials	*	*	*	*	*	*
3. Project-based Learning						
4. Practical-based Learning						
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Discussion Session						
2. Extra Lectures						
3. Provide different levels of books and materials						

2.6 Assessment Methods

Assessment Methods:		Course LOs Covered					
Methods		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Formative Assessment Method							
Tests	Discussion	*	*	*	*		
	Midterm Exam	*	*	*	*	*	*
	Quizzes	*		*			
	Experimental						
Projects	Mini Projects						
Assignments		*	*	*	*	*	*
Summative Assessment Method							
Final Exam		*	*	*	*	*	*

2.6.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Assignments	2 to 6 & 9 to 13	8 %
Midterm exam	8	24 %
quizzes	10	4 %
Discussion	15	4%
Final exam	16 and above	60 %
Total		100 %

2.7. List of Reference: (max. five years ago)

Course Notes:	Not used
Essential Books (Textbooks):	<ul style="list-style-type: none"> • Shaker elbehary handbook. • ECP203-2020. • Design of RC Structure halls – DR.M. Hilal • lectures
Recommended Books:	<ul style="list-style-type: none"> • Design of RC Structure - V. 2 - DR. Mashhour A. Ghoneim.

2.8. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective		
	CO1	CO2	CO3
PO2	*		
PO6		*	
PO7			*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
CO1	*					
CO2			*	*	*	*
CO3		*				

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO4	CLO4
PLO3	*	*				
PLO12			*	*	*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO3	PO2	CLO1	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Written Exam Assignments Discussion
	PO7	CLO2	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Written Exam Assignments Discussion
PLO12	PO6	CLO3	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Written Exam Assignments Discussion Quizzes
		CLO4	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Written Exam Assignments Discussion
		CLO5	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Written Exam Assignments Quizzes
		CLO6	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Written Exam Assignments

Course Coordinator: Dr. Mohamed Makhlof



Head of Department: Prof. Dr. Ahmed Saeed Debaiky

Date: 7/3/2023





Course Specification

1. Basic Information:

Department Offering the program	Civil Engineering Program			
Department Offering the course	Civil Engineering Program			
Date of Specification Approval				
Course Title	Repair and Strengthening of Concrete Structures	Code	C1552	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	2nd Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	2	-	4

2. Professional Information:

2.1. Course Description:

Deterioration causes of concrete structure - Evaluation of concrete structures - Repair and strengthening materials (Types - Testing - Handling) - Bond between repair and strengthening materials and concrete surface - Design of repair and strengthening systems - Repair and strengthening of concrete elements (Foundation - Columns - Beams - Slabs...etc.) - Repair and strengthening of concrete structures against effect of earthquakes and fires - Protection and maintenance of concrete structures.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO5	Master self-learning and life-long learning strategies to communicate effectively in academic/professional fields.	CO1	Apply the repair and strengthening principles of concrete structures against the effect of earthquakes and fires-protection and maintenance of concrete structures.
PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations.	CO2	Create the principles of Evaluation of concrete structures, Deterioration causes of concrete structure and Repair and strengthening of concrete elements (Foundation - Columns - Beams - Slabs...etc.) that is appropriate to safety standards considering economic and societal factors.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO5	Practice research techniques and methods of investigation as an inherent part of learning.	CLO1	Describe the type of Protection and maintenance of concrete structures. (Understand)
		CLO2	Illustrate the Repair and strengthening of concrete structures against effect of earthquakes and fires. (Apply)
PLO13	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.	CLO3	Illustrate the Evaluation of concrete structures, and Deterioration causes of concrete structure. (Apply)
		CLO4	Classify the Repair and strengthening materials, and the Bond between repair and strengthening materials and concrete surface (Analyze)
		CLO5	Design of repair and strengthening systems for concrete elements. (Create)

2.4. Course Topics:

Course Topics	Week	Course LO's Covered				
		CLO1	CLO2	CLO3	CLO4	CLO5
• Deterioration causes of concrete structure	1			*		
• Deterioration causes of concrete structure	2			*		
• Evaluation of concrete structures	3			*		
• Evaluation of concrete structures	4			*		
• Repair and strengthening materials	5				*	
• Repair and strengthening materials	6				*	
• Bond between repair and strengthening materials and concrete surface	7				*	
• Mid term	8					
• Design of repair and strengthening systems	9					*
• Repair and strengthening of concrete elements (Foundation - Columns - Beams - Slabs...etc.)	10					*
• Repair and strengthening of concrete elements (Foundation - Columns - Beams - Slabs...etc.)	11					*
• Repair and strengthening of concrete elements (Foundation - Columns - Beams - Slabs...etc.)	12					*
• Protection and maintenance of concrete structures	13	*				
• Repair and strengthening of concrete structures against effect of earthquakes and fires	14		*			
• Final Exam	15					
Total	13	1	1	4	3	4

2.5 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered				
Methods	CLO1	CLO2	CLO3	CLO4	CLO5
1. Lecture			*	*	*
2. Tutorials			*	*	*
3. Report	*	*			
Teaching and Learning Methods for Students with Special Needs:					
Methods					
1. Discussion Session					
2. Extra Lectures					
3. Provide different levels of books and materials					

2.6 Assessment Methods:

Assessment Methods:	Course LOs Covered				
Methods	CLO1	CLO2	CLO3	CLO4	CLO5
Formative Assessment Method					
Tests	Oral Test	*	*	*	*
	Midterm Exam			*	*
	Report	*	*		
Assignments			*	*	*
Summative Assessment Method					
Final Exam			*	*	*

2.6.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
Assignments	4 & 7 & 12	5 %
Midterm exam	8	20 %
Report	13 & 14	10 %
Oral Test	15	5%
Final exam	16 and above	60%
Total		

2.7. List of References:

Essential Books (Textbooks):	<ul style="list-style-type: none"> • El-Kasaby, E. A., Repair and strengthening of concrete elements, Dar Al-Kutub Al-Almia, Cairo, 5th Ed., (19441/2015), ISBN 978 – 977 – 726 – 140 – 1, 2015. • El-Kasaby, E. A., Engineering of Shallow Foundations, Dar Al-Kutub Al-Almia, Cairo, 5th Ed., (19440/2015), ISBN 978 – 977 – 726 – 139 – 5, 2015. • El-Kasaby, E. A., Design and Construction of Deep and Special Foundations, Dar Al-Kutub Al-Almia, Cairo, 4th Ed., (10651/2016), ISBN 978 – 977 – 726 – 168 – 5, 2016.
Recommended Books:	<ul style="list-style-type: none"> • El-Kasaby, E. A., Repair and strengthening of concrete elements, Dar Al-Kutub Al-Almia, Cairo, 5th Ed., (19441/2015), ISBN 978 – 977 – 726 – 140 – 1, 2015.

2.8. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO5	*	
PO6		*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes				
	CLO1	CLO2	CLO3	CLO4	CLO5
CO1	*	*			
CO2			*	*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes				
	CLO1	CLO2	CLO3	CLO4	CLO5
PLO5	*	*			
PLO13			*	*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO5	PO5	CLO1	<ul style="list-style-type: none"> • Report 	<ul style="list-style-type: none"> • Oral Test • Report
		CLO2	<ul style="list-style-type: none"> • Report 	<ul style="list-style-type: none"> • Oral Test • Report
PLO13	PO6	CLO3	<ul style="list-style-type: none"> • Lecture • Tutorials 	<ul style="list-style-type: none"> • Written Exams • Assignments • Oral Test
		CLO4	<ul style="list-style-type: none"> • Lecture • Tutorials 	<ul style="list-style-type: none"> • Written Exams • Assignments • Oral Test
		CLO5	<ul style="list-style-type: none"> • Lecture • Tutorials 	<ul style="list-style-type: none"> • Written Exams • Assignments • Oral Test • Report

Course Coordinator: Prof. Dr. El-Sayed Abdel Fattah El-Kassaby



Head of Department: Prof. Dr. Ahmed Saeed Debaiky



Date: 20/02/2023



Course Specification

1. Basic Information:

Department Offering the program	Civil Engineering Program			
Department Offering the course	Civil Engineering Program			
Date of Specification Approval				
Course Title	Remote Sensing	Code	C 1534	
Type	Compulsory <input type="checkbox"/>	Elective <input checked="" type="checkbox"/>		
Semester	2 nd Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	2	-	4

2. Professional Information:

2.1. Course description:

Basics and principles of remote sensing - Definitions - Energy sources - Advantages of remote sensing technique - Photo and image interpretation - Control points and ground truth observations - Field work steps - The use of remote sensing in GIS applications - Hardware and software required for image processing and interpretations..

