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

Course Specification

Course Code: CVE 1202 **Course Title:** Properties and Testing of Materials (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 1202			
Year/level	first year / second level (2nd Semester)			
Specialization	**Major**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	3	2		5

2. Course Aims

No.	Aim
AM2	Teach the students to practice the methodology of characterize different types of material
AM3	Teach the students to practice the methodology of characterize the behavior of materials.
AM5	Enabling the students to pursue a continuing education and self-learning

3. Course Learning Outcomes (LOs)

CLO3	Develop and conduct appropriate experimentation and/or simulation to draw conclusions
CLO12	Practice research techniques and methods of investigation as an inherent part of learning.
CLO15	Function efficiently as an individual and as a member of multi-disciplinary and multi- cultural teams
CLO21	Select appropriate and sustainable technologies for construction of buildings.

4. Course Contents

Topics	Week
Properties of steel reinforcement	1
Classification of steel reinforcement bars	2
Study the behavior of metals under the influence of tensile loads	3
Study the behavior of metals under static compression	4
Study the behavior of metals under static bending	5
Study the behavior of metals under the influence of shear loads	6
Study the behavior of metals under the influence of torsion moment	7
Types and properties of insulation materials	8
Midterm exam	9
Determine the hardness of materials	10
Study the behavior of metals under the influence of impact loads	11
Fatigue of metals	12
Welding of metals	13
Test of welding	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	√	√		√	√							
CLO12	√	√	√				√	√		√		
CLO15								√		√	√	
CLO21	√	√		√								

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	Sheets	CLO3, CO12. CLO15, CLO21
2	Reports	CLO3, CO12. CLO15, CLO21
3	Quizzes	CLO3,CLO12,CLO15 CLO21
4	Mid-term Exam	CLO3, CLO21
5	Final Exam	CLO3,CLO12,CLO15 CLO21

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Reports	Bi-weekly
2	Sheets	Bi-weekly
3	Quizzes	Bi-weekly
4	Mid-term Exam	9
5	Final Exam	15

7.3 Weighting of Assessments

	Assessment Method	Weights%	Weights	Weights%	Weights
Teacher Opinion	Reports	40%	40	5%	5
	sheets			10%	10
	Attendance			-	-
	Quizzes			5%	5
	Mid-term exam			20%	20
Final Exam		60%	60		
Total		100%	100		

8. List of References

[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	CLOs
1	Properties of steel reinforcement	AM1,AM2	CLO3, CLO21
2	Classification of steel reinforcement bars	AM1,AM2	CLO3, CLO21
3	Study the behavior of metals under the influence of tensile loads	AM1,AM2	CLO3, CLO21
4	Study the behavior of metals under static compression	AM1,AM2	CLO3, CLO21
5	Study the behavior of metals under static bending	AM1,AM2	CLO3, CLO21
6	Study the behavior of metals under the influence of shear loads	AM1,AM2	CLO3, CLO21
7	Study the behavior of metals under the influence of torsion moment	AM1,AM2	CLO3, CLO21
8	Types and properties of insulation materials	AM1,AM2	CLO3, CLO21
9	Midterm exam	AM1,AM2	CLO3, CLO21
10	Determine the hardness of materials	AM1,AM2	CLO3, CLO21
11	Study the behavior of metals under the influence of impact loads	AM1,AM2	CLO12, CLO15, CLO21

12	Fatigue of metals	AM1,AM2	CLO12, CLO15, CLO21
13	Welding of metals	AM1,AM2	CLO3, CLO12, CLO15, CLO21
14	Test of welding	AM1,AM2	CLO3, CLO12, CLO15, CLO21
15	Final Exam	AM1,AM2	CLO3, CLO12, CLO15, CLO21

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.
PLO5	Practice research techniques and methods of investigation as an inherent part of learning.	CLO12	Practice research techniques and methods of investigation as an inherent part of learning.
PLO7	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
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,	CLO21	Select appropriate and sustainable technologies for construction of buildings. Infrastructures and water structures.

	Hydrology and Fluid Mechanics.		

Title	Name	Signature
Course coordinator	**Dr. Ghada Taha**	Dr. Ghada Taha
Program Coordinator:	**Dr. Khaled Samy**	Dr. Khaled Samy
Head of Department	**Asso. Prof. Dr. Ahmed Hamdy**	Dr. A. Hamdy
Date of Approval	**09/2023**	

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

Course Specification

Course Code: CVE 1203 **Course Title: Plane 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 1203**			
Year/level	first year / second level (2nd Semester)			
Specialization	**Major**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	2	2	-	4

2. Course Aims

No.	Aim
(AM1)	Provide a professional engineer capable of working efficiently and effectively in surveying.
(AM3)	Give the students the knowledge and expertise to plan and carry out civil engineering projects using contemporary techniques.

3. Learning Outcomes (LOs)

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
Mathematical model for coordinate transformation	1
Mathematical model for intersection	2
Building inclination using intersection concept	3
Horizontal displacement, inclination value and direction for building	4
Mathematical model for resection	5
Some applications for intersection and resection	6
Introduction to Areas calculations	7
Areas calculations (mechanical and graphical methods)	8
Midterm	9
Areas calculations (Mathematical methods)	10
Parcel division techniques	11
kinds and sources of errors in surveying measurement	12
Most probable value and root mean square error	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	
2	Online lectures and assignments	

7. Students' Assessment

7.1 Students' Assessment Method

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

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Attendance	Weekly
2	Reports	Bi-weekly
3	Sheets	Bi-weekly
4	Quizs	4 & 10
5	Mid-term Exam	9
6	Practical Exam	-
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	Practical Attendance	-	-		
	Lab. Reports				
	Lab. Activities / Projects				
	practical exam			-	-
Final Exam		60%	60		
Total		100%	100		

8. List of References

[1] De, Alak. *Plane Surveying*. S. Chand Publishing, 2000.
[2] Napoles, E., and M. Berber. "Precise formula for volume computations using contours method." *Boletim de Ciências Geodésicas* 24 (2018).

