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

1. Basic Information

Program Title	**Civil Engineering Program**
Department offering the Program	**Irrigation and Hydraulics Dept.**
Department Responsible for the Course	**Irrigation and Hydraulics Dept.**
Course Code	**IRH 111**
Year/ Level	**First Year-First Semester**
Specialization	Major
Authorization data of course specification	

Teaching Hours	Lectures	Tutorial	Practical
	2	**2**	**1**

2. Course aims:

No.	Aim
1	Master a wide range of engineering knowledge, techniques, and skills for use in drawing and producing civil engineering projects.

3. Learning Outcomes (LOs):

No.	LOs
B1.1	Select appropriate and sustainable techniques for preparing building and infrastructure construction drawings; Either manually or using computer graphics programs.
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 to civil drawing and functions.	W1
2	Earth works and roads intersections.	W2, W3
3	Retaining wall.	W4, W5
4	Bridges and water structures.	W6, W7
5	Reinforced concrete elements.	W9
6	Steel structures elements and connections.	W10
7	Overview of computer-aided design and graphics programs for civil engineering applications.	W11
8	Basic techniques and skills to create 2D construction drawings- Basic tools and functions– Drafting screen	W12
9	Preliminary create design and layouts for drawings of applied civil engineering projects.	W13, 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 Assessments:

No.	Assessment Method	Weights
1	Mid Term Examination	**16.67 %**
2	Semester work (Quizzes, presentation, Portfolio)	**16.67 %**
5	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.
3	k. Venugopal, "Engineering Drawing" New Age International Publisher, ISBN-13: 978-8122436679, 2014.

9. Facilities Required for Teaching and Learning:

No.	Facility
1	Lecture Classroom
2	Computer lab.
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	Introduction to civil drawing and functions.	1	B1.1
2	Earth works and roads intersections.	1	B1.1
3	Retaining wall.	1	B1.1, B2.1
4	Bridges and water structures.	1	B1.1, B2.1
5	Reinforced concrete elements.	1	B1.1, B2.1
6	Steel structures elements and connections.	1	B1.1, B2.1
7	Overview of computer-aided design and graphics programs for civil engineering applications.	1	B1.1
8	Basic techniques and skills to create 2D construction drawings- Basic tools and functions– Drafting screen	1	B1.1
	Preliminary create design and layouts for drawings of applied civil engineering projects.	1	B1.1, B2.1

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

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

Date of Approval: **/ /2021.**

Course: Civil Drawing & CAD Applications	
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; Either manually or using computer graphics programs.
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	**Irrigation and Hydraulics Dept.**
Department Responsible for the Course	**Irrigation and Hydraulics Dept.**
Course Code	**IRH 121**
Year/ Level	**First Year-Second Semester**
Specialization	Major
Authorization data of course specification	

Teaching Hours	Lectures	Tutorial	Practical
	2	**2**	**1**

2. Course aims:

No.	Aim
2	Apply knowledge of math, science, engineering, and fluid mechanics concepts to identify, formulate, and solve hydraulics problems.

3. Learning Outcomes (LOs):

No.	LOs
B1.1	Select appropriate and sustainable technologies for understanding and interpretation of fluids properties and phenomena; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: hydraulics and fluid mechanics.

4. Course Contents:

No.	Topics	week
1	Introduction to fluid mechanics and hydraulics engineering	W1
2	Units and Dimensions	W2
3	Fluid pressure, hydraulic pressure measuring devices and applications	W3, W4
4	Equilibrium of floating objects	W5
5	Water kinematics	W6
6	Fluid flow and fluid flow types	W7
7	Bernoulli equation applications	W9,10
8	Dimensional analysis and similarities and their theories	W11
9	Hydraulics piping networks	W12, W13
10	Water hammer phenomena.	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
3	Oral Examination	B1.1
4	Practical Examination	B1.1
5	Final Term Examination	B1.1

7.2 Assessment Schedule:

No.	Assessment Method	Weeks
1	Mid Term Examination	**8**
2	Semester work (Quizzes, presentation, Portfolio)	**weekly**
3	Oral Examination	**14**
4	Practical Examination	**14**
5	Final Term Examination	**15**