2.2. Course Objectives (CO):

Program objective		Course objective	
PO1	Apply a wide spectrum of engineering knowledge, science and specialized skills with analytic, critical and systemic thinking to identify and solve engineering problems in real life situation.	CO1	Apply wide sets of remote sensing knowledge, science, and specialized skills.
		CO2	Solve surveying and remote sensing problems in real-life situations.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO2	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.	CLO1	Recognize the fundamental of the remote sensing systems.
		CLO2	Illustrate the different remote sensing observations.
PLO11	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.	CLO3	Recognize applications of new satellite images processing techniques.
		CLO4	Determine appropriate and sustainable technologies of remote sensing measurements.

2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Introduction to remote sensing	1	√			
Basics and principles of remote sensing and Definitions	2, 3	√			
Energy sources	4, 5	√	√		
Advantages of remote sensing technique	6				√
Photo and image interpretation	7		√		√
Control points and ground truth observations	8			√	√
Midterm Exam	9	√	√	√	√
Field work steps	10		√		
The use of remote sensing in GIS applications	11, 12			√	√
Hardware and software required for image processing and interpretations	13, 14, 15	√			√
Total		8	4	3	9

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered			
Methods	CLO1	CLO2	CLO3	CLO4
1. Lecture	√	√	√	√
2. Tutorials	√	√	√	√
3. report			√	√
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				
2. Extra Lectures				

3. Provide different levels of books and materials

2.7 Assessment Methods

Assessment Methods:		Course LOs Covered			
Methods		CLO1	CLO2	CLO3	CLO4
Formative Assessment Method					
Tests	Midterm Exam	√	√	√	√
Quizes				√	√
Report				√	√
Summative Assessment Method					
Final Exam		√	√	√	√

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Midterm exam	9	16%
Report	11	8%
Quizes	6, 13	16%
Final exam	16 and above	60%
Total		100%

2.8. List of Reference:

Essential Books (Textbooks):	Remote Sensing: Principles, Interpretation, and Applications, by Sabins & Ellis. 4th edition, 2020.
Recommended Books:	(1) Remote Sensing and Image Interpretation by Lillesand, Kiefer, and Chipman, 7th Edition, 2015. Wiley, and Sons. ISBN: 9781118343289. (2) Remote sensing of vegetation: Principles, techniques, and applications by Jones & Vaughan. 1st Edition, 2010. Oxford University Press. ISBN: 9780199207794.

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
laboratory Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO1	√	√

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
CO1	√	√		
CO2			√	√

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
PLO2	√	√		
PLO11			√	√

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO2	PO1	CLO1	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Written Exam

		CLO2	<ul style="list-style-type: none"> • Lecture • Tutorials 	<ul style="list-style-type: none"> • Written Exam
PLO11		CLO3	<ul style="list-style-type: none"> • Lecture • Tutorials • Report 	<ul style="list-style-type: none"> • Written Exam • Report • Quizes
		CLO4	<ul style="list-style-type: none"> • Lecture • Tutorials • Report 	<ul style="list-style-type: none"> • Written Exam • Report • Quizes

Course Coordinator: Dr. Essam Ghanem
Dr. Ahmed Elhadary



Head of Department: Prof. Dr. Ahmed Saeed Debaiky



Date: 9 /3 /2023



Course Specification

1. Basic Information:

Department Offering the program	Civil Engineering Program			
Department Offering the course	Civil Engineering Program			
Date of Specification Approval				
Course Title	The Global Positioning System (GPS)	Code	C 1532	
Type	Compulsory <input type="checkbox"/>		Elective <input checked="" type="checkbox"/>	
Semester	Second Semester (Fifth Year)			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	2	0	4

2. Professional Information:

2.1. Course description:

Introduction to GPS - GPS basis and idea - Field procedure in GPS surveys - Data types used in GPS - Satellite positioning and ground control system - Uses of GPS in civil engineering - Hardware and software requirements.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO1	Apply a wide spectrum of engineering knowledge, science and specialized skills with analytic, critical and systemic thinking to identify and solve engineering problems in real life situation.	CO1	Illustrate the basic principle of the global positioning system (GPS)
		CO2	Apply analytic skills to solve engineering problems in the branch of GPS

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO2	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.	CLO1	Use a suitable software used in GPS analysis
PLO11	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.	CLO2	Identify the idea of GPS
		CLO3	Discuss the data types used in GPS
		CLO4	demonstrate the Satellite positioning and ground control system
		CLO5	Explain the application of GPS in civil engineering

2.4. Course Topics:

Course Topics	Week	Course LO's Covered				
		CLO1	CLO2	CLO3	CLO4	CLO5
Introduction to GPS	1-2		√			
GPS basis and idea	3-4		√			
Field procedure in GPS surveys	5		√			
Data types used in GPS	6-7			√		
Satellite positioning and ground control system	9-10				√	
Uses of GPS in civil engineering	11-12					√
Hardware and software requirements	13-14	√				
Total		2	5	2	2	2

2.5. Lab Topics:

N.A

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered				
Methods	CLO1	CLO2	CLO3	CLO4	CLO5
1. Lecture	√		√	√	√
2. Tutorials	√		√	√	
3. Computer-based Instruction		√			
Teaching and Learning Methods for Students with Special Needs:					
Methods					
1. Discussion Session					
2. Extra Lectures					
3. Provide different levels of books and materials					

2.7 Assessment Methods

Assessment Methods:		Course LOs Covered				
Methods		CLO1	CLO2	CLO3	CLO4	CLO5
Formative Assessment Method						
Tests	Midterm Exam		√	√		
Assignments		√				
Report						√
Summative Assessment Method						
Final Exam			√	√	√	

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Midterm Exam	8	24%(30degree)
Assignments	14	8%(10degree)
Report	13	8%(10degree)
Final Exam	16	60%(5degree)
Total		100%(125)

2.8. List of Reference:

Course Notes:	Lecture Notes
Essential Books (Textbooks):	Understanding Earth Observation, Domenico Solimini,2016, ISBN 978-3-319-25632-0 ISBN 978-3-319-25633-7 (eBook)
Recommended Books:	• Seeber · Satellite Geodesy -2nd completely revised and extended edition - Walter de Gruyter ·Berlin New York 2003 -

	ISBN 3-11-017549-5 • Zhilin Li, Qing Zhu, Christopher Gold (2004) DIGITAL TERRAIN MODELING Principles and Methodology -ISBN 0-415-32462-9.
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2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO1	√	√

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes				
	CLO1	CLO2	CLO3	CLO4	CLO5
CO1		√	√		√
CO2	√			√	

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes				
	CLO1	CLO2	CLO3	CLO4	CLO5
PLO2	√				
PLO11		√	√	√	√

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO2	PO1	CLO1	• Computer-based Instruction	• Assignments
PLO11		CLO2	• Lecture • Tutorials	• Midterm Exam • Final Exam
		CLO3	• Lecture • Tutorials	• Midterm Exam • Final Exam
		CLO4	• Lecture • Tutorials	• Final Exam
		CLO5	• Lecture	• Report

Course Coordinator: Dr.Rasha Mohey Al-Deen



Head of Department: Prof. Dr. Ahmed Debaik



Date: 17/ 2/2023



Course Specification

1. Basic Information:

Department Offering the program	Civil Engineering Program			
Department Offering the course	Civil Engineering Program			
Date of Specification Approval				
Course Title	New Construction Materials	Code	1522	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input checked="" type="checkbox"/>		
Semester	Second Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	2	-	4

2. Professional Information:

2.1. Course description:

Different types of new construction materials - Constituent materials of the new construction materials - Properties of the new construction materials (Physical, Chemical & Mechanical properties) - Fabrication technology - Comparison with conventional construction materials - Structural applications - Testing - Economical point of view.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO1	Behave professionally and adhere to engineering ethics and standards and work to develop the profession and the community and promote sustainability principles.	CO1	Evaluation and judgment of new construction materials.
PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations.	CO2	Design and application of the new construction materials.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO2	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.	CLO1	Experimentation of the new construction materials. (Evaluation)
		CLO2	Judgment of the experimental results. (Evaluation)
PLO11	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.	CLO3	Choosing suitable materials and techniques for civil engineering applications. (Creation)
		CLO4	Determination the properties of new construction materials. (Creation)
PLO13	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.	CLO5	Manage appropriate new construction techniques. (Creation)
		CLO6	Assessment the quality of construction materials. (Evaluation)