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	Mathematical model for coordinate transformation	AM1, AM3	CLO2, CLO15
2	Mathematical model for intersection	AM1	CLO2, CLO22
3	Building inclination using intersection concept	AM1, AM3	CLO2, CLO15, CLO16, CLO22
4	Horizontal displacement, inclination value and direction for building	AM3	CLO15, CLO22
5	Mathematical model for resection	AM3	CLO2, CLO15, CLO16, CLO22
6	Some applications for intersection and resection	AM1, AM3	CLO2, CLO16, CLO22
7	Introduction to Areas calculations	AM1, AM3	CLO16, CLO22
8	Areas calculations (mechanical and graphical methods)	AM1	CLO16, CLO22
9	Areas calculations (Mathematical methods)	AM1, AM3	CLO16, CLO22
10	Parcel division techniques	AM1, AM3	CLO16, CLO22
11	kinds and sources of errors in surveying measurement	AM3	CLO2, CLO15
12	Most probable value and root mean square error	AM1, AM3	CLO2, CLO15

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- 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**	Dr. Khaled
Head of Department	**Asso. Prof. Dr. Ahmad Hamdy Ibrahim**	Dr.A.Hamdy
Date of Approval	**22/09/2023**	

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

Course Specification

Course Code: CVE 1102 **Course Title:** Properties and Testing of Materials (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 1102			
Year/level	first year / second level (1st Semester)			
Specialization	**Major**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	3	2		5

2. Course Aims

No.	Aim
AM2	Teach the students to practice the methodology of characterize different types of material
AM3	Give the students the knowledge and expertise to Classify the materials
AM5	Enabling the students to pursue a continuing education and self-learning

3. Course Learning Outcomes (CLOs)

CLO3	Develop and conduct appropriate experimentation and/or simulation to draw conclusions
CLO12	Practice research techniques and methods of investigation as an inherent part of learning.
CLO21	Select appropriate and sustainable technologies for construction of buildings. Infrastructures and water structures.

4. Course Contents	
Topics	**Week**
Definition of engineering materials and the different classifications of the materials	1
Definition of properties of materials and specifications and codes	2
Basic material properties- physical properties, density, porosity, permeability, water absorption.	3
Basic material properties- chemical properties, mechanical properties.	4
Basic material properties - tensile, compression, bending and shear resistance	5
Basic material properties – stiffness, resilience, ductility, hardness	6
Measuring, calibration and stress and strain measuring devices	7
Properties and types of natural stones - stone tests	8
Midterm exam	9
Properties and tests of gypsum	10
Properties and tests lime	11
Properties and types of bricks - brick tests	12
Properties and types of wood - wood tests	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
CLO3	√	√		√	√							
CLO12	√	√	√				√	√		√		
CLO21	√	√		√								

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	CLOs
1	Reports	CLO3, CO12, CLO21
2	Sheets	CLO3, CO12, CLO21
3	Quizzes	CLO3, CLO21
4	Mid-term Exam	CLO3, CLO21
5	Final Exam	CLO3, CO12, CLO21

7.2 Assessment Schedule		
No.	**Assessment Method**	**Weeks**
1	Reports	Bi-weekly
2	Sheets	Bi-weekly
3	Quizzes	Bi-weekly
4	Mid-term Exam	9
5	Final Exam	15

7.3 Weighting of Assessments					
	Assessment Method	**Weights%**	**Weights**	**Weights%**	**Weights**
Teacher Opinion	Reports	35%	35	5%	5
	sheets			10%	10
	Quizzes			5%	5
	Mid-term exam			20%	20
Final Exam		60%	60		
Total		100%	100		

8. List of References

[1] Goodno, Barry J., and James M. Gere. Mechanics of materials. Cengage Learning, 2020.
[2] Hibbeler, Russell Charles. Mechanical of materials. 2012.
[3]Mohmed Khafaga. (2012), Engineering Properties of Materials, Egyptian Dar El-Qotob
[4] Mehta, "Building Construction Principal, Materials and system" code B-g/1/2009
[5] Egyptian Standard Specifications, "steel reinforcement of concrete", 2009.
[6] Egyptian Standard Specifications, "temper test method" ,2009.
[7] Egyptian Standard Specifications, "stons test method" , 2009.
[8] Egyptian Standard Specifications, "Bricks test method" , 2009.
[9] Egyptian Standard Specifications, "Lime test method" , 2009.
[10] Egyptian Standard Specifications, "Gypsum test method" , 2009.
[11] "Egyptian Code of Practice for Design and Construction of FRP",2009
[12] Goodno, Barry J., and James M. Gere. Mechanics of materials. Cengage Learning, 2020.
[13] Abdel Rahman Megahed, (2001), "Structural Engineer guide book for strengthen of materials and advanced structural analysis" code B-g/66 .

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	Definition of engineering materials and the different classifications of the materials	AM1,AM3	CLO3, CLO21
2	Definition of properties of materials and specifications and codes	AM1,AM3	CLO3, CLO21
3	Basic material properties- physical properties, density, porosity, permeability, water absorption.	AM1,AM3	CLO3, CLO21
4	Basic material properties- chemical properties, mechanical properties.	AM1,AM3	CLO3, CLO21
5	Basic material properties - tensile, compression, bending and shear resistance	AM1,AM3	CLO3, CLO21
6	Basic material properties – stiffness, resilience, ductility, hardness	AM1,AM3	CLO3, CLO21
7	Measuring, calibration and stress and strain measuring devices	AM1,AM3	CLO3, CLO21
8	Properties and types of natural stones - stone tests	AM1,AM3	CLO3, CLO21
9	Midterm exam	AM1,AM3	CLO3, CLO21
10	Properties and tests of gypsum	AM1,AM3	CLO3, CLO21
11	Properties and tests lime	AM1,AM3	CLO12, CLO21
12	Properties and types of bricks - brick tests	AM1,AM3	CLO12, CLO21
13	Properties and types of wood - wood tests	AM1,AM3	CLO12, CLO21
14	Revision	AM1,AM3	CLO3, CLO12, CLO21

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.
PLO5	Practice research techniques and methods of investigation as an inherent part of learning.	CLO12	Practice research techniques and methods of investigation as an inherent part of learning.

