Course Specifications: Mathematics (3)

1. Basic Information

Program Title	Civil Engineering Program
Department offering the Program	Structural Engineering Department + Public Works Engineering Department +Irrigation and Hydraulics Engineering Department
Department Responsible for the Course	Mathematics and Engineering Physics
Course Code	BAS 8111
Year/ Level	First Year – First Semester
Specialization	Minor
Authorization data of course specification	**December 2021**

Teaching Hours	Lectures	Tutorial	Practical
	4	2	0

2. Course aims:

No.	Aim
2	Apply the differential equations and multiple integrals theories to solve engineering problems in Civil engineering.

3. Learning Outcomes (LOs):

B1.1	Illustrate concepts and theories of differential equations
B1.2	Discuss the relation of Laplace transform and multiple integrals
B2.1	Design Mathematical model using partial differential equations
B2.2	Apply appropriate methodologies of integration to optimize the design of systems

4. Course Contents:

No.	Topics	Weeks
1	Partial differentiation + First order differential equations (DEs)	1, 2
2	Application of Partial differentiation + Second and higher DEs	3, 4
3	Double integral + Laplace Transform (L.T.)	5, 6
4	Triple integral + Inverse L. T.	7, 9
5	Line and Surface integrals + Applications of L.T. to DEs.	10, 11
6	Vector Calculus + Applications of L.T to integral equations	12, 13, 14

5. Teaching and Learning Methods:

No.	Teaching Method
1	Lectures
2	Discussion Sessions

6. Teaching and Learning Methods for Disable Students:

No.	Teaching Method	Reason
1	Additional Tutorials	To communicate better with
2	More solved examples	

7. Student Assessment:

7.1 Student Assessment Methods:

No.	Assessment Method	LOs
1	Mid Term Examination	B1.1, B1.2, B2.1
2	Semester work (reports, quizzes)	B1.1, B1.2, B2.1
3	Final Term Examination	B2.1, B2.2

7.2 Assessment Schedule:

No.	Assessment Method	Weeks
1	Mid Term Examination	8
2	Semester work (reports, quizzes)	2. 4, 6, 10, 12
3	Final Term Examination	15

7.3 Weighting of Assessments:

No.	Assessment Method	Weights
1	Mid Term Examination	20%
2	Semester work (reports, quizzes)	7%
3	Final Term Examination	73%
Total		100%

8. List of References

No.	Reference List
1	James Stewart, Calculus - Early Transcendentals 5th ed, Brooks/Cole, 2006.
2	David Bachman, Advanced Calculus Demystified, McGraw-Hill, 2007.

9. Facilities Required for Teaching and Learning:

No.	Facility
1	Lecture Classroom
2	White Board
3	Data Show System
4	Sound System

10. Matrix of Knowledge and Skills of the Course:

No.	Topic	Aims	LOs
1	Partial differentiation + First order differential equations (DEs)	1	B1.1
2	Application of Partial differentiation + Second and higher DEs	1	B1.1
3	Double integral + Laplace Transform (L.T.)	1	B1.2, B2.1
4	Triple integral + Inverse L. T.	1	B1.2, B2.1
5	Line and Surface integrals + Applications of L.T. to DEs.	1	B2.1, B2.2
6	Vector Calculus + Applications of L.T to integral equations	1	B2.1, B2.2

Course Coordinator:

Head of Department: Prof. Dr. Mohamed El-Zoughiby

Date of Approval: December 2021

Course: Mathematics (3)	
Program LOs	**Course LOs**
B1. Select appropriate and sustainable technologies for construction of buildings and infrastructures; 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	B1.1 Illustrate concepts and theories of differential equations B1.2 Discuss the relation of Laplace transform and multiple integrals
B2 Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbors; or any other emerging field relevant to the discipline.	B2.1 Design Mathematical model using partial differential equations B2.2 Apply appropriate methodologies of integration to optimize the design of systems

1. Basic Information

Program Title	Civil Engineering Program
Department offering the Program	Structural Engineering Department + Public Works Engineering Department + Hydraulics Engineering Department.
Department Responsible for the Course	Irrigation and Hydraulics Engineering
Course Name	Law and Financing Sources
Course Code	IRH8112
Year/ Level	First Year-First Semester
Specialization	Major
Authorization date of course specification	12/2021

Teaching Hours	Lectures	Tutorial	Practical
	3	1	0

2. Course Aims:

No.	Aim
3	Develop the field of civil engineering disciplines; to meet the required needs with professional and legal responsibilities; and project management to achieve organizational for construction project.

3. Learning Outcomes (LOs):

No.	LOs
A6.1	Plan engineering projects according to legal rules of civil law, and legislation of industrial safety and environment.
A6.2	Monitor implementation of engineering projects, and Solve engineering problems related to the Egyptian unified building law and building codes.
A9.1	Acquire skills to manage engineering projects and compare between economic alternatives offered.
A9.2	Assess the economic, quality and environmental impacts of engineering projects, and respond to variable conditions and application in engineering project.

4. Course Contents:

No.	Topics	week
1	Introduction in legislation of work and regulated laws for engineering works	W1
2	Criminal liability for the engineer and the contractor for not taking into account the technical assets in construction	W2,

		W3
3	Contracts of engineering works liabilities and arbitration-legislation of industrial safety and environment	W4, W5
4	Legal rules of civil law and related contracting	W6, W7
5	Building codes	W9
6	Claims and disputes and arbitration	W10, W11
7	Demand and supply balance	W12, W13
8	Introduction in economy; request, offering and balance-costs - time value for money currency - comparison between alternatives economical evaluation - economic analysis in construction department - analysis of money fluxes of investments - applications in construction projects.	W14

5. Teaching and Learning Methods:

No.	Teaching Method
1	Interactive lectures (hybrid learning)
2	Discussion Sessions
3	Flipped classroom

6. Teaching and Learning Methods for Disable Students:

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

7. Student Assessment:

7.1 Student Assessment Methods:

No.	Assessment Method	ILOs
1	Mid Term Examination	A6.1, A6.2
2	Semester work	A6.1, A9.1, A9.2
3	Final Term Examination	A6.1, A6.2, A9.1, A9.2