2.4. Course Topics:

Course Topics	Week	Course LO's Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Introduction to new construction materials	1			*	*	*	*
Introduction to strengthening and repair of RC structures	2					*	*
Strengthening of RC columns using FRP	3			*	*	*	
Strengthening of RC flexural elements using FRP	4			*	*	*	
Strengthening of RC beams against shear using FRP	5			*	*	*	

High strength concrete	6	*	*	*	*	*	*
High Performance concrete (I).	7	*	*	*	*	*	*
High Performance concrete (II).	8	*	*	*	*	*	*
Mid-term Exam	9						
Light weight concrete	10	*	*	*	*	*	*
Geopolymer concrete	11	*	*	*	*	*	*
Other concretes for special applications (I)	12	*	*	*	*	*	*
Other concretes for special applications (II)	13	*	*	*	*	*	*
Other concretes for special applications (III)	14	*	*	*	*	*	*
Oral							
Total	15	1	3	5	3	2	2

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
N.A	N.A	N.A	N.A	N.A	N.A	N.A	N.A
Total							

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered					
Methods	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
1.Lecture	*	*	*	*	*	*
2.Tutorial	*	*	*	*	*	*
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Discussion Session						
2. Extra Lectures						
3. Provide different levels of books and materials						

2.7 Assessment Methods

Assessment Methods:		Course LOs Covered					
Methods		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Formative Assessment Method							
Tests	Oral Exam	*	*	*	*	*	*
	Midterm Exam	*	*	*	*	*	*
Assignments		*	*	*	*	*	*
Summative Assessment Method							
Final Exam		*	*	*	*	*	*

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Assignments	2 to 8 & 10 to 14	5%
Midterm Exam	9	20%
Oral Exam	15	10%
Final Exam	16 or more	60%
Total		100%

2.8. List of Reference: (max. five years ago)

Course Notes:	Used
Essential Books (Textbooks):	١- الكود المصري لأسس تصميم واشتراطات تنفيذ البوليمرات المسلحة بالألياف في مجالات التشييد – ٢٠٨.
Recommended Books:	1- "Construction Materials, their Nature and Behavior", Fourth Edition, Edited by Peter Domone and John Illston.
Periodicals, Web Sites, ... etc:	https://www.sciencedirect.com/journal/construction-and-building-materials

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO1	*	
PO6		*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
CO1	*	*		*		*
CO2			*	*	*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
PLO2	*	*				
PLO11			*	*		
PLO13					*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO2	PO1	CLO1	<ul style="list-style-type: none">• Lecture• Tutorial	<ul style="list-style-type: none">• Written exam• Assignments• Oral exam
		CLO2	<ul style="list-style-type: none">• Lecture• Tutorial	<ul style="list-style-type: none">• Written exam• Assignments• Oral exam
PLO11	PO6	CLO3	<ul style="list-style-type: none">• Lecture• Tutorial	<ul style="list-style-type: none">• Written exam• Assignments• Oral exam
		CLO4	<ul style="list-style-type: none">• Lecture• Tutorial	<ul style="list-style-type: none">• Written exam• Assignments• Oral exam
PLO13		CLO5	<ul style="list-style-type: none">• Lecture• Tutorial	<ul style="list-style-type: none">• Written exam• Assignments• Oral exam
		CLO6	<ul style="list-style-type: none">• Lecture• Tutorial	<ul style="list-style-type: none">• Written exam• Assignments• Oral exam

Course Coordinator: Prof. Dr\ Khaled Mohamed El-Sayed



Head of Department: Prof. Dr\ Ahmed El-Debeiky



Date: 15/3/2023



Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the course	Civil Engineering Program			
Date of Specification Approval				
Course Title	Earthquake Engineering and Structural Dynamics	Code	C 1512	
Type	Compulsory <input type="checkbox"/>	Elective <input checked="" type="checkbox"/>		
Semester	2 nd Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	2	0	4

2. Professional Information:

2.1. Course description:

Introduction to structural dynamic: Types of dynamic loads and the formulation of the equation of motion. Single degree of freedom systems, undamped and damped free and forced vibrations. Two degrees of freedom and multi degree of freedom systems. Mode shapes - Seismological background and Lateral load resisting systems - Code applications. Response of structures to earthquakes.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO1	Apply a wide spectrum of engineering knowledge, science, and specialized skills with analytic, critical, and systemic thinking to identify and solve engineering problems in real-life situations.	CO1	Formulate the Equation of motion for single-degree and multi degrees systems under different vibration systems.
PO5	Behave professionally, adhere to engineering ethics and standards, and work to develop the profession and community and promote sustainability principles.	CO2	Analyze spectrum and different mode shapes for single and multi-degree of freedom systems

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO5	Practice research techniques and methods of investigation as an inherent part of learning.	CLO1	Form the Equation of motion for single and multi-degree of freedom systems
		CLO2	Investigate free and forced vibration
		CLO3	Study undamped and damped vibration
		CLO4	Examine single and multi-degree of freedom systems
PLO11	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	CLO5	Discuss the dynamic analysis and environmental loads
		CLO6	Present an overview of Seismological background, Lateral load resisting systems and an introduction to earthquake analysis methods.

2.4. Course Topics:

Course Topics	Week	Course LO's Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Introduction to dynamic analysis	1	√				√	
Types of environmental loads	2					√	
Formulation of the Equation of motion	3	√	√				
Single degree of freedom systems (Free vibration)	4	√	√				
Single degree of freedom systems (Damping vibration)	5	√	√	√	√		
Single degree of freedom systems (Forced vibration)	6	√	√	√	√		
Midterm Exam	7	√	√	√	√	√	
Two degree of freedom systems	8,9	√	√		√		
Multi degree of freedom systems	10		√		√	√	
Modal analysis (Eigen value problem)	11	√	√		√		
Mode shapes (Eigen vector)	12	√	√		√	√	
Seismological background and Lateral load resisting systems	13					√	√
Introduction to Earthquake analysis using equivalent static method	14					√	√

Introduction to Earthquake analysis using response spectrum method	15					√	√
Final Exam	16	√	√	√	√	√	√
Total	16	9	9	2	7	7	3

2.5. Lab Topics:

Not Applicable

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
1. Lectures	√	√	√	√	√	√
2. Tutorials	√	√	√	√		
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Discussion Session						
2. Extra Lectures						
3. Provide different levels of books and materials						

2.7 Assessment Methods

Assessment Methods:	Course LOs Covered					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Formative Assessment Method						
Tests	Midterm exam	√	√	√	√	√
	Quiz	√	√	√	√	
Assignments	√	√	√	√		
Summative Assessment Method						
Final Exam	√	√	√	√	√	√

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses %
Formative Assessment Method		
Tests	Midterm exam	7
	Quiz	3,5,10,13
Assignments	3,4,6,7,13	8
Summative Assessment Method		
Final Exam	16	60
Total		100

2.8. List of Reference:

Essential Books (Textbooks):	William T. Thomson (auth.)-Theory of Vibration with Applications-Springer US (1 st edition 1993)
Recommended Books:	Dynamics of Structures: Theory and Applications to Earthquake Engineering by Anil K. Chopra (1 st edition 1995)

2.9. Facilities required for Teaching and Learning

Different Facilities	
Lecture Hall	√
Data Show	√
White Board	√

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO1	√	
PO5		√

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
CO1	√	√	√	√	√	√
CO2	√	√	√	√	√	√

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
PLO5	√	√	√	√		
PLO11					√	√

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO5	PO1	CLO1	• Lectures	• Midterm and Final Exam
	PO1	CLO2	• Lectures	• Midterm and Final Exam
			• Tutorials	• Quiz
	PO1	CLO3	• Lectures	• Midterm and Final Exam
	PO5		• Tutorials	• Quiz
	PO1	CLO4	• Lectures	• Midterm and Final Exam
PO5			• Tutorials	• Quiz
PLO11	PO1	CLO5	• Lectures	• Final Exam
	PO1	CLO6	• Lectures	• Final Exam

Course Coordinator: Prof. Ashraf Mohamed Abu-Rayan
Dr. Ahmed Abd El-Salam



Head of Department: Prof. Ahmed EL Debaiky



Date:09 /03 /2023



Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering			
Department Offering the Course	Civil Engineering			
Date of Specification Approval				
Course Title	Sewerage	Code	C 1491	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	First Semester (Fourth Year)			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	2	1	4

2. Professional Information:

2.1. Course description:

Sewerage: Sources, types and characteristics of municipal wastewater - Municipal wastewater collection and transportation - Preliminary treatment of municipal Wastewater (Deceleration chamber - Screen and Gritchamber) - Primary treatment of municipal wastewater - Secondary treatment of municipal wastewater (Oxidation pond - Activated sludge process - Trickling filter process - Rotating biological contactor - Aerated lagoon) - Sludge disposal (Thickening - Stabilization - Dewatering).

