



Level 0



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			
Course Title	Mathematics I	Code	BES 011	
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>	
Semester	Level 0-1			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	2	2	0	3

2. Professional Information:

2.1. Course description:

Differential Calculus: Real functions and their graphs (Algebraic functions, trigonometric functions and their inverses, exponential, hyperbolic and logarithmic functions). Limits and continuity. Differentiation of real functions of one variable. Applications of differentiation (maxima, minima and inflection points, curve tracing, optimization problems, related rates). The first mean value theorem and first order approximation of function. Taylor, s and Maclaurin's expansions of functions.

Algebra: Elements of mathematical logic with applications, Matrix algebra and system of linear equations (Gauss elimination, Gauss-Gordon elimination and LU Factorization and Matrix inversion). Eigenvalues and Eigenvectors. Complex variables

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 elements of mathematical logic, relations, mappings, real functions and their graphs applications of differentiation, and its applications.
PO2	Behave professionally and adhere to engineering ethics and standards and work to develop the profession and the community and promote sustainability principles.	CO2	Select a suitable item to evaluate applied engineering problems.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
A1- 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
A2- 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	Solve 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
Real functions and their graphs	1&2	√	√		
Limits and continuity Elements of mathematical logic with applications	3		√		√
Differentiation of real functions of one variable	4&5	√			
Gauss elimination, Gauss-Gordon elimination	6&7	√	√		√
Midterm Exam	8				
The first mean value theorem and first order approximation of function	9	√		√	√
Gauss elimination, Gauss-Gordon elimination and LU Factorization	10	√			√
Eigenvalues and Eigenvectors	11		√	√	
The first mean value theorem and first order approximation of function	12	√	√	√	
Taylor, s and Maclaurin's expansions of functions	13		√	√	
Complex variables	14	√			√
Total	14	11	8	4	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	15%
Quizzes	4,7,12	15%
Final Exam	Scheduled by the faculty council	40%
Total		100%

2.8. List of Reference:

Essential Books (Textbooks):	Tai-Ran Hsu, Applied Engineering Analysis, published by John Wiley & Sons, 2018 (ISBN 97811119071204) Ray E. Bolz, CRC Handbook of Tables for Applied Engineering Science, CRC Press, 2019, doi.org/10.1201/9781315214092
Periodicals, Web Sites, ... etc:	<ol style="list-style-type: none"> https://byjus.com 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	√	

PO2		√
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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	√	√		
PLO2			√	√

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO1	PO1	CLO1	<ul style="list-style-type: none"> Lecture Problem-based Learning 	<ul style="list-style-type: none"> Midterm Exam, Final Exam
		CLO2	<ul style="list-style-type: none"> Lecture Problem-based Learning 	<ul style="list-style-type: none"> Midterm Exam Discussion Quizzes
PLO2	PO2	CLO3	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Final Exam Quizzes
		CLO4	<ul style="list-style-type: none"> Tutorials Problem-based Learning 	<ul style="list-style-type: none"> Midterm Exam, Quizzes Discussion

Course Coordinator: Ass Prof. Dr. Mohamed Medhat Mousa
Dr. Doaa Ahmed Abd-Elwahab Hammad



Head of Department: Head of Department: Prof. Dr. Ahmed Debaiky
Date: 10 / 9 / 2023





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			
Course Title	Social Issues	Code	UHS103	
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>	
Semester	Level 0-2			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	2	0	0	2

2. Professional Information:

2.1. Course description:

In this course, the social problems facing societies in the modern era are studied. Topics include problems related to the population issue, citizenship, a culture of tolerance and acceptance of the other, globalization, and violence against women. Social problems will be analyzed from different social perspectives to better understand their possible causes and consequences. Strategies for addressing social problems will be discussed and evaluated.

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	Analyze different social issues and illustrate how to deal with heterogeneous team
PO4	Master self-learning and life-long learning strategies to communicate effectively in academic/professional fields	CO2	Evaluate the origins of social problems in the structure of existing social institutions to communicate effectively in professional fields

2.3. Course Learning Outcomes (CLO's):

Student Competences	Program Learning Outcomes		Course Learning Outcomes	
A5	PLO5	Practice research techniques and methods of investigation as an inherent part of learning	CLO1	Examine scientific research, various types of research, appropriate methods, technologies and data that sociologists use to investigate the human condition;
A7	PLO7	Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.	CLO2	Analyze different social issues that related with the individual as a member of multi-cultural teams.
A10	PLO10	Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.	CLO3	Practice self, learning strategies in different social issues
			CLO4	Evaluate competing social scientific theories regarding the origins of social problems using lifelong and other learning strategies.

2.4. Course Learning Outcomes VS Three Domains of Learning

Cognitive	Psychomotor	Affective
	CLO3,4	CLO1,2

2.5. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Introduction in social issues.	1		√		
Recognize the structural, systemic factors which affect the quality of life of persons of different ages, gender, social class, sexual orientation, disability, and racial/ethnic backgrounds;	2,3				√
Problems related to the population issue.	4,5		√		
Problems related to citizenship.	6	√		√	
Problems related to citizenship.	7		√		
Midterm Exam	8				
Problems related to a culture of tolerance and acceptance of the other.	9,10		√		
Problems related to globalization.	11		√		
Problems related to violence against women	13	√		√	

Present alternative explanations or theories of social phenomena	14				√
Total	14	2	7	2	3

2.6. Lab Topics:

(Not Applicable)

2.7 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered			
	CLO1	CLO2	CLO3	CLO4
1. Lecture				√
2. Report	√	√		
3. Self Learning			√	
4. Hybrid 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				

2.8 Assessment Methods

Assessment Methods:	Course LOs Covered				
	CLO1	CLO2	CLO3	CLO4	
Formative Assessment Method					
Test	Midterm Exam		√		√
Report		√	√	√	
Presentations		√		√	
Summative Assessment Method					
Final Exam					√

2.8.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	The weighting of Assessment %	
Formative Assessment Method			
Tests	Midterm Exam	8	30
Report		6,13	15
Presentations		13	15
Summative Assessment Method			
Final exam		16	40
Total		16	100

2.9. List of References:

Course Notes:	Lecturer Notes
Essential Books (Textbooks):	Lauer, Robert and Jeanette Lauer. 2016. Social Problems and the Quality of Life, 13th Edition. New York: NY. McGraw Hill w/Connect.
Web Sites	https://beng.bu.edu/tem/1739-2022-05-29-11-57-14

2.10. 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
PO3	√	
PO4		√

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

Student Competences	Program Learning Outcomes	Course Learning Outcomes			
		CLO1	CLO2	CLO3	CLO4
A5	PLO5	√			
A7	PLO7		√		
A10	PLO10			√	√

3.4. Assessment Alignment Matrix

SC	PLO	PO	CLO	Teaching M.	Assessment M.
A5	PLO5	PO3	CLO1	Report	Presentations, Report
A7	PLO7		CLO2	Report	Midterm Exam, Report
A10	PLO10	PO4	CLO3	Self - Learning	Presentation, Report
			CLO4	Lecture Hybrid Learning	Midterm Exam, Final Exams

Course Coordinator: Dr. Goda Elsayed



Head of Department: ~~Head of Department:~~ Prof. Dr. Ahmed Debaiky



Date: 10 / 9 / 2023



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			
Course Title	English Language	Code	UHS101	
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>	
Semester	Level 0-1			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	2	-	-	2

2. Professional Information:

2.1. Course description:

The characteristics of the foreign language (English, Deutsch, French, or any foreign language approved by the academic department council and both the faculty and university councils) - Revision of the language grammar – grammar style and effective sentences and their characteristics – Identification of common errors in writing technical sentences – Building basic paragraphs: types of paragraphs, reading and analyzing of excerpts from books in various disciplines to develop communication skills.

2.2. Course Objectives (CO):

The students will be able to:

Program objective		Course objective	
PO4	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	Illustrate the academic terminologies related to their field of specialization

2.3. Course Learning Outcomes (CLO's):

Student Competences	Program Learning Outcomes		Course Learning Outcomes	
A5	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.
A8	PLO8	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	CLO2	Identify the appropriate written and oral communication in different situations in English.
			CLO3	Communicate efficiently to convey ideas verbally.
			CLO4	Discuss the abstract ideas and arguments from a range of texts.
			CLO5	Use vocabulary as a key ingredient in developing advanced written skills.
A10	PLO10	Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.	CLO6	Practice a range of grammatical structures and vocabulary accurately and effectively.

2.4. Course Learning Outcomes VS Three Domains of Learning

Cognitive	Psychomotor	Affective
CLO2,4,5,6		CLO1,3

2.5. Course Topics:

Course Topics	Week	Course LO's Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Introduction to course content	1-2		√		√	√	
Revision of the language grammar	3-4					√	
grammar style	5					√	
effective sentences and their characteristics	6		√	√	√	√	
Identification of common errors in writing technical sentences	7		√		√	√	
Midterm Exam	8						
Identification of common errors in writing technical sentences	9						√
types of paragraphs	10-11	√				√	√

reading and analyzing of excerpts from books in varies disciplines to develop communication skills	12-14	√	√	√			
Total	14	2	4	2	3	6	2

2.6. Lab Topics:

(Not Applicable)

2.7 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered					
	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
1. Lecture		√		√	√	
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						

2.8 Assessment Methods

Assessment Methods:	Course LOs Covered					
	CLO1	CLO2	CLO3	CLO4	CLO ^o	CLO ^v
Formative Assessment Method						
1. Tests	First Exam		√		√	√
	Second Exam		√		√	√
2. Discussions			√		√	
3. Reports	√					√
4. Observation	√		√	√		√
Summative Assessment Method						
Final Exam		√		√	√	

2.8.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	The weighting of Assessment %
Formative Assessment Method		
Tests	Midterm Exam	8 30 %
Discussion	6,10,11,13	10%
Report	11, 15	6%
Observation	6,13-15	4%
Summative Assessment Method		
Final Exam	Scheduled by the faculty council	40 %

Total	100 %
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2.9. List of References:

Essential Books (Textbooks):	Folse, Keith, April Muchmore-Vokoun and Elena Vestri Solomon. Great Essays. 3rd ed. U.K.: Heinle Cengage Learning, 2010.
Recommended Books:	Murphy, R. and Smalzer, W., 2000. Grammar in use. Cambridge: Cambridge University Press Emanuel Alvarez-Sandoval, "The Importance of Learning a Foreign Language in a Changing Society", 2005, Universe
Periodicals, Web Sites, ... etc:	http:// www.duolingo.com https://elt.oup.com

2.10. 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
PO4	√	√

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

Student Competences	Program Learning Outcomes	Course Learning Outcomes					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
A5	PLO5	√					
A8	PLO8		√	√	√	√	
A10	PLO10						√

3.4. Assessment Alignment Matrix

SC	PLO	PO	CLO	Teaching M.	Assessment M.
A5	PLO5	PO4	CLO1	Self- learning	Reports
				Interactive Learning	Observation
A8	PLO8		CLO2	Lecture	First , and Second Exams
				Interactive Learning	Observation
			CLO3	Interactive Learning	Observation
				Discussion	Discussions
			CLO4	Lecture	First , and Second Exams
				Discussion	Discussions
CLO5	Lecture		First , and Second Exams		
	Discussion		Discussions		
A10	PLO10		CLO6	Self- learning	Reports
				Interactive Learning	Observation

Course Coordinator: Dr. Mohammad Abdelghany Shehata



Head of Department: ~~Head of Department:~~ Prof. Dr. Ahmed Debaiky



Date: 10 / 9 / 2023



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			
Course Title	Physics I	Code	BES031	
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>	
Semester	Level 0-1			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	2	2	1	3

2. Professional Information:

2.1. Course Description:

Discuss the basic phenomena and theories of mechanical and electromagnetic waves and thermodynamics physics related to engineering 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 situations.	CO1	Discuss the basic phenomena and theories of mechanical and electromagnetic waves, thermodynamics, heat transfer, and properties of matter physics related to engineering applications.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
A1-PLO1	Identify, formulate, analyze, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	CLO1	Explain the concept of waves, their types and mathematical description, some of their physical phenomena with a few simple applications on mechanical waves.

		CLO2	Discuss Young's interference of light, Thin Film, Single Slit Diffraction and Diffraction Grating.
		CLO3	Explain the meaning and concept of thermodynamics, its main and principle physical quantities, thermodynamic processes, first law of thermodynamics, ideal gas and its properties, and heat transfer
		CLO4	Discuss some of the basic topics on the properties of matter explaining stress and strain and Hooke's law in elasticity and equation of continuity, Bernoulli's equation and its applications, viscosity and surface tension in fluid mechanics.
A2-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	Analyze the results given from experiments.

2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Wave Motion	1,2	X			
Sound Waves	3	X			
Superposition of Waves	4	X			
Interference of Light	5		X		
Diffraction of Light	6		X		
Heat and the First Law of Thermodynamics	7			X	
Midterm	8				
Ideal Gas and its Properties	9, 10			X	
Heat Transfer	11			X	
Properties of Matter	12, 13, 14				X
Total	14	3	2	3	1

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered				
		CLO1	CLO2	CLO3	CLO4	CLO5
Malus' Law						X
Specific Heat						X
Resonance in Air column						X
Single Slit Diffraction						X
Diffraction Grating						X
Hooke's Law						X
Viscosity of a Liquid						X
Surface Tension of Water						X
Total						

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered				
	Methods	CLO1	CLO2	CLO3	CLO4
1. Lectures	X	X	X	X	
2. Discussion Sessions	X	X	X	X	
3. Practical					X
4. Tutorials	X	X	X	X	

2.7 Assessment Methods

Assessment Methods:		Course LO's Covered				
Methods		CLO1	CLO2	CLO3	CLO4	CLO5
Formative Assessment Method						
Tests	Quizzes	X				
	Midterm	X	X			
	Quiz 2			X		
	Practical Exam					X
Summative Assessment Method						
Final Exam		X	X	X	X	

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Quiz 1	5	5 %
Midterm	8	30 %
Quiz 2	13	5 %
Practical Exam	14	20 %
Final Exam	Scheduled by the faculty council	40 %
Total		100%

2.8. List of Reference:

Essential Books (Textbooks):	Physics for Scientists and Engineers, R.A. Serway and J.W. Jewett, 10th Edition, 2018.
Recommended Books:	Physics: Principles and Applications, Douglas C. Giancoli 7th edition, 2022 Fundamentals of physics, Halliday & Resnick, 12th Edition, 2021.