7.2 Assessment Schedule:

No.	Assessment Method	Weeks
1	Mid Term Examination	8
2	Semester work	By - weekly
3	Final Term Examination	15

7.3 Weighting of Assessment:

No.	Assessment Method	Weights
1	Mid Term Examination	15 %

2	Semester work	15 %
3	Final Term Examination	70 %
Total		100%

8. List of References:

No.	Reference List
1	John Vail Farr and Isaac Faber "Engineering Economics of Life Cycle Cost Analysis" CRC Press, 2019.
2	Lukas Klee "International Construction Contract Law" Wiley-Blackwell, 2018. -1

9. Facilities Required for Teaching and Learning:

No.	Facility
1	Lecture Classroom
2	White Board
3	Data Show System
4	Visualizer
5	Presenter
6	Sound System

10. Matrix of Knowledge and Skills of the Course:

No.	Topic	aim	LO's
1	Introduction in legislation of work and regulated laws for engineering works	3	A6.1
2	Criminal liability for the engineer and the contractor for not taking into account the technical assets in construction	3	A6.1, A6.2
3	Contracts of engineering works liabilities and arbitration-legislation of industrial safety and environment	3	A6.1
4	Legal rules of civil law and related contracting	3	A6.1, A6.2
5	Building codes	3	A6.2
6	Claims and disputes and arbitration	3	A9.1
7	Demand and supply balance	3	A9.1, A9.2
8	Introduction in economy; request, offering and balance-costs - time value for money currency - comparison between alternatives economical evaluation - economic analysis in construction department - analysis of money fluxes of investments - applications in construction projects.	3	A9.1, A9.2

Course Coordinator: Dr. Samy Khalf-Allah

Head of Department: Assoc. Prof. Dr. Tharwat Eid Sarhan

Date of Approval: 12/2021

Course: Law and Financing Sources	
Program LOs	**Course LOs**
A6. Plan, supervise, and monitor implementation of engineering projects, taking into consideration other trades requirements	A6.1 Plan engineering projects according to legal rules of civil law and the technical assets in construction. A6.2 Monitor implementation of engineering projects and Solve engineering problems related to the Egyptian unified building law and building codes.
A9. Use creative, innovative, and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations	A9.1 Acquire skills to manage engineering projects and compare between economic alternatives offered. A9.2 Assess the economic, quality and environmental impacts of engineering projects, and respond to variable conditions and application in engineering project.

1. Basic Information

Program Tile	Civil Engineering Program
Department offering the Program	Structural Engineering Department + Public Works Engineering Department + Hydraulics Engineering Department.
Department Responsible for the Course	Irrigation and Hydraulics Engineering
Course Name	Civil Engineering Drawing
Course Code	IRH8114
Year/ Level	First Year-First Semester
Specialization	Major
Authorization data of course specification	12/2021

Teaching Hours	Lectures	Tutorial	Practical
	2	4	0

2. Course Aims:

No.	Aim
1	Master a wide range of engineering knowledge, techniques, and skills for use in drawing and producing of crossing and heading up water structures.

3. Learning Outcomes (LOs):

No.	LOs
B1.1	Select appropriate and sustainable techniques for preparing building and infrastructure construction drawings.
B2.1	Achieve optimal design drawings for water structures, foundations and earth retaining structures, reinforced concrete and steel structures.

4. Course Contents:

No.	Topics	week
1	Introduction: conventions in civil engineering drawing	W1
2	Drawing of Earthen works: waterway cross sections, slope in bed, berm and bank, and crossing of roads	W2, W3
3	Drawing of Retaining walls: stepped brick wall, battered back wall, cantilevers type wall, and counterfort wall.	W4, W5
4	Drawing of the Combination between earthen works and retaining walls.	W6, W7
5	Drawing of the complete Irrigation structures: arch bridge, reinforced concrete bridge, culvert, weir, and syphon.	W9, W10, W11
6	Drawing of Reinforced Concrete dwelling structures: slabs, beams, columns, and foundation.	W12, W13
7	Drawing of Steel Construction: beam connections, compound sections, angle & plate connection and column bases.	W14

5. Teaching and Learning Methods:

No.	Teaching Method
1	Interactive lectures (hybrid learning)
2	Discussion Sessions
3	Flipped classroom
4	Practical

6. Teaching and Learning Methods for Disable Students:

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

7. Student Assessment:

7.1 Student Assessment Methods:

No.	Assessment Method	LOs
1	Mid Term Examination	B1.1
2	Semester work (Quizzes, presentation, Portfolio)	B1.1, B2.1
3	Final Term Examination	B1.1, B2.1

7.2 Assessment Schedule:

No.	Assessment Method	Weeks
1	Mid Term Examination	**8**
2	Semester work (Quizzes, presentation, Portfolio)	**weekly**
3	Final Term Examination	**15**

7.3 Weighting of Assessment:

No.	Assessment Method	Weights
1	Mid Term Examination	13.33 %
2	Semester work (Quizzes, presentation, Portfolio)	20 %
3	Final Term Examination	66.67 %
Total		100%

8. List of References:

No.	Reference List
1	Yasser Shoukry and Jaiprakash Pandey “Practical Autodesk AutoCAD 2021 and AutoCAD LT 2021” ISBN 978-1-78980-915-2, Packt Publishing, 2020.

2	George Omura and Brian C. Benton "Mastering AutoCAD 2019 and AutoCAD LT 2019" John Wiley & Sons, Inc., Indianapolis, Indiana, 2018.

9. Facilities Required for Teaching and Learning:

No.	Facility
1	Lecture Classroom
2	White Board
3	Data Show System
4	Visualizer
5	Presenter
6	Sound System

10. Matrix of Knowledge and Skills of the Course:

No.	Topic	Aims	LO's
1	Introduction	**1**	B1.1
2	Drawing of Earthen works	**1**	B1.1
3	Drawing of Retaining walls	**1**	B1.1
4	Drawing of the Combination between earthen works and retaining walls.	**1**	B1.1, B2.1
5	Drawing of the complete Irrigation structures	**1**	B1.1, B2.1
6	Drawing of Reinforced Concrete dwelling structures	**1**	B1.1, B2.1
7	Drawing of Steel Construction	**1**	B2.1

Course Coordinator: Prof. Dr. Adel EL-Masry.

