	Ministry of Higher Education **Higher Institute of Engineering and Technology** **Civil Engineering Department**	

Course Specification

Course Code: ARE2221 **Course Title: Architectural Engineering**

1. Basic information

Program Title	Civil Engineering			
Department offering the program	Civil Engineering			
Department offering the course	Architecture Engineering			
Course Code	ARE2221			
Year/level	Second year / third Level			
Specialization	**Minor**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	2	2	-	4

2. Course Aims

No.	Aim
1	Use Their understanding of professional, ethical and social responsibilities and the importance of life-long learning in the conduct of their careers . (AM6)

3. Learning Outcomes (LOs)

CLO13	Plan and monitor implementation of engineering projects
CLO14	Supervise trades requirements.
CLO25	Plan and manage construction processes: address construction defects, instability and quality issues
CLO26	Maintain safety measures in construction and materials and asses environmental impacts of projects.

4. Course Contents

No.	Topics	Week
1	Introduction and identification of the methodology, objective and method of evaluation + identification of architecture	1
2	building works and bonding bricks	2
3	structural systems for roofs with small span	3
4	Insulation works (moisture + heat)	4
5	Identify the elements of the building and the sequence of construction works	5
6	Introducing the project	6
7	**Midterm Exam**	7
8	Discuss the plan of project	8
9	expansion joints and subsidence	9
10	Discuss the section of project	10
11	Architectural Finishing Works	11
12	Apply architectural Finishing Works	12
13	Semifinal project & Evaluate the project	13
14	**Revision**	14
15	**Final Exam**	15

5. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Lectures (face to face / online)	Presentation / Movies	Discussions	Tutorials	Practical and lab. experiments	Problem Solving	Brain Storming	Projects and Team Working	Site Visits	Research / Reports	Self-learning	Modeling and Simulation

CLO13	√	-	√	-	-	√	√	√	-		√	-
CLO14	√	-	√	-	-	√	√	√	√	√	√	-
CLO25	√	√	√	-	-	-	√	√	√	√	√	-
CLO26	√	√	√	-	-	-	√	√	-	-	-	-

6. Teaching and Learning methods of Disabled Students

No.	Teaching Method	Reason
1	Additional Tutorials	-
2	Online lectures and assignments	-

7. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	LOs
1	Attendance	-------
2	Reports / Sheets	CLO13- CLO14-CLO25
3	Quiz 1 / Quiz 2	-
4	Mid-term Exam	CLO13- CLO14
5	Oral/ Practical Exam	-
6	Final Exam	CLO13- CLO14-CLO25-CLO26

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Attendance	----
2	Reports / Sheets	Weekly
3	Quiz 1 / Quiz 2	-
4	Mid-term Exam	7
5	Oral/ Practical Exam	14
6	Final Exam	15

7.3 Weighting of Assessments

	Assessment Method	Weights%	Weights	Weights%	Weights
Teacher Opinion	Reports / sheets / Activities	%50	50	%30	30
	Attendance			-	-
	Quiz 1 / Quiz 2			-	-
	Mid-term exam			20%	20
Practical / Oral	Practical Attendance	-		-	-
	Lab. Reports			-	-
	Lab. Activities / Projects			-	-
	Final oral / practical exam			-	-
Final Exam		%50	50	%50	50
Total		%100	100	%100	100

8. List of References

- DAVID CHAPELL & ANDREW WILLS,(2019)," The Architect in Practice"RIBA, New york,11TH Ed.
- Guedi Capeluto, Carlos Ernesto Ochoa,(2017), Intelligent Envelopes for High-Performance Buildings, Design and Strategy ,Springer Cham,1st Ed.
- Wilhelm, N.E. (2014). Building Construction. In: Selin, H. (eds) Encyclopaedia of the History of Science, Technology, and Medicine in Non-Western Cultures. Springer
- محمود احمد على,(2021), سلسلة دليلك فى عالم التنفيذ الجزء الاول والثانو دار الكتب العلمية للنشر والتوزيع, القاهرة.

9. Facilities required for teaching and learning

White board
Data show

10. Matrix of Course Content with Course LO's

No.	Topics	Aim	LOs
1	Introduction and identification of the methodology, objective and method of evaluation + identification of architecture	1	CLO13- CLO14- CLO25-CLO26
2	building works and bonding bricks	1	CLO13- CLO14- CLO26
3	structural systems for roofs with small span	1	CLO14- CLO25-CLO26
4	Insulation works (moisture + heat)	1	CLO13- CLO14- CLO26
5	Identify the elements of the building and the sequence of construction works	1	CLO13- CLO14- CLO26
6	Introducing the project	1	CLO14- CLO25-CLO26
7	Mid-term Exam	1	CLO13- CLO14
8	Discuss the plan of project	1	CLO13- CLO14- CLO26
9	expansion joints and subsidence	1	CLO13- CLO14- CLO26
10	Discuss the section of project	1	CLO13- CLO14- CLO26
11	Architectural Finishing Works	1	CLO14- CLO25-CLO26
12	Apply architectural Finishing Works	1	CLO13- CLO14- CLO26
13	Semifinal project & Evaluate the project	1	CLO13- CLO14- CLO25-CLO26
14	**Revision**	1	CLO13- CLO14- CLO25-CLO26
15	**Final Exam**	1	CLO13- CLO14- CLO25-CLO26

11. Matrix of Program LOs with Course Los

Program LOs		Course LOs	
PLO6	Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	CLO13	Plan and monitor implementation of engineering projects
		CLO14	supervise trades requirements.
PLO13	Plan and manage construction processes: address construction defects, instability and quality issues: maintain safety measures in construction and materials and asses environmental impacts of projects.	CLO25	Plan and manage construction processes: address construction defects, instability and quality issues
		CLO26	maintain safety measures in construction and materials and asses environmental impacts of projects.

Title	Name	Signature
Course coordinator	**Dr. Hend Ali**	
Program Coordinator:	**Dr. Khaled Samy Abdallah**	Dr. Khaled Samy
Head of Department	**Asso. Prof. Dr. Ahmed Hamdy**	Dr.A.Hamdy
Date of Approval	**2/2025**	

	Ministry of Higher Education **Higher Institute of Engineering and Technology, Fifth Settlement** **Civil Engineering Department**	

Course Specification

Course Code: CVE 2204 **Course Title: Design of R.C structures (2)**

1. Basic information

Program Title	Civil Engineering Department			
Department offering the program	Civil Engineering Department			
Department offering the course	Civil Engineering Department			
Course Code	CVE 2204			
Year/level	Second year / third level (2^{nd} Semester)			
Specialization	**Major**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	2	2		4

2. Course Aims

No.	Aim
1	Provide an engineering professional that is good in numerous facets of design and implementation in the practice of civil engineering structures (AM1)
2	Make the graduates continuing educations and self-learning and to qualify for an advanced scientific degree(AM5)

3. Learning Outcomes (LOs)

CLO6	Apply engineering design processes to produce cost-effective solutions.
CLO8	Achieve the principles of design within the principles and contexts of sustainable design and development.
CLO17	Use creative, innovative, and flexible thinking to respond to new situations.
CLO21	Select appropriate and sustainable technologies for the construction of buildings.
CLO24	Achieve an optimum design of Reinforced Concrete elements

4. Course Contents

Topics	Week
Introduction in types of sections	1
Design of sections subjected to moment only	2
Design of sections subjected to normal only	3
Design of sections subjected to moment and normal (compression) (part1)	4
Design of sections subjected to moment and normal (compression)(part2)	5
Design of sections subjected to moment and normal (compression)(part3)	6
Mid-term exam	7
Design of sections subjected to moment and normal (tension)(part1)	8
Design of sections subjected to moment and normal (tension)(part2)	9
Design of short column	10
Design of slender column	11
Drawing reinforcement of frames	12
Drawing sections of frames	13
Final revision on all topics	14
Final exam	15

5. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Lectures (face to face / online)	Presentation / Movies	Discussions	Tutorials	Practical and lab. experiments	Problem Solving	Brain Storming	Projects and Team Working	Site Visits	Research / Reports	Self-learning	Modeling and Simulation

CLO6	√			√			√					
CLO8	√			√			√					
CLO17	√			√						√	√	
CLO21	√			√			√					
CLO24	√			√						√	√	

6. Teaching and Learning methods of Disabled Students

No.	Teaching Method	Reason
1	Additional Tutorials	X
2	Online lectures and assignments	X

7. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	LOs
1	Attendance	-------
2	Sheets	CLO6, CLO8, CLO17, CLO21, CLO24
3	Quizzes	CLO6, CLO8, CLO17, CLO21
4	Mid-term Exam	CLO6, CLO8, CLO17
6	Final Exam	CLO6 ,CLO24 ,CLO17,CLO8

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Attendance	----
2	Sheets	weekly
3	Quizzes	weekly
4	Mid-term Exam	7
6	Final Exam	15