7.3 Weighting of Assessments:

No.	Assessment Method	Weights
1	Mid Term Examination	**10 %**
2	Semester work (Quizzes, presentation, Portfolio)	**10 %**
3	Oral Examination	**10 %**
4	Practical Examination	**10 %**
5	Final Term Examination	**60 %**
Total		100 %

8. List of References

No.	Reference List
1	Manish Kumar "Fluid Mechanics and Hydraulic Machines" Pearson India Education Services Pvt. Ltd, 2019.
2	Richard M. McCuen "Fluid Mechanics for Civil and Environmental Engineers" CRC press, 2018
3	Yunus Çengel and John M. Cimbala "Fluid Mechanics in SI Units" 3rd edition. ISBN-13: 978-9339204655, McGraw Hill Education, 2017.
4	Currie, I. G. “Fundamental mechanics of fluids” CRC press, 2016

9. Facilities Required for Teaching and Learning:

No.	Facility
1	Lecture Classroom
2	Hydraulics lab.
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	Introduction to fluid mechanics and hydraulics engineering	2	B1.1
2	Units and Dimensions	2	B1.1
3	Fluid pressure, Hydraulic pressure measuring devices and applications	2	B1.1
4	Equilibrium of floating objects	2	B1.1
5	Water kinematics	2	B1.1
6	Fluid flow and fluid flow types	2	B1.1
7	Bernoulli equation applications	2	B1.1
8	Dimensional analysis and similarities and their theories	2	B1.1
9	Hydraulics piping networks	2	B1.1
10	Water hammer phenomena.	2	B1.1

Course Coordinator: Assoc. Prof. Dr. Hossam Abd-Elaziz.

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

Date of Approval: / /2021

Course: Hydraulics 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 and sustainable technologies for understanding and interpretation of fluids properties and phenomena; using either numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques of: hydraulics and fluid mechanics.

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

1. Basic Information

Program Title	Civil Engineering Program
Department offering the Program	Public Work Engineering department
Department Responsible for the Course	Public Work Engineering department
Course Code	PWE112
Year/ Level	First Year-Second Semester
Specialization	Major
Authorization data of course specification	

Teaching Hours	Lectures	Tutorial	Practical
	4	1	2

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):

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
B3.1	Plan levelling and horizontal curves in construction projects
B3.2	Manage calculation processes of areas and volumes by Surveying fundamentals.

4. Course Contents:

No.	Topics	week
1	Surveying fundamentals, Units, Type of surveying, Chain surveying, Obstacles	1-3
2	bearings, Reduced bearing & Whole circle bearing and relation between them	4-6
3	Traverse (link traverse & loop traverse), Angular and linear misclosure	7-9
4	Tacheometry, Stadia hair method, Tangential method, Invar bar method	10
5	Theory of levelling, Ordinary levelling, Flying levelling, Instruments, longitudinal levelling, Cross section levelling	11
6	Horizontal curves , Simple ,compound, reverse, transition curves. Setting out of horizontal curves using distance only, using distance and angles, using coordinates	12
7	Area	13
8	Volumes.	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	Semester work (Quizzes, presentation, Portfolio)	B1.1, B3.1
2	Practical examination	B1.2
3	Oral examination	B3.1
4	Final Term Examination	B1.1 , B3.1 , B3.2

7.2 Assessment Schedule:

No.	Assessment Method	Weeks
1	Semester work (Quizzes, presentation, Portfolio)	weekly
2	Practical examination	14
3	Oral examination	14
4	Final Term Examination	15

7.3 Weighting of Assessments:

No.	Assessment Method	Weights
1	Semester work (Quizzes, presentation, Portfolio)	20 %
2	Practical examination	8.5 %
3	Oral examination	8.5 %
4	Final Term Examination	63 %
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, Units, Type of surveying, Chain surveying, Obstacles	1	B1.1
2	bearings, Reduced bearing & Whole circle bearing and relation between them	1	B1.1
3	Traverse (link traverse & loop traverse), Angular and linear misclosure	1	B1.1 , B1.2
4	Tacheometry, Stadia hair method, Tangential method, Invar bar method	1	B1.1 , B1.2
5	Theory of levelling, Ordinary levelling, Flying levelling, Instruments, longitudinal levelling, Cross section levelling	1	B3.1
6	Horizontal curves , Simple ,compound, reverse, transition curves. Setting out of horizontal curves using distance only, using distance and angles, using coordinates	1	B3.1
7	Area	1	B3.1 , B3.2
8	Volumes.	1	B3.1 , B3.2