Head of Department: Assoc. Prof. Dr. Tharwat Eid Sarhan

Date of Approval: 12/2021

Course: Civil Engineering Drawing	
Program LOs	**Course LOs**
B1. Select appropriate and sustainable technologies for construction of buildings and infrastructures; 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.	B1.1 Select appropriate and sustainable techniques for preparing building and infrastructure construction drawings.
B2. Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbors; or any other emerging field relevant to the discipline.	B.2.1 Achieve optimal design drawings for water structures, foundations and earth retaining structures, reinforced concrete and steel structures.

University: Mansoura University
Faculty: Faculty of Engineering
Program: Civil Engineering Program

1. Basic Information

Program Title	Civil Engineering Program
Department offering the Program	Structural Engineering Department + Public Works Engineering Department +Irrigation and Hydraulics Engineering Department
Department Responsible for the Course	Public Work Engineering department
Course Code	PWE 8113
Year/ Level	First Year-First Semester
Specialization	Major
Authorization data of course specification	December 2021

Teaching Hours	Lectures	Tutorial	Practical
	4	2	

2. Course aims:

No.	Aim
3	Apply statistical concepts in civil engineering field; to meet the required needs with considering the impacts on society and environment

3. Learning Outcomes (LOs):

A2.1	Forecasting population at any time using statistical analyses.
A2.2	Perform curve fitting to analyze, interpret data.
A5.1	Practice research techniques and methods of investigation using frequency distribution and probability methods as an inherent part of learning.

4. Course Contents:

No.	Topics	week
1	Central Tendency	1-3
2	Frequency Distributions	4-6
3	Curve Fitting and regression methods	7-9
4	Forecasting technique	10
5	Probability distributions	11
6	Sampling Distribution	12
7	Hypothesis Testing	13-14

5. Teaching and Learning Methods:

No.	Teaching Method
1	Interactive lectures (hybrid learning)
2	Discussion Sessions
3	Flipped classroom

6. Teaching and Learning Methods for Disable Students:

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

7. Student Assessment:

7.1 Student Assessment Methods:

No.	Assessment Method	LOs
1	Mid Term Examination	A2.1
2	Semester work (Quizzes, presentation, Portfolio)	A5.1, A2.2
3	Final Term Examination	A2.1, A2.2, A5.1

7.2 Assessment Schedule:

No.	Assessment Method	Weeks
1	Mid Term Examination	8
2	Semester work (Quizzes, presentation, Portfolio)	Weekly
3	Final Term Examination	15

7.3 Weighting of Assessments:

No.	Assessment Method	Weights
1	Mid Term Examination	13.34 %
2	Semester work (Quizzes, presentation, Portfolio)	10 %
3	Final Term Examination	66.67 %
Total		100 %

8. List of References

No.	Reference List
1	Sheldon Rose, A First course in probability, Eighth edition, 2010, Pearson Prentice Hall.

9. Facilities Required for Teaching and Learning:

No.	Facility
1	Lecture Classroom
2	White Board
3	Data Show System
4	Visualizer
5	Presenter
6	Sound System

10. Matrix of Knowledge and Skills of the Course:

No.	Topic	aim	LO's
1	Central Tendency	3	A2.1
2	Frequency Distributions	3	A2.2
3	Curve Fitting and regression methods	3	A5.1
4	Forecasting technique	3	A5.1
5	Probability distributions	3	A5.1
6	Sampling Distribution	3	A5.1
7	Hypothesis Testing	3	A5.1

Course Coordinator:

1. Muharram Fouad Abdo Allaa El Din

2. Usama Elrawy Ali Shahdah

Head of Department: Prof. Dr. Muharram Fouad Abdo Allaa El Din

Date of Approval: December 2021

Course: Statistical applications in civil engineering	
Program LOs	**Course LOs**
A2. Develop and conduct appropriate experimentation and/or simulation, analyze, and interpret data, assess, and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	A2.1. Forecasting population at any time using statistical analyses. A2.2. Perform curve fitting to analyze, interpret data.
A5. Practice research techniques and methods of investigation as an inherent part of learning.	A5.1. Practice research techniques and methods of investigation using frequency distribution and probability methods as an inherent part of learning.

University: Mansoura University
Faculty: Faculty of Engineering
Program: Civil Engineering Program

1. Basic Information

Program Title	Civil Engineering Program
Department offering the Program	Structural Engineering Department + Public Works Engineering Department +Irrigation and Hydraulics Engineering Department
Department Responsible for the Course	Public Work Engineering department
Course Code	PWE 8115
Year/ Level	First Year- First Semester
Specialization	Major
Authorization data of course specification	December 2021

Teaching Hours	Lectures	Tutorial	Practical
	2	1	1

2. Course aims:

No.	Aim
1	Master a wide range of plan surveying knowledge and techniques to use them in Civil engineering projects .

3. Learning Outcomes (LOs):

A7.1	Function efficiently as an individual and as a member of a team in Mapping with tape and traverse field works
B1.1	apply a full range Surveying fundamentals , reduced bearing and whole circle bearing concepts in engineering projects
B1.2	Select appropriate traverses and tacheometry methods for construction of buildings and infrastructures
B1.3	Use Coordinate transformation concepts and techniques

4. Course Contents:

No.	Topics	week
1	Surveying Fundamentals	1-3
2	Distance Measurements (experiment: Mapping with tape)	4-5
3	Angular measurements (experiment: Compass)	6-7
4	Traverses and Traverse Computations (experiment: traverse field works)	10-12
5	Coordinate transformation (self-study)	13-14

5. Teaching and Learning Methods:

No.	Teaching Method
1	Interactive lectures (hybrid learning)
2	Discussion Sessions
3	Flipped classroom
4	Practical

6. Teaching and Learning Methods for Disable Students:

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

7. Student Assessment:

7.1 Student Assessment Methods:

No.	Assessment Method	LOs
	Mid Term Examination	B1.1 , B1.2
1	Semester work (Quizzes)	A7.1 , B1.3

7.2 Assessment Schedule:

No.	Assessment Method	Weeks
1	Mid Term Examination	8
2	Semester work (Quizzes)	weekly

7.3 Weighting of Assessments:

No.	Assessment Method	Weights
1	Mid Term Examination	67.67 %
2	Semester work (Quizzes, presentation, Portfolio)	33.33 %
Total		100 %

8. List of References

No.	Reference List
1	Johnson, Aylmer. "Plane and Geodetic Surveying 2nd Edition". CRC Press, 2014
2	Bossler, and Moffit. "Surveying 10th Edition". 2004.