7.3 Weighting of Assessments

	Assessment Method	Weights%	Weights	Weights%	Weights
Teacher Opinion	sheets	40%	40	----	---
	Attendance			----	----
	Quizzes			20%	20
	Mid-term exam			20%	20
Practical	Practical Attendance				
	Lab. Reports				
	Lab. Activities / Projects				
	Final oral / practical exam				
Final Exam		60%	60	60%	60
Total		100%	100	100%	100

8. List of References

[1] Reynolds, C. E., Steedman, J. C., & Threlfall, A. J. (2007). Reinforced concrete designer's handbook. CRC Press.
[2] Darwin, D., Dolan, C. W., & Nilson, A. H. (2016). Design of concrete structures (Vol. 2). New York, NY, USA:: McGraw-Hill Education.
[3] Wang, C. K., & Salmon, C. G. (1979). Reinforced concrete design
[4] Shetty, M. S., & Jain, A. K. (2019). Concrete Technology (Theory and Practice), 8e. S. Chand Publishing.
[5] Raju, N. K. (2005). Structural Design and Drawing: Reinforced Concrete and Steel. Universities Press.
[6] Bandyopadhyay (2008) Design of concrete strctures. Prentice-Hall

9. Facilities required for teaching and learning

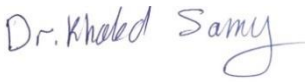
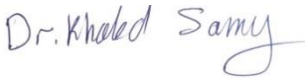
Lecture/Classroom
White board
Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)
Moodle and Microsoft teams
Data show
Laboratory Usage

10. Matrix of Course Content with Course LO's

No.	Topics	Aim	LOs
1	Introduction in types of sections	AM1,AM5	CLO6, CLO8, CLO24
2	Design of sections subjected to moment only	AM1,AM5	CLO6, CLO8, CLO24
3	Design of sections subjected to normal only	AM1,AM5	CLO17, CLO24,CLO6,CLO21
4	Design of sections subjected to moment and normal (compression) (part1)	AM1,AM5	CLO6 ,CLO24,CLO17
5	Design of sections subjected to moment and normal (compression)(part2)	AM1,AM5	CLO6 ,CLO24,CLO17
6	Design of sections subjected to moment and normal (compression)(part3)	AM1,AM5	CLO17,CLO6
7	Mid-term exam	AM1,AM5	CLO6, CLO8, CLO17
8	Design of sections subjected to moment and normal (tension)(part1)	AM1,AM5	CLO6 ,CLO24,CLO17
9	Design of sections subjected to moment and normal (tension)(part2)	AM1,AM5	CLO6 ,CLO24,CLO17
10	Design of short column	AM1,AM5	CLO6 ,CLO24,CLO17
11	Design of slender column	AM1,AM5	CLO6 ,CLO24,CLO17
12	Drawing reinforcement of frames	AM1,AM5	CLO17,CLO6
13	Drawing sections of frames	AM1,AM5	CLO17,CLO6
14	Final revision	AM1,AM5	CLO6,CLO8,CLO17,CLO21,CLO24
15	Final exam	AM1,AM5	CLO6 ,CLO24,CLO17,CLO8

11. Matrix of Program LOs with Course Los

Program LOs		Course LOs	
PLO3	1 Apply engineering design processes to produce cost-effective solutions., Meet specified needs with consideration for global, cultural, social, economic, environmental, and ethical aspects and achieve the principles of design within the principles and contexts of sustainable design and development.	CLO6,CLO8	Apply design engineering processes to .produce cost-effective solutions Achieve the principles of design within the principles and contexts of .sustainable design and development
PLO9	Use creative, innovative, and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	CLO17	Use creative, innovative, and flexible thinking to respond to new situations
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.	CLO21	Select appropriate and sustainable technologies for the construction of buildings.
PLO12	Achieve an optimum design of Reinforced Concrete and Steel Structures. Foundations and Earth Retaining Structures..	CLO24	Achieve an optimum design of Reinforced Concrete elements

Title	Name	Signature
Course coordinator	**Dr. khaled Samy Abdallah**	
Program Coordinator:	**Dr. khaled Samy Abdallah**	
Head of Department	**Asso. Prof. Dr. Ahmed Hamdy**	
Date of Approval	**2/2025**	

	Ministry of Higher Education **Higher Institute of Engineering and Technology- 5th settlement** **Civil Engineering Department**	

Course Specification

Course Code: CVE 2102 **Course Title:** Properties and Testing of Materials (3)

1. Basic information

Program Title	Civil Engineering Department			
Department offering the program	Civil Engineering Department			
Department offering the course	Civil Engineering Department			
Course Code	CVE 2102			
Year/level	Second year / third level (1st Semester)			
Specialization	**Major**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	4	1	1	6

2. Course Aims

No.	Aim
AM1	Provide an engineer professional can select appropriate type of concrete material for specific application.
AM3	Give the students the knowledge and expertise to study the concrete mix design criteria for both normal strength and high strength concrete.
AM7	Work with contemporary field instrumentation and perform experiments and analyze the results

3. Course Learning Outcomes (LOs)

CLO3	Develop and conduct appropriate experimentation and/or simulation to draw conclusions
CLO9	Utilize contemporary technologies, codes of practice and standards.
CLO16	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.
CLO21	Select appropriate and sustainable technologies for construction of buildings. Infrastructures and water structures.
CLO26	Maintain safety measures in construction and materials.

4. Course Contents	
Topics	**Week**
Manufacturing of Concrete	1
Properties and types of cement - cement tests	2
Characteristics, types, and tests of Coarse aggregates	3
Properties and tests of fine aggregates	4
Mixing water and chemical additives	5
Fresh concrete properties and tests	6
Midterm exam	7
Mix Design for normal high-strength concrete	8
Hardened concrete properties and tests	9
Evaluation of the results of the mix design of concrete mixes	10
Shrinking and creep	11
Durability of concrete	12
Quality control of concrete	13
Practical Exam	14
Final Exam	15

5. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Lectures (face to face / online)	Presentation / Movies	Discussions	Tutorials	Practical and lab. experiments	Problem Solving	Brain Storming	Projects and Team Working	Site Visits	Research / Reports	Self-learning	Modeling and Simulation

CLO3	√	√		√	√							
CLO9	√	√	√				√	√		√		
CLO16								√		√	√	
CLO21	√	√		√								
CLO26	√	√		√								

6. Teaching and Learning methods of Disabled Students

No.	Teaching Method	Reason
1	Additional Tutorials	
2	Online lectures and assignments	

7. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	LOs
1	Attendance	-------
2	Reports	CLO3,9,16,21,26
3	Sheets	CLO3,9,16,21,26
4	Quizzes	CLO3,21,26
5	Mid-term Exam	CLO3,21,26
6	Oral/ Practical Exam	CLO3,9,21,26
7	Final Exam	CLO3,9,16,21,26

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Attendance	-----
2	Reports	Bi-weekly
3	Sheets	Bi-weekly
4	Quizzes	4&10
5	Mid-term Exam	9
6	Practical Exam	14
7	Final Exam	15

7.3 Weighting of Assessments

	Assessment Method	Weights%	Weights	Weights%	Weights
Teacher Opinion	Reports	30%	30	2.5%	2.5
	sheets			5%	5
	Quizzes			2.5%	2.5
	Mid-term exam			20%	20
Practical	Practical Attendance	%10	10	-	-
	Lab. Reports			-	-
	Lab. Activities / Projects			-	-
	practical exam			10%	10
Final Exam		60%	60	60%	60
Total		100%	100	100%	100

8. List of References

[1] Mohamed Khafaga. (2015), Engineering Properties of Materials, Egyptian Dar El-Qotob

[1] Hibbeler, Russell Charles. Mechanical of materials. 2012.

[2] Abdel Rahman Megahed, (2001), "Structural Engineer guide book for strengthen of materials and advanced structural analysis" code B-g/66 .

[3] Goodno, Barry J., and James M. Gere. Mechanics of materials. Cengage Learning, 2020.

[4] Onouye, Barry, and Kevin Kane. "Statics and strength of materials for architecture and building construction." Mechanical of materials, (2007).