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
PO1	X

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes				
	CLO1	CLO2	CLO3	CLO4	CLO5
CO1	X	X	X	X	X

3.3. Program Learning Outcomes VS Course Learning Outcomes

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

3.4. Assessment Alignment Matrix

PO	PLO	CLO	Teaching M.	Assessment M.
PO1	PLO1	CLO1	<ul style="list-style-type: none">• Lectures• Discussion Sessions• Tutorials	<ul style="list-style-type: none">• Quiz 1• Midterm• Final Exam
		CLO2	<ul style="list-style-type: none">• Lectures• Discussion Sessions• Tutorials	<ul style="list-style-type: none">• Midterm• Final Exam
		CLO3	<ul style="list-style-type: none">• Lectures• Discussion Sessions• Tutorials	<ul style="list-style-type: none">• Quiz 2• Final Exam
		CLO4	<ul style="list-style-type: none">• Lectures• Discussion Sessions• Tutorials	<ul style="list-style-type: none">• Final Exam
		PLO2	CLO5	<ul style="list-style-type: none">• Practical

Course Coordinator: Associate Prof: Mina Danial Asham
Dr: Ibrahim Sayed Ahmed
Dr: Walid Soliman selmy



Head of Department: ~~Head of Department:~~ Prof. Dr. Ahmed Debaiky



Date: 10 / 9 / 2023



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			
Course Title	Computer Aided Drafting	Code	MEC 014	
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>	
Semester	Level 0-2			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	1	0	2	2

2. Professional Information:

2.1. Course Description:

Explore the fundamentals of Computer-Aided Drafting (CAD) with a focus on its historical development, advantages, and limitations. This course delves into the essential principles of graphic communication and CAD techniques, providing students with the skills necessary for the visualization, sketching, and geometric construction of mechanical components.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO 4	Master self-learning and life-long learning strategies to communicate effectively in academic/professional fields.	CO 1	Develop the ability to create accurate and detailed engineering drawings using software
PO 5	Solve problems in the areas of integrated mechanics, electronics, computers, and software systems.	CO 2	Create clear and well-organized technical drawings using AutoCAD features such as layers, dimensioning, and text to

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
A4- PLO 4	Utilize contemporary technologies, codes of practice and standards,	CLO1	Identify the capabilities of computer-aided drawing techniques in architectural expression.

	quality guidelines, health and safety requirements, environmental issues, and risk management principles	CLO2	Apply basic CAD concepts to develop and construct accurate 2D geometry through the creation of basic geometric constructions.
PLO8	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	CLO3	Communicate graphically with the colleagues in the lab.

Cognitive Domain	Psychomotor Domain	Affective Domain
CLO1	CLO2	CLO3

2.4. Course Topics:

Course Topics	Week	Course LO's Covered		
		CLO 1	CLO 2	CLO 3
Introduction to Computer Aided Drawing and Benefits of computer-aided drawing	1	*		
Industry standard for drawing	2		*	
the visualization, sketching, and geometric construction of mechanical components	3,4,5,6	*	*	
Illustrate CAD drawing construction techniques	7	*		*
Mid-Term	8			
graphical communication using the alphabet of lines, orthographic projection, section views, auxiliary views	9,10,11			
creation of assembly and detail mechanical components.	12,13			*
3D drawing of Mechanical Component	14		*	*
Total	14	6	6	3

2.5. Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered		
Methods	CLO 1	CLO 2	CLO 3
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		
		CLO 1	CLO 2	CLO 3
Formative Assessment Method				
Tests	Mid-term Exam	*		*
Discussions			*	*
Assignments		*		
Summative Assessment Method				
Final Exam		*	*	

2.6.1. Assessment Schedule & Grades Distribution

Assessment Methods		Week	Weighting of Asses.
Formative Assessment Method			
Tests	Mid-term Exam	7 th	30%
	Lab session drawings	9 th	5%
Discussion		Week #9,13	10%
Assignments		Week # 2,3,4,5,6,7,10,11, 12, 13,14	15%
Summative Assessment Method			
Final exam		Scheduled by the faculty council	40%
Total			100%

2.7. List of Reference:

Essential Books (Textbooks):	William Chalk, Goetsch, "Technical Drawing", Delmar technical graphics series, 6th edition, 2010.
Recommended Books:	Allbert W. Boundy, "Engineering Drawing", McGraw-Hill Australia, 2012

2.8. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Data Show
White Board
Lecture notes (PDF)

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO 1	CO 2
PO 4	*	
PO 5		*

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes		
	CLO 1	CLO 2	CLO 3
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
PLO 4	*	*	
PLO 8			*

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO 4	PO 4	CLO 1	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Mid-term Exam Assignments Final Exam
		CLO2	<ul style="list-style-type: none"> Tutorials 	<ul style="list-style-type: none"> Discussion Final Exam
PLO 8	PO 5	CLO 3	<ul style="list-style-type: none"> Tutorials 	<ul style="list-style-type: none"> Mid-term Exam Discussions

Course Coordinator:

Head of Department: Head of Department: Prof. Dr. Ahmed Debaiky



Date: 10 / 9 / 2023



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			
Course Title	Production Engineering	Code	MEC 012	
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>	
Semester	Level 0-2			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	1	-	3	2

2. Professional Information:

2.1. Course description:

This course is introductory to principles of production, function and planning of workshop, industrial safety, measurements, carpentry tools, engineering materials, metal machining, joining of materials, sheet metal work, metal forming, bench work and filling, foundry and pattern making.

2.2. Course Objectives (CO):

Program objective		Course objective	
PO4	Use techniques, skills, and modern engineering tools necessary for engineering practice.	CO1	Apply different branches of production engineering, i.e Manufacturing Technology, Industrial Engineering and Quality Control
PO6	Strengthening students' ability to make decisions, solve problems, and develop architectural and urban solutions to develop and serve the local community.	CO2	Application of particular materials for specific design requirements
		CO3	E valuate basic manufacturing processes and select the appropriate process to produce various products

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
A4- PLO4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles	CLO1	Characterize the knowledge about workshop's equipment and hand tools of different manufacturing processes, and the necessary safety considerations.
		CLO2	Classify the different manufacturing processes definitions, concepts, formulae, characteristics, and capabilities.
		CLO3	Merge the use of principles and concepts to suggest appropriate solutions for engineering problems based on analytical thinking.
A6- PLO6	Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	CLO4	Explore skills to carryout measurement tests using the measuring tools and hand tools and workshop equipment.
		CLO5	Apply the experience and hands skills on different trades of engineering like fitting, carpentry, machining, welding, and sheet metal.
		CLO6	Employ the appropriate techniques, skills, and modern engineering tools necessary for engineering practice.

2.4. Course Topics:

Course Topics	Week	Course LO's Covered					
		CLO 1	CLO 2	CLO 3	CLO 4	CLO 5	CLO 6
Introduction and classification , Industrial Engineering (The role of production engineer , production system , Production types, Types of industries)	1	√	√		√		
Industrial Engineering (Factory planning , Production planning and control , Organization for production , Manufacturing costs	2			√		√	
Engineering materials (Composition Structure Properties Production and Applications)	3	√		√			

Quality Control (Specifications and Standards, Dimensioning, Tolerances and fits, Metrology)	4				√	√	√
Casting technology	5	√			√		
Powder metallurgy	6		√			√	
Metal forming technology	7			√		√	√
Plastic processing	8		√		√		
Joining technology	9-10			√			√
Metal removal technology , Turning, drilling, milling, shaping and planning, broaching, sawing, grinding	11	√		√			
Turning technology, machining parameters, machining time, cutting tools, tool life	12-13		√		√		
Non - conventional manufacturing processes	14			√		√	√
Total	14	4	5	7	6	5	5

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered					
		CLO 1	CLO 2	CLO 3	CLO 4	CLO 6	CLO 6
Carpentry workshop	1-3	√					
Foundry workshop	4-6	√					
plumbing workshop	7-9	√					
lathe workshop	10-12	√					
Total	12						

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered					
Methods	CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Lectures and slides	√	√	√	√		√
Tutorials		√	√	√		√
Problem-based learning	√	√	√	√	√	√
Discussion	√	√		√	√	
Projects			√	√	√	
Reports			√	√		
Teaching and Learning Methods for Students with Special Needs:						
Methods						
1. Brain storming						
2. Presentation on case study						

2.7 Assessment Methods

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

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method		Week	Weighting of Asses.
Test	Discussion	8,13	10%
	mid-term exam	8	30%
Report of workshop		5,11	10%
Project		2,4,6,14	10%
Final written examination		Scheduled by the faculty council	40%
Total			100%

2.8. List of Reference:

Essential Books (Textbooks):	Galyer, JFC and Shotbolt , CR 1990, Metrology for engineers, 5th edn, Cassell, London
Recommended Books:	Manufacturing: Design, production, Automatic and Integration. New York, NY: Gordon and Breach science publishers,2003. ISBN:9780824742737
	Katsundo Hitomi , Manufacturing Systems Engineering, A Unified Approach to Manufacturing Technology, Production Management and Industrial Economics, Routledge, 2017, doi.org/10.1201/9780203748145
Periodicals, Web Sites, ... etc:	Social media: www.youtube.com Free Books Download: search.4shared.com/search.html

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
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
PLO4	√	√	√			
PLO6				√	√	√

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO4	PO4	CLO1	Lecture	Oral test
			Discussion	Experimental
		CLO2	Practical based learning	Observation
			Report	Report
		CLO3	Problem based on learning	Experimental
			Project based on learning	observation
PLO6	PO6	CLO4	Brain storming	Observation
			Presentation	observation
		CLO5	• Design studies	• Design studies
			Presentation	observation
		CLO6	• Reports	Reports
			Presentation	observation

Course Coordinator: Prof Saleh Kaytbay



Head of Department: ~~Head of Department:~~ Prof. Dr. Ahmed Debaiky

Date: 10 / 9 / 2023





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			
Course Title	Information and Communication Technology	Code	UHS 102	
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>	
Semester	Level 0-1			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	2	-	-	2

2. Professional Information:

2.1. Course description:

Concepts and terminologies of information technology – Communication styles in teaching and Learning – The internet and learning – multimedia systems – databases – Virtual Reality – Augmented reality – Internet of Things – Robotics and its classification – Artificial Intelligence – Big data – Cloud Computing.

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 community and promote sustainability principles.	CO1	Understand what is technology and its benefits and challenges in modern societies.
		CO2	Explore the social dimensions and development according to technology advance and globalization.

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
A4- PLO4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	CLO1	Explain technology and the advantages and disadvantages of using it.
		CLO2	Describe how technology affects our way of thinking and the world.
A10- PLO10	Acquire and apply new knowledge, and practice self, lifelong and other learning strategies.	CLO3	Justify the social impact in design sciences.
		CLO4	Investigate the role of technology in achieving sustainable economy

2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Nature of Technology	1	√			
Technological Advance	2	√			
The Origin of Technologies	3	√			
Embodying the Concept in Physical Form	4		√		
Progress and Social Impact in Design Sciences	5		√		
Models of Engineering Methodology	6		√		
Revolutions in Design Sciences	7		√		
Mid-term Exam	8				
The Three Factors of Quality of Life	9			√	
Technological Systems and Innovation	10			√	
Technology and Social Progress	11			√	
Achieving Eco-Efficiency Through Design For The Environment	12				√
Design Practice	13				√
Toward a Sustainable Economy	14				√
The Social Dimension of Technology	15				√
Total	15	3	4	3	4

2.5 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered			
Methods	CLO1	CLO2	CLO3	CLO4
1. Lectures	√	√	√	
2. Report	√			√
3. Discussion		√	√	√
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			
Methods	CLO1	CLO2	CLO3	CLO4
Formative Assessment Method				
Tests	Mid-term Exam	√	√	√
Report		√	√	√
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 exam	Week # 14	30%
Final written exam	Scheduled by the faculty council	40%
Total		100%

2.7. List of Reference:

Essential Books (Textbooks):	The Nature of Technology: What It Is and How It Evolves, W. Brian Arthur, Penguin Books, 2016.
Recommended Books:	Floyd Fuller, Brian Larson, Lisa Bucki, Faithe Wempen, —Computers: Understanding Technology Comprehensive —, 6th edition, 2016, Kendall Hunt Publishing, ISBN-13 : 978-0763870089

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	√	√

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
PLO7	√	√		
PLO10			√	√

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO7	PO2	CLO1	<ul style="list-style-type: none">• Lectures• Report• Self-Learning	<ul style="list-style-type: none">• Mid-term Exam• Report• Final Exam
		CLO2	<ul style="list-style-type: none">• Lectures• Discussion	<ul style="list-style-type: none">• Mid-term Exam• Final Exam
PLO10	PO2	CLO3	<ul style="list-style-type: none">• Lectures• Discussion	<ul style="list-style-type: none">• Report• Final Exam
		CLO4	<ul style="list-style-type: none">• Report• Discussion• Self-learning	<ul style="list-style-type: none">• Mid-term Exam• Report

Course Coordinator: Prof. Dr. Ahmed M. El-Assal



Dr. Osama Hamdy

Head of Department: ~~Head of Department:~~ Prof. Dr. Ahmed Debaiky



Date: 10 / 9 / 2023



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			
Course Title	General Chemistry	Code	BES 041	
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>	
Semester	Level 0-1			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	3	1	2	4

2. Professional Information:

2.1. Course description:

Gases: ideal & real gas laws, kinetic molecular theory - Liquids and solutions - Solids: arrangement of atoms, metallic solids, alloys - Chemical kinetics: reaction rates & order, catalysis – Electrochemistry: electrochemical cells, corrosion– Cements – Polymers – lubricants.