Course Coordinator:

Ahmed Awad Ali Awad

Fawzi Hamed Fawzi Zarzoura

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

Date of Approval:

Course: Plane Survey	
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 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
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.

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
Department Responsible for the Course	Structural Engineering Department
Course Code	STE121
Year/ Level	First year
Specialization	Major
Authorization data of course specification	

Teaching Hours	Lectures	Tutorial	Practical
	2		1

2. Course aims:

No.	Aim
1	Master a wide range of material knowledge, techniques and skills to use them in real Civil engineering structures.

3. Learning Outcomes (LOs):

B1.1.	select appropriate materials for construction of building and infrastructure
B1.2.	use physical measurements and testing in the engineering concepts of properties and strength of materials
B2.1.	use the concepts of properties and strength of materials in design
B2.2.	Achieve the optimum design of reinforced concrete structures, foundations and earth retaining structures, also of sanitary works, irrigation, water resources and harbors

4. Course Contents:

No.	Topics	week
1	Standard specifications of engineering materials	1
2	Testing machines and their calibration, Strain gages	2-3
3	Main properties of engineering materials (physical, chemical, mechanical …)	4-5
4	Behavior of metals under static loads (Tension, Compression, Flexure, Shear) Laboratory: Tensil and compressive strength test of metals	6-12
5	Surface hardness of metals	13
6	Behavior of metals under dynamic loads (Impact) and repeated loads (Fatigue)	14-15

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, B2.1
2	Semester work (Quizzes, presentation, Portfolio)	B1.1, B2.1, B2.2
3	Practical Examination	B1.2
4	Final Term Examination	B1.1, B2.1, B2.2

7.2 Assessment Schedule:

No.	Assessment Method	Weeks
1	Mid Term Examination	8
2	Semester work (Quizzes, presentation, Portfolio)	weekly
3	Practical Examination	14
4	Final Term Examination	15

7.3 Weighting of Assessments:

No.	Assessment Method	Weights
1	Mid Term Examination	10%
2	Semester work (Quizzes, presentation, Portfolio)	10%
3	Practical Examination	10%
4	Final Term Examination	70%
Total		100 %

8. List of References

No.	Reference List
1	*Neville, A.M., "Properties of Concrete", Longman, 5th ed., 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	Standard specifications of engineering materials	1	B1.1
2	Testing machines and their calibration, Strain gages	1	B1.2
3	Main properties of engineering materials (physical, chemical, mechanical …)	1	B1.1, B1.2
4	Behavior of metals under static loads (Tension, Compression, Flexure, Shear) Laboratory: Tensil and compressive strength test of metals	1	B2.1, B2.2
5	Surface hardness of metals	1	B2.1, B2.2
6	Behavior of metals under dynamic loads (Impact) and repeated loads (Fatigue)	1	B2.1, B2.2

Course Coordinator: Prof. Dr. Mohammed Yousry El-Sheikh

Head of Department: Prof. Dr. Ahmed Mahmoud Yousef

Date of Approval: September 2021

Course: Plane Survey	
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 materials for construction of building and infrastructure B1.2. use physical measurements and testing in the engineering concepts of properties and strength of materials
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. use the concepts of properties and strength of materials in design B2.2. Achieve the optimum design of reinforced concrete structures, foundations and earth retaining structures, also of sanitary works, irrigation, water resources and harbors

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
Department Responsible for the Course	Structural Engineering Department
Course Code	STE111
Year/ Level	First year - First Semester
Specialization	Major
Authorization data of course specification	December 2020

Teaching Hours	Lectures	Tutorial	Practical
	3	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	Statically determinate beams	2-4