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.

Title	Name	Signature
Course coordinator	**Dr. Ghada Taha**	Dr. Ghada Taha
Program Coordinator:	**Dr. Khaled Samy**	Dr. Khaled Samy
Head of Department	**Asso. Prof. Dr. Ahmed Hamdy**	Dr. A. Hamdy
Date of Approval	**09/2023**	

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

Course Specification

Course Code: CVE 1104 **Course Title: Civil Drawing**

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 1104			
Year/level	Frist year / Second level (1nst Semester)			
Specialization	**Major**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	1	4		5

2. Course Aims

No.	Aim
AM1	Provide an engineer professional that is proficient in drawing and reading civil engineering drawings. (AM1).

3. Course Learning Outcomes (LOs)

CLO8	Achieve the principles of drawing the different structural components (earth work, walls, super structures, R.C components and steel components)
CLO9	Use contemporary technologies to draw the different structural components.

4. Course Contents

Topics	Week No.
Earth works.	1
Sub-structures works.	2
Walls	3
Arch bridge.	4
Pipe and R.C. box culvert.	5
Bridge and weir.	6
R.C Bridge	7
Drawing of pipe aqueduct	8
Midterm exam	9
Drawing of Syphons	10
Drawing of locks	11
Steel columns and girders.	12
R.C. slabs (plan and sections), R.C. beams (sec. elevation and cross sections).[1]	13
R.C. slabs (plan and sections), R.C. beams (sec. elevation and cross sections). [2]	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

CLO8	√			√								
CLO9	√			√								

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	CLO8, CLO9
3	Quizzes	CLO8, CLO9
4	Mid-term Exam	CLO8, CLO9
5	Practical Exam	------
6	Final Exam	CLO8, CLO9

7.2 Assessment Schedule

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

7.3 Weighting of Assessments

	Assessment Method	Weights%	Weights	Weights%	Weights
Teacher Opinion	Reports / sheets / Activities	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		
Total		100%	100		

8. List of References

[1] Christopher M. Monsere, Civil Engineering Drawing Pt I: Plan Reading & Structural Drawing (2021).

[2] Walaa Elnashar, Civil Engineering Drawing book, Zagazig University (2018).

[3] Tamboli, Akbar. Handbook of structural steel connection design and details. McGraw-Hill Education, 2010.

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

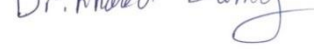
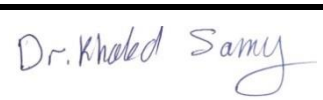
10. Matrix of Course Content with Course LO's

No	Topics	Aim	LOs
1	Earth works.	AM1	CLO8, CLO9
2	Sub-structures works.	AM1	CLO8, CLO9
3	Walls	AM1	CLO8, CLO9
4	Arch bridge.	AM1	CLO8, CLO9
5	Pipe and R.C. box culvert.	AM1	CLO8, CLO9
6	Bridge and weir.	AM1	CLO8, CLO9
7	R.C Bridge	AM1	CLO8, CLO9
8	Drawing of pipe aqueduct	AM1	CLO8, CLO9
9	Drawing of Syphons	AM1	CLO8, CLO9
10	Drawing of locks	AM1	CLO8, CLO9
11	Steel columns and girders.	AM1	CLO8, CLO9
12	R.C. slabs (plan and sections), R.C. beams (sec. elevation and cross sections).	AM1	CLO8, CLO9

11. Matrix of Program LOs with Course Los

Program LOs		Course LOs	
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	CLO8	Achieve the principles of drawing the different structural components (earth work, walls, super structures, R.C components and steel components)

	development.		
PLO4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.	CLO9	Use contemporary technologies to draw the different structural components.

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	**09/2023**	

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

Course Specification

Course Code: CVE 1204 **Course Title: Fluid Mechanics**

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 1204			
Year/level	Frist year / Second level (2nst Semester)			
Specialization	**Major**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	4	1	1	6

2. Course Aims

No.	Aim
AM1	Provide a professional engineer capable of working efficiently and effectively in water area design (AM1).
AM2	Teach the students to practice the methodology in thinking and describing water problems (AM2).

3. Course Learning Outcomes (LOs)

CLO1	Identify the fluid types and its properties.
CLO3	Conduct water appropriate experimentation and simulation to draw conclusions

4. Course Contents

Topics	Week No.
Basic dimension - Properties of fluid **Labs:** Measurement of Fluid Properties	1
Ideal fluid.	2
Newtonian and Non-Newtonian Flow	3
Surface tension – Compressibility	4
Pressure - Hydrostatic pressure - Pressure measurements **Labs**: Pressure Measurements	5
Kinematics of flow	6
Conservation Laws **Labs**: Verification of Bernolli's Therom	7
Free Jets **Labs**: Orifice and Free Jet	8
Mid-term exam	9
Energy analysis of steady flow	10
Energy line and hydraulic grade line	11
Velocity and flow measurements **Labs**: Flow Velocity Measurement	12
Venturi Effects - Flow regimes, Energy head losses in pipe flow - Flow through pipes **Labs**: Determination of Friction Factor in Pipes	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
CLO1	√	√		√								
CLO3					√		√	√		√	√	

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, CLO3
3	Quizzes	CLO1
4	Mid-term Exam	CLO1
5	Practical Exam	CLO3
6	Final Exam	CLO1

7.2 Assessment Schedule		
No.	**Assessment Method**	**Weeks**
1	Attendance	Weekly
2	Sheets	Bi-weekly
3	Quizzes	5,12
4	Mid-term Exam	9
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] N. Khurmi and R.S. Khurmi, Hydraulics, Fluid Mechanics and Hydraulic Machines, January 2019, Publisher: S. Chand

[2] Gregory Falkovich, Fluid Mechanics, Cambridge University Press, 2020, ISBN:9781316416600, **DOI:**https://doi.org/10.1017/9781316416600

[3] Pritchard, Philip J., and John W. Mitchell. Fox and McDonald's introduction to fluid mechanics. John Wiley & Sons, 2016.