9. Facilities Required for Teaching and Learning:

No.	Facility
1	Lecture Classroom
2	White Board
3	Data Show System
4	Visualizer
5	Presenter
6	Sound System
7	Lab

10. Matrix of Knowledge and Skills of the Course:

No.	Topic	aim	LO's
1	Surveying Fundamentals	1	B1.1
2	Distance Measurements (experiment: Mapping with tape)	1	A7.1 , B1.1
3	Angular measurements (experiment: Compass)	1	B1.1 , B1.2
4	Traverses and Traverse Computations (experiment: traverse field works)	1	A7.1 , B1.1 , B1.2
5	Coordinate transformation (self-study)	1	B1.3

Course Coordinator:

Ahmed Awad Ali Awad

Fawzi Hamed Fawzi Zarzoura

Head of Department: Prof. Dr. Muharram Fouad Abdo Allaa El Din

Date of Approval: December 2021

Course: Plane Survey	
Program LOs	**Course LOs**
A7. Function efficiently as an individual and as a member of multi-disciplinary and multicultural teams	A7.1 Function efficiently as an individual and as a member of a team in Mapping with tape and traverse field works
B1. Select appropriate and sustainable technologies for construction of buildings and infrastructures; 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	B1.1 apply a full range Surveying fundamentals , reduced bearing and whole circle bearing concepts in engineering projects B1.2 Select appropriate traverses and tacheometry methods for construction of buildings and infrastructures B1.3 Use Coordinate transformation concepts and techniques

University: Mansoura University
Faculty: Faculty of Engineering
Program: Civil Engineering Program

1. Basic Information

Program Title	Civil Engineering Program
Department offering the Program	Structural Engineering Department + Public Works Engineering Department + Hydraulics Engineering Department.
Department Responsible for the Course	Structural Engineering Department
Course Code	STE 8116
Year/ Level	First year - First Semester
Specialization	Major
Authorization data of course specification	December 2021

Teaching Hours	Lectures	Tutorial	Practical
	2	2	-

2. Course aims:

No.	Aim
2	Apply theory of structures for solving civil engineering problems of different structures and calculating the straining actions of the structures based on the concepts and theory of structures.

3. Learning Outcomes (LOs):

B1.1	Select appropriate mathematical methods for analysis of statically determinate beams, rigid frames, arches, and trusses.
B1.2	Define the concepts of structural analysis for different structures.
B2.1	Achieve an optimum design of different structures by understanding design principles and describe the principles of structural analysis using the methods of influence lines for statically determinate structures and moving loads for statically determinate beams.
B2.2	Applied analytical thinking to reach the most appropriate solution to engineering problems by analyze structural problems of statically determinate structures.

4. Course Contents:

No.	Topics	week
1	Loads and reactions	1-2-3
2	Statically determinate beams	4-5-6-7
3	Statically determinate rigid frames	9-10-11
4	Statically determinate arches	12-13

5. Teaching and Learning Methods:

No.	Teaching Method
1	Interactive lectures (hybrid learning)
2	Discussion Sessions
3	Flipped classroom

6. Teaching and Learning Methods for Disable Students:

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

7. Student Assessment:

7.1 Student Assessment Methods:

No.	Assessment Method	LOs
1	Semester work (Quizzes, presentation, Portfolio)	B1.1, B1.2, B2.1, B2.2

7.2 Assessment Schedule:

No.	Assessment Method	Weeks
1	Semester work (Quizzes, presentation, Portfolio)	weekly

7.3 Weighting of Assessments:

No.	Assessment Method	Weights
1	Semester work (Quizzes, presentation, Portfolio)	100%
Total		100 %

8. List of References

No.	Reference List
1	*V.N. Vazirani, M.M. Ratwani, & S.K. Duggal, "Analysis of structures", Khanna publishers, sixteenth edition, 2005.*
2	*Hibbeler, R. C. Structural Analysis, Eighth Edition. Pearson prentice Hall. New Jersey. USA.2012.*
3	*EL-Dakhakhny. W. Theory of structures, fourteenth edition. Assiut University., Egypt.2010.*

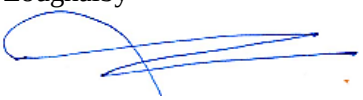
9. Facilities Required for Teaching and Learning:

No.	Facility
1	Lecture Classroom
2	White Board
3	Data Show System
4	Visualizer
5	Presenter
6	Sound System

10. Matrix of Knowledge and Skills of the Course:

No.	Topic	aim	LO's
1	Loads and reactions	2	B1.1, B1.2
2	Statically determinate beams	2	B1.1, B1.2
3	Statically determinate rigid frames	2	B2.1, B2.2
4	Statically determinate arches	2	B2.1, B2.2

Course Coordinator: Prof. Dr/ Mohammed Naguib Abou El-Saad 

Head of Department: Prof. Dr/ Mohamed Elsaied El-Zoughaiby 

Date of Approval: December 2021

Course: Theory of structures 1	
Program LOs	**Course LOs**
B1. Select appropriate and sustainable technologies for construction of buildings and infrastructures; 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	B1.1-Select appropriate mathematical methods for analysis of statically determinate beams, rigid frames, arches, and trusses. B1.2-Define the concepts of structural analysis for different structures.
B2. Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbors; or any other emerging field relevant to the discipline	B2.1- Achieve an optimum design of different structures by understanding design principles and describe the principles of structural analysis using the methods of influence lines for statically determinate structures and moving loads for statically determinate beams. B2.2- Applied analytical thinking to reach the most appropriate solution to engineering problems by analyze structural problems of statically determinate structures.