2.2. Course Objectives (CO):

Program objective		Course objective	
PO1	. Apply a wide spectrum of engineering knowledge, science and specialized skills with analytic, critical and systemic thinking to identify and solve engineering problems in real life situation	CO1	Illustrate the sources, characteristics of municipal wastewater and Wastewater gravity system.
PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations	CO2	Design the different units of WWTP

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO2	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.	CLO1	Discuss the different sources of wastewater and wastewater characteristics.
		CLO2	Analyze the sewer system and Preliminary treatment of municipal Wastewater
PLO12	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.	CLO3	Design the different methods of Secondary treatment of municipal wastewater (Oxidation pond - Activated sludge process - Trickling filter process - Rotating biological contactor - Aerated lagoon)
		CLO4	Use the different methods of Sludge treatment and disposal (Thickening - Stabilization - Dewatering).

2.4. Course Topics:

Course Topics	Week	Course LOs Covered			
		CLO1	CLO2	CLO3	CLO4
Wastewater concept and its sources	1	*			
Characteristics of wastewater	2	*			
Characteristics of wastewater	3	*			
Sewer system design	4		*		
Sewer system design	5		*		
Primary treatment	6		*		
Oxidation ponds	7			*	
Midterm Exam	8				
Trickling filter	9			*	
Rotating biological contactor	10			*	
Activated sludge	11			*	
Aerated lagoons	12			*	
Sludge treatment	13				*
Sludge treatment	14				*
Practical Exam	15				
Final Exam	16				
Total		3	3	6	2

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
PH, Temperature, Total Solids (TS), Chloride, Nitrogen, Phosphorus, Heavy Metals, Dissolved Oxygen (DO), total bacteria account and Total coliform.	9	*			
Biochemical Oxygen Demand (BOD) and Chemical Oxygen Demand (COD)	10	*			
Biochemical Oxygen Demand (BOD) and Chemical Oxygen Demand (COD).	11	*			
Total	3				

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered			
Methods	CLO1	CLO2	CLO3	CLO4
1. Lecture	*	*	*	*
2. Tutorials	*	*	*	*
3. Project-based Learning	*	*		
4. Practical-based Learning				*
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				
2. Extra Lectures				
3. Provide different levels of books and materials				

2.7 Assessment Methods

Assessment Methods:		Course LOs Covered			
Methods		CLO1	CLO2	CLO3	CLO4
Formative Assessment Method					
Tests	Quizzes	*	*	*	*
	Midterm Exam	*	*	*	
	Experimental	*			
Projects	Mini Projects		*		
Assignments		*	*	*	*
Summative Assessment Method					
Final Exam		*	*	*	*

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Assignments	2 to 6 & 9 to 13	5 %
Midterm exam	8	10 %
Mini Projects	7	2.5 %
Quizzes	3,5,7,10,13	2.5 %
Experimental	15	20 %
Final exam	16 and above	60 %
Total		100 %

2.8. List of Reference:

Course Notes:	Not used
Essential Books (Textbooks):	<ul style="list-style-type: none"> • Metcalf & Eddy 1 AECOM (2014) Wastewater Engineering, Treatment and Resource Recovery, ISBN 978-0-07-340118-8 • Sewerage Prof. Dr. M. Basiouny (2019) • محطات الرفع - الصرف الصحي - الكود المصرى (2019) • أعمال المعالجة- الصرف الصحي - الكود المصرى- (2019)

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
laboratory Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO1	*	
PO6		*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
CO1	*	*		
CO2			*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
PLO2	*	*		
PLO12			*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment
PLO2	PO1	CLO1	<ul style="list-style-type: none"> Lecture Tutorials Project-based Learning 	<ul style="list-style-type: none"> Quizzes Midterm Exam Experimental Assignments Final Exam
		CLO2	<ul style="list-style-type: none"> Lecture Tutorials Project-based Learning 	<ul style="list-style-type: none"> Quizzes Midterm Exam Mini Projects Assignments Final Exam
PLO12	PO6	CLO3	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Quizzes Midterm Exam Assignments Final Exam
		CLO4	<ul style="list-style-type: none"> Lecture Tutorials Practical-based Learning 	<ul style="list-style-type: none"> Quizzes Assignments Final Exam

Course Coordinator:

prof. Dr. Mohamad Basiouny
Dr. Osama Abdelaziz Abosiada



Head of Department: Prof. Dr. Ahmed Saeed Debaiky

Date: 1/2/2023





Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering			
Department Offering the Course	Civil Engineering			
Date of Specification Approval				
Course Title	Highway and Airport Engineering	Code	C 1481	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	First Semester (Fourth Year)			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	2	1	4

2. Professional Information:

2.1. Course description:

Airport Engineering: Airport planning and component - Aircraft characteristics related to airport design - Airport classification – Airport configuration - Runway orientation - Airport obstruction clearance surfaces - Airport capacity - Geometric design of the airport (runway, taxiway, exit taxiway - and apron) - Heliports landing strip - Structural design of airports - Airport lighting, marking, and signs - Drainage.

Highway Engineering: Testing and specifications of road aggregates - Testing and specifications of bituminous materials characteristics and tests – Hot mix asphalt concrete characteristics and design -Asphalt concrete mix planet - Pavement layers construction - Pavement maintenance - Drainage.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations.	CO1	Plan and design the airport system
		CO2	Construct and maintain pavement layers

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO12	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.	CLO1	Describe aircraft characteristics related to airport design (Understand)
		CLO2	Analyze the wind rose (Analyze)
		CLO3	Plan the different elements of the airport (Apron, Taxiway, Runway, Exits,...etc) According to ICAO. (Create)
		CLO4	Design the pavement of the airport according to FAA specification. (Create)
PLO13	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.	CLO5	Test the road materials (Analyze)
		CLO6	Design asphalt concrete mixture (Create)
		CLO7	Construct the pavement layers According to Egyptian code. (Create)
		CLO8	Evaluate the pavement distresses According to Egyptian code. (Evaluate)

2.4. Course Topics:

Course Topics	Week	Course LOs Covered							
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
Airport planning and component. Aircraft characteristics related to airport design.	1	*							
Airport classification. Runway orientation. Airport configuration.	2		*						
Geometric design of the airport and its capacity.	3			*					
	4			*					
	5			*					

Airport obstruction clearance surfaces	6			*					
Structural design of airports	7				*				
Midterm exam	8								
Airport lighting, marking, and signs	9				*				
Testing and specifications of road aggregates Testing and specifications of bituminous materials characteristics and tests	10					*			
Hot mix asphalt concrete characteristics and design	11						*		
Asphalt concrete mix plant	12						*		
Pavement layers construction	13							*	
Pavement maintenance	14								*
Practical exam	15								
Final Exam	16								
Total		1	1	4	2	1	2	1	1

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered							
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
Penetration test, Softening point test	10					*			
Flash point test, thin film oven test	11					*			
Extraction test and compaction percent	12					*			
Total	3					3			

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered							
Methods	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
1. Lecture	*	*	*	*		*	*	*
2. Tutorials	*	*	*	*		*	*	*
3. Project-based Learning			*	*				
4. Practical-based Learning					*			
Teaching and Learning Methods for Students with Special Needs:								

Methods
1. Discussion Session
2. Extra Lectures
3. Provide different levels of books and materials

2.7 Assessment Methods

Assessment Methods:		Course LOs Covered							
Methods		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
Formative Assessment Method									
Tests	Oral Test					*			
	Midterm Exam	*	*	*	*				
	Experimental					*			
Projects	Mini Projects			*	*				
Assignments		*	*				*	*	*
Summative Assessment Method									
Final Exam		*	*	*	*		*	*	*

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Assignments	2 to 7 & 13 to 14	2 %
Midterm exam	8	16 %
Mini Projects	9	2 %
Oral & Experimental	15	20 %
Final exam	16 and above	60 %
Total		100 %

2.8. List of Reference:

Essential Books (Textbooks):	<ul style="list-style-type: none"> • Pavement Engineering Principles and Practice, Rajib B. Mallick and Tahar El-Korchi, CRC Press Taylor & Francis Group, Third Edition, 2018, ISBN-13: 978-1-4987-5880-2. • Airport Design and Operation, ANTONI N KAZDA & ROBERT E. CAVES, Emerald Group Publishing Limited, Third Edition, 2015, ISBN: 978-1-78441-870-0.
Recommended Books:	<ul style="list-style-type: none"> • Planning and Design of Airports, Robert Horonjeff, Francis X. McKelvey, William J. Sproule, and Seth B. Young, Fifth Edition, Mc Graw Hill, 2010, ISBN-13: 978-0071446419. • Pavement Analysis and Design, Yang Huang, Second International Edition, Pearson, 2012, ISBN-13: 978-0-13-272610-8.