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	Basic dimension - Properties of fluid	AM1, AM2	CLO1, CLO3
2	Ideal fluid.	AM1, AM2	CLO1
3	Newtonian and Non-Newtonian Flow	AM1, AM2	CLO1, CLO3
4	Surface tension – Compressibility	AM1, AM2	CLO3
5	Pressure - Hydrostatic pressure - Pressure measurements	AM1, AM2	CLO1, CLO3
6	Kinematics of flow	AM1, AM2	CLO1
7	Conservation Laws	AM1, AM2	CLO1, CLO3
8	Free Jets	AM1, AM2	CLO3
10	Energy analysis of steady flow	AM1, AM2	CLO1
11	Energy line and hydraulic grade line	AM1, AM2	CLO1
12	Velocity and flow measurements	AM1, AM2	CLO3,
13	Venturi Effects - Flow regimes, Energy head losses in pipe flow - Flow through pipes	AM1, AM2	CLO1, CLO3

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 fluid types and its properties.
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

Title	**Name**	**Signature**
Course coordinator	**Dr. Ghada Taha**	Dr. Ghada Taha
Program Coordinator:	**Dr. Khaled Samy**	Dr. Khaled Samy
Head of Department	**Asso. Prof. Dr. Ahmed Hamdy**	Dr. A. Hamdy
Date of Approval	**09/2023**	

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

Course Specification

Course Code: CVE 1103 **Course Title: Plane 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 1103			
Year/level	first year / Second level (1st Semester)			
Specialization	**Major**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	4	1	1	6

2. Course Aims

No.	Aim
(AM1)	Provide a professional engineer capable of working efficiently and effectively in surveying.
(AM2)	Teach the students to practice the methodology in thinking and describing surveying problems.

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 surveying and mapping science	1
Measurements units	2
Map Scale	3
Direct and indirect methods of distance measurements	4
Directions and angles measurements using theodolites	5
Calculations of Horizontal Circle Reading [HCR]	6
Calculations of Vertical Circle Reading [VCR]	7
Computation of coordinates	8
Midterm	9
Traverse and its types; Closed, Connected, Open traverse	10
Closed traverse; Computations of angular closing error	11
Closed traverse; Computations of linear closing error	12
Computations of connected traverse	13
Practical exam	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	Weekly
2	Reports	Bi-weekly
3	Sheets	Bi-weekly
4	Quiz 1 / Quiz 2	4 & 10
5	Mid-term Exam	9
7	Practical Exam	14
8	Final Exam	15

7.3 Weighting of Assessments

	Assessment Method	Weights%	Weights	Weights%	Weights
Teacher Opinion	Reports / sheets / Activities	30%	30	5%	5
	Attendance				-
	Quiz 1 / Quiz 2			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		

7. List of References

[1] De, Alak. *Plane Surveying*. S. Chand Publishing, 2000.

[2] Napoles, E., and M. Berber. "Precise formula for volume computations using contours method." *Boletim de Ciências Geodésicas* 24 (2018)

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 surveying and mapping science	AM1, AM2	CLO2, CLO15
2	Measurements units	AM1	CLO2, CLO16
3	Map Scale	AM1, AM2	CLO2, CLO15, CLO16, CLO22
4	Direct and indirect methods of distance measurements	AM2	CLO15, CLO22
5	Directions and angles measurements using theodolites	AM1, AM2	CLO15, CLO22
6	Calculations of Horizontal Circle Reading [HCR]	AM2	CLO16
7	Calculations of Vertical Circle Reading [VCR]	AM2	CLO16
8	Computation of coordinates	AM1	CLO16, CLO22
9	Traverse and its types; Closed, Connected, Open traverse	AM1, AM2	CLO2, CLO16, CLO22
10	Closed traverse; Computations of angular closing error	AM2	CLO16, CLO22
11	Closed traverse; Computations of linear closing error	AM2	CLO16, CLO22
12	Computations of connected traverse	AM1, AM2	CLO2, CLO15

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.	CLO1	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	**09/2023**	

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

Course Specification

Course Code: CVE 1101 **Course Title: Structural Analysis (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 1101			
Year/level	first year / second level (1st Semester)			
Specialization	**Major**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	4	2		6

2. Course Aims

No.	Aim
(AM2)	Teach the students how to solve complex engineering problems by applying engineering fundamentals and basic science (AM2).

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.

4. Course Contents

Topics	Week
Introduction theory of structure, and stability equations	1
Determination of reactions for beams without intermediate hinges.	2
Determination of reactions for beams with intermediate hinges.	3
Determination of internal forces for beams without intermediate hinges.	4

Determination of internal forces for beams with intermediate hinges.	5
Determination of internal forces for Frames without inclined members.	6
Determination of internal forces for Frames with inclined members.	7
MIDTERM	8
Determination of internal forces for Closed Frames	9
Determination of reactions for trusses	10
Define the force for all the truss members	11
Introduction into arches	12
Determination of reactions for arch	13
Determination of internal forces for arch	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	√	√		√								

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	CLO 1, CLO2
3	Quiz 1 / Quiz 2	CLO 1, CLO2
4	Mid-term Exam	CLO 1, CLO2
5	Final Exam	CLO 1, CLO2

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Attendance	Weekly
2	Sheets	Bi-weekly
3	quizzes	---
4	Mid-term Exam	8
5	Final Exam	15

7.3 Weighting of Assessments

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

8. List of References

[1] El Dakhekhni, Theory Of Structures, Dar Al Maaref.
[2] Hulse, R., & Cain, J. (2017). Structural mechanics: worked examples. Bloomsbury Publishing.
[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

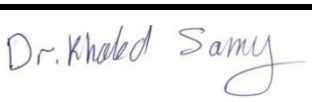
10. Matrix of Course Content with Course LO's