University: Mansoura University
Faculty: Faculty of Engineering
Program: Civil Engineering Program

1. Basic Information

Program Title	Civil Engineering Program
Department offering the Program	Structural Engineering Department + Public Works Engineering Department +Irrigation and Hydraulics Engineering Department
Department Responsible for the Course	Electrical Eng. Dep. and Mechanical power Eng. Dep.
Course Code	EE-MPE8123
Year/ Level	First Year-Second Semester
Specialization	Minor
Authorization data of course specification	December 2021

Teaching Hours	Lectures	Tutorial	Practical
	4	2	0

2. Course aims:

No.	Aim
2	Apply the basic concepts and principles of thermodynamic, heat transfer, air conditioning and heavy construction equipment components in different types of building

3. Learning Outcomes (LOs):

B1.1	Apply Thermodynamic concepts and techniques in thermal systems and processes
B1.2	Use Properties diagram and steam tables in First and second law of thermodynamics problems
B1.3	Apply a full range of mechanical engineering concepts and techniques in Compression processes .
B3.1	Manage Heat transfer modes considering fundamental of heat exchangers concepts .
B3.2	Plan Air conditioning facilities , air conditioning cycles and Refrigeration considering Air cycles standard .
B3.3	Manage Heavy construction equipment components by fundamentals of diesel engines .

4. Course Contents:

No.	Topics	week
1	Thermodynamic properties	1
2	Thermal systems and processes	2
3	Properties diagram and steam tables	3
4	First law of thermodynamics	4
5	Second law of thermodynamics	5
6	Compression processes	6
7	Heat transfer modes	7

8	Fundamental of heat exchangers	9
9	Refrigeration and air conditioning cycles	10
10	Air conditioning facilities	11
11	Air standard cycles	12
12	Fundamental of diesel engines	13
13	Heavy construction equipment components and futures	14

5. Teaching and Learning Methods:

No.	Teaching Method
1	Interactive lectures (hybrid learning)
2	Discussion Sessions
3	Flipped classroom

6. Teaching and Learning Methods for Disable Students:

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

7. Student Assessment:

7.1 Student Assessment Methods:

No.	Assessment Method	LOs
1	Mid Term Examination	B1.3 , B3.1 ,
2	Semester work (Quizzes)	B1.1 , B1.2
3	Final Term Examination	B1.1 , B1.2 , B1.3 , B3.1 , B3.2 , B3.3

7.2 Assessment Schedule:

No.	Assessment Method	Weeks
1	Mid Term Examination	8
2	Semester work (Quizzes)	Weekly
3	Final Term Examination	15

7.3 Weighting of Assessments:

No.	Assessment Method	Weights
1	Mid Term Examination	20 %
2	Semester work (Quizzes)	67 %
3	Final Term Examination	13 %
Total		100 %

8. List of References

No.	Reference List
1	Lecture notes prepared in the form of a book by the course coordinator. (2019)
2	Charles K. Alexander, Matthew N. Sadiku, "Fundamentals of electric circuits", fifth edition McGraw Hill, 2012.

9. Facilities Required for Teaching and Learning:

No.	Facility
1	Lecture Classroom
2	White Board
3	Data Show System
4	Visualizer
5	Presenter
6	Sound System

10. Matrix of Knowledge and Skills of the Course:

No.	Topic	aim	LO's
1	Thermodynamic properties	2	B1.1
2	Thermal systems and processes	2	B1.1
3	Properties diagram and steam tables	2	B1.2
4	First law of thermodynamics	2	B1.2
5	Second law of thermodynamics	2	B1.2
6	Compression processes	2	B1.3
7	Heat transfer modes	2	B3.1
8	Fundamental of heat exchangers	2	B3.1
9	Refrigeration and air conditioning cycles	2	B3.2
10	Air conditioning facilities	2	B3.2
11	Air standard cycles	2	B3.2
12	Fundamental of diesel engines	2	B3.3
13	Heavy construction equipment components and futures	2	B3.3

Course Coordinator:

Prof. Ahmed Abd Razik Sultan

Head of Department: Prof. Dr/ Mohamed Elsaied El-Zoughaiby

Date of Approval: December 2021

Course: Electrical and Mechanical Installation	
Program LOs	**Course LOs**
B1. Select appropriate and sustainable technologies for construction of buildings and infrastructures; 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	B1.1 Apply Thermodynamic concepts and techniques in thermal systems and processes B1.2 Use Properties diagram and steam tables in First and second law of thermodynamics problems . B1.3 Apply a full range of mechanical engineering concepts and techniques in Compression processes .
B3. Plan and manage construction processes; address construction defects, instability, and quality issues; maintain safety measures in construction and materials; and assess environmental impacts of projects.	B3.1 Manage Heat transfer modes considering fundamental of heat exchangers concepts . B3.2 Plan Air conditioning facilities , air conditioning cycles and Refrigeration considering Air cycles standard . B3.3 Manage Heavy construction equipment components by fundamentals of diesel engines .

University: Mansoura University
Faculty: Faculty of Engineering
Program: Civil Engineering Program

1. Basic Information

Program Title	Civil Engineering Program
Department offering the Program	Structural Engineering Department + Public Works Engineering Department +Irrigation and Hydraulics Engineering Department
Department Responsible for the Course	Public Work Engineering department
Course Code	PWE 8125
Year/ Level	First Year-Second Semester
Specialization	Major
Authorization data of course specification	December 2021

Teaching Hours	Lectures	Tutorial	Practical
	2	1	1

2. Course aims:

No.	Aim
1	Master a wide range of plan surveying knowledge and techniques to use them in Civil engineering projects .

3. Learning Outcomes (LOs):

A7.1	Function efficiently as an individual and as a member of a team in longitudinal section , cross section leveling and grid leveling field work
B3.1	Plan levelling and horizontal curves in construction projects
B3.2	Manage calculation processes of areas and volumes by Surveying fundamentals.
B3.3	manage surveying observation by application of theory of errors

4. Course Contents:

No.	Topics	week
1	Leveling (Experiment: longitudinal section leveling, cross section leveling)	1-3
2	Horizontal curves (Experiment: setting out of curves)	4-6
3	Vertical curves	7-9
4	Areas and volumes (Experiment: grid leveling and volumes)	10-11
5	Theory of errors	12-14

5. Teaching and Learning Methods:

No.	Teaching Method
1	Interactive lectures (hybrid learning)

2	Discussion Sessions
3	Flipped classroom
4	Practical

6. Teaching and Learning Methods for Disable Students:

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

7. Student Assessment:

7.1 Student Assessment Methods:

No.	Assessment Method	LOs
1	Mid Term Examination	B3.1 , B3.3
2	Practical examination	A7.1 , B3.2
3	Oral examination	B3.3
4	Final Term Examination	B3.1 , B3.2 , B3.3

7.2 Assessment Schedule:

No.	Assessment Method	Weeks
1	Mid Term Examination	8
2	Practical examination	14
3	Oral examination	14
4	Final Term Examination	15

7.3 Weighting of Assessments:

No.	Assessment Method	Weights
1	Mid Term Examination	17 %
2	Practical examination	12 %
3	Oral examination	6%
4	Final Term Examination	65 %
Total		100 %

8. List of References

No.	Reference List
1	Johnson, Aylmer. "Plane and Geodetic Surveying 2nd Edition". CRC Press, 2014
2	Bossler, and Moffit. "Surveying 10th Edition". 2004.