9. Facilities required for teaching and learning

Lecture/Classroom
White board
Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)
Moodle and Microsoft teams
Data show

Laboratory Usage

10. Matrix of Course Content with Course LO's

Week	Topics	Aim	LOs
1	Manufacturing of Concrete	AM1,AM3	CLO3
2	Properties and types of cement - cement tests	AM1,AM3	CLO3,CLO9
3	Characteristics, types, and tests of Coarse aggregates	AM1,AM3	CLO 3,CLO9,CLO21
4	Properties and tests of fine aggregates	AM1,AM3	CLO 3,CLO9,CLO21
5	Mixing water and chemical additives	AM1,AM3	CLO 3,CLO9,CLO21
6	Fresh concrete properties and tests	AM1,AM3	CLO 3,CLO9,CLO21
7	**Midterm exam**	AM1,AM3	CLO 3,CLO9,CLO21
8	Mix Design for normal high-strength concrete	AM1,AM3	CLO 3,CLO9,CLO21
9	Hardened concrete properties and tests	AM1,AM3	CLO9, CLO16,CLO21,CLO26
10	Evaluation of the results of the mix design of concrete mixes	AM1,AM3	CLO9, CLO16,CLO21,CLO26
11	Shrinking and creep	AM1,AM3	CLO9, CLO16,CLO21,CLO26
12	Durability of concrete	AM1,AM3	CLO9, CLO16,CLO21,CLO26
13	Quality control of concrete	AM1,AM3	CLO9, CLO16,CLO21,CLO26
14	**Practical Exam**	AM1,AM3	CLO9, CLO16,CLO21,CLO26
15	**Final Exam**	AM1,AM3	CLO9, CLO16,CLO21,CLO26

11. Matrix of Program LOs with Course Los

Program LOs		Course LOs	
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	Develop and conduct appropriate experimentation and/or simulation to draw conclusions

PLO4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.	CLO9	Utilize contemporary technologies, codes of practice and standards.
PLO8	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	CLO16	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.
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.	CLO21	Select appropriate and sustainable technologies for construction of buildings. Infrastructures and water structures.
PLO13	Plan and manage construction processes; address construction defects, instability, and quality issues; maintain safety measures in construction and materials; and assess environmental impact of projects.	CLO26	Maintain safety measures in construction and materials.

Title	Name	Signature
Course coordinator	**Dr. Ghada Taha Abd Alaaty**	Dr. Ghada Taha
Program Coordinator:	**Dr. khaled Samy Abdallah**	Dr. Khaled Samy
Head of Department	**Asso. Prof. Dr. Ahmed Hamdy**	Dr. A. Hamdy
Date of Approval	**/09/2024**	

Course Specification

Course Code: CVE 2202 **Course Title:** Properties and Testing of Materials (4)

1. Basic information

Program Title	Civil Engineering Department			
Department offering the program	Civil Engineering Department			
Department offering the course	Civil Engineering Department			
Course Code	CVE 2202			
Year/level	second year / third level (2nd Semester)			
Specialization	**Major**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	4	1	1	6

2. Course Aims

No.	Aim
AM1	Provide an engineer professional can select appropriate type of concrete and its properties for specific application.
AM2	Teach the students to practice the methodology of characterize the behavior different types of concretes.
AM3	Give the students the knowledge and expertise to evaluate concrete buildings & wall and repair methods.

3. Course Learning Outcomes (LOs)

CLO3	Develop and conduct appropriate experimentation and/or simulation to draw conclusions
CLO9	Utilize contemporary technologies, codes of practice and standards.
CLO16	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.
CLO21	Select appropriate and sustainable technologies for construction of buildings. Infrastructures and water structures.
CLO26	Maintain safety measures in construction and materials.

4. Course Contents	
Topics	**Week**
Introduction in Special types of concrete	1
Special types of concrete (part1)	2
Special types of concrete(part2)	3
Non- destructive tests of concrete elements	4
Hot weather concrete	5
Precautions and recommendations for hot weather concrete	6
Midterm exam	7
Corrosion of steel in concrete	8
Crack types report needed	9
Evaluation report needed	10
Types of cracks in wall and repair methods	11
Repair method for concrete elements	12
Repair by FRP technology	13
Practical Exam	14
Final Exam	15

5. Teaching and Learning methods	
Course learning Outcomes (LOs)	**Teaching and Learning Methods**

	Lectures (face to face / online)	Presentation / Movies	Discussions	Tutorials	Practical and lab. experiments	Problem Solving	Brain Storming	Projects and Team Working	Site Visits	Research / Reports	Self-learning	Modeling and Simulation
CLO3	√	√	√	√	√	√	-	-	-	-	-	-
CLO9	√	√	-	√	√	-	-	-	-	-	-	-
CLO16	√	-	√	√	√	√	√	-	-	-	-	-
CLO21	-	-	-	√	√	√	√	-	-	-	-	-
CLO26	√	-	-	√	√	√	√	-	-	-		-

6. Teaching and Learning methods of Disabled Students

No.	Teaching Method	Reason
1	Additional Tutorials	X
2	Online lectures and assignments	X

7. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	LOs
1	Attendance	-------
2	Reports	CLO3,9,16,21,26
3	Sheets	CLO3,9,16,21,26
4	Quizzes	CLO3,21,26
5	Mid-term Exam	CLO3,21,26
6	Practical Exam	CLO3,9,21,26
7	Final Exam	CLO3,9,16,21,26

7.2 Assessment Schedule		
No.	**Assessment Method**	**Weeks**
1	Attendance	----
2	Reports	Bi-weekly
3	Sheets	Bi-weekly
4	Quizzes	Bi-weekly
5	Mid-term Exam	7
6	Practical Exam	13
7	Final Exam	14

7.3 Weighting of Assessments

	Assessment Method	**Weights%**	**Weights**	**Weights%**	**Weights**
Teacher Opinion	Reports	35%	35	5%	5
	sheets			5%	5
	Attendance			-	-
	Quizzes			5%	5
	Mid-term exam			20%	20
Practical	Practical Attendance	5%	5	-	-
	Lab. Reports			-	-
	Lab. Activities / Projects			-	-
	practical exam			5%	5
Final Exam		60%	60	60%	60
Total		100%	100	100%	100

8. List of References

[1] Mohamed Khafaga. (2015), Engineering Properties of Materials, Egyptian Dar El-Qotob

[1] Hibbeler, Russell Charles. Mechanical of materials. 2012.

[2] Abdel Rahman Megahed, (2001), "Structural Engineer guide book for strengthen of materials and advanced structural analysis" code B-g/66 .

[3] Goodno, Barry J., and James M. Gere. Mechanics of materials. Cengage Learning, 2020.

[4] Onouye, Barry, and Kevin Kane. "Statics and strength of materials for architecture and building construction." Mechanical of materials, (2007).

9. Facilities required for teaching and learning

Lecture/Classroom
White board
Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)
Moodle and Microsoft teams
Data show
Laboratory Usage

10. Matrix of Course Content with Course LO's

Week	Topics	Aim	LOs
1	Introduction in Special types of concrete	AM1,AM2,AM3	CLO3
2	Special types of concrete (part1)	AM1,AM2,AM3	CLO3,CLO9
3	Special types of concrete(part2)	AM1,AM2,AM3	CLO 3,CLO9,CLO21
4	Non- destructive tests of concrete elements	AM1,AM2,AM3	CLO 3,CLO9,CLO21
5	Hot weather concrete	AM1,AM2,AM3	CLO 3,CLO9,CLO21
6	Precautions and recommendations for hot weather concrete	AM1,AM2,AM3	CLO 3,CLO9,CLO21
7	Midterm exam	AM1,AM2,AM3	CLO 3,CLO9,CLO21
8	Corrosion of steel in concrete	AM1,AM2,AM3	CLO 3,CLO9,CLO21
9	Crack types report needed	AM1,AM2,AM3	CLO9, CLO16,CLO21,CLO26
10	Evaluation report needed	AM1,AM2,AM3	CLO9, CLO16,CLO21,CLO26
11	Types of cracks in wall and repair methods	AM1,AM2,AM3	CLO9, CLO16,CLO21,CLO26
12	Repair method for concrete elements	AM1,AM2,AM3	CLO9, CLO16,CLO21,CLO26
13	Repair by FRP technology	AM1,AM2,AM3	CLO9, CLO16,CLO21,CLO26
14	Practical Exam	AM1,AM2,AM3	CLO9, CLO16,CLO21,CLO26
15	Final Exam	AM1,AM2,AM3	CLO3,CLO9, CLO16,CLO21,CLO26

11. Matrix of Program LOs with Course Los

Program LOs		Course LOs	
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	Develop and conduct appropriate experimentation and/or simulation to draw conclusions
PLO4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.	CLO9	Utilize contemporary technologies, codes of practice and standards.

PLO8	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	CLO16	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.
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.	CLO21	Select appropriate and sustainable technologies for construction of buildings. Infrastructures and water structures.
PLO13	Plan and manage construction processes; address construction defects, instability, and quality issues; maintain safety measures in construction and materials; and assess environmental impact of projects.	CLO26	Maintain safety measures in construction and materials.