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	Demonstrate knowledge of laboratory safety and to generalize the analytical and quantitative skills gained and apply them in more advanced courses.
		CO2	Recognize the basic fundamentals in engineering chemistry to provide a broad foundation in chemistry that stresses on the concepts of reaction kinetics, redox reaction and understanding polymers, cements, and lubricants,
		CO3	Classify matter and explain the qualitative and quantitative relationships between state of matter and energy involved in chemical or physical processes.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
A1- PLO1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics	CLO1	Explain gas laws and differentiate between ideal and real gas behavior.
		CLO2	Recognize the intermolecular forces and solutions colligative properties. Familiarizing with basic principal of lubrication and selection of lubricant.
		CLO3	Describe bonding that can be applied to affect the properties of solids. Identify properties of polymers and their characteristics. Specify requirements of clinker, and chemical admixtures used in concrete technology
		CLO4	Identify reaction order to determine rate law. Recognize different factors affecting on it.
A2- 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	Recognize redox reactions and different types of electrochemical cells. Make stoichiometric calculations for electrolytic processes Recognize corrosion and basic principles to control.
		CLO6	Perform laboratory experiments correctly using appropriate techniques and safety procedures and communicate the results of their experiments via written laboratory reports

2.4. Course Topics:

Course Topics	Week	Course LO's Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Gas laws & molecular theory, Deviation from ideal gas to real behavior	1-2	✓					
Intermolecular forces& properties of liquids, phase diagrams, Solution process, Colligative properties	3-4		✓				
Structure and bonding in solids, Types of crystalline solids	5			✓			
Reaction rates and the dependence of rate on concentration	6				✓		
Mid Exam	7	✓	✓	✓			

Dependence of reaction rate on concentration, Temperature and catalysis	8				✓		
Oxidation reduction reactions, types of electrochemical cells. corrosion and basic principles to corrosion control	9- 10					✓	
Polymerization reactions, Members of the polymer family	11			✓			
Lubricants	12		✓				
Cement	13			✓			
Experimental exam	14						✓

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered
		CLO 6
Introduction to lab. safety rules	1	✓
Introduction to lab. glassware	2	✓
Experiment 1: Volumetric determination of NaOH using a standard HCl	3	✓
Experiment 2: Determination of a mixture of carbonate and bicarbonate content of a soda ash sample	4	✓
Experiment 3: Determination of chloride ion concentration	5	✓
Experiment 4: Indirect determination of A mixture of halides.	6	✓
Experiment 5: Determination of ferrous ions in ferrous sulphate using potassium permanganate solution	7	✓
Experiment 6: Titration of ferrous sulphate using potassium dichromate solution	8	✓
Experiment 7: Determination of copper ions in copper sulphate using sodium thiosulphate solution	9	✓
Experiment 8: Determine the consistency of cement using the Vicat apparatus	10	✓
Experimental Test	14	✓
Total	11	11

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. Practical-based Learning						✓
4. Problem-based Learning	✓	✓	✓	✓	✓	
5. Interactive 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
Tests	Mid Exam	✓	✓	✓			
	Practical exam						✓
Assignments							✓
Final Exam		✓	✓	✓	✓	✓	

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method		Week	Weighting of Asses.
Tests	Mid Exam	7	30%
	Experimental	14	20%
Assignments		Week#2,3,4,9,14	10%
Final Exam		Scheduled by the faculty council	40%
Total			100%

2.8. List of Reference:

Essential Books (Textbooks)	- P. Barnes, J. Bensted, Structure and Performance of Cements, CRC Press, 2nd Edition, 2019. - Jeffrey Gaffney, Nancy Marley, General Chemistry for Engineers (Enhanced Edition), Elsevier; 2018.
Recommended Books	- Brown, Lawrence S. and Holme, Thomas, "Chemistry for Engineering Students, 4th Edition" (2018). Chemistry Books. 1. https://lib.dr.iastate.edu/chem_books/1

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
PO1	✓	✓	✓

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
PLO1	✓	✓	✓	✓		
PLO2					✓	✓

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO1	PO1	1	<ul style="list-style-type: none"> • Lecture • Tutorials • Problem-based Learning 	<ul style="list-style-type: none"> • Midterm Exam • Final Exam
		2	<ul style="list-style-type: none"> • Lecture • Tutorials • Problem-based Learning 	<ul style="list-style-type: none"> • Midterm Exam • Final Exam
		3	<ul style="list-style-type: none"> • Lecture • Tutorials • Problem-based Learning 	<ul style="list-style-type: none"> • Midterm Exam • Final Exam
		4	<ul style="list-style-type: none"> • Lecture • Tutorials • Problem-based Learning 	<ul style="list-style-type: none"> • Midterm Exam • Final Exam
PLO2		5	<ul style="list-style-type: none"> • Lecture • Tutorials • Problem-based Learning 	<ul style="list-style-type: none"> • Final Exam
		6	<ul style="list-style-type: none"> • Experimental-based Learning • Interactive learning 	<ul style="list-style-type: none"> • Experimental Exam

Course Coordinator: Prof. Elsayed Fouad



Head of Department: Head of Department: Prof. Dr. Ahmed Debaiky



Date: 10 / 9 / 2023



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			
Course Title	Engineering Graphics	Code	MEC011	
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>	
Semester	Level 0-1			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	0	0	4	2

2. Professional Information:

2.1. Course description:

Engineering drawing techniques and skills. Conventional lettering and dimensioning. Geometric constructions. Theories of view derivation. Orthographic projection of engineering bodies. Derivation of views from isometric drawings and deducing of missing views. Sectioning views: (full, half, offset, partial, revolved, removed, and partial sectioning). Steel construction, Symbols of electrical circuits.

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 community and promote sustainability principles.	CO1	Emphasized the importance of drawing as a language for engineers and developed student's skills in engineering drawing
PO3	Work in and lead a heterogeneous team and display leadership qualities, business administration, and entrepreneurial skills.	CO2	Working in stressful environment within constraints and manage tasks and resources efficiently.

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
A6- PLO6	Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	CLO1	Illustrate the engineering drawing (drawing tools, tangency, projections, isometrics, sections, ...)
		CLO2	Define the geometry of engineering objects
A8- PLO8	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	CLO3	Evaluate the drawing rules in engineering drawing
		CLO4	Solve problems in the sectioning of engineering objects.

2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Introduction to Engineering Drawing and its importance	1	√		√	√
Lettering and Lines	2	√	√		
Geometric Constructions	3-4		√		√
Isometric Projection	5-6		√		√
Dimension Isometric Projection	7		√	√	
Mid term	8				
Orthographic Projection – from Isometric	9-10				
Orthographic Projection – missing View	11-13			√	√
Revision	14	√	√	√	√
Total	14	4	6	4	5

2.5 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered			
	CLO1	CLO2	CLO3	CLO4
1. Lectures.	√	√	√	
2. Design Studio		√	√	√
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				

2.6 Assessment Methods

Assessment Methods:		Course LOs Covered			
Methods		CLO1	CLO2	CLO3	CLO4
Formative Assessment Method					
Tests	Written Exam	√		√	√
Assignments		√	√		√
Summative Assessment Method					
Final Exam		√	√	√	

2.6.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Assignments	An assessment every week	30%
Mid-term exam	Week # 8	30%
Final written exam	Scheduled by the faculty council	40%
Total		100%

2.7. List of Reference:

Essential Books (Textbooks):	Reddy, K. V. 2010. Textbook of Engineering Drawing . B.S. Publ., Hyderabad. Xue, Y., Mu, H., Xue, L., & Wang, X. (2023, March). Teaching Innovation and Practice of Mind Mapping Applied to Engineering Drawing Course. In <i>2023 IEEE 12th International Conference on Educational and Information Technology (ICEIT)</i> (pp. 156-161). IEEE.
Recommended Books:	French, T. E., Vierch, C. J., Engineering Drawing and Graphic Technology, McGraw-Hill, 11th ed.
Periodicals, Web Sites, ... etc:	www.mechanical drawing google.com

2.88. Facilities required for Teaching and Learning

Different Facilities
Lecture Hall
Tutorial activities
Data Show
White Board
Office meetings.
Discussion

3. Matrix:

3.1. Program Objectives VS Course Objectives

Program Objectives	Course Objective	
	CO1	CO2
PO1	√	
PO4		√

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	PO2	CLO1	<ul style="list-style-type: none"> Lectures Design Studio Discussion 	<ul style="list-style-type: none"> Assignments Written final exam
		CLO2	<ul style="list-style-type: none"> Lectures Design Studio Discussion 	<ul style="list-style-type: none"> Assignments Written final exam
PLO8	PO3	CLO3	<ul style="list-style-type: none"> Lectures Design Studio Discussion 	<ul style="list-style-type: none"> Assignments Written final exam
		CLO4	<ul style="list-style-type: none"> Lectures Design Studio Discussion 	<ul style="list-style-type: none"> Assignments Written final exam

Course Coordinator: DR. Mohamed Shehata

Head of Department: Head of Department: Prof. Dr. Ahmed Debaiky

Date: 10 / 9 / 2023



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			
Course Title	Computer Programming Fundamentals	Code	ELE 042	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	Level 0-2			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	0	2	2	2

2. Professional Information:

2.1. Course description:

Types of programming languages, Problem solving methods: flowcharts, algorithms, structured programming. Application on a Python Programming language for solving engineering problems with emphasis on assignments of numeric data types, Analysis of errors in numerical computations, Input and output. Selection control structures, Loops and iteration structures, Procedures and functions, Modular program design, Array processing.

2.2. Course Objectives (CO):

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

Program objective		Course objective	
PO 4	Use techniques, skills, and modern engineering tools necessary for engineering practice.	CO 1	Characterize different programming languages and fundamental of python environment
		CO 2	Apply programming skills in core Python

2.3. Course Learning Outcomes (CLO's):

CBE/Program Learning Outcomes		Course Learning Outcomes	
A4- PLO4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.	CLO 1	Recognize the basic concepts of python programming with the help of data types, operators and expressions, etc.
		CLO 2	Add control statements for altering the sequential execution of programs in solving problems
		CLO 3	Demonstrate operations on built-in functions and container data types (list, tuple, etc.)
A10- PLO10	Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.	CLO 4	Solve complicated practical and engineering problems using learned tools of python

2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Introduction to Python	1	✓			
Basic coding skills, working with data types, variables, Expressions, operators, and Strings	2	✓			
Learning Python logic operators and conditional statements	3, 4		✓		
Define loops and iterations in python	5, 6		✓		
Understand and apply string manipulation, guess-and-check, approximations, and bisection methods	7		✓		
Midterm Exam	8				
Learn how to write functions in Python.	9, 10			✓	
Extra examples on learned programming tools in Python	11				✓
Basic skills for working with tuples, lists and their operations	12			✓	
Clarify how to build Python modules and how to read and write files	13			✓	
Pre-exam Revision and discussion	14				✓
Total					

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Introduction to Python	1	✓			
Basic coding skills, working with data types, variables, Expressions, operators, and Strings	2	✓			
Learning Python logic operators and conditional statements	3, 4		✓		
Define loops and iterations in python	5, 6		✓		
Understand and apply string manipulation, guess-and-check, approximations, and bisection methods	7		✓		
Midterm Exam	8				
Learn how to write functions in Python.	9, 10			✓	
Extra examples on learned programming tools in Python	11				✓
Basic skills for working with tuples, lists and their operations	12			✓	
Clarify how to build Python modules and how to read and write files	13			✓	
Pre-exam Revision and discussion	14				✓
Total					

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered			
Methods	CLO1	CLO2	CLO3	CLO4
1. Computer-based instruction	✓	✓	✓	
2. 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	✓	✓		
	Oral Exam	✓	✓	✓	
Assignments					✓
Summative Assessment Method					
Final Exam			✓	✓	✓

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Oral Exam	6 th , 11 th	20%
Midterm exam	8 th	30%
Assignments	10 th	10%
Final exam	15 th	40%
Total		100%

2.8. List of Reference:

Essential Books (Textbooks):	Ashok Kamthane, Amit Kamthane, “Programming and Problem Solving with Python”, McGraw Hill Education (India) Private Limited, 2018
Recommended Books:	Yashavant Kanetkar, Aditya Kanetkar, “Let us Python”, BPB publication, 1st Edition, 2019
Periodicals, Web Sites, ... etc:	https://www.geeksforgeeks.org/python-programming-language/

2.9. Facilities required for Teaching and Learning

Different Facilities
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 4	✓	✓

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 4	✓	✓	✓	
PLO 10				✓

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO 4	PO 4	CLO 1	• Computer-based instruction	• Midterm Exam • Oral Exam
		CLO 2	• Computer-based instruction	• Midterm Exam • Oral Exam Final Exam
		CLO 3	• Computer-based instruction	• Oral Exam • Final Exam
PLO 10	PO 4	CLO 4	• Problem-based learning	• Assignments • Final Exam

Course Coordinator: Dr. Maha Raouf
Dr. Hossam Labib Zayed



Head of Department: Head of Department: Prof. Dr. Ahmed Debaiky
Date: 10 / 9 / 2023





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			
Course Title	Physics II	Code	BES 032	
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>	
Semester	Preparatory Year 1 st Semester			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	2	2	1	3

2. Professional Information:

2.1. Course description:

Discuss phenomena and theories of electricity and magnetism physics related to engineering application.

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	Create phenomena and theories of electricity and magnetism physics related to engineering application.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
A1- PLO1	Identify, formulate, analyze, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	CLO1	Explain the concepts of charges, electric fields, electric flux, Gauss's law and its application.
		CLO2	Illustrate electric potential and capacitors.
		CLO3	Evaluate current, resistance and the magnetic field.

		CLO4	Evaluate Ampere's law and its application, the magnetic Gauss's Law, Faraday's Law and Magnetic Induction.
A2-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	Analyze the results given from experiment.

2.4. Course Topics:

Course Topics	Week	Course LO's Covered				
		CLO1	CLO2	CLO3	CLO4	CLO5
the electric field	1,2	✓				
gauss's law	3,4	✓				
The Electric Potential	5,6		✓			
the capacitance	7		✓			
Midterm	8					
current and resistance	9			✓		
the magnetic field	10,11			✓		
Sources of Magnetic Field	12				✓	
faraday's law of induction	13				✓	
the inductance	14				✓	
Total	14	2	2	2	3	0

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered				
		CLO1	CLO2	CLO3	CLO4	CLO5
Kirchhoff's Voltage and Current Laws	2					✓
Ohm's Law	3					✓
Metric Bridge	4					✓
Electric Field Mapping	5					✓
Capacitor Charging	7					✓
Capacitor Discharging	8					✓

The Electric Transformer	9					✓
Faraday's Law	10					✓
Total						8

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered				
	Methods	CLO1	CLO2	CLO3	CLO4
1. Lectures	✓	✓	✓	✓	
2. Discussion Sessions	✓	✓	✓	✓	
3. Practical					✓
4. 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
Formative Assessment Method						
Tests	Quiz 1	✓				
	Midterm	✓	✓			
	Quiz 2			✓		
	Practical Exam					✓
Summative Assessment Method						
Final Exam		✓	✓	✓	✓	

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Quiz 1	4	5 %
Midterm	8	30 %
Quiz 2	12	5 %
Practical Exam	15	20 %
Final Exam	Scheduled by the faculty council	40 %
Total		100%

2.8. List of Reference:

Essential Books (Textbooks):	Physics for Scientists and Engineers, R.A. Serway and J.W. Jewett, 10th Edition, 2018.
Recommended Books:	Fundamentals of physics, Halliday & Resnick, 12th Edition, 2021.