Periodicals, Web Sites, ... etc:	https://www.faa.gov/ https://www.icao.int/Pages/default.aspx
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2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
laboratory Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO6	*	*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes							
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
CO1	*	*	*	*				
CO2					*	*	*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes							
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
PLO12	*	*	*	*				
PLO13					*	*	*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO12	PO6	CLO1	<ul style="list-style-type: none">• Lectures• Tutorials	<ul style="list-style-type: none">• Assignment• Midterm Exam• Final Exam
		CLO2	<ul style="list-style-type: none">• Lectures• Tutorials	<ul style="list-style-type: none">• Assignment• Midterm Exam• Final Exam
		CLO3	<ul style="list-style-type: none">• Lectures• Tutorials• Project-based Learning	<ul style="list-style-type: none">• Midterm Exam• Mini Project• Final Exam
		CLO4	<ul style="list-style-type: none">• Lectures• Tutorials• Project-based Learning	<ul style="list-style-type: none">• Midterm Exam• Mini Project• Final Exam
PLO13	PO6	CLO5	<ul style="list-style-type: none">• Practical-based Learning	<ul style="list-style-type: none">• Experimental Exam• Oral Exam
		CLO6	<ul style="list-style-type: none">• Lectures• Tutorials	<ul style="list-style-type: none">• Assignment• Final Exam
		CLO7	<ul style="list-style-type: none">• Lectures• Tutorials	<ul style="list-style-type: none">• Assignment• Final Exam
		CLO8	<ul style="list-style-type: none">• Lectures• Tutorials	<ul style="list-style-type: none">• Assignments• Final Exam

Course Coordinator: Dr. Ahmed Gamal



Head of Department: Prof. Dr. Ahmed Saeed Debaiky



Date: 1/11/2022



Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering			
Department Offering the Course	Civil Engineering			
Date of Specification Approval				
Course Title	Design of Foundations (a)	Code	C1461	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	First Semester (Fourth Year)			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	2	-	4

2. Professional Information:

2.1. Course Description:

Bearing capacity - Shallow foundation (Construction considerations - Design considerations) - Design of shallow foundation (Isolated footings - Strip footings - Combined footings - Strap beam footings - Rafts) - Deep foundations (Construction considerations - Design considerations).

2.2. Course Objectives (CO):

Program objective		Course objective	
PO2	Behave professionally and adhere to engineering ethics and standards and work to develop the profession and the community and promote sustainability principles.	CO1	Apply the principles of soil bearing capacity and choose an appropriate type of foundation that is appropriate to safety standards considering economic and societal factors.
PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations.	CO2	Design the different types of shallow foundations taking into consideration the safety risks, applicable standards, and economics.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO3	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.	CLO1	Calculate the bearing capacity of soil for the shallow foundation. (Apply)
		CLO2	Explain the construction and design considerations for shallow and deep foundations to produce cost-effective solutions. (Understand)
PLO12	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.	CLO3	Design the isolated footings and strip footings. (Create)
		CLO4	Design of combined footings and strap footings and rafts. (Create)

2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
• Bearing capacity of soil	1	*			
• Bearing capacity of soil	2	*			
• Bearing capacity of soil	3	*			
• Shallow foundation (Construction & Design considerations)	4		*		
• Design of isolated footings	5			*	
• Design of isolated footings subjected to eccentric force	6			*	
• Design of strip footings	7			*	
Midterm Exam	8				
• Design of combined footings (Rect.)	9				*
• Design of combined footings (Trap.)	10				*
• Design of strap foundations	11				*
• Design of raft foundations	12				*

• Design of raft foundations	13				*
• Deep foundations (Construction & Design considerations)	14		*		
Practical exam	15	Not Applicable			
Final Exam	16				
Total	13	3	2	3	5

2.5. Lab Topics: Not Applicable

2.6 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered			
Methods	CLO1	CLO2	CLO3	CLO4
Lecture	*	*	*	*
Tutorials	*	*	*	*
Project-based Learning			*	*
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				
2. Extra Lectures				
3. Provide different levels of books and materials				

2.7 Assessment Methods:

Assessment Methods:		Course LOs Covered			
Methods		CLO1	CLO2	CLO3	CLO4
Formative Assessment Method					
Tests	Midterm Exam	*	*	*	
	Quizzes	*		*	*
Projects	Mini Projects			*	*
	Assignments	*	*	*	*
Summative Assessment Method					
Final Exam		*	*	*	*

2.7.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
Assignments	2 to 6 & 9 to 13	5 %
Midterm exam	8	20 %
Mini Projects	12&13	5 %
Quizzes	4 & 7&11	10 %
Final exam	16 and above	60%
Total		

2.8. List of References:

Essential Books (Textbooks):	<ul style="list-style-type: none"> • El-Kasaby, E. A., Engineering of Surface Foundations, Dar Al-Kutub Al-Almia, Cairo, 5th Ed., (19440/2015), ISBN 978 – 977 – 726 – 139 – 5, 2015. • El-Kasaby, E. A., Design and Construction of Deep and Special Foundations, Dar Al-Kutub Al-Almia, Cairo, 4th Ed., (10651/2016), ISBN 978 – 977 – 726 – 168 – 5, 2016. • Hemed a, Advances in Soil Mechanics and Foundation Engineering, IntechOpen, London ISBN: 978-1-78984-290-6,2020
Recommended Books:	<ul style="list-style-type: none"> • Bowles, J., Foundation Analysis and Design, McGraw - Hill, 5th. Ed., ISBN 978 – 007 - 912 – 247 – 7, 2009.

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO2	*	
PO6		*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
CO1	*	*		
CO2		*	*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
PLO3	*	*		
PLO12			*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO3	PO2	CLO1	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Midterm Exam Quiz Assignment Final Exam
		CLO2	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Midterm Exam Assignment Final Exam
PLO12	PO6	CLO3	<ul style="list-style-type: none"> Lecture Tutorials Project-based Learning 	<ul style="list-style-type: none"> Midterm Exam Quiz Mini Project Assignment Final Exam
		CLO4	<ul style="list-style-type: none"> Lecture Tutorials Project-based Learning 	<ul style="list-style-type: none"> Quiz Mini Project Assignment Final Exam

Course Coordinator: Prof. Dr. El-Sayed Abdel Fattah El-Kassaby
Dr. Mahmoud Awaad Gomaa
Dr. Mohab Roshdy Ahmed



Head of Department: Prof. Dr. Ahmed Saeed Debaiky



Date: 9/11/2022



Course Specification

1. Basic Information:

Program Title	Civil Engineering program			
Department Offering the Program	Civil Engineering			
Department Offering the Course	Civil Engineering			
Date of Specification Approval				
Course Title	Design of Concrete Structures (3)	Code	C 1451	
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>	
Semester	First Semester (Fourth Year)			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	2	0	5

2. Professional Information:

2.1. Course description:

Design of Concrete Structures (3): Working stresses design method - Design of water structures (Circular tank - Rectangular tanks - Underground tanks - Elevated tanks - Wide tanks) - Design of shell structures (domes - cones).