9. Facilities Required for Teaching and Learning:

No.	Facility
1	Lecture Classroom
2	White Board
3	Data Show System
4	Visualizer
5	Presenter
6	Sound System
7	Lab

10. Matrix of Knowledge and Skills of the Course:

No.	Topic	aim	LO's
1	Leveling (Experiment: longitudinal section leveling, cross section leveling)	1	A7.1 , B3.1 , B3.2
2	Horizontal curves (Experiment: setting out of curves)	1	B3.1
3	Vertical curves	1	B3.1
4	Areas and volumes (Experiment: grid leveling and volumes)	1	A7.1 , B3.1 , B3.2
5	Theory of errors	1	B3.3

Course Coordinator:

Ahmed Awad Ali Awad

Fawzi Hamed Fawzi Zarzoura

Head of Department: Prof. Dr. Muharram Fouad Abdo Allaa El Din

Date of Approval: December 2021

Course: Plane Survey	
Program LOs	**Course LOs**
A7. Function efficiently as an individual and as a member of multi-disciplinary and multicultural teams	A7.1 Function efficiently as an individual and as a member of a team in longitudinal section , cross section leveling and grid leveling field work
B3. Plan and manage construction processes; address construction defects, instability, and quality issues; maintain safety measures in construction and materials; and assess environmental impacts of projects.	B3.1 Plan levelling and horizontal curves in construction projects B3.2 Manage calculation processes of areas and volumes by Surveying fundamentals. B3.3 manage surveying observation by application of theory of errors

University: Mansoura University
Faculty: Faculty of Engineering
Program: Civil Engineering program

1. Basic Information

Program Title	Civil Engineering program		
Department offering the Program	Structural Engineering Department + Public Works Engineering Department + Hydraulics Engineering Department.		
Department Responsible for the Course	Structural Engineering Department		
Course Code	STE 8122		
Year/ Level	First Year-Second Semester		
Specialization	Major		
Authorization data of course	December 2021		
Teaching Hours	Lectures	Tutorial	Practical
	4	4	-

2. Course aims:

No.	aim
3	Develop the field of civil engineering materials; to meet the required needs with considering the impacts on environment.

3. Learning Outcomes (LOs):

B1.1	Select appropriate and sustainable technologies for Cement and aggregate Manufacturing to achieve the required Physical and mechanical properties.
B1.2	Applying a full range of cement and aggregate testing concepts
B.3.1	Manage quality of steel and water used in building construction.
B3.2	Plan nanotechnology in construction building.

4. Course Contents:

No.	Topics	Week
1	General Classes of materials, testing, inspection, specifications	1-2-3
2	Testing machines, strain gauges	4-5
3	General features of mechanical behavior of metals, static tension, static compression, static bending, static shear	6-7-9-10-11-12-13
4		
4	Cement, composition, types, manufacture, properties, test	1-2-3-4-5-6-7
5	Mineral aggregates classification, properties, Lime and Gypsum, classification, manufacture	9-10-11-12-13

5. Teaching and Learning Methods:

No.	Teaching Method
1	Interactive lectures (hybridlearning)
2	Discussion lessons
3	Flipped classroom
4	Practical

6. Teaching and Learning Methods 0f Disable Students:

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

7. Student assessment:

7.1 Student Assessment Methods:

No.	Assessment Method	LOs
1	Mid Term	B1.1, B3.1
2	Oral/Practical Examination	B3.2
3	Semester work	B1.2
4	Final Term	B1.1,B3.1,B3.2

7.2 Assessment Schedule:

No.	Assessment Method	Weeks
1	Mid Term	8
2	Oral/Practical Examination	14
3	Semester work	Weekly
4	Final Term	15

7.3 Weighting of Assessments

No.	Assessment Method	Weights
1	Mid Term	15%
2	Oral/Practical Examination	10%
3	Semester work	15%
4	Final Term Examination	60%
Total		100%

8. List of References

No.	Reference List
1	Doran and Cather, "Construction Materials Reference Book", 2nd Edition, 2014.

9. Facilities Required for Teaching and Learning:

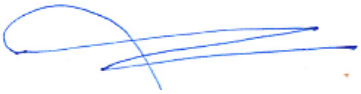
No.	Facility
1	Lecture Classroom
2	Lab Facilities
3	White Board
4	Data Show System
5	Visualizer
6	Presenter
7	Sound System

10. Matrix of Knowledge and Skills of the Course:

No.	Topic	aim	LO's
1	General Classes of materials, testing, inspection, specifications	3	B1.1
2	Testing machines, strain gauges	3	B1.2
3	General features of mechanical behavior of metals, static tension, static	3	B3.1
4	Cement, composition, types, manufacture, properties, test	3	B3.2
5	Mineral aggregates classification, properties, Lime and Gypsum,	3	B1.2,B3.1

Course Coordinator: Prof. Dr. Ahmed Tahawya

Head of Department: Prof. Dr/ Mohamed Elsaied El-Zoughaiby



Date of Approval: December 2021

Course: Concrete materials	
Program LOs	**Course LOs**
B1. Select appropriate and sustainable technologies for construction of buildings and infrastructures; 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.	B1.1. Select appropriate and sustainable technologies for Cement and aggregate Manufacturing to achieve the required Physical and mechanical properties. B1.2. Applying a full range of cement and aggregate testing concepts
B3. Plan and manage construction processes; address construction defects, instability, and quality issues; maintain safety measures in construction and materials; and assess environmental impacts of projects.	B.3.1. Manage quality of steel and water used in building construction. B3.2. plan nanotechnology in construction building.