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
PO1	✓

3.2. Course Objectives VS Course Learning Outcomes

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

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

PO	PLO	CLO	Teaching M.	Assessment M.
PO1	PLO1	CLO1	<ul style="list-style-type: none">• Lectures• Discussion Sessions• Tutorials	<ul style="list-style-type: none">• Quiz 1• Midterm• Final Exam
		CLO2	<ul style="list-style-type: none">• Lectures• Discussion Sessions• Tutorials	<ul style="list-style-type: none">• Midterm• Final Exam
		CLO3	<ul style="list-style-type: none">• Lectures• Discussion Sessions• Tutorials	<ul style="list-style-type: none">• Quiz 2• Final Exam
		CLO4	<ul style="list-style-type: none">• Lectures• Discussion Sessions• Tutorials	<ul style="list-style-type: none">• Final Exam
	PLO2	CLO5	<ul style="list-style-type: none">• Practical	<ul style="list-style-type: none">• Practical Exam

Course Coordinator: Associate Prof: Mina Danial Asham
Dr: Ibrahim Sayed Ahmed
Dr: Walid Soliman selmy



Head of Department: Head of Department: Prof. Dr. Ahmed Debaiky



Date: 10 / 9 / 2023



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			
Course Title	Mechanics (II)	Code	BES 022	
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>	
Semester	Level 0- ^{II}			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	2	2	0	3

2. Professional Information:

2.1. Course description:

Kinematics of particles (rectilinear and curvilinear motion), Kinetics of particles (force and acceleration method – work and energy method – impulse and momentum method), Planar Kinetics of rigid bodies (translation – rotation about a fixed axis – general plane motion), planar kinetics of rigid bodies (force and acceleration method – work and energy method – impulse and momentum method). Moment of area, mass moments of inertia for single body, product of inertia and principle moments of inertia.

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	Analyze the mathematics equilibrium conditions of motion for rigid bodies under the action of various loads.
		CO2	Evaluate the principals of dynamics as a science for solving the practical problems of engineering applications.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
A1- PLO1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics	CLO1	Describe the particle motion along different trajectory using different coordinate systems.
		CLO2	Apply the equilibrium conditions of motion for a particle using Newton's second law, the principle of conservation of energy and the principle of conservation of linear momentum.
		CLO3	Analyze the various types of a rigid-body planar motion.
A2- PLO2	Develop and conduct appropriate experimentation and/or simulation, analyse and interpret data, assess, and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	CLO4	Apply the equilibrium conditions of motion for a rigid body using Newton's second law, the principle of conservation of energy and the principle of conservation of linear momentum.
		CLO5	Determine the area and mass moment of inertia for a single body.

2.4. Course Topics:

Course Topics	Week	Course LO's Covered				
		CLO1	CLO2	CLO3	CLO4	CLO5
Kinematics of particles (Rectilinear motion)	1	✓				
Kinematics of particles (curvilinear motion)	2,3	✓				
Kinetics of particles (force and acceleration method)	4	✓	✓			
Kinetics of particles (work and energy method)	5		✓			
Kinetics of particles (impulse and momentum method)	6		✓			
Kinematics of Rigid bodies:(Translation, Rotation, and General plane motion)	7					
First Mid-Term Exam	8					
Kinematics of Rigid bodies:(Translation, Rotation, and	9			✓		

General plane motion)						
Area and mass moment of inertia	10					✓
Kinetics of Rigid bodies (Force and acceleration method)	11, 12		✓		✓	✓
Kinetics of Rigid bodies (work and energy method)	13		✓		✓	✓
Kinetics of Rigid bodies (impulse and momentum method)	14		✓		✓	✓
Total	14	4	7	1	4	5

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. Discussion			✓		
Teaching and Learning Methods for Students with Special Needs:					
Methods					
1. Discussion Session					

2.6 Assessment Methods

Assessment Methods:		Course LOs Covered				
Methods		CLO1	CLO2	CLO3	CLO4	CLO5
Tests	Mid- Term Exam	✓	✓			✓
	Quizzes			✓		
Assignments		✓		✓	✓	
Summative Assessment Method						
Final Exam		✓	✓		✓	✓

2.7 Assessment Schedule & Grades Distribution

Assessment Methods		Week	Weighting of Asses.
Formative Assessment Method			
Tests	Mid-term Exam	8 th	30%
	Quizzes	6 th , 13 th ,	15%
Assignments		5 th , 9 th , 11 th ,	15%
Summative Assessment Method			
Final exam		Scheduled by the faculty council	40%
Total			100%

2.8. List of Reference:

Course Notes:	Vector Mechanics for Engineers: Dynamics, 12th Edition Ferdinand P. Beer, E. Russell Johnston, 2019
Recommended Books:	Engineering Mechanics, Dynamics, 14th Edition- Hibbeler, 2018

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Halls
White Boards
Data Show

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

Student Competences	Program Learning Outcomes	Course Learning Outcomes				
		CLO1	CLO2	CLO3	CLO4	CLO5
A1	PLO1	✓	✓	✓		
A2	PLO2				✓	✓

3.4. Assessment Alignment Matrix

Student Competences	PLO	PO	CLO	Teaching M.	Assessment M.
A1	PLO1	PO1	CLO1	Lectures	Midterm Exam Assignments Final Exam
			CLO2	Tutorials	Midterm Exam Final Exam
			CLO3	Lectures	Quizzes Assignments
A2	PLO2		CLO4	Discussion	Final Exam Assignments
			CLO5	Tutorials	Midterm Exam Final Exam

Course Coordinator: Dr. Diaan El-Din Khedr



Dr. Naser Eldin Ab Elsttar

Head of Department: ~~Head of Department:~~ Prof. Dr. Ahmed Debaiky

Date: 10 / 9 / 2023





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			
Course Title	Mechanics (1)	Code	BES 021	
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>	
Semester	Level 0-1			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	2	2	0	3

2. Professional Information:

2.1. Course description:

Fundamental of statics, Types of supports, Vector algebra and applications to mechanics, Statics of particles, Moments of forces and couples in space, Equivalent systems of forces and moments, Equilibrium of rigid bodies, Centroids and centers of gravity, Analysis of structures (Truss and Machines), Friction and its application, Virtual work for a system of connected rigid bodies, Stability of equilibrium configuration.

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	Analyze the mathematics equilibrium conditions of rest for rigid bodies under the action of various loads.
		CO2	Evaluate the principles of statics as a science for solving the practical problems of engineering applications.

2.3. Course Learning Outcomes (CLO's):

Student Competences	Program Learning Outcomes		Course Learning Outcomes	
A1	PLO1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics	CLO1	predict the statically equilibrium conditions of a particle under the action of forces
			CLO2	Apply the statically equilibrium conditions of a rigid body under the action of various loads.
A2	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	Analyze the forces acting on the members of structures composed of pin-connected members.
			CLO4	Determine the location of the centroid and the moment of inertia for a body of a regular or irregular shape.

2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Fundamentals of statics, Statics of Particle in space	1,2	✓			
Vector algebra and applications to mechanics, Moment of forces and couples in space	3		✓		
Equivalent systems of forces and moments	4,5		✓		✓
Types of supports, Equilibrium of Rigid bodies in space	6		✓		
Analysis of Structures: Trusses (method of joints)	7			✓	
First Mid-Term Exam	8				
Analysis of Structures: Trusses (method of sections)	9			✓	
Analysis of Structures: (Machines)	10			✓	
Centroids and centers of gravity	11, 12				✓

Friction and its application	13	√			
Virtual work for a system of connected rigid bodies	14			√	
Total	14				

2.5 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

2.6 Assessment Methods

Assessment Methods:		Course LOs Covered			
Methods		CLO1	CLO2	CLO3	CLO4
Tests	First Mid- Term Exam	√	√		
	Quizzes		√		√
Assignments		√	√	√	√
Summative Assessment Method					
Final Exam			√	√	√

2.7 Assessment Schedule & Grades Distribution

Assessment Methods		Week	Weighting of Asses.
Formative Assessment Method			
Tests	First Mid-term Exam	8 th	30%
	Quizzes	6 th , 13 th ,	15%
Assignments		5 th , 9 th , 11 th ,	15%
Summative Assessment Method			
Final exam		Scheduled by the faculty council	40%
Total			100%

2.8. List of Reference:

Course Notes:	Vector Mechanics for Engineers: Statics, 12th Edition Ferdinand P. Beer, E. Russell Johnston, 2019
Recommended Books:	Engineering Mechanics, Statics, 14th Edition- Hibbeler, 2018

2.9. Facilities required for Teaching and Learning

Different Facilities
Lecture Halls
White Boards
Data Show

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

Student Competences	Program Learning Outcomes	Course Learning Outcomes			
		CLO1	CLO2	CLO3	CLO4
A1	PLO1	✓	✓		
A2	PLO2			✓	✓

3.4. Assessment Alignment Matrix

Student Competences	PLO	PO	CLO	Teaching M.	Assessment M.
A1	PLO1	PO1	CLO1	• Lectures	<ul style="list-style-type: none"> • Written Exam • Assignments • Quizzes
			CLO2	• Tutorials	<ul style="list-style-type: none"> • Written Exam • Assignments
A2	PLO2		CLO3	• Discussion	<ul style="list-style-type: none"> • Assignments • Quizzes
			CLO4	• Discussion	<ul style="list-style-type: none"> • Assignments

Course Coordinator: Dr. Diaa El-Din Khedr
Dr. Naser Eldin Ab Elstar



Head of Department: Head of Department: Prof. Dr. Ahmed Debaiky
Date: 10 / 9 / 2023





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			
Course Title	Mathematics II	Code	BES 012	
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>	
Semester	Level 0-2			
Teaching Hours	Lec.	Tut.	Lab.	Credit hours
	2	2	0	3

2. Professional Information:

2.1. Course description:

Integral Calculus: Indefinite integrals with applications. Methods of integration. Definite integrals with applications (areas, volumes of revolution, lengths of curves and surface area).

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).

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 elements of mathematical logic, relations, mappings, real functions and their graphs applications of differentiation, and its applications.
PO2	Behave professionally and adhere to engineering ethics and standards and work to develop the profession and the community and promote sustainability principles.	CO2	Select a suitable item to evaluate applied engineering problems.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
A1- 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
A2- 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	Solve 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
Indefinite integrals with applications	1&2	√	√		
Methods of integration	3&4		√		√
Definite integrals with applications	5	√			
Areas and volumes of revolution, lengths of curves and surface area	6&7	√	√		√
Midterm Exam	8				
Surfaces and curves in three dimensions	9	√		√	√
Vector functions of one variable	10	√		√	√
Scalar functions of several variables, partial derivatives	11		√	√	
Directional derivatives, total derivatives	12		√	√	
Tangent planes and normal lines	13		√	√	
Taylor expansions, maxima and minima, Lagrange's multipliers	15	√			√
Total	15	6	6	5	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. 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	15%
Quizzes	4,7,12	15%
Final Exam	Scheduled by the faculty council	40%
Total		100%

2.8. List of Reference:

Essential Books (Textbooks):	Howard Anton, "Calculus with analytical geometry", John Wiley & Sons, Last Edition.
	George B. Thomas, Jr., Maurice D. Weir, Joel Hass, THOMAS' CALCULUS Multivariable (Twelfth Edition), 2010.
Periodicals, Web Sites, ... etc:	<ol style="list-style-type: none"> https://byjus.com 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	√	
PO2		√

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 Problem-based Learning 	<ul style="list-style-type: none"> Midterm Exam, Final Exam
		CLO2	<ul style="list-style-type: none"> Lecture Problem-based Learning 	<ul style="list-style-type: none"> Midterm Exam Discussion Quizzes
PLO2	PO2	CLO3	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Final Exam Quizzes
		CLO4	<ul style="list-style-type: none"> Tutorials Problem-based Learning 	<ul style="list-style-type: none"> Midterm Exam, Quizzes Discussion

Course Coordinator: Ass Prof. Dr. Mohamed Medhat Mousa
Dr. Doaa Ahmed Abd-Elwahab Hammad



Head of Department: Head of Department: Prof. Dr. Ahmed Debaiky
Date: 10 / 9 / 2023





Level 1



Course Specification (Study Plan 2022)

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	CIV 111	
Pre-requisite Course Title	Mechanics II	Code	BES 022	
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>	
Semester	Please select the appropriate and delete the others 1-1			
Teaching Hours	Credit hours	Contact hours		
		Lect.	Tut.	Lab.
	3	2	0	2

2. Professional Information:

2.1. Course description:

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	<ul style="list-style-type: none"> • Define engineering materials, and its types. • Explain different types of testing machines and strain gauge devices. • List different types of engineering materials properties. • Explain mechanical properties and behavior of engineering materials under static and impact loads. • Draw stress – strain curve of engineering materials under static and impact loads. • Describe procedures of testing engineering materials. • Explain different processes of engineering materials failure under static and impact loads.
		CLO2	<ul style="list-style-type: none"> • Conclude the mechanical properties of engineering materials and factors affecting them. • Conclude acceptance criteria of engineering materials. • Apply testing methods to determine mechanical properties of engineering materials. • Apply quality control procedures.
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	<ul style="list-style-type: none"> • Perform necessary tests to check the validity of engineering materials. • Observe, record, and analyze data in laboratory. • Decide the acceptance or refusal of engineering materials according to required specification.
		CLO4	<ul style="list-style-type: none"> • Present and share ideas. • 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		*	*	
Experimental / Oral Exam	15				
Final exam	16				
Total	16	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		3	3	3

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered			
Methods	CLO1	CLO2	CLO3	CLO4
1. Lectures	*	*	*	*
2. Practical		*	*	
3. Teaching on line		*	*	
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 7 and 9 to 14	10%
Mid-term exam	8	30%
Oral & Experimental	15	20%
Final exam	16	40 %
Total		100%

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

Course Notes:	According to lecturer
Essential Books (Textbooks):	<p>١. المواصفات القياسية المصرية. ٢. المواد الهندسية مقاومتها واختبارها (الجزء الأول والجزء الثاني)، ا.د. احمد العريان - ا.د. عبد الكريم عطا ٣. مقاومة واختبار المواد، د. عبد الوهاب محمد عوض - د. إبراهيم على درويش</p>
Recommended Books:	<p>1. Mechanics of Materials, James M. Gere & Barry J. Goodno, CENGAGE Learning, ISBN-13: 978-1111577735 / ISBN-10: 1111577730. 2. Strength of Materials, S. S. Bhavikatti, Vikas, Vicas, ISBN-13: 978-9325971578, ISBN-10: 9325971577. 3. A Textbook of Strength of Materials, Dr R.K. Bansal, LAXMI PUBLICATIONS (P) LTD, ISBN-10: 9788131808146 / ISBN-13: 978-8131808146.</p>



Periodicals, Web Sites, ... etc:	
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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
PO1	*	
PO6		*

3.2. Course Objectives VS Course Learning Outcomes

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

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"> • Lectures 	<ul style="list-style-type: none"> • Midterm Exam • Oral Test • Assignments • Final exam
		CLO2	<ul style="list-style-type: none"> • Lectures • Practical • Teaching on line 	<ul style="list-style-type: none"> • Midterm Exam • Experimental • Oral Test • Assignments • Final exam
PLO11	PO6	CLO3	<ul style="list-style-type: none"> • Lectures • Practical • Teaching on line 	<ul style="list-style-type: none"> • Midterm Exam • Experimental • Oral Test • Assignments • Final exam
		CLO4	<ul style="list-style-type: none"> • Lectures 	<ul style="list-style-type: none"> • Assignments

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

Head of Department: Prof. Dr. Hala Refaat

Date: / 9 /2024



Course Specification (Study Plan 2022)

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	3/9/2024			
Course Title	Structure Analysis II	Code	CIV122	
Pre-requisite Course Title		Code	CIV121	
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>	
Semester	1-2			
Teaching Hours	Credit hours	Contact hours		
		Lect.	Tut.	Lab.
	۳	۲	۲	.