2.2. Course Objectives (CO):

Program objective		Course objective	
PO2	Behave professionally and adhere to engineering ethics and standards and work to develop the profession and the community and promote sustainability principles.	CO1	Behave professionally and adhere to engineering ethics and standards.
PO4	Use techniques, skills, and modern engineering tools necessary for engineering practice.	CO2	Use techniques, skills and modern engineering tools for reinforced concrete structures.
PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations.	CO3	Design the Concrete Structures geometrically & structure

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO3	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.	CLO1	Apply knowledge to choose the better type of structural system.
		CLO2	Apply the Principals of designing to the water-structural elements.
PLO4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.	CLO3	Utilize Egyptian codes for reinforced concrete structures.
		CLO4	Use different structural systems for planning the RC buildings.
PLO12	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.	CLO5	Analyze the different RC structure elements.
		CLO6	Design the different reinforcement concrete structural elements according to ECP.

2.4. Course Topics:

Course Topics	Week	Course LOs Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Working stresses design method	1			*			
Control of cracking	2		*	*			
Design of elevated rectangular water tanks	3		*		*		
Examples on elevated rectangular water tanks	4	*	*	*			*
Design of Wide tanks	5	*	*		*		*
Design of Deep Beam	6		*	*			*

Design of tower tank under wind load	7					*	*
Midterm Exam	8						
Rested on soil & underground RC water tanks	9		*	*		*	*
Design of Circular R.C. Water Tanks	10	*	*				*
	11			*	*		
Evaluate Types of R.C. water structures	12					*	
Design of R.C shell structures (domes - cones)	13	*	*	*	*		
	14					*	*
Practical Exam	15	Not Applicable					
Final Exam	16						
Total		4	8	7	4	4	7

2.5. Lab Topics: Not Applicable

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered					
Methods	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
1. Lecture	*	*	*	*	*	*
2. Tutorials	*	*	*	*	*	*
3. Project-based Learning	*	*	*	*	*	*
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Discussion Session						
2. Extra Lectures						
3. Provide different levels of books and materials						

2.7 Assessment Methods

Assessment Methods:	Course LOs Covered					
Methods	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Formative Assessment Method						
Tests	Oral Test		*		*	*
	Midterm Exam	*	*	*	*	*
Assignments	*	*	*	*	*	*
Mini Project	*	*	*	*	*	*
Summative Assessment Method						
Final Exam	*	*	*	*	*	*

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Assignments	2 to 6 & 9 to 13	6 %
Mini Project	7	4 %
Midterm Exam	8	20 %
Oral Exam	15	10 %
Final Exam	16 and above	60 %
Total		100 %

2.9. List of Reference: (max. five years ago)

Course Notes:	Not used
Essential Books (Textbooks):	<ul style="list-style-type: none"> • Shaker elbehary handbook. • ECP203-2020. • Design of RC Structure halls – DR.M. Hilal. • Lectures.
Recommended Books:	<ul style="list-style-type: none"> • Design of RC Structure - DR. Mashhour A. Ghoneim.

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective		
	CO1	CO2	CO3
PO2	*		
PO4		*	
PO6			*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
CO1	*	*				
CO2			*	*		
CO3					*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
PLO3	*	*				
PLO4			*	*		
PLO12					*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO3	PO2	CLO1	<ul style="list-style-type: none"> Lecture Tutorials Project-based Learning 	<ul style="list-style-type: none"> Midterm Exam Final Exam Assignments Mini Project
		CLO2	<ul style="list-style-type: none"> Lecture Tutorials Project-based Learning 	<ul style="list-style-type: none"> Midterm Exam Final Exam Assignments Mini Project Oral Test
PLO4	PO4	CLO3	<ul style="list-style-type: none"> Lecture Tutorials Project-based Learning 	<ul style="list-style-type: none"> Midterm Exam Final Exam Assignments Mini Project
		CLO4	<ul style="list-style-type: none"> Lecture Tutorials Project-based Learning 	<ul style="list-style-type: none"> Midterm Exam Final Exam Assignments Mini Project Oral Test
PLO12	PO6	CLO5	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Midterm Exam Final Exam

			<ul style="list-style-type: none"> • Project-based Learning 	<ul style="list-style-type: none"> • Assignments • Mini Project • Oral Test
		CLO6	<ul style="list-style-type: none"> • Lecture • Tutorials • Project-based Learning 	<ul style="list-style-type: none"> • Midterm Exam • Final Exam • Assignments • Mini Project

Course Coordinator: - Prof.Dr. Ahmed Hassan Abdelkreem
- Prof. Dr. Ahmed Saeed Debaiky



Head of Department: Prof. Dr. Ahmed Saeed Debaiky
Date: 8/11/2022





Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering			
Department Offering the Course	Civil Engineering			
Date of Specification Approval				
Course Title	Design of irrigation works	Code	C 1441	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	First Semester (Fourth Year)			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	4	2	0	5

2. Professional Information:

2.1. Course description:

Basic concept of irrigation structures design -Design of culverts - Design of syphon - Design of aqueducts - Design of retaining walls - Design of tail escapes - Design of bridges - Design of weirs -Heading up structure - Head regulator design -Types of dams - Navigation structures (locks).

2.2. Course Objectives (CO):

Program objective		Course objective	
PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations.	CO1	Create Classification of irrigation structures. Retaining wall Types, Cases of loading, Hydraulic and structural design.
		CO2	Evaluate the Crossing structures: Hydraulic design, Calculation of loads for different cases of loading and structural design for the following crossing structures: Small R.C. bridges, Culverts, Syphons, Aqueducts. Escapes: Types, Functions, Design. Introduction to heading up works and navigation works.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO12	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.	CLO1	Design the irrigation works as the tail escape, culvert, syphon, retaining wall, regulator, and bridges. (Create)
		CLO2	Design the Navigation works as (locks). (Create)
PLO13	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.	CLO3	Determine the heading up of the irrigation works. (Evaluate)
		CLO4	Determine the of loads for different cases of loading for irrigation structure. (Evaluate)

2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Introduction	1	*	*	*	*
Design of Tail escape	2	*		*	*
Design of Box Culvert	3	*		*	*
Design of Box Culvert	4	*		*	*
Design of Pipe Culvert	5	*		*	*
Design of Box Syphon	6	*		*	*
Design of Pipe Syphon	7	*		*	*
Midterm Exam	8				
Design of Box aqueduct	9	*		*	*
Design of Pipe aqueduct	10	*		*	*
Design of Bridges	11	*		*	*
Design of Retaining Walls	12	*		*	
Design of Regulators	13	*			
Design of Navigation structures	14		*		*
Practical Exam	15	Not Applicable			
Final Exam	16				
Total	15	12	2	11	11

2.5. Lab Topics: Not Applicable

Lab Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered			
Methods	CLO1	CLO2	CLO3	CLO4
1. Lectures	*	*	*	*
2. Tutorials	*	*	*	*
3. Reports			*	
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Repeat the explanation of some of the material and tutorials.				
2. Give them specific tasks and assign a teaching assistance to follow up the performance of this group of students.				
3. Provide different levels of books and materials				

2.7 Assessment Methods

Assessment Methods:		Course LOs Covered			
Methods		CLO1	CLO2	CLO3	CLO4
Formative Assessment Method					
Tests	Oral Test	*	*	*	*
	Midterm Exam	*	*		*
	Quizzes	*	*	*	*
Projects	Mini projects	*	*	*	*
Reports		*		*	*
Summative Assessment Method					
Final Exam		*	*	*	*

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Quizzes	At end of each topic	2%
Midterm Exam	8	20%
Reports	3,14	5%
Mini Project	10	3%
Oral Test	15	10%
Final Exam	16 and above	60%
Total		100%

2.8. List of Reference:

Course Notes:	
Recommended Books:	Irrigation and Drainage Principle (Dr. Sharl Irrigation Engineering and Hydraulic Structures by Santosh Kuma-By Easy Engineering, 2012
Periodicals, Web Sites, ... etc:	-

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO6	*	*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
CO1	*	*		
CO2			*	*

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
PLO12	*	*		
PLO13			*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO12	PO6	CLO1	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Oral Exam Midterm Exam Final Exam Quizzes Reports Mini projects
		CLO2	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Oral Exam Midterm Exam Final Exam Quizzes Mini projects
PLO13		CLO3	<ul style="list-style-type: none"> Lecture Tutorials Reports 	<ul style="list-style-type: none"> Oral Exam Final Exam Quizzes Reports Mini projects
		CLO4	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Oral Exam Midterm Exam Final Exam Quizzes Reports Mini projects