No.	Topics	Aim	Los
1	**Introduction theory of structure, and stability equations**	1	CLO 1, CLO2
2	Determination of reactions for beams without intermediate hinges.	1	CLO 1, CLO2
3	Determination of reactions for beams with intermediate hinges.	1	CLO 1, CLO2
4	Determination of internal forces for beams without intermediate hinges.	1	CLO 1, CLO2
5	Determination of internal forces for beams with intermediate hinges.	1	CLO 1, CLO2
6	Determination of internal forces for Frames without inclined members.	1	CLO 1, CLO2
7	Determination of internal forces for Frames with inclined members.	1	CLO 1, CLO2
8	Determination of internal forces for Closed Frames	1	CLO 1, CLO2
9	Determination of reactions for trusses	1	CLO 1, CLO2
10	Define the force for all the truss members	1	CLO 1, CLO2
11	Introduction into arches	1	CLO 1, CLO2
12	Determination of reactions for arch&	1	CLO 1, CLO2

	Determination of internal forces for arch		

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.

Title	Name	Signature
Course coordinator	**Dr. Nesrin Ali Morsy**	
Program Coordinator:	**Dr. khaled Samy Abdallah**	
Head of Department	**Asso. Prof. Dr. Ahmed Hamdy**	
Date of Approval	**9/2023.**	

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

Course Specification

Course Code: CVE 1201 Course Title: Structural Analysis (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 1201			
Year/level	First year / Second level (2^{nd} Semester)			
Specialization	**Major**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	4	2		6

2. Course Aims

No.	Aim
1	Teach the students how to analysis of structure (AM2).
2	Give the students the knowledge and expertise to analysis of structure using several techniques (AM3).
3	Make it possible for graduates to pursue continuing education and self-learning, and to qualify for advanced scientific degrees in structural analysis (AM5).

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

No.	Topics	Week
1	**Introduction on Influence Line**	1
2	Influence Line of Beams	2,3
3	Influence Line of Continus Beams	4,5
4	Influence Line of Frames	6,7
5	Influence Line of Trusses	8,10
6	Properties of Area	11
7	Straining Action	12
8	Normal Stresses on Beams	13

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	Reports / Sheets	CLO1, CLO2, CLO22
3	Quiz 1 / Quiz 2	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	Weekly
2	Reports / Sheets	Bi-weekly
3	Quizzes	Weekly
4	Mid-term Exam	9
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	40%	40	-	-
	Attendance			-	-
	Quiz 1 / Quiz 2			20%	20
	Mid-term exam			20%	20
Practical / Oral	Practical Attendance				
	Lab. Reports				
	Lab. Activities / Projects				
	Final oral / practical exam				
Final Exam		60%	60		
Total		100%	100		

8. List of References

[1] El Dakhekhni, Theory Of Structures, Dar Al Maaref.
[2]OBrien, E. J., Quilligan, M. J., & Karoumi, R. (2006, March). Calculating an influence line from direct measurements. In Proceedings of the Institution of Civil Engineers-Bridge Engineering (Vol. 159, No. 1, pp. 31-34). Thomas Telford Ltd.
[3] Ye, J. (2008). Structural and stress analysis: theories, tutorials and examples. CRC Press.
[4] Megson, T. H. G. (2019). Structural and stress analysis. Butterworth-Heinemann.
[5] V.N. Vazirani. (1997). Analysis of Structures . Khanna Pubishers.
[6] PHI Learrning. (2008). Structures . L. Schoek.

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 on Influence Line**	2	CLO 1, CLO2
2	Influence Line of Beams	2,3	CLO1, CLO2, CLO22
3	Influence Line of Beams	2,3	CLO1, CLO2, CLO22
4	Influence Line of Continus Beams	2,3	CLO1, CLO2, CLO22
5	Influence Line of Frames	2,3	CLO1, CLO2, CLO22
6	Influence Line of Frames	2,3	CLO1, CLO2, CLO22
8	Influence Line of Trusses	2,3	CLO1, CLO2, CLO22
9	Midterm exam	2,3	CLO1, CLO2, CLO22
10	Influence Line of Trusses	2,3	CLO1, CLO2, CLO22
11	Properties of Area	5	CLO1, CLO2
12	Straining Action	5	CLO1, CLO2
13	Normal Stresses on frames	5	CLO1, CLO2, CLO22
14	Final Revesion	2,3,5	CLO1, CLO2, CLO22
15	Final Exam	2,3,5	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
Asso. Dr. Ahmed Hamdy.	**Asso. Dr. Ahmed Hamdy.**	Dr.A.Hamdy
Date of Approval	**9/2023.**	

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

Course Specification

Course Code: HUM 1402 **Course Title: Technical Report Writing**

1. Basic information

Program Title	Civil Engineering Department			
Department offering the program	Civil Engineering Department			
Department offering the course	Civil Engineering Department			
Course Code	HUM XX02			
Year/level	Frist year / Second level (1nst Semester)			
Specialization	**Mainor**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	2	1	0	3

2. Course Aims

No.	Aim
AM4	Teach the students how to Write civil technical Reports (AM4).

3. Course Learning Outcomes (LOs)

CLO16	Communicate effectively in writing of technical report with a range of audiences using contemporary tools.
CLO17	Use creative, innovative, and flexible thinking to write a professional technical report.

4. Course Contents

Topics	Week
Technical report definition.	1
Types of communication.	2
Difference between reports and others.	3
Characteristics of good report.	4

Objectives and importance of reports writing.	5
Preparation stages of reports.	6
Main elements of reports and research.	7
Write sentences, diagrams, tables and mathematics in Reports.	8
Mid-term exam	9
Presentation of technical report models.	10
Presentation of technical report models.	11
Presentation of technical report models	12
Presentation of student's reports	13
Presentation of student's reports	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
CLO16	√	√	√									
CLO17	√		√	√			√					

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	CLO16, CLO17
3	Quizzes	CLO16, CLO17
4	Mid-term Exam	CLO16, CLO17
5	Oral/ Practical Exam	------
6	Final Exam	CLO16, CLO17

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Attendance	Weekly
2	Sheets	Bi-weekly
3	Quizzes	------
4	Mid-term Exam	9
5	Practical Exam	---------
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		
Total		100%	100		

8. List of References

[1] Technical Report Writing book, Water and water structure department, Zagazig University,2020.