2. Professional Information:

2.1. Course Description:

Buckling of Column, Elastic deflection of determinate structures (double Integration method and virtual work method). Influence line for determinate beam- Analysis of statically indeterminate structures (Three moment equations).

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.
		CO2	Evaluate a wide spectrum of engineering, with analytic, critical, and systemic thinking to solve indeterminate structural 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	Students will be able to apply principles of buckling analysis to calculate the critical loads of columns using appropriate mathematical models. (Apply)
		CLO2	Calculate elastic deflections in determinate structures using the double integration method and the virtual work method. (Calculate)
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	Construct influence lines for determinate beams to determine the effects of moving loads and assess their impact on the structure. (Construct)
		CLO4	Students will be able to evaluate statically indeterminate structures using the three-moment equations to determine internal forces and moments, and apply these evaluations to design improvements. (Evaluate)

2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Influence line for determinate beam	1			√	
	2			√	
	3			√	
Elastic deflection by Double integration method to analyzing the deformation of <u>beam</u>	4		√		
	5		√		
Elastic deflection by Double integration method to analyzing the deformation of <u>frame</u>	6		√		
Midterm Exam	7		√	√	
Elastic deflection by Virtual work method to analyzing the deformation of beam	8		√		
	9		√		



Elastic deflection by Virtual work method to analyzing the deformation of frame	10		√		
Using the three moment equation to analyzing the indeterminate beams.	11				√
Using the three moment equation to analyzing the indeterminate frames.	12				√
Studying the buckling of columns.	13	√			
Studying the buckling of columns.	14	√			
Final Exam	16	√	√	√	√
Total	13	2	6	3	2

2.5. Lab Topics: **inapplicable**

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			
	CLO 1	CLO2	CLO3	CLO4
1.lecture	√	√	√	√
2. tutorials	√	√	√	√
Teaching and Learning Methods for Students with Special Needs:				
Methods				
Discussion Session				
Extra Lectures				
Provide different levels of books and materials				

2.7 Assessment Methods



Assessment Methods:		Course LOs Covered			
		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	13	10%
Quiz	13	20%
Midterm Exam	7	30%
Final Exam	16	40%
Total		100% (100 marks)

2.8. List of Reference:

Course Notes:	According to lecturer
Essential Books (Textbooks):	Aslam Kassimali , “Structural Analysis” Stamford USA: Cengage Learning, 4th Si Edition, 2011, ISBN-13: 978-0-495-29567-9 • Aslam Kassimali, “Structural Analysis”, Stamford USA: Cengage Learning, 6th Si Edition, 2019, ISBN-13 : 978-1337630948
Recommended Books:	• Jack C. McCormac, “Structural Analysis Using Classical and Matrix Methods”, John Wiley & Sons, Inc, 4th Edition, 2007, ISBN-13: 978-0470036082.
Periodicals, Web Sites, ... etc:	https://web.mit.edu/16.20/homepage/9_Buckling/Buckling_files/module_9_with_solutions.pdf

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
PO1	√	
		√

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CLO 1	CLO 2	CLO 3	CLO 4
CO1	√	√		
CO2			√	√

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes			
	CLO 1	CLO 2	CLO 3	CLO 4
PLO1	√	√		
PLO11			√	√



3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
1	1	1	<ul style="list-style-type: none"> • Lecture • Tutorials 	<ul style="list-style-type: none"> • Assignments • Quiz • Final Exam
		2	<ul style="list-style-type: none"> • Lecture • Tutorials 	<ul style="list-style-type: none"> • Midterm Exam • Assignments • Quiz • Final Exam
11		3	<ul style="list-style-type: none"> • Lecture • Tutorials 	<ul style="list-style-type: none"> • Assignments • Quiz • Midterm Exam
		4	<ul style="list-style-type: none"> • Lecture • Tutorials 	<ul style="list-style-type: none"> • Assignments • Quiz • Final Exam

Course Coordinator: Dr. Ahmed Youssef Kamal El-Deen

Dr. Ibrahim Elazab

Head of Department: Prof. Dr. Hala Refat

Date: 3 / 9 / 2024



Course Specification (Study Plan 2022)

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	CAD for Civil Engineering	Code	CIV101		
Pre-requisite Course Title	Computer Aided Drafting	Code	MEC 014		
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>		
Semester	1-1				
Teaching Hours	Credit hours	Contact hours			
		Lect.	Tut.	Lab.	Sum
	2	1	0	3	4

2. Professional Information:

2.1. Course description:

Application of AutoCAD Program in drawing different types of civil structures (Irrigation structures – Reinforced concrete structures – Steel structures- urban transportation systems).

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, that are necessary for engineering practice.

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	Identify drawing commands
		CLO2	Explain modifying commands, and (orthogonal, relative, hatch, Array....) options.



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. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles	CLO3	Use AutoCAD Software to draw Irrigation structures projects
		CLO4	Use AutoCAD Software to draw reinforced concrete and steel structures projects

2.4. Course Topics (Lab Topics):

Lab Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
1.Introduction.	1	√			
2.Drawing Commands	2,3	√			
3.Modifying Commends	4,5		√		
4.Dimensions, Text, Modify text.	6		√		
5.Experimental Test	7	√	√		
6.Dimensions, Text, Modify text.	8		√		
7.Layers, Block.	9,10		√		
8.Irrigation structures drawing.	11,12			√	
9.Reinforced concrete structures drawing	13				√
10. Steel structures drawing	14				√
11. Review	15	√	√	√	√
Practical Exam	16	√	√	√	√
Total	16	3	3	4	7



2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered							
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
Total									

2.6 Teaching and Learning Methods

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

2.7 Assessment Methods

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



2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Experimental Test	7	30
Assignment	11,14	30
Practical Exam	16	40
Total		100 marks

2.8. List of Reference:

Course Notes:	According to lecturer
Essential Books (Textbooks):	AutoCAD Fundamentals. (Manual).(Course Notes)
Recommended Books:	A Textbook of Engineering Drawing: Along with an Introduction to AutoCAD, International Publishing House, 2015. ISBN 9789384588687
Periodicals, Web Sites, ... etc:	https://www.autodesk.com/products/autocad/free-trial https://easyengineering.net/autocad-books/

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
PO 4	√

3.2. Course Objectives VS Course Learning Outcomes

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

3.3. Program Learning Outcomes VS Course Learning Outcomes

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



3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO4	PO4	CLO1	<ul style="list-style-type: none">• Lecture• Computer-based Instruction	<ul style="list-style-type: none">• Experimental Test• Practical Exam
PLO4	PO4	CLO2	<ul style="list-style-type: none">• Lecture• Computer-based Instruction	<ul style="list-style-type: none">• Experimental Test• Practical Exam
PLO12	PO4	CLO3	<ul style="list-style-type: none">• Computer-based Instruction	<ul style="list-style-type: none">• Assignments• Practical Exam
PLO12	PO4	CLO4	<ul style="list-style-type: none">• Computer-based Instruction	<ul style="list-style-type: none">• Assignments• Practical Exam

Course Coordinator: Dr. Ahmed Youssef

Head of Department: Prof. Dr. Hala Refat

Date: 6 / 9 / 2024



Course Specification (Study Plan 2022)

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	Hydraulics	Code	CIV 162		
Pre-requisite Course Title	Fluid Mechanics	Code	CIV 161		
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>		
Semester	1-2				
Teaching Hours	Credit hours	Contact hours			
		Lect.	Tut.	Lab.	Sum
	2	2	0	1	3

2. Professional Information:

2.1. Course description:

Basic Principles (open channel flow) - Uniform Flow (Basic equations for steady uniform flow - Velocity and shear stress distributions in open channels) – Non-Uniform Flow (Specific energy - Hydraulics of channel bed transition) - Hydraulic Jumps - Gradually Varied Flow - Open Channel Design (Rigid boundary and erodible channel) - Dimensional analysis and Similarity (Methods of dimensional analysis - Model analysis and similarity) – Hydraulics Machinery (Pumps and Turbines) – Unsteady Flow.

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	Design Of Open Channel Dimensions
		CO2	Design Of Hydraulics Machinery
		CO3	Modeling Existing and Proposed Systems In Laboratory



2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
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.	CLO1	Identify the difference between the various types of flow and open channel characteristics.
		CLO2	Solve practical problems of various types of flow.
PLO 9	Use creative, innovative, and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	CLO3	Identify the difference between gradually and rapidly varied flow and its applications
		CLO4	Create models that simulate the actual flow characteristics
PLO 11	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	Apply the available software to perform exercises.
		CLO6	Analyze in quantitative terms the processes of the Hydraulics for solving civil engineering problems

2.4. Course Topics:

Course Topics	Week	Course LO's Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Basic Principles (open channel flow)	1	√		√			√
Uniform Flow (Basic equations)	2	√	√				



for steady uniform Flow)							
Uniform Flow (Velocity and shear stress distributions in open channels)	3	√	√				√
Non-Uniform Flow (Specific energy - Hydraulics of channel bed transition)	4	√	√				√
Hydraulic Jumps	5	√		√			√
Hydraulic Jumps	6	√	√	√			
Midterm Exam	7	√	√	√			
Gradually Varied Flow	8	√	√	√			√
Gradually Varied Flow	9		√		√		
Open Channel Design (Rigid boundary and erodible channel)	10	√	√	√			
Dimensional analysis and Similarity (Methods of dimensional analysis)	11				√	√	√
Dimensional analysis and Similarity (Model analysis and similarity)	12				√	√	√
Hydraulics Machinery (Pumps and Turbines)	13					√	√
Unsteady Flow	14	√	√				√



Practical Exam	15				√	√	√
Final Exam	16	√	√	√			√
Total	16	11	10	7	4	4	11

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered					
		CLO 1	CLO 2	CLO 3	CLO 4	CLO 5	CLO 6
Open Channel Flow	3	√		√	√		
Hydraulic Jump	5			√	√		√
Pump characteristics	13					√	√
Total	3	1	0	2	2	1	2

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered					
	CLO 1	CLO 2	CLO 3	CLO 4	CLO 5	CLO 6
1. Lectures	√	√	√	√	√	√
2. laboratory experimental			√	√		√
3. Video-based Learning	√		√		√	

2.7 Assessment Methods

Assessment Methods:		Course LOs Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Formative Assessment Method							
Tests	Midterm Exam	√	√	√			
	Experimental Exam				√	√	√
	Oral Exam	√		√		√	
Student activity			√		√	√	
Final Exam		√	√	√			√



2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Student activity	At end of each topic	10
Midterm Exam	7	30
Experimental Exam	15	10
Oral Exam	15	10
Final Exam	16	40
Total		100 marks

2.8. List of Reference:

Course Notes:	According to lecturer
Essential Books (Textbooks):	Fundamentals of Hydraulic Engineering, by Prasuhn, Alan L., Oxford University Press 1992, ISBN 978-1-61344-141-1, 978-0-19-510732-6
Recommended Books:	-Strum, W. T., (2001). Open Channels Hydraulics, McGraw-Hill Higher Education, USA. -Chow, V.T (ed.): "Handbook of Hydrology," McGraw-Hill, New York, 1964. -Novak, P., Moffat, A. I. B., Nalluri, C., Narayanan, R. (2001) Hydraulic Structures, Third Ed, Spon, London
Periodicals, Web Sites, ... etc:	https://www.accessengineeringlibrary.com/binary/mheaeworks/472297b9d6eba65c/d3172d82099b4e7475e94b59ea45ae8906ab2b8768854b29645441c1a0c85b71/book-summary.pdf

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
PO6	√	√	√

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
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
PLO 2	√	√				
PLO 9			√	√		
PLO 11					√	√



3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO 2	PO 6	CLO 1	<ul style="list-style-type: none"> Lecture Video-based Learning 	<ul style="list-style-type: none"> Midterm Exam Student activity Oral Exam Final Exam
		CLO 2	<ul style="list-style-type: none"> Lecture Tutorial 	<ul style="list-style-type: none"> Midterm Exam Student activity Final Exam
PLO 9		CLO 3	<ul style="list-style-type: none"> Lecture Tutorial 	<ul style="list-style-type: none"> Midterm Exam Student activity Oral Exam Final Exam
		CLO 4	<ul style="list-style-type: none"> Lecture Video-based Learning laboratory experiment 	<ul style="list-style-type: none"> Experimental Exam Student activity
PLO 11		CLO 5	<ul style="list-style-type: none"> Lecture Video-based Learning laboratory experiment 	<ul style="list-style-type: none"> Student activity Experimental Exam Oral Exam
		CLO 6	<ul style="list-style-type: none"> Lecture Video-based Learning laboratory experiment 	<ul style="list-style-type: none"> Experimental Exam Final Exam

Course Coordinator: Dr. Tarek Hemdan
Dr. Ahmed Abou el-fetouh

Head of Department: Prof. Dr. Hala Refat

Date: 7 / 9 /2024



Course Specification (Study Plan 2022)

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	CIV 161		
Pre-requisite Course Title	Physics I	Code	BES 031		
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>		
Semester	1-1				
Teaching Hours	Credit hours	Contact hours			
		Lect.	Tut.	Lab.	Sum
	2	2	0	1	3

2. Professional Information:

2.1. Course description:

Dimensions and Units - Fluid Properties - Fluid Statics (Pressure distribution - Pressure measurements - Forces on submerged surfaces) - Buoyancy and Floatation - Fluids in Relative Equilibrium - Fluid Kinematics (Description of Fluids motion - Continuity Equation - Velocity and Acceleration) - Fluid Dynamics (Energy Equation - Applications of Bernoulli's Equation) - Impulse-Momentum Equation - Application of the Momentum Equation - Flow in Pipes – Pipes Systems.

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	Solve problems in physical properties of fluid, pressure measurements, hydrostatic pressure forces on submerged surfaces, and losses in flow in pipes.
		CO2	Identify the fundamental laws of fluid mechanics as continuity, energy, and momentum equation.