**Course Coordinator: Dr. Amir Sabry Ibraheem
Dr. Ahmed Abou Elfetoh**



**Head of Department: Prof. Ahmed Saeed Debaiky
Date: 08/11/2022**





Course Specification

1. Basic Information:

Department Offering the program	Civil Engineering Program			
Department Offering the course	Civil Engineering Program			
Date of Specification Approval				
Course Title	Projects Management	Code	C 1402	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	2nd Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	3	0	4

2. Professional Information:

2.1. Course description:

Projects Management: Definitions used in projects management - The project life cycle - Project stages - Relationships and responsibilities of the different project parties - Execution phase responsibilities - Productivity - Quality management.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO3	Work in and lead a heterogeneous team and display leadership qualities, business administration, and entrepreneurial skills.	CO1	Use techniques, skills and modern engineering tools necessary for engineering practice.
		CO2	Assume full responsibility for own learning and self-development, engage in lifelong learning and demonstrate the capacity to engage in post- graduate and research studies.
PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations.	CO3	Design of constructions systems that meet specified needs with applicable standards.
		CO4	Understand the concept of quality control during design and construction, field verification, and review
PO7	Incorporate economics and business practices including project risk and change management into the practice	CO5	Communicate effectively using different modes, tools, and languages with various audiences; to deal with

	of engineering and to understand their limitations.		academic/professional challenges in a critical and creative manner.
		CO6	Incorporate economic and business practices into engineering projects.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	CLO1	<ul style="list-style-type: none"> - Define the different terms used in projects management. (Remember) - Project life cycle (Understand).
		CLO2	<ul style="list-style-type: none"> - Describe Project stages (Understand). - Describe Project parties (Understand).
PLO6	Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	CLO3	<ul style="list-style-type: none"> - Define of responsibility on the project organizational chart (Remember). - Identify the construction activities and its relationships (Remember).
		CLO4	<ul style="list-style-type: none"> - Explain the difference between execution phase responsibility and organizational responsibility (Understand). - Prepare execution plan and Execution Methods (Apply).
PLO13	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.	CLO5	<ul style="list-style-type: none"> - Analysis of construction productivity (Analyze). - Estimate or Calculate construction duration per each activity (Apply). - Prepare time plan for construction activity and processes (Create).
		CLO6	<ul style="list-style-type: none"> - Define the importance of Quality in Construction (Remember). - Understand Garvin's eight dimensions of quality: Performance, features, reliability, conformance, durability, serviceability, aesthetics, and perceived quality (Understand). - Explain difference between Quality Assurance and Quality Control

			(Understand). - Perform Quality Management plan and its improvement methods (Create).
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2.4. Course Topics:

Course Topics	Week	Course LO's Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Define the different terms used in projects management	1	√					
Project life cycle	2	√					
Project stages	3		√				
Project parties	4		√				
Define of responsibility on the project organizational chart	5			√			
Construction activities and its relationships	6			√			
Difference between execution phase responsibility and organizational responsibility	7				√		
Midterm exam	8						
Prepare execution plan and Execution Methods	9				√		
Analysis of construction productivity	10					√	
Calculate construction duration per each activity.	11					√	
Prepare time plan for construction activity and processes	12					√	
Define the importance of Quality in Construction	13						√
Dimensions of quality: Performance, features, reliability, conformance, durability, serviceability, aesthetics, and perceived quality	14						√
Difference between Quality Assurance and Quality Control	15						√
Practical exam	16						
Total	14	2	2	2	2	3	3

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Not Applicable							
Total		0	0	0	0		

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered						
	Methods	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
1. Lecture	√	√	√	√	√	√	√
2. Tutorials				√	√		√
3- Discussion	√	√					
4. Presentations			√	√			√
Teaching and Learning Methods for Students with Special Needs:							
Methods							
1. Discussion Session							
2. Extra Lectures							
3. Provide different levels of books and materials							

2.7 Assessment Methods

Assessment Methods:	Course LOs Covered						
	Methods	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Formative Assessment Method							
Tests	Oral Test						
	Midterm Exam	√	√	√	√		
	Experimental						
Projects	Mini Projects				√	√	
Assignments			√		√	√	√
Final Exam							
Final Exam		√	√	√	√	√	√

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Assignments	2 to 7 & 9 to 12	15 %
Midterm exam	8	20 %
Mini Projects	13	5 %
Final exam	15	60 %
Total		100 %

2.8. List of Reference: (max. five years ago)

Course Notes:	Not used
Essential Books (Textbooks):	<ul style="list-style-type: none"> - Construction Project Management: Planning, Scheduling and Controlling (2019) K. K. Chitkara. - Construction Project Scheduling and Control (2015) Saleh A. Mubarak, Waily. - Construction Project Management 6th Edition (2015) S. Keoki Sears , Glenn A. Sears , Richard H. Clough, Jerald L. Rounds, Robert O. Segner.
Recommended Books:	<ul style="list-style-type: none"> - Construction Project Management: A Practical Guide to Field Construction Management 5th Edition (2015) by S. Keoki Sears, Glenn A. Sears, Richard H. Clough.
Periodicals, Web Sites, ... etc:	<ul style="list-style-type: none"> - https://www.pmi.org/ - https://www.ecosys.net/knowledge/construction-project-management/ - https://www.coursera.org/learn/construction-project-management

	- https://www.projectmanager.com/guides/construction-project-management
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2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
PO3	√	√				
PO6			√	√		
PO7					√	√

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
CO1					√	
CO2			√			
CO3				√		
CO4						√
CO5		√				
CO6	√					

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
PLO1	√	√				
PLO6			√	√		
PLO13					√	√

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO1	PO3	CLO1	<ul style="list-style-type: none"> • Lecture • Tutorials • Presentations 	<ul style="list-style-type: none"> • Written Exam • Mini Projects • Assignments
		CLO2	<ul style="list-style-type: none"> • Lecture • Tutorials • Presentations 	<ul style="list-style-type: none"> • Written Exam • Presentation • Assignments
PLO6	PO6	CLO3	<ul style="list-style-type: none"> • Lecture • Tutorials • Discussion 	<ul style="list-style-type: none"> • Written Exam • Presentation • Assignments
		CLO4	<ul style="list-style-type: none"> • Lecture • Tutorials • Discussion 	<ul style="list-style-type: none"> • Written Exam • Presentation • Assignments
PLO13	PO7	CLO5	<ul style="list-style-type: none"> • Lecture • Tutorials • Discussion 	<ul style="list-style-type: none"> • Written Exam • Mini Projects • Assignments
		CLO6	<ul style="list-style-type: none"> • Lecture • Tutorials • Presentations 	<ul style="list-style-type: none"> • Written Exam • Presentation • Assignments

Course Coordinator: Associate Professor: Ahmed Nouh Ahmed Meshref

Head of Department: Professor: Ahmed El Debaiky

Date: 7 / 11 / 2022



Course Specification

1. Basic Information:

Department Offering the program	Civil Engineering Program			
Department Offering the course	Civil Engineering Program			
Date of Specification Approval				
Course Title	Design of Foundations (b)	Code	C1462	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	2nd Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	2	-	4

2. Professional Information:

2.1. Course Description:

Design of deep foundations (Piles foundations - Piers - Caissons - Construction and design of retaining walls - Construction and design of sheet pile walls) - Construction and design of ground steel tanks - Foundations on difficult soil.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations.	CO1	Evaluate the principles of sheet pile walls and retaining walls, choosing an appropriate type of support system suitable for safety standards, considering economic and social factors.
		CO2	Design different types of deep foundations and foundations on difficult soils considering safety risks, applicable standards, and economy.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO3	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.	CLO1	Explain the classification and construction methods of deep foundations and retaining structures. (Understand)
		CLO2	Determine the bearing capacity for the deep foundation. (Apply)
PLO12	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.	CLO3	Design sheet pile walls and retaining walls to produce cost-effective solutions. (Create)
		CLO4	Design with full detailing for the deep foundations. (Create)

2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
• Construction methods of Sheet pile walls	1			*	
• Design of Sheet pile walls	2			*	
• Classification of deep foundations	3	*			
• Construction methods of deep foundations	4	*			
• Bearing Capacity of Piles	5		*		
• Bearing Capacity of Piles	6		*		
• Settlement of piles group- Pile load test	7		*		
• Midterm	8				
• Laterally Loaded Piles (Inclined Piles)	9				*
• Design of Pile Caps	10				*
• Design of Pile Caps	11				*
• Piers and Caissons	12				*
• Stability of Retaining walls	13			*	
• Design of Retaining walls	14			*	
• Final Exam					
Total	13	2	3	4	4