Title	Name	Signature
Course coordinator	**Mamdouh Mostsfa tawakol**	M. Tawakol
Program Coordinator:	**Dr. Khaled samy Abdallah**	Dr. Khaled Samy
Head of Department	**Asso. Prof. Dr. Ahmed Hamdy**	Dr. A. Hamdy
Date of Approval	**2/2025**	

	Ministry of Higher Education **Higher Institute of Engineering and Technology, Fifth Settlement** **Civil Engineering Department**	

Course Specification

Course Code: CVE 2103 **Course Title: Design of R.C structures (1)**

1. Basic information

Program Title	Civil Engineering Department			
Department offering the program	Civil Engineering Department			
Department offering the course	Civil Engineering Department			
Course Code	CVE 2103			
Year/level	Second year / third level (1st Semester)			
Specialization	**Major**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	2	2		4

2. Course Aims

No.	Aim
1	Provide an engineering professional that is good in numerous facets of design and implementation in the practice of civil engineering structures (AM1)

3. Course Learning Outcomes (LOs)

CLO2	Solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.by applying engineering fundamentals, basic science, and mathematics.
CLO21	Select appropriate and sustainable technologies for the construction of buildings. Infrastructures and water structures..
CLO24	Achieve an optimum design of Reinforced Concrete elements

4. Course Contents

Topics	Week
Introduction to the behavior of R.C concrete (plain concrete and steel)	1
Converting from an architecture plan to structrual plan and getting dimensions	2
Drawing structural plans and get dimensions of different elements	3
Load distribution	4
Estimating loads on beams	5
Drawing S.F.D and B.M.D for different types of beams	6
Mid term exam	7
Design the critical sections using first princible	8
Design the critical sections using charts	9
Drawing details of reinforcement using the moment of resistance	10
Drawing details of reinforcement using the imperical method	11
Check of shear for critical sections	12
Design of short column	13
Revision on all topics	14
Final exam	15

5. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Lectures (face to face / online)	Presentation / Movies	Discussions	Tutorials	Practical and lab. experiments	Problem Solving	Brain Storming	Projects and Team Working	Site Visits	Research / Reports	Self-learning	Modeling and Simulation

CLO2	√			√			√					
CLO21	√			√			√					
CLO24	√			√						√	√	

6. Teaching and Learning methods of Disabled Students

No.	Teaching Method	Reason
1	Additional Tutorials	
2	Online lectures and assignments	

7. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	LOs
1	Attendance	-------
2	Sheets	CLO1,CLO21,CLO24
3	Quizzes	
4	Mid-term Exam	CLO1,CLO21
5	Practical Exam	
6	Final Exam	CLO1,CLO21,CLO24

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Attendance	-------
2	Sheets	weekly
3	Quizzes	-
4	Mid-term Exam	7
5	Practical Exam	14
6	Final Exam	15

7.3 Weighting of Assessments

	Assessment Method	Weights%	Weights	Weights%	Weights
Teacher Opinion	sheets	40%	40	20%	20
	Attendance			----	----
	Quizzes			----	-----
	Mid-term exam			20%	20
Practical	Practical Attendance				
	Lab. Reports				
	Lab. Activities / Projects				
	practical exam				
Final Exam		60%	60	60%	60
Total		100%	100	100%	100

8. List of References

[1] Reynolds, C. E., Steedman, J. C., & Threlfall, A. J. (2007). Reinforced concrete designer's handbook. CRC Press.

[2] Darwin, D., Dolan, C. W., & Nilson, A. H. (2016). Design of concrete structures (Vol. 2). New York, NY, USA:: McGraw-Hill Education.

[3] Wang, C. K., & Salmon, C. G. (1979). Reinforced concrete design

[4] Shetty, M. S., & Jain, A. K. (2019). Concrete Technology (Theory and Practice), 8e. S. Chand Publishing.

9. Facilities required for teaching and learning

Lecture/Classroom
White board
Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)
Moodle and Microsoft teams
Data show
Laboratory Usage

10. Matrix of Course Content with Course LO's

No.	Topics	Aim	LOs
1	Introduction to the behavior of R.C concrete (plain concrete and steel)	AM1	CLO2
2	Converting from an architecture plan to structrual plan and getting dimensions	AM1	CLO2,CLO21
3	Drawing structural plans and get dimensions of different elements	AM1	CLO2, CLO24
4	Load distribution	AM1	CLO21
5	Estimating loads on beams	AM1	CLO22
6	Drawing S.F.D and B.M.D for different types of beams	AM1	CLO22
7	Mid term exam	AM1	CLO21 ,CLO24
8	Design the critical sections using first princible	AM1	CLO21
9	Design the critical sections using charts	AM1	CLO21 ,CLO24
10	Drawing details of reinforcement using the moment of resistance	AM1	CLO21
11	Drawing details of reinforcement using the imperical method	AM1	CLO21
12	Check of shear for critical sections	AM1	CLO21 ,CLO24
13	Design of short column	AM1	CLO21 ,CLO24
14	Revision on all topics	AM1	CLO2,CLO21,CLO24
15	Final exam	AM1	CLO21 ,CLO24,CLO22

11. Matrix of Program LOs with Course Los

Program LOs		Course LOs	
PLO1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	CLO1	Solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.by applying engineering fundamentals, basic science, and mathematics
PLO11	Select appropriate and sustainable technologies for construction of buildings. Infrastructures and water structures; using either numerical techniques or physical measurements and /	CLO21	Select appropriate and sustainable technologies for construction of buildings. Infrastructures and water structures

	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.		
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.	CLO24	Achieve an optimum design of Reinforced Concrete and Steel Structures. Foundations and Earth Retaining Structures.

Title	Name	Signature
Course coordinator	**Dr. Hoda Awad Abdel Zaher**	Dr.Hoda Awad
Program Coordinator:	**Dr. khaled Samy Abdallah**	Dr.Khaled Samy
Head of Department	**Asso. Prof. Dr. Ahmed Hamdy**	Dr.A.Hamdy
Date of Approval	**9/2024**	

	Ministry of Higher Education **Higher Institute of Engineering and Technology, Fifth Settlement** **Civil Engineering Department**	

Course Specification

Course Code: CVE 2106 **Course Title: Hydraulics**

1. Basic information

Program Title	Civil Engineering Department			
Department offering the program	Civil Engineering Department			
Department offering the course	Civil Engineering Department			
Course Code	CVE 2106			
Year/level	Second year / Third level (1st Semester)			
Specialization	**Major**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	2	1	1	4

2. Course Aims

No.	Aim
AM2	Teach the students to practice the methodology in thinking and describing water problems (AM2).
AM5	Make it possible for graduates to pursue continuing education and self-learning (AM5).

3. Course Learning Outcomes (LOs)

CLO3	Conduct water appropriate experimentation and simulation to draw conclusions.
CLO19	Acquire and apply new knowledge for open channel.

4. Course Contents

Topics	Week. No
Flow Types and properties.	1
Open channel flow principals. **Labs:** Establish uniform flow conditions	2

Velocity and shear stress distribution for open channel.	3
Design of open channel by Manning equation.	4
Design of open channel by Chezy equation. **Labs:** Determine the roughness coefficient.	5
Design of best hydraulic sections for open channel. **Labs:** Calibration of Contracted Rectangular and Triangular Notch Notches	6
Mid-term exam	7
Specific energy of open channels.	8
Identify the bed slope or profile category.	9
Hydraulic jump. **Labs:** Study the hydraulic jump	10
Drawing of water profile for regulator. **Labs:** Study the water profile for gate.	11
Drawing of water profile for weir.	12
Drawing of water profile for dam, Drawing of water profile for free outfall.	13
Practical exam	14
Final exam	15

5. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Lectures (face to face / online)	Presentation / Movies	Discussions	Tutorials	Practical and lab. experiments	Problem Solving	Brain Storming	Projects and Team Working	Site Visits	Research / Reports	Self-learning	Modeling and Simulation
CLO3					√		√		√			
CLO19	√										√	

6. Teaching and Learning methods of Disabled Students

No.	Teaching Method	Reason
1	Additional Tutorials	
2	Online lectures and assignments	

7. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	LOs
1	Attendance	-------
2	Sheets	CLO3, CLO19
3	Quizzes	CLO3, CLO19
4	Mid-term Exam	CLO3, CLO19
5	Practical Exam	CLO3, CLO19
6	Final Exam	CLO3, CLO19

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Attendance	----
2	Sheets	Bi-weekly
3	Quizzes	4&10
4	Mid-term Exam	7
5	Practical Exam	14
6	Final Exam	15

7.3 Weighting of Assessments

	Assessment Method	Weights%	Weights	Weights%	Weights
Teacher Opinion	Sheets	30%	30	5%	5
	Attendance			-	-
	Quizzes			5%	5
	Mid-term exam			20%	20
Practical / Oral	Practical Attendance	10%	10	-	-
	Lab. Reports			-	-

	Lab. Activities / Projects			-	-
	Practical exam			10%	10
Final Exam		60%	60		
Total		100%	100		

8. List of References

[1] Weilin Xu, Mesoscale Analysis of Hydraulics, Springer, 2020

[2] Gregory Falkovich, Fluid Mechanics, Cambridge University Press, 2018, ISBN:9781316416600, **DOI:**https://doi.org/10.1017/9781316416600

[3] Hwang, Ned HC, et al. Fundamentals of hydraulic engineering systems. No. TC160. H8213 1981. Upper Saddle River, NJ: Prentice Hall, 1996.