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	Solve the complex problems in Fluid mechanics.
		CLO2	Apply laboratory experiments and apply available online software packages to solve flow problems.
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	Analyse fluid mechanics applications using Mass, Energy and Momentum equations
		CLO4	Evaluate fluid mechanic applications using laboratory experiments

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	√			
Midterm Exam	7				
Types of flow	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 online software packages to solve flow problems	14		√		
Practical and oral exam	15				
Total	15	12	5	4	4

2.5. Lab Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Determine Densities, and Specific Gravities.	2		√		√
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			
	CLO1	CLO2	CLO3	CLO4
1. Lectures	√		√	
2. Tutorials	√	√	√	
3. Video-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 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			
		CLO1	CLO2	CLO3	CLO4
Tests	Midterm Exam	√		√	
	Experimental		√		√
	Quizzes	√		√	
	Oral Exam	√	√		√
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	5
Experimental	2, 3, 10, 11, 12, and 14	10
Midterm Exam	7	30
Reports	14	5
Oral Test	15	10
Final Exam	16	40
Total		100 marks

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

Course Notes:	According to lecturer
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"> • 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 • Mechanics of Fluids, Massey B S., Van Nostrand Reinhold. 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:	Young, Munson and Okiishi's A Brief Introduction to Fluid Mechanics, 6th Edition Wiley
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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	
	CO 1	CO 2
PO1	√	√

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes			
	CLO 1	CLO 2	CLO 3	CLO 4
CO1	√	√		
CO2			√	√

3.3. Program Learning Outcomes VS Course Learning Outcomes

Program Learning Outcomes	Course Learning Outcomes			
	CLO 1	CLO 2	CLO 3	CLO 4
PLO2	√	√		



PLO11			√	√
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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"> • Quizzes • written Exam
		CLO2	<ul style="list-style-type: none"> • Tutorials • Practical-based Learning 	<ul style="list-style-type: none"> • Experimental • Reports • Oral Test
PLO11		CLO3	<ul style="list-style-type: none"> • Lecture • Tutorials 	<ul style="list-style-type: none"> • Quizzes • written Exam
		CLO4	<ul style="list-style-type: none"> • Practical-based Learning 	<ul style="list-style-type: none"> • Experimental Exam • Oral Test

Course Coordinator: Dr. Fahmy Salah Abdelhaleem

Head of Department: Prof. Dr. Hala Refat

Date: / 9 /2024



Course Specification (Study Plan 2022)

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	Survey for Engineers I	Code	CIV 142		
Pre-requisite Course Title	Mathematics II	Code	BES 012		
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>		
Semester	1-2				
Teaching Hours	Credit hours	Contact hours			
		Lect.	Tut.	Lab.	Sum
	3	2	-	2	4

2. Professional Information:

2.1. Course description:

Basics of surveying and mapping (Definitions - Units - Scales- Reconnaissance - Sketch drawing)- Distance measurement (principles - optical measurements- EDM) - Angle and direction measurement (Vertical & Horizontal angle measurements) - Traverse (Traverse computation & adjustment) - Intersection and Resection - Area & volume computation - Vertical control & Leveling (Definitions - Methods of determining relative heights - Topographic maps - Precise leveling - Trigonometric leveling).

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	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.
PO 5	Master self-learning and life-long learning strategies to communicate effectively in academic/professional fields.	CO 2	Practice the experimental, and surveying techniques and skills with proficiency using modern surveying instruments in a work team.

2.3. Course Learning Outcomes (CLO's):



Program Learning Outcomes		Course Learning Outcomes	
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.	CLO 1	Use different survey instruments, (tap, theodolite, and level) efficiently as a member in a working group in engineering projects.
PLO 5	Practice research techniques and methods of investigation as an inherent part of learning.	CLO 2	Apply the fundamental concepts of using surveying instruments in survey and setting out.
		CLO 3	Identify the basic principles of a plane and topographic survey
PLO 11	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.	CLO 4	Determine horizontal and vertical angles, horizontal distance, and reduced level of points.
		CLO 5	Calculate the coordinate of the traverse, adjust it, and solve the intersection and resection problems.

2.4. Course Topics:

Course Topics	Week	Course LO's Covered				
		CLO1	CLO2	CLO3	CLO4	CLO5
Basics of surveying and mapping (Definitions - Units - Scales- Reconnaissance - Sketch drawing)	1		√			



Distance measurement (principles - optical measurements- EDM)	2	√	√			
Angle and direction measurement (Vertical & Horizontal angle measurements)	3				√	
Traverse (Traverse computation & adjustment)	4, 5					√
Intersection and Resection	6					√
Midterm Exam	7					
Area & volume computation	8, 9	√				
Vertical control & Leveling (Definitions)	10			√	√	
Methods of determining relative heights	11			√	√	
Topographic maps	12		√	√		
Precise leveling	13			√	√	
Trigonometric leveling	14			√	√	
Practical Exam	15					
Final Exam	16					
Total	13	4	2	5	6	3

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered				
		CLO1	CLO2	CLO3	CLO4	CLO5
Linear surveying measurements	1, 2	√				
Theodolite parts and calibration	3, 4, 5	√				
Vertical and Horizontal angle measurements	6, 8, 9	√			√	
Tacheometric surveying	10, 11	√				
Survey levelling instruments and height determination	12, 13, 14	√			√	
Total		13			5	



2.6 Teaching and Learning Methods

Teaching and Learning Methods:	CLO 1	CLO2	CLO3	CLO4	CLO5
	Lecture				√
Practical-based Learning	√			√	
Report		√	√		
Teaching Online				√	√
Teaching and Learning Methods for Students with Special Needs:					
Methods					
Discussion Session					
Extra Lectures					
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	Midterm Exam			√	√
	Experimental Exam	√		√	
Reports			√	√	
Mini Projects		√		√	
Summative Assessment Method					
Final Exam			√	√	√

2.7.1. Assessment Schedule & Grades Distribution



Assessment Method	Week	Weighting of Asses.
Midterm Exam	7	30
Reports	3	3
Mini Projects	14	7
Experimental Exam	15	20
Final Exam		40
Total		100 marks

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

Course Notes:	According to lecturer
Essential Books (Textbooks):	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
Periodicals, Web Sites, ... etc:	<ul style="list-style-type: none"> https://www.lawinsider.com/dictionary/survey-plan#:~:text=Survey%20Plan%20means%20the%20plan,Sample%20Sample%20 https://0810ole6z-1105-y-https-www-webofscience-com.mplbci.ekb.eg/wos/woscc/full-record/WOS:000931961700049?SID=EUW1ED0D57dNJ5kJCin9AAaFD1YUc <p>Egyptian Knowledge Bank</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	
	CO 1	CO 2
PO 1	√	
PO 5		√

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes				
	CLO 1	CLO 2	CLO 3	CLO 4	CLO 5
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	CLO 5
PLO 2	√				
PLO 5		√	√		
PLO 11				√	√

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• Mini Projects
PLO5	PO5	CLO2	<ul style="list-style-type: none">• Report	<ul style="list-style-type: none">• Reports• Final Exam
PLO11	PO1	CLO3	<ul style="list-style-type: none">• Reports	<ul style="list-style-type: none">• Reports• Final Exam
		CLO4	<ul style="list-style-type: none">• Lecture• Practical-based Learning• Teaching Online	<ul style="list-style-type: none">• Midterm Exam• Experimental Exam• Mini Projects• Final Exam
		CLO5	<ul style="list-style-type: none">• Lecture• Teaching Online	<ul style="list-style-type: none">• Midterm Exam• Final Exam

Course Coordinator:

Dr. Ahmed Saber

Head of Department: Prof. Dr. Hala Refat

Date: / 9 /2024



Course Specification (Study Plan 2022)

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	Structure Analysis I	Code	CIV 121		
Pre-requisite Course Title	Mechanics I	Code	BES 021		
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>		
Semester	1-1				
Teaching Hours	Credit hours	Contact hours			
		Lect.	Tut.	Lab.	Sum
	3	2	2	4	

2. Professional Information:

2.1. Course description:

Loads and reactions – Stability of structures (external and internal) – Straining actions in Statically determinate structures- Normal stresses – Shear stresses (pure shear, torsional) – 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 situation.	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	Identify, 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 construction of	CLO3	Determine the internal forces in determinate structural elements using classical methods



	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	Calculate the stresses and combined stresses in various types of structural members under different loading conditions, such as axial loading, bending, and torsion
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2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
Loads and Reactions.	1	√			
Loads and Reactions.	2	√			
Stability of structures	3		√		
Analysis of Determinate Beam	4			√	
Analysis of Determinate Beam	5			√	
Analysis of Determinate Frame	6			√	
Midterm Exam	7	√	√	√	
Analysis of Determinate Frame	8			√	
Analysis of Determinate Truss.	9			√	
Normal stresses	10				√
Normal stresses	11				√
Shear stresses	12				√
Shear stresses	13				√
Combined stresses.	14				√
Practical Exam	15				
Final Exam	16				
Total	13	2	1	5	5

2.5. Lab Topics:

Not Applicable



2.6 Teaching and Learning Methods

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

2.7 Assessment Methods

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

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Mid-Term Exam	8	30 % (30 Degree)
Quizzes	2-14	30 % (30 Degree)
Final Exam	16	40% (40 Degree)
Total		100 marks

2.8. List of Reference:

Course Notes:	According to lecturer
Essential Books (Textbooks):	Theory of structures Wagih Mohamed eldakhakhni, 2020 ISBN: 0-7432-02-977-978
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.



	<ul style="list-style-type: none"> • Kenneth M. Leet, Chia-Ming Uang, Joel T. Lanning, Anne M. Gilbert. “Fundamentals of Structural Analysis”. McGraw-Hill Education, 2018. ISBN-13: 978-0073398006 • 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
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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	
	CO 1	CO 2
PO1	√	√

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 11			√	√

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO 1	PO1	CLO 1	<ul style="list-style-type: none"> • Lecture • Tutorials 	<ul style="list-style-type: none"> • Midterm Exam • Quizzes • Final Exam
		CLO 2	<ul style="list-style-type: none"> • Lecture • Tutorials 	<ul style="list-style-type: none"> • Midterm Exam • Quizzes • Final Exam
PLO 11	PO1	CLO 3	<ul style="list-style-type: none"> • Lecture • Tutorials 	<ul style="list-style-type: none"> • Midterm Exam • Quizzes • Final Exam
		CLO 4	<ul style="list-style-type: none"> • Lecture • Tutorials 	<ul style="list-style-type: none"> • Midterm Exam • Quizzes • Final Exam

Course Coordinator: Dr. Ahmed Abdelsalam

Head of Department: Prof. Dr. Hala Refat

Date: / 9 /2024



Course Specification (Study Plan 2022)

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	CIV 114	
Pre-requisite Course Title	Technology of Building Materials	Code	CIV 113	
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>	
Semester	Please select the appropriate and delete the others 1-2			
Teaching Hours	Credit hours	Contact hours		
		Lect.	Tut.	Lab.
	3	2	0	2

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	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	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 (I)	3			*			
Concrete manufacture (II)	4			*			
Properties of fresh concrete	5	*			*		



Properties of hardened concrete (I)	6		*		*		
Properties of hardened concrete (II)	7		*		*		
Mid-term Exam	8						
Durability of concrete	8		*	*			
Mix design (I)	10					*	
Mix design (II)	11					*	
Statistical analysis to judge concrete quality	12						*
Concrete admixtures	13			*			
Special concretes	14			*			
Experimental / Oral Exam	15						
Final exam	16						
Total	16	1	3	8	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. Practical	*	*		*		
3. Teaching on line	*	*	*	*	*	*
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 7 & 9 to 14	10%
Midterm Exam	8	30%
Experimental & Oral	15	20%
Final Exam	16	40%
Total		100%

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

Course Notes:	According to lecturer
Essential Books (Textbooks):	<p>١- الكود المصري لتصميم وتنفيذ المنشآت الخرسانية - ٢٠٣.</p> <p>٢- الملحق الثالث للكود المصري لتصميم وتنفيذ المنشآت الخرسانية (دليل الاختبارات المعملية لمواد الخرسانة).</p>
Recommended Books:	<p>1- Concrete Technology, AM Neville, JJ Brooks, Longman, ISBN-10: 0273732196, ISBN-13: 978-0273732198.</p> <p>2- Properties of Concrete and Structures, P.K. Mehta, Prentice Hall, ISBN-10: 0131671154, ISBN-13: 978-0131671157.</p> <p>3- تكنولوجيا الخرسانة" (الجزء الأول والجزء الثاني)، أ.د. أحمد العريان - أ.د. عبد الكريم عطا</p>
Periodicals, Web Sites, ... etc:	<p>https://www.concrete.org</p> <p>https://www.cement.org</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"> • Lectures • Practical • Teaching on line 	<ul style="list-style-type: none"> • Written exam • Assignments • Oral exam • Experimental
		CLO2	<ul style="list-style-type: none"> • Lectures • Practical • Teaching on line 	<ul style="list-style-type: none"> • Written exam • Assignments • Oral exam • Experimental
PLO11	PO6	CLO3	<ul style="list-style-type: none"> • Lectures • Teaching on line 	<ul style="list-style-type: none"> • Written exam • Assignments • Oral exam
		CLO4	<ul style="list-style-type: none"> • Lectures • Practical • Teaching on line 	<ul style="list-style-type: none"> • Written exam • Assignments • Oral exam • Experimental
PLO13		CLO5	<ul style="list-style-type: none"> • Lectures • Teaching on line 	<ul style="list-style-type: none"> • Written exam • Assignments • Oral exam
		CLO6	<ul style="list-style-type: none"> • Lectures • Teaching on line 	<ul style="list-style-type: none"> • Written exam • Assignments • Oral exam

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

Head of Department: Prof. Dr. Hala Refaat

Date: / 9 /2024



Course Specification (Study Plan 2022)

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	CIV 113	
Pre-requisite Course Title	General Chemistry	Code	BES 041	
Type	Compulsory <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>		
Semester	Please select the appropriate and delete the others 1-1			
Teaching Hours	Credit hours	Contact hours		
		Lect.	Tut.	Lab.
	2	2	0	1

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

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered					
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6
Cement tests (I)	7	*	*		*		*
Cement tests (II)	9	*	*		*		*
Concrete aggregates tests	11	*	*		*		*
Total	3	3	3		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.Practical	*	*		*		
3. Teaching on line	*	*	*	*	*	*
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 7 & 9 to 14	10%
Midterm Exam	8	30%
Experimental & Oral	15	20%
Final Exam	16	40%
Total		100%