University: Mansoura University
Faculty: Faculty of Engineering
Program: Civil Engineering Program

1. Basic Information

Program Title	Civil Engineering Program
Department offering the Program	Structural Engineering Department + Public Works Engineering Department + Hydraulics Engineering Department.
Department Responsible for the Course	Structural Engineering Department
Course Code	STE 8126
Year/ Level	First year - Second Semester
Specialization	Major
Authorization data of course specification	December 2021

Teaching Hours	Lectures	Tutorial	Practical
	2	2	-

2. Course aims:

No.	Aim
2	Apply theory of structures for solving civil engineering problems of different structures and calculating the straining actions of the structures based on the concepts and theory of structures.

3. Learning Outcomes (LOs):

B1.1	Select appropriate mathematical methods for analysis of statically determinate beams, rigid frames, arches, and trusses.
B1.2	-Define the concepts of structural analysis for statically determinate arches and trusses
B2.1	Achieve an optimum design of different structures by understanding design principles and describe the principles of structural analysis using the methods of influence lines for statically determinate structures and moving loads for statically determinate beams.
B2.2	Describe the principles of structural analysis using the methods of influence lines for statically determinate structures and moving loads for statically determinate beams

4. Course Contents:

No.	T	week
1	Statically determinate trusses	1-2-3-4-5
2	influence lines for statically determinate structures	6-7-9-10
3	Moving Loads for Statically Determinate Beams	11-12

5. Teaching and Learning Methods:

No.	Teaching Method
1	Interactive lectures (hybrid learning)
2	Discussion Sessions
3	Flipped classroom

6. Teaching and Learning Methods for Disable Students:

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

7. Student Assessment:

7.1 Student Assessment Methods:

No.	Assessment Method	LOs
1	Mid Term	B1.1, B1.2
2	Semester work	B2.1
3	Final Term	B1.1, B1.2, B2.1, B2.2

7.2 Assessment Schedule:

No.	Assessment Method	Weeks
1	Mid Term	8
2	Semester work	weekly
3	Final Term	15

7.3 Weighting of Assessments:

No.	Assessment Method	Weights
1	Mid Term	12.5%
	Semester work	12.5%
	Final Term	75%
Total		100 %

8. List of References

No.	Reference List
1	***V.N. Vazirani, M.M. Ratwani, & S.K. Duggal, "Analysis of structures", Khanna publishers, sixteenth edition, 2005.***
2	***Hibbeler, R. C. Structural Analysis, Eighth Edition. Pearson prentice Hall. New Jersey. USA.2012.***
3	***EL-Dakhakhny. W. Theory of structures, fourteenth edition. Assiut University., Egypt.2010.***

9. Facilities Required for Teaching and Learning:

No.	Facility
1	Lecture Classroom
2	White Board
3	Data Show System
4	Visualizer
5	Presenter
6	Sound System

10. Matrix of Knowledge and Skills of the Course:

No.	Topic	aim	LO's
1	Statically determinate trusses	2	B1.1, B1.2
2	influence lines for statically determinate structures	2	B1.1, B1.2
3	Moving Loads for Statically Determinate Beams	2	B2.1, B2.2

Course Coordinator: Prof. Dr/ Mohammed Naguib Abou El-Saad

Head of Department: Prof. Dr/ Mohamed Elsaied El-Zoughaiby

Date of Approval: December 2021

Course: Theory of structures 1	
Program LOs	**Course LOs**
B1. Select appropriate and sustainable technologies for construction of buildings and infrastructures; 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	B1.1-Select appropriate mathematical methods for analysis of statically determinate beams, rigid frames, arches, and trusses. B1.2-Define the concepts of structural analysis for different structures.
B2. Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbors; or any other emerging field relevant to the discipline	B2.1- Achieve an optimum design of different structures by understanding design principles and describe the principles of structural analysis using the methods of influence lines for statically determinate structures and moving loads for statically determinate beams. B2.2- Applied analytical thinking to reach the most appropriate solution to engineering problems by analyze structural problems of statically determinate structures.

Course Specifications: Mathematics 4

1. Basic Information

Program Tile	Civil Engineering Program
Department offering the Program	Structural Engineering Department + Public Works Engineering Department +Irrigation and Hydraulics Engineering Department
Department Responsible for the Course	Mathematics and Engineering Physics
Course Code	BAS 8121
Year/ Level	First Year -Second Semester
Specialization	Minor
Authorization data of course specification	**December 2021**

Teaching Hours	Lectures	Tutorial	Practical
	4	4	0

2. Course Aims:

No.	Aim
1	Solve partial differential equations related to Civil engineering problems such as in structural analysis, Finite element methods.

3. Learning Outcomes (LOs):

B1.1	Recognize concepts and theories of special functions, Fourier series, and Fourier transform
B1.2	Illustrate principles of functions of complex variables and analytical functions
B1.3	Acquire an understanding of different theorems related to complex integrals
B2.1	Solve partial differential equations in problems related to Civil engineering
B2.2	Apply Fourier transforms and complex analysis to applications of Civil engineering

4. Course Contents:

No.	Topics	Week
1	Gamma, Beta.	1,2
2	Bessel and Legendre functions.	3,4,5
3	Fourier series and Fourier Integral	6,7,9
4	Boundary value problem (heat, wave and Laplace equations).	10,11,12,13,14
5	Complex numbers	1
6	Functions of a complex variable	2
7	Elementary functions	3,4,5
8	Conformal mapping	6,7
9	Complex integration	9
10	Power series	10,11
11	Residue theorem	12,13,14

5. Teaching and Learning Methods:

No.	Teaching Method
1	Lectures
2	Discussion Sessions

6. Teaching and Learning Methods for Disable Students:

No.	Teaching Method	Reason
1	Additional Tutorials	To help them understand
2	More solved examples	

7. Student Assessment:

7.1 Student Assessment Methods:

No.	Assessment Method	LOs
1	Mid Term Examination	B1.1, B1.2, B1.3
2	Semester work (reports, quizzes)	B1.1, B1.2, B1.3
3	Final Term Examination	B1.1, B1.2, B1.3, B2.1, B2.2

7.2 Assessment Schedule:

No.	Assessment Method	Weeks
1	Mid Term Examination	8
2	Semester work (reports, quizzes)	2, 4, 6, 10, 12
3	Final Term Examination	15

7.3 Weighting of Assessments:

No.	Assessment Method	Weights
1	Mid Term Examination	20%
2	Semester work (reports, quizzes)	7%
3	Final Term Examination	73%
Total		100%

8. List of References:

No.	Reference List
1	Larry Andrews, Special functions of Mathematics for Engineers, Second Edition, SPIE PRESS, 1998.
2	J. W. Brown and R. V. Churchill, Complex variables and applications, McGraw-Hill, New York, 2009.