9. Facilities required for teaching and learning

Lecture/Classroom
White board
Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)
Moodle and Microsoft teams
Data show
Laboratory Usage

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10. Matrix of Course Content with Course LO's

No.	Topics	Aim	LOs
1	Flow Types and properties.	AM2	CLO3, CLO19
2	Open channel flow principals. **Labs:** Establish uniform flow conditions	AM2	CLO3
3	Velocity and shear stress distribution for open channel.	AM2, AM5	CLO19
4	Design of open channel by Manning equation.	AM2	CLO3
5	Design of open channel by Chezy equation. **Labs:** Determine the roughness coefficient.	AM2	CLO3
6	Design of best hydraulic sections for open channel. **Labs:** Calibration of Contracted Rectangular and Triangular Notch Notches	AM2	CLO3

7	**Mid-term exam**	AM2	CLO3, CLO19
8	Specific energy of open channels.	AM2, AM5	CLO19
9	Identify the bed slope or profile category.	AM2	CLO3, CLO19
10	Hydraulic jump. **Labs:** Study the hydraulic jump	AM2, AM5	CLO3
11	Drawing of water profile for regulator. **Labs:** Study the water profile for gate.	AM2, AM5	CLO3, CLO19
12	Drawing of water profile for weir.	AM2, AM5	CLO3, CLO19
13	Drawing of water profile for dam, Drawing of water profile for free outfall.	AM2, AM5	CLO3, CLO19
14	**Practical exam**	AM2, AM5	CLO3, CLO19
15	**Final exam**	AM2, AM5	CLO3, CLO19

11. Matrix of Program LOs with Course Los

Program LOs		Course LOs	
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	Conduct water appropriate experimentation and simulation to draw conclusions.
PLO10	Acquire and apply new knowledge. and practice self, lifelong and other learning strategies.	CLO19	Acquire and apply new knowledge for open channel.

Title	Name	Signature
Course coordinator	**Dr. Ghada Taha Abd Alaaty**	Dr. Ghada Taha
Program Coordinator:	**Dr. khaled Samy Abdallah**	Dr. Khaled Samy
Head of Department	**Asso. Prof. Dr. Ahmed Hamdy**	Dr. A. Hamdy
Date of Approval	**09/2024**	

	Ministry of Higher Education **Higher Institute of Engineering and Technology, Fifth Settlement** **Civil Engineering Department**	

Course Specification

Course Code: CVE 2205 **Course Title: Irrigation and Drainage Engineering**

1. Basic information

Program Title	Civil Engineering Department			
Department offering the program	Civil Engineering Department			
Department offering the course	Civil Engineering Department			
Course Code	CVE 2205			
Year/level	Second year / Third level (2^{st} Semester)			
Specialization	**Major**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	4	2		6

2. Course Aims

No.	Aim
AM2	Teach the students to practice the methodology in surface and groundwater hydrology (AM2).
AM3	Give students with technical skills to estimate hydrological data (precipitation, evaporation, infiltration, …) (AM3).
AM5	Make it possible for graduates to pursue continuing education in irrigation and drainage specialty. (AM5)

3. Course Learning Outcomes (LOs)

CLO1	Identify the best layout of irrigation and drainage network and water structures classification.
CLO12	Practice research techniques and methods of to estimate hydrological data (precipitation, evaporation, infiltration, …)
CLO20	Practice self-learning strategies to detect water requirements for different crops.
CLO28	Transfer concepts of design to how achieve the optimum benefits of surface and groundwater

4. Course Contents

Topics	Week. No
Roles of Hydrology – Precipitation	1
Evaporation – Infiltration	2
Surface Runoff – Stream Flow	3
Hydrograph	4
Flow in Confined Aquifer	5
Flow in Unconfined Aquifer	6
Mid-term exam	7
Soil-Plant-Water Relationship	8
Water Requirements	9
Empirical methods for water duties	10
Irrigation efficiencies	11
Spacing between Drains	12
Tile Drainage, Salinity	13
Revision	14
Final exam	15

5. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Lectures (face to face / online)	Presentation / Movies	Discussions	Tutorials	Practical and lab. experiments	Problem Solving	Brain Storming	Projects and Team Working	Site Visits	Research / Reports	Self-learning	Modeling and Simulation

CLO1	√	√		√		√						
CLO12	√	√		√								
CLO20							√			√	√	
CLO28	√	√		√								

6. Teaching and Learning methods of Disabled Students

No.	Teaching Method	Reason
1	Additional Tutorials	X
2	Online lectures and assignments	X

7. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	LOs
1	Attendance	-------
2	Sheets	CLO1, CLO12, CLO20,CLO28
3	Quizzes	CLO12, CLO20, CLO28
4	Mid-term Exam	CLO12, CLO20, CLO28
5	Practical Exam	---
6	Final Exam	CLO12, CLO20, CLO28

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Attendance	------
2	Sheets	Bi-weekly
3	Quizzes	-----
4	Mid-term Exam	7
5	Practical Exam	14
6	Final Exam	15

7.3 Weighting of Assessments

	Assessment Method	Weights%	Weights	Weights%	Weights
Teacher Opinion	sheets	40%	40	10%	10
	Attendance				-
	Quizzes			10%	10
	Mid-term exam			20%	20
Practical / Oral	Practical Attendance				
	Lab. Reports				
	Lab. Activities / Projects				
	Practical exam				
Final Exam		60%	60	60%	60
Total		100%	100	100%	100

8. List of References

[1] Kamranvand, F., Davey, C.J., Williams, L., Parker, A., Jiang, Y., Tyrrel, S. and McAdam, E.J., 2021. Membrane distillation of concentrated blackwater: effect of temperature, solids concentration and membrane pore size. Water Environment Research, 93(6), pp.875-886.

[2] William George Bligh, The Practical Design of Irrigation Works Classic Reprint, 2018, ISBN: 1332329349, Pages: 438.

[3] Sharma, R. K., and T. K. Sharma. A Textbook of Water Power Engineering. S. Chand Publishing, 2003.

9. Facilities required for teaching and learning

Lecture/Classroom
White board
Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)
Moodle and Microsoft teams
Data show
Laboratory Usage

10. Matrix of Course Content with Course LO's

No.	Topics	Aim	LOs
1	Roles of Hydrology – Precipitation	AM2	CLO12, CLO28
2	Evaporation – Infiltration	AM2, AM3	CLO12, CLO28
3	Surface Runoff – Stream Flow	AM2, AM3	CLO12, CLO28
4	Hydrograph	AM2, AM3	CLO12, CLO28
5	Flow in Confined Aquifer	AM2	CLO12, CLO28
6	Flow in Unconfined Aquifer	AM2	CLO12, CLO28
7	**Midterm exam**	AM2	CLO12, CLO20, CLO28
8	Soil-Plant-Water Relationship	AM5	CLO20
9	Water Requirements	AM5	CLO20
10	Empirical methods for water duties	AM5	CLO20
11	Irrigation efficiencies	AM5	CLO20
12	Spacing between Drains	AM5	CLO20
13	Tile Drainage, Salinity	AM5	CLO20
14	**Revision**	AM2, AM3,AM5	CLO12, CLO20, CLO28
15	**Final exam**	AM2, AM3,AM5	CLO12, CLO20, CLO28

11. Matrix of Program LOs with Course Los

Program LOs		Course LOs	
PLO1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	CLO1	Identify the best layout of irrigation and drainage network.
PLO5	Practice research techniques and methods of investigation as an inherent part of learning.	CLO12	Practice research techniques and methods of surface and groundwater problems investigation
PLO10	Acquire and apply new knowledge, and practice self, lifelong and other learning strategies	CLO20	Practice self-learning strategies to detect new water resources for different purposes
PLO14	Deal with bidding, contract and financial issues including project insurance and guarantees.	CLO28	Transfer concepts of design to how achieve the optimum benefits of surface and groundwater

Title	Name	Signature
Course coordinator	**Asso. Prof. Dr. Ahmed Hamdy**	Dr. A. Hamdy
Program Coordinator:	**Dr. Khaled samy abdallah**	Dr. Khaled Samy
Head of Department	**Asso. Prof. Dr. Ahmed Hamdy**	Dr. A. Hamdy
Date of Approval	**2/2025**	

	Ministry of Higher Education **Higher Institute of Engineering and Technology, Fifth Settlement** **Civil Engineering Department**	

Course Specification

Course Code: CVE 2101 Course Title: Structural Analysis (3)

1. Basic information

Program Title	Civil Engineering Department			
Department offering the program	Civil Engineering Department			
Department offering the course	Civil Engineering Department			
Course Code	CVE 2101			
Year/level	Second year / Third Level (1st Semester)			
Specialization	**Major**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	4	2		6

2. Course Aims

No.	Aim
1	Graduating engineering cadres capable of working efficiently and effectively in many areas of design and implementation civil engineering practice. (AM1)

3. Learning Outcomes (LOs)

CLO1	Identify and formulate complex engineering problems by applying engineering fundamentals, basic science, and mathematics.
CLO2	Solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.by applying engineering fundamentals, basic science, and mathematics.
CLO22	Use either numerical techniques or physical measurements by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics,

4. Course Contents

Topics	Week
Shear Stresses due to Force	1
Connections Direct Shear	2
Shear Flow	3
Shear Stresses due to Torsion	4
Connections subjected to Torsion	5
Combined Stresses(part1)	6
Midterm exam	7
Combined Stresses(part2)	8
Deflection Double Integration Method	9
Deflection Conjugate Beam	10
Deflection Vitrual Work on Beams	11
Deflection Vitrual Work on Frames	12
Deflection Vitrual Work on Trusses	13
Revision	14
Final Exam	15

5. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Lectures (face to face / online)	Presentation / Movies	Discussions	Tutorials	Practical and lab. experiments	Problem Solving	Brain Storming	Projects and Team Working	Site Visits	Research / Reports	Self-learning	Modeling and Simulation

CLO1	√	√		√								
CLO2	√	√		√								
CLO22							√			√	√	

6. Teaching and Learning methods of Disabled Students

No.	Teaching Method	Reason
1	Additional Tutorials	
2	Online lectures and assignments	

7. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	Los
1	Attendance	-------
2	Sheets	CLO1, CLO2, CLO22
3	Quizzes	CLO1, CLO2, CLO22
4	Mid-term Exam	CLO1, CLO2, CLO22
5	Oral/ Practical Exam	
6	Final Exam	CLO1, CLO2, CLO22

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Attendance	-------
2	Sheets	Bi-weekly
3	Quizzes	4 & 10
4	Mid-term Exam	7
5	Oral/ Practical Exam	14
6	Final Exam	15

7.3 Weighting of Assessments					
	Assessment Method	**Weights%**	**Weights**	**Weights%**	**Weights**
Teacher Opinion	sheets	40%	40	10%	10
	Attendance			-----	----
	Quizzes			10%	10
	Mid-term exam			20%	20
Practical / Oral	Practical Attendance				
	Lab. Reports				
	Lab. Activities / Projects				
	Final oral / practical exam				
Final Exam		60%	60	60%	60
Total		100%	100	100%	100

8. List of References

[1] Machacek, J., & Cudejko, M. (2010). Shear connection in steel and concrete composite trusses. SDSS'Rio 2010 Stability and Ductility of Steel Structures, 8-10.
[2] Ye, J. (2008). Structural and stress analysis: theories, tutorials and examples. CRC Press.
[3] Megson, T. H. G. (2019). Structural and stress analysis. Butterworth-Heinemann.

9. Facilities required for teaching and learning

Lecture/Classroom
White board
Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)
Moodle and Microsoft teams
Data show
Laboratory Usage

10. Matrix of Course Content with Course LO's

No.	Topics	Aim	Los
1	**Shear Stresses due to Force**	AM1	CLO1, CLO2
2	Connections Direct Shear	AM1	CLO1, CLO2
3	Shear Flow	AM1	CLO1, CLO2
4	Shear Stresses due to Torsion	AM1	CLO22
5	Connections subjected to Torsion	AM1	CLO22
6	Combined Stresses(part1)	AM1	CLO22
7	**Mid term exam**	AM1	CLO1, CLO2, CLO22
8	Combined Stresses(part2)	AM1	CLO1, CLO2, CLO22
9	Deflection Double Integration Method	AM1	CLO1, CLO2, CLO22
10	Deflection Conjugate Beam	AM1	CLO1, CLO2, CLO22
11	Deflection Vitrual Work on Beams	AM1	CLO1, CLO2, CLO22
12	Deflection Vitrual Work on Frames	AM1	CLO1, CLO2, CLO22
13	Deflection Vitrual Work on Trusses	AM1	CLO1, CLO2, CLO22
14	**Revision**	AM1	CLO1, CLO2, CLO22
15	**Final Exam**	AM1	CLO1, CLO2, CLO22

11. Matrix of Program LOs with Course Los

Program Los		Course Los	
PLO1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	CLO1	Identify and formulate complex engineering problems by applying engineering fundamentals, basic science, and mathematics.
		CLO2	Solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.by applying engineering fundamentals, basic science, and mathematics.
PLO11	Use either numerical techniques or physical measurements 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.	CLO22	Use either numerical techniques or physical measurements by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics,

Title	Name	Signature
Course coordinator	**Dr. khaled Samy Abdallah**	Dr. Khaled Samy
Program Coordinator:	**Dr. khaled Samy Abdallah**	Dr. Khaled Samy
Head of Department	**Asso. Prof. Dr. Ahmed Hamdy**	Dr. A. Hamdy
Date of Approval	**9/2024**	

	Ministry of Higher Education **Higher Institute of Engineering and Technology-fivth settlement** **Civil Engineering Department**	

Course Specification

Course Code: CVE 2105 **Course Title:** Topographic Surveying 1

1. Basic information

Program Title	Civil Engineering Department			
Department offering the program	Civil Engineering Department			
Department offering the course	Civil Engineering Department			
Course Code	CVE 2105			
Year/level	first year / third level (1st Semester)			
Specialization	**Major**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	2	1	1	4

2. Course Aims

No.	Aim
AM3	Give the students the knowledge and expertise to plan and carry out civil engineering projects using contemporary techniques.
AM4	Strength the links between the sectors participating in the process of establishing national civil projects.

3. Course Learning Outcomes (CLOs)

CLO2	Solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.by applying engineering fundamentals.
CLO15	Function efficiently as an individual and as a member of multi-disciplinary and multi- cultural teams.
CLO16	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.
CLO22	Use either numerical techniques or physical measurements by applying a full range of civil engineering concepts and techniques of: Surveying.

Topics	Week
Introduction to vertical control	1
Different methods for height difference determination	2
Ordinary levelling: survey level and survey staff	3
Calculation of ordinary levelling	4
Indirect methods for height difference determination: Tachometry	5
Trigonometric levelling	6
Midterm Exam	7
Applications of levelling	8
Longitudinal levelling	9
Cross section levelling	10
Grid levelling	11
Contour lines	12
Topographic maps	13
Practical	14
Final Exam	15

4. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Lectures (face to face / online)	Presentation / Movies	Discussions	Tutorials	Practical and lab. experiments	Problem Solving	Brain Storming	Projects and Team Working	Site Visits	Research / Reports	Self-learning	Modeling and Simulation

CLO2	√	√	√	√	√							
CLO15	√	√		√	√							
CLO16			√		√					√	√	
CLO22	√	√	√	√	√		√	√				

5. Teaching and Learning methods of Disabled Students

No.	Teaching Method	Reason
1	Additional Tutorials	
2	Online lectures and assignments	

6. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	CLOs
1	Attendance	-------
2	Reports / Sheets	CLO2, CLO15, CLO16, CLO22
3	Quizzes	CLO2, CLO15, CLO22
4	Mid-term Exam	CLO2, CLO22
5	Practical Exam	CLO2
6	Final Exam	CLO2, CLO15, CLO16

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Attendance	-------
2	Reports	Bi-weekly
3	Sheets	Bi-weekly
4	Quizzes	4 & 10
5	Mid-term Exam	7
6	Practical Exam	14
7	Final Exam	15

7.3 Weighting of Assessments					
	Assessment Method	**Weights%**	**Weights**	**Weights%**	**Weights**
Teacher Opinion	Reports / sheets / Activities	30%	30	5%	5
	Attendance				-
	Quizzes			5%	5
	Mid-term exam			20%	20
Practical / Oral	Practical Attendance	10%	10		
	Lab. Reports				
	Lab. Activities / Projects				
	Final oral / practical exam			10%	10
Final Exam		60%	60	60%	60
Total		100%	100	100%	100

7. List of References

[1]Bhavikatti, S. S. *Basic Cilvil Enginering*. New Age, 1966..

[2] Dewberry, Sidney O. *Land development handbook: Planning, engineering, and surveying*. McGraw-Hill Education, 2008.

8. Facilities required for teaching and learning

Lecture/Classroom
White board
Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)
Moodle and Microsoft teams
Data show
Laboratory Usage

9. Matrix of Course Content with Course LO's

No.	Topics	Aim	LOs
1	Introduction to vertical control	AM3, AM4	CLO2, CLO15
2	Different methods for height difference determination	AM3	CLO2, CLO15
3	Ordinary levelling: survey level and survey staff	AM3, AM4	CLO1, CLO15, CLO16, CLO22
4	Calculation of ordinary levelling	AM3	CLO1, CLO15, CLO16, CLO22
5	Indirect methods for height difference determination: Tachometry	AM3, AM4	CLO16,CLO22
6	Trigonometric levelling	AM3, AM4	CLO1, CLO1, CLO16, CLO22
7	**Midterm Exam**	AM3, AM4	CLO1, CLO1, CLO16, CLO22
8	Applications of levelling	AM4	CLO16
9	Longitudinal levelling	AM3, AM4	CLO16
10	Cross section levelling	AM3	CLO2, CLO16
11	Grid levelling	AM3	CLO2, CLO16
12	Contour lines	AM3, AM4	CLO16, CLO22
13	Topographic maps	AM3, AM4	CLO2, CLO15
14	**Practical**	AM3, AM4	CLO1, CLO1, CLO16, CLO22
15	**Final Exam**	AM3, AM4	CLO1, CLO1, CLO16, CLO22

10. Matrix of Program LOs with Course Los

Program LOs		Course LOs	
PLO1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	CLO2	Solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.by applying engineering fundamentals, basic science, and mathematics.
PLO 7	Function efficiently as an individual and as a member of multi-disciplinary and multi- cultural teams.	CLO15	Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.
PLO 8	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	CLO16	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.
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: Surveying.	CLO22	Use either numerical techniques or physical measurements by applying a full range of civil engineering concepts and techniques of: Surveying.