[2] Arabinda Das, How to Write a Technical Report?, 2017, Conference: National Project & Seminar Competition , Doi: 10.13140/Rg.2.2.35266.02246.

[3] Hering, Heike, Heike Hering, and Baumann. How to write technical reports. Springer Berlin Heidelberg, 2019.

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	Technical report definition.	AM4	CLO16, CLO17
2	Types of communication.	AM4	CLO16, CLO17
3	Difference between reports and others.	AM4	CLO16, CLO17
4	Characteristics of good report.	AM4	CLO16, CLO17
5	Objectives and importance of reports writing.	AM4	CLO16, CLO17
6	Preparation stages of reports.	AM4	CLO16, CLO17

7	Main elements of reports and research.	AM4	CLO16, CLO17
8	Write sentences, diagrams, tables and mathematics in Reports.	AM4	CLO16, CLO17
9	Presentation of technical report models.	AM4	CLO16, CLO17
10	Presentation of technical report models.	AM4	CLO16, CLO17
11	Presentation of technical report models.	AM4	CLO16, CLO17
12	Presentation of student's reports, Presentation of student's reports.	AM4	CLO16, CLO17

11. Matrix of Program LOs with Course Los

Program LOs		Course LOs	
PLO8	Communicate effectively - graphically, verbally and in writing with a range of audiences using contemporary tools.	CLO16	Communicate effectively in writing of technical report 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.	CLO17	Use creative, innovative, and flexible thinking to write a professional technical report.

Title	Name	Signature
Course coordinator	**Dr. Medhat Mahmoud Momtaz**	
Program Coordinator:	**Dr. khaled Samy Abdallah**	Dr. Khaled Samy
Head of Department	**Asso. Prof. Dr. Ahmed Hamdy**	Dr. A. Hamdy
Date of Approval	**09/2023**	

Course Specification

Course Code: EPE 1221 **Course Title: Electrical & Mechanical Engineering**

1. Basic information

Program Title	Civil Engineering Depart.			
Department offering the program	Civil Engineering Depart.			
Department offering the course	Electrical Power Engineering Depart.			
Course Code	EPE1221			
Year/level	First year / second Semester (2^{nd} Semester)			
Specialization	**Minor**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	2	2	0	4

2. Course Aims

No.	Aim
1	Providing students with academic and technical skills to solve dc and ac circuits, elevators, steel manufacturing and refrigeration. (AM3)

3. Learning Outcomes (LOs)

CLO1	Identify and formulate the dc and ac circuit theories problems and the elevators, steel manufacturing and basics of refrigeration.
CLO2	Solve different theories that can be applied to electrical circuits and industrial and commercial applications.

4.Course contents

Topics	Week
Basic Concepts of electric circuits	1
Basic circuit laws	2

Circuit analysis techniques	3
Electrical circuits theorems	4
Ac circuits	5
Industrial and commercial applications	6
Elevators	7
Steel manufacturing	8
Machines in agriculture	10
HVAC	11
Air conditioning	12
Refrigeration	13
review	14
Practical 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
CLO1	√		√	√		√						
CLO2	√		√	√		√				√		

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	LOs
1	Attendance	CLO2
2	Reports	CLO2
3	Quizzes	CLO1
4	Mid-term Exam	CLO1
5	Final Exam	CLO1,CLO2

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Attendance	Weekly
2	Reports	Bi-weekly
3	Sheets	Weekly
4	Quizzes	Bi-weekly
5	Mid-term Exam	9
6	Final Exam	16

7.3 Weighting of Assessments

	Assessment Method	Weights%	Weights	Weights%	Weights
Teacher Opinion	Reports / sheets	40%	40	5	5
	Attendance			5	5
	Quizzes			10	10
	Mid-term exam			20	20
Final Exam				60	60
Total				100	100

7. List of References

Alexander & Sadiku ,"Fundamental of electrical circuits",2004

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

9. Matrix of Course Content with Course LO's

Week No.	Topics	Aim	LO's
1	Basic Concepts of electric circuits	1	CLO1
2	Basic circuit laws	1	CLO1
3	Circuit analysis techniques	1	CLO1
4	Electrical circuits theorems	1	CLO1, CLO2
5	Ac circuits	1	CLO1, CLO2
6	Industrial and commercial applications	1	CLO2
7	inverse laplace transform.- Wave Equation	1	CLO2
8	inverse laplace transform.- Heat Equation	1	CLO2
10	Application on inverse Laplace-Vector anaylsis	1	CLO2
11	Application on inverse Laplace-Vector anaylsis	1	CLO2
12	Heaviside unit step(laplace transform)	1	CLO2
13	Heaviside unit step(inverse laplace transform)--Vector anaylsis	1	CLO2
14	inverse laplace transform.- Wave Equation	1	CLO1, CLO2

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.	CLO1	Identify and formulate the dc and ac circuit theories problems and the elevators, steel manufacturing and basics of refrigeration.
		CLO2	Solve different theories that can be applied to electrical circuits and industrial and commercial applications.