2.5 Teaching and Learning Methods:

Teaching and Learning Methods:	Course LO's Covered			
Methods	CLO1	CLO2	CLO3	CLO4
1. Lecture	*	*	*	*
2. Tutorials	*	*	*	*
3. Project-based Learning				*
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				
2. Extra Lectures				
3. Provide different levels of books and materials				

2.6 Assessment Methods:

Assessment Methods:		Course LOs Covered			
Methods		CLO1	CLO2	CLO3	CLO4
Formative Assessment Method					
Tests	Midterm Exam	*	*	*	
	Quizzes			*	*
Projects	Mini Project				*
	Assignments	*	*	*	*
Summative Assessment Method					
Final Exam		*	*	*	*

2.6.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
Assignments	2 to 6 & 9 to 13	3.2 %
Midterm exam	8	20.6 %
Mini Project	12	1.6 %
Quizzes	3 & 11	9.6 %
Final exam	16 and above	60%
Total		100%

2.7. List of References:

Essential Books (Textbooks):	<ul style="list-style-type: none"> El-Kasaby, E. A., Engineering of Surface Foundations, Dar Al-Kutub Al-Almia, Cairo, 5th Ed., (19440/2015), ISBN 978 – 977 – 726 – 139 – 5, 2015. El-Kasaby, E. A., Design and Construction of Deep and Special Foundations, Dar Al-Kutub Al-Almia, Cairo, 4th Ed., (10651/2016), ISBN 978 – 977 – 726 – 168 – 5, 2016.
Recommended Books:	<ul style="list-style-type: none"> Bowles, J., Foundation Analysis and Design, McGraw - Hill, 5th. Ed., ISBN 978 – 007 - 912 – 247 – 7, 2009.

2.8. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO6	*	*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
CO1	*		*	
CO2		*		*

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
PLO3	*	*		
PLO12			*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO3	PO6	CLO1	<ul style="list-style-type: none">• Lecture• Tutorials	<ul style="list-style-type: none">• Written Exams• Assignments
		CLO2	<ul style="list-style-type: none">• Lecture• Tutorials	<ul style="list-style-type: none">• Written Exams• Assignment
PLO12	PO6	CLO3	<ul style="list-style-type: none">• Lecture• Tutorials	<ul style="list-style-type: none">• Written Exams• Assignments• Quiz
		CLO4	<ul style="list-style-type: none">• Lecture• Tutorials• Project-based Learning	<ul style="list-style-type: none">• Written Exams• Assignments• Quiz• Mini Project

Course Coordinator: Prof. Dr. El-Sayed Abdel Fattah El-Kassaby
Dr. Mahmoud Awaad Gomaa
Dr. Mohab Roshdy Ahmed



Head of Department: Prof. Dr. Ahmed Saeed Debaiky



Date: 20/02/2023



Course Specification

1. Basic Information:

Program Title	Civil Engineering Program			
Department Offering the Program	Civil Engineering Department			
Department Offering the Course	Civil Engineering Department			
Date of Specification Approval				
Course Title	Design of Foundations (b)	Code	C1462	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	10 th Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	2	-	4

2. Professional Information:

2.1. Course Description:

Design of deep foundations (Piles foundations - Piers - Caissons - Construction and design of retaining walls - Construction and design of sheet pile walls) - Construction and design of ground steel tanks - Foundations on difficult soil.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO2	Behave professionally and adhere to engineering ethics and standards and work to develop the profession and the community and promote sustainability principles.	CO1	Evaluate the principles of sheet pile walls and retaining walls, choosing an appropriate type of support system suitable for safety standards, considering economic and social factors.
PO6	Design of constructions that meet specified needs with appropriate attention to health and safety risks, applicable standards, economic, environmental, cultural, and societal considerations.	CO2	Design different types of deep foundations and foundations on difficult soils considering safety risks, applicable standards, and economy.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO3	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.	CLO1	Explain the classification and construction methods of deep foundations and retaining structures. (Understand)
		CLO2	Determine the bearing capacity for the deep foundation. (Apply)
PLO12	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.	CLO3	Design sheet pile walls and retaining walls to produce cost-effective solutions. (Create)
		CLO4	Design with full detailing for the deep foundations. (Create)

2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Construction methods of Sheet pile walls	1			*	
Design of Sheet pile walls	2			*	
Stability of Retaining walls	3			*	
Design of Retaining walls	4			*	
Design of Special types of Retaining walls	5			*	
Bearing Capacity of Piles	6		*		
Settlement of piles group-Pile load test	7		*		
Midterm	8		*	*	
Laterally Loaded Piles (Inclined Piles)	9				*
Design of Pile Caps	10				*
Design of Pile Caps	11				*

Piers and Caissons	12				*
Classification of deep foundations	13	*			
Construction methods of deep foundations	14	*			
Practical Exam	15				
Final Exam	16				
Total	13	2	۲	۰	4

2.5 Teaching and Learning Methods:

Teaching and Learning Methods: Methods	Course LO's Covered			
	CLO1	CLO2	CLO3	CLO4
1. Lecture		*	*	*
2. Tutorials		*	*	*
3. Project-based Learning				*
4. Report	*			
Teaching and Learning Methods for Students with Special Needs:				
Methods				
1. Discussion Session				
2. Extra Lectures				
3. Provide different levels of books and materials				

2.6 Assessment Methods:

Assessment Methods: Methods	Course LOs Covered			
	CLO1	CLO2	CLO3	CLO4
Formative Assessment Method				
Tests	Midterm Exam		*	*
	Quizzes			*
Projects	Mini Project			*
	Report	*		
Assignments		*	*	*
Summative Assessment Method				
Final Exam	*	*	*	*

2.6.1. Assessment Schedule & Grades Distribution:

Assessment Method	Week	Weighting of Asses.
Assignments	2 to 7 & 9 to 12	1.6 %
Report	4	1.6 %
Midterm exam	8	25.6 %
Mini Project	12	1.6 %
Quizzes	4 & 12	9.6 %
Final exam	16 and above	60%
Total		100%

2.7. List of References:

Essential Books (Textbooks):	<ul style="list-style-type: none"> • El-Kasaby, E. A., Engineering of Surface Foundations, Dar Al-Kutub Al-Almia, Cairo, 5th Ed., (1944/2015), ISBN 978 – 977 – 726 – 139 – 5, 2015. • El-Kasaby, E. A., Design and Construction of Deep and Special Foundations, Dar Al-Kutub Al-Almia, Cairo, 4th Ed., (10651/2016), ISBN 978 – 977 – 726 – 168 – 5, 2016. • Hemed a, Advances in Soil Mechanics and Foundation Engineering, IntechOpen, London ISBN: 978-1-78984-290-6,2020
Recommended Books:	<ul style="list-style-type: none"> • Bowles, J., Foundation Analysis and Design, McGraw - Hill, 5th. Ed., ISBN 978 – 007 - 912 – 247 – 7, 2009.

2.8. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Library Usage
Data Show
White Board

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO2	*	
PO6		*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
CO1	*		*	
CO2		*		*

3.3. Program Learning Outcomes VS Course Learning Outcomes:

Program Learning Outcomes	Course Learning Outcomes			
	CLO1	CLO2	CLO3	CLO4
PLO3	*	*		
PLO12			*	*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO3	PO2	CLO1	<ul style="list-style-type: none"> • Report 	<ul style="list-style-type: none"> • Report • Final Exam
		CLO2	<ul style="list-style-type: none"> • Lecture • Tutorials 	<ul style="list-style-type: none"> • Midterm Exam • Final Exam • Assignment
PLO12	PO6	CLO3	<ul style="list-style-type: none"> • Lecture • Tutorials 	<ul style="list-style-type: none"> • Midterm Exam • Final Exam • Assignments • Quiz
		CLO4	<ul style="list-style-type: none"> • Lecture • Tutorials • Project-based Learning 	<ul style="list-style-type: none"> • Final Exam • Assignments • Quiz • Mini Project

Course Coordinator: Prof. Dr. El-Sayed Abdel Fattah El-Kassaby
Dr. Mahmoud Awaad Gomaa
Dr. Mohab Roshdy Ahmed



Head of Department: Prof. Ahmed Saeed Deb
Date: 29/2/2023