Title	Name	Signature
Course coordinator	**Asso. Prof. Dr. Ahmad Hamdy Ibrahim**	Dr. A. Hamdy
Program Coordinator:	**Dr. khaled Samy Abdallah**	Dr. Khaled Samy
Head of Department	**Asso. Prof. Dr. Ahmed Hamdy**	Dr. A. Hamdy
Date of Approval	**09/2024**	

	Ministry of Higher Education **Higher Institute of and Technology, Fifth Settlement** **Civil Engineering Department**	

Course Specification

Course Code: CVE 2104 **Course Title: Geotechnical and geological engineering**

1. Basic information

Program Title	Civil Engineering Department			
Department offering the program	Civil Engineering Department			
Department offering the course	Civil Engineering Department			
Course Code	CVE 2104			
Year/level	Second year / 3rd level (1st Semester)			
Specialization	**Major**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	4	2		6

2. Course Aims

No.	Aim
AM2	Teach the students to practice the methodology in thinking and describing soil problems.

3. Course Learning Outcomes (CLOs)

CLO3	Conduct appropriate soil experimentation to draw conclusions.
CLO22	Use physical measurements by applying a full range of civil engineering concepts and techniques of Soil Mechanics.

4. Course Contents

Week No.	Topics
1	Introduction into geotechnical and geology.
2	The role of geological engineering in civil engineering, types of rocks and soil characteristics.
3	Soil phases.

4	Soil properties.
5	Soil Classification.
6	Water in soil.
7	**Midterm exam**
8	Soil Permeability part1.
9	Soil Permeability part2.
10	Stress under footing.
11	Consolidation
12	Soil Shear Strength.
13	Site Exploration.
14	**Revision**
15	**Final Exam**

5. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Lectures (face to face / online)	Presentation / Movies	Discussions	Tutorials	Practical and lab. experiments	Problem Solving	Brain Storming	Projects and Team Working	Site Visits	Research / Reports	Self-learning	Modeling and Simulation
CLO3	√	√	√	√	√	√	-	-	-	-	-	-
CLO22	√	√	√	√	√	√	-	-	-	-	-	-

6. Teaching and Learning methods of Disabled Students

No.	Teaching Method	Reason
1	Additional Tutorials	
2	Online lectures and assignments	

7. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	LOs
1	Attendance	-------
2	Sheets	CLO3, CLO22
3	Reports	-------
4	Quiz 1 / Quiz 2	-------
5	Mid-term Exam	CLO22
6	Oral/ Practical Exam	-------
7	Final Exam	CLO3, CLO22

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Attendance	-----
2	Sheets	Bi-weekly
3	Reports	-
4	Quiz 1 / Quiz 2	-
5	Mid-term Exam	7
6	Oral/ Practical Exam	14
7	Final Exam	15

7.3 Weighting of Assessments

	Assessment Method	Weights%	Weights	Weights%	Weights
Teacher Opinion	sheets	40%	40	20%	20
	Attendance			-	-
	Quiz 1 / Quiz 2			-	-
	Mid-term exam			20%	20
Practical / Oral	Practical Attendance	-	-	-	-
	Lab. Reports			-	-
	Lab. Activities / Projects			-	-
	Final oral / practical exam			-	-
Final Exam	Written exam	60%	60	60%	60
Total		100%	100	100	100

8. List of References

[1] Das B.M, "Advanced Soil Mechanics", Fifth Edition, ISBN: 9780367730109 ، 0367730103, (2020)

[2] Das B.M, Sivakugan N., "Fundamentals of Geotechnical Engineering", Prentice Hall, ISBN: 9781305635180 ،1305635183 (2017).

[3] Das B.M, Sobhan K., "Principles of Geotechnical Engineering", ISBN: 9781337516877 ، 1337516872, (2016).

[4] Liu C and Evett J.B, "Soils and Foundations" 7th Edition, Prentice Hall, ISBN: 0132221381 (2007).

[5] Schroeder W.L, Stephen Dickenson and C. Warrington, "Soils in Construction, 5/E", Prentice Hall, ISBN: 0130489174 (2004).

[6] Murthy V.N.S, "Geotechnical Engineering: Principles and Practices", Prentice Hall, ISBN: 9780824708733 ،0824708733 (2003)

9. Facilities required for teaching and learning

Lecture/Classroom
White board
Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)
Moodle and Microsoft teams
Data show
Laboratory Usage

10. Matrix of Course Content with Course LO's

Week No.	Topics	Aim	LOs
1	Introduction into geotechnical and geology.	2	CLO22
2	The role of geological engineering in civil engineering, types of rocks and soil characteristics.	2	CLO22
3	Soil phases.	2	CLO22
4	Soil properties.	2	CLO3, CLO22
5	Soil Classification.	2	CLO22
6	Water in soil.	2	CLO22
7	**Midterm exam**	2	CLO3, CLO22
8	Soil Permeability part1.	2	CLO3, CLO22

9	Soil Permeability part2.	2	CLO3, CLO22
10	Stress under footing.	2	CLO22
11	Consolidation	2	CLO3, CLO22
12	Soil Shear Strength.	2	CLO3, CLO22
13	Site Exploration.	2	CLO3, CLO22
14	**Revision**	2	CLO3, CLO22
15	**Final Exam**	2	CLO3, CLO22

11. Matrix of Program LOs with Course Los

Program LOs		**Course LOs**	
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.	CLO 3	Conduct appropriate soil experimentation to draw conclusions.
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.	CLO 22	Use physical measurements by applying a full range of civil engineering concepts and techniques of Soil Mechanics.

Title	**Name**	**Signature**
Course coordinator	**Prof. Dr. Kamal Hafez**	كمال حافظ
Program Coordinator:	**Dr. khaled Samy Abdallah**	Dr. Khaled Samy
Head of Department	**Asso. Prof. Dr. Ahmed Hamdy**	Dr. A. Hamdy
Date of Approval	**09/2024**	

Course Specification

Course Code: CVE 2201 Course Title: Structural Analysis (4)

1. Basic information

Program Title	Civil Engineering Department			
Department offering the program	Civil Engineering Department			
Department offering the course	Civil Engineering Department			
Course Code	CVE 2201			
Year/level	Second year / 3rd level (2nd Semester)			
Specialization	**Major**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	4	2	-	6

2. Course Aims

No.	Aim
AM1	Teach the students how to analysis the statically indeterminate structures using several methods.
AM3	Give the students the knowledge and expertise to draw the internal force of statically indeterminate structure using several techniques.

3. Course Learning Outcomes (CLOs)

CLO1	Identify and formulate complex engineering problems by applying engineering fundamentals, basic science, and mathematics.
CLO2	Solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.by applying engineering fundamentals, basic science, and mathematics.
CLO22	Use either numerical techniques or physical measurements by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics,

4. Course Contents

Week No.	Topics
1	Introduction on determinate, and Indetermined Structure
2	Three Moment Equation Method on Beams
3	Three Moment Equation Method on Frames
4	Moment Distribution Method on Beams
5	Moment Distribution Method on Frames
6	Virtual Work Method on Beams
7	**Midterm Exam.**
8	Virtual Work Method on Frames
9	Virtual Work Method on Trusses
10	Slope Deflection Method on Beams
11	Slope Deflection Method on Beams with setelment
12	Slope Deflection Method on Frames
13	Slope Deflection Method on Closed Frames
14	**Revision**
15	**Final Exam**

5. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Lectures (face to face / online)	Presentation / Movies	Discussions	Tutorials	Practical and lab. experiments	Problem Solving	Brain Storming	Projects and Team Working	Site Visits	Research / Reports	Self-learning	Modeling and Simulation

CLO1	√	√	√	√	-	√	-	-	-	-	√	-
CLO2	√	√	-	√	-	-	-	-	-	-	√	-
CLO22	√	-	√	√	-	√	√	-	-	-	√	-

6. Teaching and Learning methods of Disabled Students

No.	Teaching Method	Reason
1	Additional Tutorials	X
2	Online lectures and assignments	X

7. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	CLOs
1	Attendance	-------
2	Reports	-------
3	Sheets	CLO1, CLO2, CLO22
4	Quizzes	CLO1, CLO2, CLO22
5	Mid-term Exam	CLO1, CLO2, CLO22
6	Oral/ Practical Exam	-------
7	Final Exam	CLO1, CLO2, CLO22

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Attendance	------
2	Reports / Sheets	Bi-weekly
3	Quizzes	Bi-weekly
4	Mid-term Exam	7
5	Oral/ Practical Exam	14
6	Final Exam	15

7.3 Weighting of Assessments

	Assessment Method	Weights%	Weights	Weights%	Weights
Teacher Opinion	Reports	40%	40	-	-
	Sheets			10%	10
	Attendance			-	-

	Quizzes			10%	10
	Mid-term exam			20%	20
Practical / Oral	Practical Attendance			-	-
	Lab. Reports			-	-
	Lab. Activities / Projects			-	-
	Final oral / practical exam			-	-
Final Exam	Written exam	60%	60	60%	60
Total		100%	100	100	100

8. List of References

[1] Derucher, K., Kim, U., & Putcha, C. (2013). Indeterminate structural analysis. The Edwin Mellen Press.