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

Course Notes:	According to lecturer
Essential Books (Textbooks):	١- الكود المصري لتصميم وتنفيذ المنشآت الخرسانية - ٢٠٣. ٢- الكود المصري لأسس تصميم واشتراطات تنفيذ البوليمرات المسلحة بالألياف في مجالات التشييد - ٢٠٨. ٣- الملحق الثالث للكود المصري لتصميم وتنفيذ المنشآت الخرسانية (دليل الاختبارات المعملية لمواد الخرسانة).
Recommended Books:	1- Construction Materials Their Nature and Behaviour, Fifth Edition, Edited By Marios Soutsos, Peter Domone, ISBN 9781498741101. 2- Building Materials (THIRD REVISED EDITION), S. K. Duggal, NEW AGE INTERNATIONAL (P) LIMITED PUBLISHERS, ISBN-13: 978-81-224-2975-6. 3- "خواص واختبار المواد" (الجزء الأول والثاني) أ.د. عبد الكريم عطا أ.د. أحمد العريان.
Periodicals, Web Sites, ... etc:	https://www.buildingmaterials.co.uk/ https://www.sciencedirect.com/journal/construction-and-building-materials



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"> • Lectures • Practical • Teaching on line 	<ul style="list-style-type: none"> • Written exam • Assignments • Oral exam • Experimental
		CLO2	<ul style="list-style-type: none"> • Lectures • Practical • Teaching on line 	<ul style="list-style-type: none"> • Written exam • Assignments • Oral exam • Experimental
PLO11	PO6	CLO3	<ul style="list-style-type: none"> • Lectures • Teaching on line 	<ul style="list-style-type: none"> • Written exam • Assignments • Oral exam
		CLO4	<ul style="list-style-type: none"> • Lectures • Practical • Teaching on line 	<ul style="list-style-type: none"> • Written exam • Assignments • Oral exam • Experimental
PLO13		CLO5	<ul style="list-style-type: none"> • Lectures • Teaching on line 	<ul style="list-style-type: none"> • Written exam • Assignments • Oral exam
		CLO6	<ul style="list-style-type: none"> • Lectures • Teaching on line 	<ul style="list-style-type: none"> • Written exam • Assignments • Oral exam

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

Head of Department: Prof. Dr. Hala Refaat

Date: / 9 /2024



Level 2



Course Specification (Study Plan 2022)

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	Architectural Engineering	Code	ARC 217		
Pre-requisite Course Title	CAD for Civil Engineering	Code	CIV 101		
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>		
Semester	please select the appropriate and delete the others 2-1				
Teaching Hours	Credit hours	Contact hours			
		Lect.	Tut.	Lab.	Sum
	2	1	0	2	3

2. Professional Information:

2.1. Course description:

The course focuses on the relation between building materials and the related adequate construction systems. Students study the basic elements of the building (roofs - floors - walls) and understand. The architectural and services elements of buildings (Function - Finishes - Building materials - Stairs - Elevators). This course provides the students with the fundamental skills and understanding the architectural drawings (Axes - Interior and exterior dimensions - Finishes tables...).

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	Outline the architectural vocabulary and drawings which used in architectural drawings.
		CO2	Produce the architectural drawings of small projects in form of different architectural projections.

2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO 8	Communicate effectively – graphically, verbally and in writing	CLO1	Discuss effectively simple architectural drawings.



	– with a range of audiences using contemporary tools.		
PLO9	Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	CLO2	Recognize the building components and materials of small architectural projects.
		CLO3	Generate manual architectural drawings for small projects through imagination and creativity.

2.4. Course Topics:

Course Topics	Week	Course LO's Covered		
		CLO1	CLO2	CLO3
Introduction to course content	1		√	
Different types of architectural drawings	2		√	
Explain how to draw architectural plans	3	√		√
Explain how to draw architectural sections	4	√		√
Explain how to draw architectural elevations	5	√		√
Explain how to draw architectural layout	6	√		√
Midterm Exam	7			
Introduction to the project	8		√	
Introduction To RC Stairs	9		√	
Flooring systems: Stones (Granite-Marble- lime/sand stone- slates...)	10		√	
Wooden floor systems: (Panels – parquets-Tiles)	11		√	
Walling systems: plastering & Painting	12		√	
Dry wall systems: (Gypsum – Cement –Wooden– Engineered) partitions.	13	√	√	√
Final sketch & discussion	14	√	√	√
Practical Exam	15			
Final Exam	16			
Total	13	6	9	6

2.5. Lab Topics:

N/A



2.6 Teaching and Learning Methods

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

2.7 Assessment Methods

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

2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Midterm Exam	Week 7	30
Assignments	weekly	15
Project	Week 14	15
Final Exam	Week 16	40
Total		100 marks

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

Course Notes:	According to lecturer
Essential Books (Textbooks):	Principles and Practice of Engineering by Mark McAfee, ASCE, Second Edition, 2010.



Recommended Books:	Ching, F., and Juroszek, S. (2018). Design Drawing. 3 rd ed., Hoboken, NJ: John Wiley & Sons, Inc.
	Karlen, M. and Fleming, R. (2016). Space Planning Basics. Hoboken, NJ: John Wiley & Sons, Inc.

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	√	√	√

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes		
	CLO 1	CLO 2	CLO 3
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
PLO 8	√		



PLO 9		√	√
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3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO8	PO 1	CLO1	<ul style="list-style-type: none"> • Tutorials • Self-Learning 	<ul style="list-style-type: none"> • Assignments • Projects
PLO9	PO 1	CLO2	<ul style="list-style-type: none"> • Lecture • Tutorials • Projects 	<ul style="list-style-type: none"> • Midterm Exam • Assignments • Final Exam
		CLO3	<ul style="list-style-type: none"> • Tutorials • Self-Learning • Projects 	<ul style="list-style-type: none"> • Midterm Exam • Assignments • Project • Final Exam

Course Coordinator: Dr Ahmed Elsaadany

Head of Department: Prof. Dr. Hala Refat

Date: / 9 /2024



Course Specification (Study Plan 2022)

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	CIV 261		
Pre-requisite Course Title	Hydraulics	Code	CIV 162		
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>		
Semester	2-1				
Teaching Hours	Credit hours	Contact hours			
		Lect.	Tut.	Lab.	Sum
	٢	٢	١	٠	٣

2. Professional Information:

2.1. Course description:

Introduction to water balance and hydrological cycle – Precipitation – Evaporation – Transpiration – Infiltration – Runoff – Hydrograph – Hydrology of the Nile basin – Flood routing – Storage and reservoir operation – Groundwater hydrology (Aquifers and groundwater reservoirs – confined and unconfined flow – design of wells – Groundwater management) – Application of computer programs in hydrology such as HEC-RAS.

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	
PLO 1	Identify, formulate, and solve complex engineering problems by	CLO1	Identify hydrological components like precipitation, evaporation,



	applying engineering fundamentals, basic science, and mathematics.		infiltration, runoff and subsurface flow.
		CLO2	Solve practical problems in surface hydrology and groundwater hydrology
PLO 11	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	√	√		√
Hydromorphology	6	√			
Midterm Exam	7	√	√		√
Surface Runoff and Stream Flow Hydrograph	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		√		√
Final Exam	16	√	√		√
Total		13	9	4	9



2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered							
		CLO1	CLO2	CLO3	CLO4	CLO5	CLO6	CLO7	CLO8
Total									

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered			
	CLO 1	CLO2	CLO3	CLO4
1. Lectures	√	√		√
2. Tutorials		√	√	√
3. Video-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 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			
		CLO1	CLO2	CLO3	CLO4
Tests	Midterm Exam	√	√		√
	Quizzes	√	√	√	√
	Oral Exam	√	√		
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	10 marks
Midterm Exam	7	30 marks
Reports	13	10 marks
Oral Test	15	10 marks
Final Exam	16	40 marks
Total		100 marks

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

Course Notes:	According to lecturer
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. 4th Edition 2017.
Periodicals, Web Sites, ... etc:	Journal of Hydrology. Elsevier B.V. https://www.sciencedirect.com/journal/journal-of-hydrology

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	√	√

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	√	√		
PLO			√	√

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO 1	PO1	CLO1	<ul style="list-style-type: none"> Lecture Video-based Learning 	<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 Video-based Learning 	<ul style="list-style-type: none"> Quizzes Reports



		CLO4	<ul style="list-style-type: none">• Lecture• Tutorials• Video-based Learning	<ul style="list-style-type: none">• written Exam• Reports• Quizzes
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**Course Coordinator: Dr. Fahmy Salah Abdelhaleem
Dr. Amir Sabry Ibrahim**

Head of Department: Prof. Dr. Hala Refat

Date: 06/ 09 /2024



Course Specification (Study Plan 2022)

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	09-2024				
Course Title	Design of R.C. Structures II	Code	CIV 252		
Pre-requisite Course Title	Design of R.C. Structures I	Code	CIV 251		
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>		
Semester	2-2				
Teaching Hours	Credit hours	Contact hours			
		Lect.	Tut.	Lab.	Sum
	3	2	2	0	4

2. Professional Information:

2.1. Course description:

Design of flat slabs - Design of sections subjected to bending moment and axial force - Analysis and design of columns – Design of RC frames -Design of Sections under Torsion - Serviceability limit states (deflection - crack width).

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	Identify the types of RC structure systems.
PO2	Behave professionally, adhere to engineering ethics and standards, and work to develop the profession and community and promote sustainability principles.	CO2	Design the different Concrete elements geometrically & structure
PO4	Use techniques, skills, and modern engineering tools necessary for engineering practice.	CO3	Analyze the water RC structure elements and design waterside sections.



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 the methods of design according to the standard code.
PLO4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	CLO2	Use the code to design of sections subjected to flexure and shear.
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	Verify the conditions of serviceability Limit states.
		CLO4	Design the different reinforcement concrete structural elements according to ECP.

2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
- Design of flat slabs	1, 2	√	√	√	√
Design of sections subjected to bending moment and axial force	2, 3	√	√	√	√
Analysis and design of columns	4, 5	√	√	√	√
Midterm Exam	7	√	√	√	√
Design of RC frames	8, 9	√	√	√	√
Design of Sections under Torsion	10, 11	√	√	√	√
Serviceability limit states (deflection - crack width).	12-14	√	√	√	√
Practical Exam	15				
Final Exam	16	√	√	√	√



Total	16	16	16	16	16
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2.5 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered			
	CLO1	CLO2	CLO3	CLO4
1. Lecture	√	√	√	√
2. Tutorials	√	√	√	√
3. Presentation			√	√
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	
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.
Tests	Midterm Exam	7	30
	Quizzes	4,6,11,12	20
Assignments		Every week	10
Summative Assessment Method			
Final Exam		16	40
Total			100

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

Course Notes:	According to lecturer
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Essential Books (Textbooks):	<ul style="list-style-type: none"> • Egyptian Code for Design & Construction of Reinforced Concrete Structures – ECOP 203-2020 • Shaker Elbehary handbook. • Lectures.
Recommended Books:	<ul style="list-style-type: none"> • Egyptian Code for Design & Construction of Reinforced Concrete Structures – ECOP 203-2018 • □ Design of Concrete Structures, Arthur H Nilson, D.Darwin, Charles W. Fifteenth Edition, 2016. • □ Fundamentals of Reinforcement Concrete and Prestressed concrete, M.Hilal, 1987. • □ Design of reinforced concrete structures, Mashhour Ghoneim, Mahmoud Elmihilmy, Volume 2, Third edition, 2012. • □ Design of reinforced concrete structures, Mashhour Ghoneim, Mahmoud Elmihilmy, Volume 3, First edition, 2011.

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		
	CO 1	CO 2	CO 3
PO1	√		
PO2		√	
PO4			√

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		√		√
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
PLO3	√			
PLO4		√		
PLO12			√	√

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO3	PO1	CLO1	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Quizzes. Written exam. Assignments.
PLO4	PO2	CLO2	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Written exam. Assignments.
PLO12	PO4	CLO3	<ul style="list-style-type: none"> Lecture Tutorials Presentation Self-Learning 	<ul style="list-style-type: none"> Quizzes. Written exam. Assignments.
		CLO4	<ul style="list-style-type: none"> Lecture Tutorials Presentation 	<ul style="list-style-type: none"> Quizzes. Written exam. Assignments.

Course Coordinator: Dr. Marwa Hany Bondok.

Marwa

Head of Department: Prof. Dr. Hala Refat

Date: 09 /09 /2024.



Course Specification (Study Plan 2022)

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	09-2024				
Course Title	Design of R.C. Structures I	Code	CIV 251		
Pre-requisite Course Title	Concrete Technology Structure Analysis II	Code	CIV 114 CIV 122		
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>		
Semester	2-1				
Teaching Hours	Credit hours	Contact hours			
		Lect.	Tut.	Lab.	Sum
	3	2	2	0	4

2. Professional Information:

2.1. Course description:

Properties of concrete materials - Ultimate limit states design method - Design of sections under pure bending moment (Rectangular, L & T - sections) - Load distribution – Design of section under shear – Design simple and continuous beams - Design of one-way and two-ways solid slabs - Design of hollow block slabs - Design of panelled beams.

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 the different types of RC design methods.
PO2	Behave professionally, adhere to engineering ethics and standards, and work to develop the profession and community and promote sustainability principles.	CO2	Analyze the different RC slabs system, and floor beams.
PO4	Use techniques, skills, and modern engineering tools necessary for engineering practice.	CO3	Design the concrete elements subjected to different straining actions.



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 the methods of design according to the standard code.
PLO4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	CLO2	Use the code to design of sections subjected to flexure and shear.
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	Verify the conditions of serviceability Limit states.
		CLO4	Design the different reinforcement concrete structural elements according to ECP.