9. Facilities Required for Teaching and Learning:

No.	Facility
1	Lecture Classroom
2	White Board
3	Data Show System
4	Sound System

10. Matrix of Knowledge and Skills of the Course:

No.	Topic	Aims	LOs
1	Gamma, Beta.	7	B1.1, B1.2
2	Bessel and legendre functions.	7	B1.1, B1.2
3	Fourier series and Fourier Intergral	7	B1.1, B1.2
4	Boundary value problem (heat, wave and laplace equations).	7	B1.1, B1.2, B1.3
5	Complex numbers	7	B1.1, B1.2, B1.3
6	Functions of a complex variable	7	B1.1, B1.2, B1.3
7	Elementary functions	7	B1.1, B1.2, B1.3
8	Conformal mapping	7	B2.1, B2.2
9	Complex integration	7	B2.1, B2.2
10	Power series	7	B2.1, B2.2
11	Residue theorem	7	B2.1, B2.2

Course Coordinator: Prof. Ibrahim El wady / Prof. Mohammed El gamal

Head of Department: Pro. Dr. Mohamed El-Zoughiby

Date of Approval: December 2021

Course: Mathematics (3)	
Program LOs	**Course LOs**
B1. Select appropriate and sustainable technologies for construction of buildings and infrastructures; 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	B1.1 Recognize concepts and theories of special functions, Fourier series, and Fourier transform B1.2 Illustrate principles of functions of complex variables and analytical functions. B1.3Explain the different theorems related to complex integrals
B2 Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures; and at least three of the following civil engineering topics: Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbors; or any other emerging field relevant to the discipline.	B2.1 Solve partial differential equations in problems related to Civil engineering B2.2 Apply Fourier transforms and complex analysis to applications of Civil engineering

1. Basic Information

Program Title	Civil Engineering Program
Department offering the Program	Structural Engineering Department + Public Works Engineering Department + Hydraulics Engineering Department.
Department Responsible for the Course	Irrigation and Hydraulics Engineering
Course Name	Technical Reports in Civil Engineering
Course Code	IRH8124
Year/ Level	First Year-Second Semester
Specialization	Major
Authorization data of course specification	12/2021

Teaching Hours	Lectures	Tutorial	Practical
	2	0	1

2. Course Aims:

No.	Aim
1	Master a wide range of engineering technical reports to use them in real Civil engineering practice.

3. Learning Outcomes (LOs):

No.	LOs
A4.1	Utilize standards in preparing technical report.
A6.1	Plan implementation of a good technical report.
B1.1	Select appropriate and sustainable techniques for preparing characteristics of technical writing, and review of the function of grammar.
B1.2	apply all the forms of expressions, elements, and types of written report.

4. Course Contents:

No.	Topics	week
1	Characteristics of technical writing	W1
2	Review of the function of grammar	W2, W3
3	Forms of expressions	W4, W5
4	Discovering and organization of ideas	W6, W7
5	Element of reports	W9, W10
6	Types of written reports	W11, W12, W13
7	Oral reports	W14

5. Teaching and Learning Methods:

No.	Teaching Method
1	Interactive lectures (hybrid learning)
2	Discussion Sessions
3	Flipped classroom
4	Practical

6. Teaching and Learning Methods for Disable Students:

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

7. Student Assessment:

7.1 Student Assessment Methods:

No.	Assessment Method	LOs
1	Semester work (Quizzes, presentation, Portfolio)	B1.1, A4.1
2	Final Term Examination	B1.1, B1.2, A6.1, A4.1

7.2 Assessment Schedule:

No.	Assessment Method	Weeks
1	Semester work (Quizzes, presentation, Portfolio)	**weekly**
2	Final Term Examination	**15**

7.3 Weighting of Assessment:

No.	Assessment Method	Weights
1	Semester work (Quizzes, presentation, Portfolio)	30 %
2	Final Term Examination	70 %
Total		100%

8. List of References:

No.	Reference List
1	“Technical Writing for Engineer, 2008, THARWAT SARHAN”
2	Report Writing Guide for Civil Engineering Students, Department of Civil Engineering, Prof. Marion Sinclair, 1/1/2014

9. Facilities Required for Teaching and Learning:

No.	Facility
1	Lecture Classroom
2	White Board
3	Data Show System
4	Visualizer
5	Presenter
6	Sound System

10. Matrix of Knowledge and Skills of the Course:

No.	Topic	Aims	LO's
1	Characteristics of technical writing	1	B1.1, A4.1
2	Review of the function of grammar	1	B1.1, A6.1
3	Forms of expressions	1	B1.1
4	Discovering and organization of ideas	1	B1.2, A4.1
5	Element of reports	1	B1.1, B1.2
6	Types of written reports	1	B1.1, B1.2
7	Oral reports	1	B1.1, A6.1

Course Coordinator: Dr. Samy Khalf-Allah

Head of Department: Assoc. Prof. Dr. Tharwat Eid Sarhan

Date of Approval: 12/2021

Course: Technical Reports in Civil Engineering	
Program LOs	**Course LOs**
A4. Utilize contemporary technologies, codes of practice, and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles .	A4.1. Utilize standards in preparing technical report.
A6. Plan, supervise, and monitor implementation of engineering projects, taking into consideration other trades requirements .	A6.1. Plan implementation of a good technical report.
B1. Select appropriate and sustainable technologies for construction of buildings and infrastructures; 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.	B1.1 Select appropriate and sustainable techniques for preparing characteristics of technical writing, and review of the function of grammar. B1.2 apply all the forms of expressions, elements and types of written report.