Title	Name	Signature
Course coordinator	**Dr. Mohamed abd elrahman** **Dr.**Riham Hosny Salem	Dr. Mohamed Dr.Riham Hosny
Program coordinator	Dr. Khaled samy abdallah	Dr. Khaled samy
Head of Department	**Asso. Prof. Dr. Ahmed Hamdy**	Dr.A.Hamdy
Date of Approval	**15/09/2023**	

Course Specification

Course Code: PHM1141 **Course Title: Mathematics (3)**

1. Basic information

Program Title	civil Engineering Department			
Department offering the program	civil Engineering Department			
Department offering the course	Physics and Mathematical Engineering			
Course Code	PHM1141			
prerequisite	Mathematics (1&2)			
Year/level	First year / First Semester (second Level)			
Specialization	**Major**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	4	2	0	6

2. Course Aims

No.	Aim
1	Training students to practice the methodology in thinking the essential knowledge to understand of some basics of calculus: Multiple Integrals, The normal and tangent plane, Surface Integration, Differential equations of the first order, Partial derivatives applications, Maxima of Multivariate functions, Higher order differential equations: (homogeneous and non-homogeneous), Simultaneous and expansion functions.(AM2)

3. Learning Outcomes (LOs)

CLO1	Identify the different classifications of equations, Partial Differentiation and the difference between the double Integral and the triple Integral and the Nonhomogeneous equations, the Method of Undetermined coefficients and the Variation of parameters and Expansion function.
CLO2	Solve complex engineering problems by applying the different methods to solve the second order differential equations and determine the particular solutions, multiple integrals in any other area, Partial Differentiation and Expansion function.
CLO21	Select different methods to evaluate multiple integrals
CLO22	Use the different kinds of differential equations of the first order (or second order), operator method and variation of parameters to find the general solution for the second order differential equations.

4- Course Contents	
Topics	**Week**
Partial Derivatives-Ordinary Differential Equations (separable method- Homogenous Eqs)	1
Partial Derivatives – O.D.E (Exact and Integrating method)	2
Applications of Partial Derivatives - First order Differential Equations	3
Applications of Partial Derivatives - Ordinary Differential Equations of n^{th} order.	4
Applications of Partial Derivatives - Ordinary Differential Equations of n^{th} order.	5
Double integral – Orthogonal Eqs.	6
Double integral - Linear Differential Equations with constant coefficients.	7
Double integral - Linear Differential Equations with constant coefficients	8
Mid Term Exam	9
Double integral - Linear Differential Equations with constant coefficients	10
Triple Integral - Linear Differential Equations with constant coefficients	11
Triple Integral - Linear Differential Equations with constant coefficients	12
Surface integral (Line integral) - Linear Differential Equations with constant coefficients	13
Surface integral (Green's theorem) - Linear Differential Equations with Variable coefficients (Euler).	14
Functions Expansion - Simultaneous Differential Equations.	15

5-Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Interactive lectures	Tutorials	Practical	Projects	Assignment	Research\reports	Self-Learning	Brain Storming	Modeling and simulations	Site Visits	Presentation	Discussion
CLO1	√	√			√		√	√				
CLO2	√	√			√	√	√	√				√
CLO21	√	√			√	√	√	√				√
CLO22	√	√			√	√	√	√				√

4. Teaching and Learning methods of Disabled Students

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

5. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	Los
1	Attendance	CLO2,CLO21,CLO22
2	Reports	CLO2, CLO21, CLO22
3	Sheets	CLO1, CLO2, CLO21, CLO22
4	Quizzes	CLO2, CLO21

5	Mid-term Exam	CLO2, CLO21
6	Final Exam	CLO1,CLO2,CLO21,CLO22

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Attendance	weekly
2	Reports	Bi-weekly
3	Sheets	weekly
4	Quizzes	Bi-weekly
5	Mid-term Exam	9
6	Final Exam	16

7.3 Assessment Schedule

	Assessment Method	Weights%	Weights
Teacher Opinion	Reports / sheets	10%	15
	Attendance	3.33	5
	Quizzes	10%	15
	Mid-term exam	26.6%	40
Final Exam		50%	75
Total		100%	150

6. List of References

[1] Sheply L. Ross, John Wiley and Sons, “Differential equations 3rd Edition”, copy right 1984, by john Wiley & Sons, Inc., published simultaneously in Canada 2017.
[2] Dennis G. Zill and Michael R. Cullen, “Differential Equations with Boundary Problem”, seven edition, PWS Publishers; published simultaneously in Canada 2015.
[3] William E. Boyce, Richard:" Elementary Differential Equations and Boundary Value Problems", 8th Edition Wiley, Publisher John Wiley & Sons, Inc., 2014.

7. Facilities required for teaching and learning

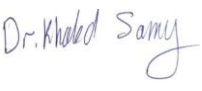
Lecture/Classroom
White board
Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)

8. Matrix of Course Content with Course LO's

No.	Topics	Aim	LO's
1	Partial Derivatives-Ordinary Differential Equations (separable method- Homogenous Eqs)	1	CLO1
2	Partial Derivatives – O.D.E (Exact and Integrating method)	1	CLO2,CLO122
3	Applications of Partial Derivatives - First order Differential Equations	1	CLO2,CLO122
4	Applications of Partial Derivatives - Ordinary Differential Equations of n^{th} order.	1	CLO2,CLO122
5	Applications of Partial Derivatives - Ordinary Differential Equations of n^{th} order.	1	CLO2,CLO122
6	Double integral – Orthogonal Eqs.	1	CLO1, CLO2,CLO21,CLO22
7	Double integral - Linear Differential Equations with constant coefficients.	1	CLO2,CLO21,CLO22
8	Double integral - Linear Differential Equations with constant coefficients	1	CLO2,CLO21,CLO22
10	Double integral - Linear Differential Equations with constant coefficients	1	CLO2,CLO21,CLO22
11	Triple Integral - Linear Differential Equations with constant coefficients	1	CLO2,CLO21,CLO22
12	Triple Integral - Linear Differential Equations with constant coefficients	1	CLO2,CLO21,CLO22
13	Surface integral (Line integral) - Linear Differential Equations with constant coefficients	1	CLO2,CLO21,CLO22
14	Surface integral (Green's theorem) - Linear Differential Equations with Variable coefficients (Euler).	1	CLO2,CLO21,CLO22
15	Functions Expansion - Simultaneous Differential Equations.	1	CLO1, CLO2, CLO22

9. Matrix of Program LOs with Course Los

Program LOs		Course Los	
PL1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	CLO1	Identify the different classifications of equations, Partial Differentiation and the difference between the double Integral and the triple Integral and the Nonhomogeneous equations, the Method of Undetermined coefficients and the Variation of parameters and Expansion function.
		CLO2	Solve complex engineering problems by applying the different methods to solve the second order differential equations and determine the particular solutions, multiple integrals in any other area, Partial Differentiation and Expansion function.
PL11	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 different methods to evaluate multiple integrals
		CLO22	use the different kinds of differential equations of the first order (or second order), operator method and variation of parameters to find the general solution for the second order differential equations.