2.4. Course Topics:

Course Topics	Week	Course LO's Covered			
		CLO1	CLO2	CLO3	CLO4
- Properties of concrete materials & Ultimate limit states design method	1	√			
Design of sections under pure bending moment (Rectangular, L & T - sections)	2, 3	√	√	√	
Load distribution	4				√
Design of section under shear	5	√	√	√	
Design simple beams	6		√	√	√
Midterm Exam	7				
Design continuous beams	8		√	√	√



Design of one-way and two-ways solid slabs	9, 10		√	√	√
Design of hollow block slabs	11, 12		√	√	√
Design of panelled beams	13, 14		√	√	√
Practical Exam	15				
Final Exam	16				
Total	16	3	7	7	6

2.5 Teaching and Learning Methods

Teaching and Learning Methods:	Course LO's Covered			
	CLO1	CLO2	CLO3	CLO4
1. Lecture	√	√	√	√
2. Tutorials	√	√	√	√
3. Presentation			√	√
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	
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.
Tests	Midterm Exam	7	30
	Quizzes	4,6,11,12	20
Assignments		Every week	10
Summative Assessment Method			
Final Exam		16	40
Total			100



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

Course Notes:	According to lecturer
Essential Books (Textbooks):	<ul style="list-style-type: none"> • Egyptian Code for Design & Construction of Reinforced Concrete Structures – ECOP 203-2020 • Shaker Elbehary handbook. • Lectures.
Recommended Books:	<ul style="list-style-type: none"> • Design of Concrete Structures, Arthur H Nilson, D.Darwin, Charles W. Fifteenth Edition, 2016. • Design of reinforced concrete structures, Mashhour Ghoneim, Mahmoud Elmihilmy, Volume I, second edition, 2012. • Design of reinforced concrete structures, Mashhour Ghoneim, Mahmoud Elmihilmy, Volume 2, Third edition, 2012. • Design of Reinforced Concrete by Jack C. McCormac, Russell H. Brown, Wiley, Fifth Edition, 2014

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		
	CO 1	CO 2	CO 3
PO1	√		
PO2		√	
PO4			√



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		√		√
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
PLO3	√			
PLO4		√		
PLO12			√	√

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO3	PO1	CLO1	Lecture	Midterm and Final Exams.
			Tutorials	Midterm and Final Exams, Assignments, and Quizzes
PLO4	PO2	CLO2	Lecture	Midterm and Final Exams.
			Tutorials	Midterm and Final Exams, and Assignments.
PLO12	PO4	CLO3		Midterm and Final Exams.
				Midterm and Final Exams, Assignments, and Quizzes
		Self-Learning	Assignments	
		CLO4	Lecture	Midterm and Final Exams.
Tutorials	Midterm and Final Exams, Assignments, and Quizzes			

Course Coordinator: Ass. prof. Dr. Mohamad Makhoulf

Head of Department: Prof. Dr. Hala Refat

Date: 07 /09 /2024



Course Specification (Study Plan 2022)

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	Survey for Engineers II	Code	CIV 241		
Pre-requisite Course Title	Survey for Engineers I	Code	CIV 142		
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>		
Semester	2-1				
Teaching Hours	Credit hours	Contact hours			
		Lect.	Tut.	Lab.	Sum
	3	2	-	2	4

2. Professional Information:

2.1. Course description:

Basics of geodesy- Geodetic datum – Reference Ellipsoid- Geoid determination –Terrestrial Coordinate systems and associated transformations – Geodetic position computations on the reference Ellipsoid (2 D approach for horizontal control)- Geodetic position computations in Space (3 D approach) – direct Geodetic problem – Inverse Geodetic problem – (GNSS) Global Navigation Satellite System - Satellite orbits - Satellite signals – Observables - Mathematical models for positioning - Data processing - Data transformation.

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	Solve the problems and discuss all that related to geodetic datum and coordinate systems of the objects on the earth by applying a wide spectrum of surveying knowledge ad the techniques of the point position determination using analytic thinking..



PO 5	Master self-learning and life-long learning strategies to communicate effectively in academic/professional fields.	CO 2	Apply a self-learning strategies to communicate effectively in professional (surveying) fields
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2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
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.	CLO 1	Identify the concepts and theories of Geodesy and Global Navigation Satellite System.
PLO 5	Practice research techniques and methods of investigation as an inherent part of learning.	CLO 2	Apply the methods of investigation in DGNSS concepts.
		CLO 3	Discuss the basic principle of different coordinate systems on the ellipsoid.
PLO 11	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.	CLO 4	explain the results of geodetic observations using numerical models and calculate their accuracy.
		CLO 5	Use suitable software to solve the problems of determining 3-D position on and near the surface of the earth

2.4. Course Topics:

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



Basics of geodesy- Geodetic datum – Reference Ellipsoid- Geoid determination	1	√				
Terrestrial Coordinate systems and associated transformations	2	√		√		
Geodetic position computations on the reference Ellipsoid (2 D approach for horizontal control)-	3				√	√
Geodetic position computations in Space (3 D approach)	4 , 5				√	√
direct Geodetic problem – Inverse Geodetic problem	6				√	√
Midterm Exam	7					
(GNSS) Global Navigation Satellite System	8, 9	√	√			
Satellite orbits - Satellite signals – Observables	10	√	√		√	
Mathematical models for positioning	11, 12		√		√	√
Data processing	13			√	√	√
Data transformation	14			√	√	√
Practical Exam	15					
Final Exam	16					
Total	13	5	5	3	9	8

2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered				
		CLO1	CLO2	CLO3	CLO4	CLO5
Total station parts	1,2	√				√



Total Station software	3,4,5					√
Coordinates by Total Station	6,8,9	√				√
Lay out and setting out by Total Station	10, 11,12,13,14					√
Total		5				13

2.6 Teaching and Learning Methods

Teaching and Learning Methods:	CLO 1	CLO2	CLO3	CLO4	CLO5
	Lecture				√
Practical-based Learning	√				√
Report		√	√		
Teaching Online				√	√
Teaching and Learning Methods for Students with Special Needs:					
Methods					
Discussion Session					
Extra Lectures					
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	Midterm Exam				√	√
	Experimental Exam	√				√
Reports			√	√		
Mini Projects		√				√
Summative Assessment Method						
Final Exam			√	√	√	√



2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Midterm Exam	7	30
Reports	3	3
Mini Projects	14	7
Experimental Exam	15	20
Final Exam		40
Total		100 marks

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

Course Notes:	According to lecturer
Essential Books (Textbooks):	<ul style="list-style-type: none"> • 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:	<ul style="list-style-type: none"> • Elementary surveying. An introduction to geomatics by Ghilani C.D., Wolf P.R., PH 2011, ISBN: 0132554348. • PRECISION SURVEYING The Principles and Geomatics Practice-JOHN OLUSEGUN OGUNDARE-2015-ISBN 978-1-119-10251-9 • Geodesy- Introduction to Geodetic Datum and Geodetic Systems-Zhiping Lu - Yunying Qu - Shubo Qiao-2014-ISBN 978-3-642-41244-8- ISBN 978-3-642-41245-5 (eBook) <p>ENGINEERING SATELLITE-BASED NAVIGATION AND TIMING-Global Navigation Satellite Systems, Signals, and Receivers- John W. Betz-2016-ISBN: 978-1-118-61597-3</p>
Periodicals, Web Sites, ... etc:	https://desktop.arcgis.com/en/arcmap/latest/map/projections/transverse-mercator.htm

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 1	√	
PO 5		√

3.2. Course Objectives VS Course Learning Outcomes

Course Objectives	Course Learning Outcomes				
	CLO 1	CLO 2	CLO 3	CLO 4	CLO 5
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	CLO 5
PLO 2	√				
PLO 5		√	√		
PLO 11				√	√



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• Mini Projects
PLO5	PO5	CLO2	<ul style="list-style-type: none">• Reports	<ul style="list-style-type: none">• Reports• Final Exam
PLO11	PO1	CLO3	<ul style="list-style-type: none">• Reports	<ul style="list-style-type: none">• Reports• Final Exam
		CLO4	<ul style="list-style-type: none">• Lecture• Teaching Online	<ul style="list-style-type: none">• Midterm Exam• Final Exam
		CLO5	<ul style="list-style-type: none">• Lecture• Practical-based Learning• Teaching Online	<ul style="list-style-type: none">• Midterm Exam• Experimental Exam• Mini Projects• Final Exam

Course Coordinator: Dr.Rasha Mohey Al-Deen

Head of Department: Prof. Dr. Hala Refat

Date: / 9 /2024



Course Specification (Study Plan 2022)

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 and Foundations	Code	CIV 232		
Pre-requisite Course Title	Soil Mechanics	Code	CIV 231		
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>		
Semester	2-2				
Teaching Hours	Credit hours	Contact hours			
		Lect.	Tut.	Lab.	Sum
	3	2	0	2	4

2. Professional Information:

2.1. Course description:

Soil Consolidation and Settlement (Soil Consolidation Theory - Primary and Secondary Settlement - Oedometer Test) - Bearing Capacity of Soil (Terzaghi Eq. - Mayerhof Eq. – Egyptian Code Eq.) - Shallow Foundations (Construction Considerations – Design Considerations) - Design of Isolated Footings (Square and Rectangular Footings – Footing with Moment) - Design of Strip Footings - Design of Combined Footings - Design of Strap Beam Footings - Design of Rafts (Conventional Method – Ribbed Raft).

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	Evaluate the soil settlement due to compressibility resulting from different loads over time by simulating that in laboratory experiments by finding different consolidation parameters by applying engineering principles.
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 soil bearing capacity and settlement to choose an appropriate type of foundation that is appropriate to safety standards considering economic and societal factors.



2.3. Course Learning Outcomes (CLO's):

Program Learning Outcomes		Course Learning Outcomes	
PLO 03	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)
PLO 11	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	Determine the soil consolidation parameters for estimating the settlement value. (Evaluate)
		CLO4	Evaluate the soil settlement by studying the soil compressibility and compaction. (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.	CLO5	Design the isolated footings and strip footings. (Create)
		CLO6	Design of combined footings and strap footings and rafts. (Create)



2.4. Course Topics:

Course Topics	Week	Course LO's Covered					
		CLO 1	CL O2	CLO 3	CLO 4	CLO 5	CLO 6
Soil Consolidation and Settlement	1				√		
Soil Consolidation and Settlement	2			√			
Soil Consolidation and Settlement	3				√		
Bearing Capacity of Soil	4	√					
Bearing Capacity of Soil	5	√					
Shallow Foundations (Construction Considerations – Design Considerations)	6		√				
Midterm Exam	7						
Design of Isolated Footings (Square and Rectangular Footings)	8					√	
Design of Isolated Footings (Footing with Moment)	9					√	
Design of Strip Footings	10					√	
Design of Combined Footings	11						√
Design of Strap Beam Footings	12						√
Design of Rafts	13						√
Design of Rafts	14						√
Practical Exam	15						
Final Exam	16						
Total	13	2	1	1	2	3	4



2.5. Lab Topics:

Lab Topics	Week	Course LO's Covered					
		CLO 1	CLO 2	CLO 3	CLO4	CLO5	CLO6
Determination of the soil consolidation parameters.	2			√			
Total	1						

2.6 Teaching and Learning Methods

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

2.7 Assessment Methods

Assessment Methods:		Course LOs Covered					
		CLO1	CLO 2	CLO 3	CLO4	CLO 5	CLO6
Formative Assessment Method							
Tests	Midterm Exam	√	√		√		
	Experimental Exam			√			
	Oral Exam		√	√			
	Quiz	√			√	√	√
Summative Assessment Method							
Final Exam		√			√	√	√



2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Quiz	4&7&10&13	10%
Midterm Exam	7	30%
Experimental Exam	15	10%
Oral Exam	15	10%
Final Exam	16	40 %
Total		100 marks

2.8. List of References:

Course Notes:	According to lecturer
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., Engineering of Surface Foundations, Dar Al-Kutub Al-Almia, Cairo, 5th Ed., (19440/2015), ISBN 978 – 977 – 726 – 139 – 5, 2015. • Hemed a, Advances in Soil Mechanics and Foundation Engineering, IntechOpen, London ISBN: 978-1-78984-290-6, 2020.
Recommended Books:	Bowles, J., Foundation Analysis and Design, McGraw - Hill, 5th. Ed., ISBN 978 – 007 - 912 – 247 – 7, 2009.
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	
	CO 1	CO 2
PO 1	√	
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
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	CLO 5	CLO 6
PLO 3	√	√				
PLO 11			√	√		
PLO 12					√	√

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO 3	PO6	CLO1	Lecture	Midterm Exam Quiz Final Exam
		CLO2	Lecture	Midterm Exam Oral Exam
PLO 11	PO1	CLO3	Practical-based Learning	Experimental Exam Oral Exam
		CLO4	Lecture	Midterm Exam Quiz Final Exam
PLO 12	PO6	CLO5	Lecture	Quiz Final Exam
		CLO6	Lecture	Quiz Final Exam

**Course Coordinator: Dr. Mohab Roshdy Ahmed
Dr. Mahmoud Awaad Gomaa**

Head of Department: Prof. Dr. Hala Refat

Date: / 9 /2024



Course Specification (Study Plan 2022)

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	Structure Analysis III	Code	CIV 221		
Pre-requisite Course Title		Code	CIV 122		
Type	Compulsory <input checked="" type="checkbox"/>		Elective <input type="checkbox"/>		
Semester	2-1				
Teaching Hours	Credit hours	Contact hours			
		Lect.	Tut.	Lab.	Sum
	3	2	0	2	4

2. Professional Information:

2.1. Course description:

Analysis of statically indeterminate structures: 1- Force approach (Consistent deformation method), 2- Displacement approach (Slope deflection Method, Moment distribution method). Introduction to Matrix Structural Analysis for 1-D element using Stiffness method (Truss, Beam, and frame elements).

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	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	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 beams by the moment distribution method	4		✓		
Solving the indeterminate frames by the moment distribution method	5			✓	
Solving the indeterminate frames with sidesway by the moment distribution method	6			✓	
Midterm Exam	7	✓	✓	✓	



Using the force method to analyzing the indeterminate beams.	8	✓	✓	✓	
Using the force method to analyzing the indeterminate frames.	9	✓		✓	
Using the force method to analyzing the indeterminate trusses.	10				✓
Using the force method to analyzing the indeterminate Composite Structures	11				✓
Introduction to Matrix Structural Analysis for 1-D element using Stiffness method	12	✓			✓
Using the Stiffness method to analyzing the indeterminate trusses	13				✓
Using the Stiffness method to analyzing the indeterminate Beams and Frames	14	✓			✓
Practical Exam	15				
Final Exam	16				
Total	13	2	1	4	2

2.5. Lab Topics:

Not Applicable

2.6 Teaching and Learning Methods

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

2.7 Assessment Methods

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



2.7.1. Assessment Schedule & Grades Distribution

Assessment Method	Week	Weighting of Asses.
Mid-Term Exam	8	30 % (30 Degree)
Quizzes	2-14	30 % (30 Degree)
Final Exam	16	40% (40 Degree)
Total		100 marks

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

Course Notes:	According to lecturer
Essential Books (Textbooks):	Aslam Kassimali, "Structural Analysis", Cengage Learning, Fifth Edition, 2015. ISBN-13: 978-1133943891
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	
	CO 1	CO 2
PO1	√	√



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 11			√	√

3.4. Assessment Alignment Matrix

PLO	PO	CLO	Teaching M.	Assessment M.
PLO 1	PO1	CLO 1	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Midterm Exam Quizzes Final Exam
		CLO 2	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Midterm Exam Quizzes Final Exam
PLO 11	PO1	CLO 3	<ul style="list-style-type: none"> Lecture Tutorials 	<ul style="list-style-type: none"> Midterm Exam Quizzes Final Exam
		CLO 4	<ul style="list-style-type: none"> Lecture Tutorials Self-Learning 	<ul style="list-style-type: none"> Midterm Exam Quizzes Final Exam

Course Coordinator: Dr. Amr R. Elgamal

Head of Department: Prof. Dr. Hala Refat

Date: / 9 /2024