[2] Megson, T. H. G. (2019). Structural and stress analysis. Butterworth-Heinemann.

[3] Benhassine, A., Chouiter, M. I., Ali, M. K., Kacem-Chaouche, N., Merazig, H., Bencharif, M., & Belfaitah, A. (2022). New Cd (II) complex derived from (1-methylimidazol-2-yl) methanol: Synthesis, crystal structure, spectroscopic study, DFT and TD-DFT calculations, antimicrobial activity and free-radical scavenging capacity. Journal of Molecular Structure, 1257, 132583.

9. Facilities required for teaching and learning

Lecture/Classroom
White board
Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)
Moodle and Microsoft teams
Data show
Laboratory Usage

10. Matrix of Course Content with Course LO's

Week No.	Topics	Aim	LOs
1	Introduction on Indeterminate, and Indeterminate Structure	1	CLO1, CLO2, CLO22
2	Three Moment Equation Method on Beams	1	CLO1, CLO2, CLO22
3	Three Moment Equation Method on Frames	1,3	CLO1, CLO2, CLO22

4	Moment Distribution Method on Beams	1,3	CLO1, CLO2, CLO22
5	Moment Distribution Method on Frames	1,3	CLO1, CLO2, CLO22
6	Virtual Work Method on Beams	1,3	CLO1, CLO2, CLO22
	Midterm Exam.	1,3	CLO1, CLO2, CLO22
8	Virtual Work Method on Frames	1	CLO1, CLO2, CLO22
9	Virtual Work Method on Trusses	1	CLO1, CLO2, CLO22
10	Slope Deflection Method on Beams	1,3	CLO1, CLO2, CLO22
11	Slope Deflection Method on Beams with settlement	1,3	CLO1, CLO2, CLO22
12	Slope Deflection Method on Frames	1,3	CLO1, CLO2, CLO22
13	Slope Deflection Method on Closed Frames	1,3	CLO1, CLO2, CLO22
14	**Revision**	1,3	CLO1, CLO2, CLO22
15	**Final Exam**	1,3	CLO1, CLO2, CLO22

11. Matrix of Program LOs with Course Los

Program LOs		Course LOs	
PLO1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	CLO1	Identify and formulate complex engineering problems by applying engineering fundamentals, basic science, and mathematics.
		CLO2	Solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.by applying engineering fundamentals, basic science, and mathematics.
PLO11	Use either numerical techniques or physical measurements 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.	CLO22	Use either numerical techniques or physical measurements by applying a full range of civil engineering concepts and techniques of: Structural Analysis and Mechanics,

Title	Name	Signature
Course coordinator	**Dr. Mamdouh Mstafa Tawakol**	
Program Coordinator:	**Dr. Khaled Samy Abdallah**	
Head of Department	**Asso. Prof. Dr. Ahmed Hamdy**	
Date of Approval	**2/2025**	

	Ministry of Higher Education **Higher Institute of Engineering and Technology-fivth settlement** **Civil Engineering Department**	

Course Specification

Course Code: CVE 2203 **Course Title:** Topographic Surveying 2

1. Basic information

Program Title	Civil Engineering Department			
Department offering the program	Civil Engineering Department			
Department offering the course	Civil Engineering Department			
Course Code	**CVE 2203**			
Year/level	second year / third level (2nd Semester)			
Specialization	**Major**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	2	2	-	4

2. Course Aims

No.	Aim
AM3	Give the students the knowledge and expertise to plan and carry out civil engineering projects using contemporary techniques.
AM5	Make it possible for graduates to pursue continuing education and self-learning, and to qualify for advanced scientific degrees.

3. Course Learning Outcomes (CLOs)

CLO2	Solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.by applying engineering fundamentals.
CLO15	Function efficiently as an individual and as a member of multi-disciplinary and multi- cultural teams.
CLO16	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.
CLO22	Use either numerical techniques or physical measurements by applying a full range of civil engineering concepts and techniques of: Surveying.

4. Course Contents

Topics	Week
Introduction to Grid Levelling	1
Grid Levelling for inclined plane parcel of land	2
Volume computations and earth work for horizontal plane parcel of land	3
Volume computations and earth work with for inclined plane parcel of land	4
Introduction of photogrammetry	5
Map scale for aerial photographs.	6
Field angle of view for aerial photographs.	7
Coordinates computations in photogrammetry	8
Midterm	9
Relief displacement calculations for aerial photographs	10
Sidelap & overlap calculations in aerial photographs	11
Planning elements of flight mission	12
Topographic maps from digital photogrammetry	13
Revision	14
Final exam	15

5. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Lectures (face to face / online)	Presentation / Movies	Discussions	Tutorials	Practical and lab. experiments	Problem Solving	Brain Storming	Projects and Team Working	Site Visits	Research / Reports	Self-learning	Modeling and Simulation

CLO2	√	√	√	√								
CLO15	√	√		√								
CLO16			√							√	√	
CLO22	√	√	√	√			√	√				

6. Teaching and Learning methods of Disabled Students

No.	Teaching Method	Reason
1	Additional Tutorials	X
2	Online lectures and assignments	X

7. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	LOs
1	Attendance	-------
2	Reports / Sheets	CLO2, CLO15, CLO16, CLO22
3	Quizzes	CLO2, CLO15, CLO22
4	Mid-term Exam	CLO2, CLO22
5	Practical Exam	---
6	Final Exam	CLO2, CLO15, CLO16

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Attendance	------
2	Reports	Bi-weekly
3	Sheets	Bi-weekly
4	Quizzes	4 & 10
5	Mid-term Exam	7
6	Practical Exam	14
7	Final Exam	15

7.3 Weighting of Assessments

	Assessment Method	Weights%	Weights	Weights%	Weights
Teacher Opinion	Reports / sheets / Activities	40%	40	10%	10
	Attendance				-
	Quiz 1 / Quiz 2			10%	10
	Mid-term exam			20%	20
Practical / Oral	Practical Attendance	-	-		
	Lab. Reports				
	Lab. Activities / Projects				
	Final oral / practical exam			-	-
Final Exam		60%	60	60%	60
Total		100%	100	100%	100

8. List of References

[1]Bhavikatti, S. S. *Basic Cilvil Enginering*. New Age, 1966.
[2] Dewberry, Sidney O. *Land development handbook: Planning, engineering, and surveying*. McGraw-Hill Education, 2008.

9. Facilities required for teaching and learning

Lecture/Classroom
White board
Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)
Moodle and Microsoft teams
Data show
Laboratory Usage

10. Matrix of Course Content with Course LO's

No.	Topics	Aim	LOs
1	Introduction to Grid Levelling	AM3	CLO2, CLO15
2	Grid Levelling for inclined plane parcel of land	AM3, AM5	CLO2, CLO15, CLO16, CLO22
3	Volume computations and earth work for horizontal plane parcel of land	AM3, AM5	CLO2, CLO15, CLO16, CLO22
4	Volume computations and earth work with for inclined plane parcel of land	AM3	CLO15, CLO22
5	Introduction of photogrammetry	AM5	CLO16, CLO22
6	Map scale for aerial photographs	AM5	CLO16, CLO22
7	Midterm	AM5	CLO2, CLO22
8	Field angle of view for aerial photographs.	AM3, AM5	CLO16
9	Coordinates computations in photogrammetry	AM3, AM5	CLO16
10	Relief displacement calculations for aerial photographs	AM3, AM5	CLO2, CLO16, CLO22
11	Sidelap & overlap calculations in aerial photographs	AM3	CLO16, CLO22
12	Planning elements of flight mission	AM3	CLO16, CLO22
13	Topographic maps from digital photogrammetry	AM3, AM5	CLO2, CLO15
14	**Revision**	AM3, AM5	CLO2, CLO15, CLO16
15	**Final exam**	AM3, AM5	CLO2, CLO15, CLO16

11. Matrix of Program LOs with Course Los

Program LOs		Course LOs	
PLO1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	CLO2	Solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.by applying engineering fundamentals, basic science, and mathematics.
PLO 7	Function efficiently as an individual and as a member of multi-disciplinary and multi-	CLO15	Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.

	cultural teams.		
PLO 8	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	CLO16	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.
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: Surveying.	CLO22	Use either numerical techniques or physical measurements by applying a full range of civil engineering concepts and techniques of: Surveying.

Title	Name	Signature
Course coordinator	**Asso. Prof. Dr. Ahmad Hamdy Ibrahim**	Dr. A. Hamdy
Program Coordinator:	**Dr. Khaled Samy Abdallah**	Dr. Khaled Samy
Head of Department	**Asso. Prof. Dr. Ahmad Hamdy Ibrahim**	Dr. A. Hamdy
Date of Approval	**2/2025**	