Title	Name	Signature
Course coordinator	**Dr. Eman Abdelaziz**	
Program Coordinator:	**Dr. khaled Samy Abdallah**	
Head of Department	**Asso. Prof. Dr. Ahmed Hamdy**	
Date of Approval	**09/2023**	

Course Specification

Course Code: PHM 1241 **Course Title: Mathematics (4)**

1. Basic information

Program Title	civil Engineering Department			
Department offering the program	civil Engineering Department			
Department offering the course	Physics and Mathematical Engineering			
Course Code	PHM 1241			
prerequisite	Mathematics 1,2			
Year/level	First year / Second Semester (second Level)			
Specialization	**Major**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	4	2	0	6

2. Course Aims

No.	Aim
1	Training students to practice the methodology in thinking the theoretical knowledge and practical to deal with Fourier series, Laplace transform and inverse Laplace, solve a system of equations, Partial Differential Equations and vector analysis.(AM2)

3. Learning Outcomes (LOs)

CLO3	Develop and conduct appropriate the concepts and theories of Fourier series, classification of PDEs ,expansion function and interpolation.
CLO5	Evaluate findings and use method for Partial differential equation, and vector analysis for different systems.
CLO23	Use testing by applying methods of Laplace transform, and Inverse Laplace for different systems.

4-course contents	
Topics	**Week**
Interpolation-Fourier Series	1
Interpolation-Fourier Series	2
Interpolation-Fourier Series	3
Curve fitting- classification and solve partial DifferentialEquations(PDEs).	4
Curve fitting- Wave Equation.	5
Laplace transform-inverse laplace transform.	6
inverse laplace transform.- Wave Equation	7
inverse laplace transform.- Heat Equation	8
Mid Term Exam	9
inverse laplace transform.- Heat Equation	10
Application on inverse Laplace-Vector anaylsis	11
Application on inverse Laplace-Vector anaylsis	12
Heaviside unit step(laplace transform)-Vector anaylsis	13
Heaviside unit step(inverse laplace transform)--Vector anaylsis	14
Expansion functions	15

5-Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Interactive lectures	Tutorials	Practical	Projects	Assignment	Research\reports	Self-Learning	Brain Storming	Modeling and simulations	Site Visits	Presentation	Discussion
CLO3	√	√			√	√	√	√				
CLO5	√	√			√	√	√	√				
CLO23	√	√			√	√	√	√				

4. Teaching and Learning methods of Disabled Students

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

5. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	Los
1	Attendance	CLO5,CLO23
2	Reports	CLO3,clo5,CLO23
3	Sheets	CLO3,clo5,CLO23
4	Quizzes	clo23
5	Mid-term Exam	CLO3,CLO23
6	Final Exam	CLO3,CLO5,CLO23

7.2 Assessment Schedule

No.	Assessment Method	Weeks

1	Attendance	weekly
2	Reports	Bi-weekly
3	sheets	Weekly
4	Quizzes	Bi-weekly
5	Mid-term Exam	9
6	Final Exam	16

7.3 Assessment Schedule

	Assessment Method	Weights%	Weights
Teacher Opinion	Reports / sheets	10%	15
	Attendance	3.33%	5
	Quizzes	10%	15
	Mid-term exam	26.6%	40
Final Exam		50%	75
Total		100%	150

8-List of References

[1] Erwin Kreyszig, Kreyszig Textbook: "Advanced Engineering Mathematics, 10th Edition- slader, 2018.

[2] Dennis G. Zill and Michael R. Cullen, "Differential Equations with Boundary Problem", seven edition, PWS Publishers; published simultaneously in Canada 2015.

[3] William E. Boyce, Richard:" Elementary Differential Equations and Boundary Value Problems", 8th Edition Wiley, Publisher John Wiley & Sons, Inc., 2014.

9-Facilities required for teaching and learning

Lecture/Classroom
White board
Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)

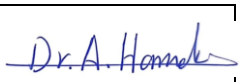
10-Matrix of Course Content with Course LO's

No.	Topics	Aim	LO's
1	Interpolation-Fourier Series	1	CLO3
2	Interpolation-Fourier Series	1	CLO3
3	Interpolation-Fourier Series	1	CLO3
4	Curve fitting- classification and solve partial DifferentialEquations(PDEs).	1	CLO3
5	Curve fitting- Wave Equation.	1	Clo3,clo5
6	Laplace transform-inverse laplace transform.	1	Clo23
7	inverse laplace transform.- Wave Equation	1	Clo23,clo5
8	inverse laplace transform.- Heat Equation	1	Clo23,clo5
10	inverse laplace transform.- Heat Equation	1	Clo23,clo5
11	Application on inverse Laplace-Vector anaylsis	1	Clo23,clo5
12	Application on inverse Laplace-Vector anaylsis	1	Clo23,clo5
13	Heaviside unit step(laplace transform)-Vector anaylsis	1	Clo23,clo5
14	Heaviside unit step(inverse laplace transform)--Vector anaylsis	1	Clo23,clo5
15	Expansion functions	1	Clo3

6. Matrix of Program LOs with Course Los

Program LOs		Course Los	
PL2	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 the concepts and theories of Fourier series, classification of PDEs and interpolation.
		CLO5	Evaluate findings and use method for Partial differential equation, and vector analysis for different systems.
PL11	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.	CLO23	Use testing by applying methods of Laplace transform, and Inverse Laplace for different systems.

Title	Name	Signature
Course coordinator	**Dr. Eman Abdelaziz**	
Program Coordinator:	**Dr. Khaled Same**	

Head of Department	**Asso. Prof. Dr. Ahmed Hamdy**	
Date of Approval	**9/2023**	