3	Statically determinate rigid frames	5-6
4	Statically determinate Cables and arches	7-9
5	Statically determinate trusses	10-11
6	Influence lines for statically determinate structures and uses of influence lines	12-13
7	Moving Loads for Statically Determinate Beams	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	B1.1, B1.2
2	Semester work (Quizzes, presentation, Portfolio)	B2.1
3	Oral Examination	B1.1, B2.1
4	Final Term Examination	B1.2, B2.1, B2.2

7.2 Assessment Schedule:

No.	Assessment Method	Weeks
1	Mid Term Examination	8
2	Semester work (Quizzes, presentation, Portfolio)	weekly
3	Oral Examination	14
4	Final Term Examination	15

7.3 Weighting of Assessments:

No.	Assessment Method	Weights
1	Mid Term Examination	13%
2	Semester work (Quizzes, presentation, Portfolio)	13%
3	Oral Examination	7 %
4	Final Term Examination	67 %
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	B2.2, B1.1
4	Statically determinate Cables and arches	2	B2.2, B1.2
5	Statically determinate trusses	2	B1.2
6	Influence lines for statically determinate structures and uses of influence lines	2	B2.1, B2.2
7	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/ Ahmed Mahmoud Youssif Mohamed

Date of Approval: December 2019

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
Department Responsible for the Course	Structural Engineering Department
Course Code	STE112
Year/ Level	First year - second Semester
Specialization	Major
Authorization data of course specification	December 2020

Teaching Hours	Lectures	Tutorial	Practical
	2	1	-

2. Course aims:

No.	Aim
1	Master a wide range of fundamentals of theory of structures for calculating different types of straining actions and stresses

3. Learning Outcomes (LOs):

B1.1	Select appropriate mathematical methods and solutions for analysis of normal, shear and torsion stresses on different types of structures.
B1.2	Apply the concepts of structural analysis for different types of straining actions and stresses.
B2.1	Achieve an optimum design of different types of connections by understanding design principles of different types of straining actions and stresses.
B2.2	Apply analytical thinking to reach the most appropriate solution to engineering problems by analyze the different stresses on the structures.

4. Course Contents:

No.	Topics	week
1	Properties of plane areas	1-2
2	Straining actions	3
3	Normal stresses	4-5-6
4	shear stresses	7-9-10
5	torsion stresses	11-12
6	combined and principal stresses	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	B1.1, B1.2
2	Semester work (Quizzes, presentation, Portfolio)	B1.2
3	Oral Examination	B1.2, B2.1
4	Final Term Examination	B1.1, B2.1, B2.2

7.2 Assessment Schedule:

No.	Assessment Method	Weeks
1	Mid Term Examination	8
2	Semester work (Quizzes, presentation, Portfolio)	weekly
3	Oral Examination	14
4	Final Term Examination	15

7.3 Weighting of Assessments:

No.	Assessment Method	Weights
1	Mid Term Examination	10%
2	Semester work (Quizzes, presentation, Portfolio)	10%
3	Oral Examination	10 %
4	Final Term Examination	70 %
Total		100 %

8. List of References

No.	Reference List
1	*Kelly, Pa. "Solid Mechanics Part I: An Introduction to Solid Mechanics". http://homepages.engineering.auckland.ac.nz/~pkel015/SolidMechanicsBooks/Part_I/. 2018.*
2	*Shaabanselim, " Structural mechanic " 2013.*

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	Properties of plane areas	1	B1.1, B1.2
2	Straining actions	1	B1.1, B1.2
3	Normal stresses	1	B2.2, B1.1
4	shear stresses	1	B2.2, B1.2
5	torsion stresses	1	B2.1, B1.1
6	combined and principal stresses	1	B2.1, B2.2

Course Coordinator: Assistant Prof. Dr/ Mohamed El Tantawy El Maadawy Awad

Head of Department: Prof. Dr/ Ahmed Mahmoud Youssif Mohamed

Date of Approval: December 2019

Course: Theory of structures 2	
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 and solutions for analysis of normal, shear and torsion stresses on different types of structures. B1.2- Apply the concepts of structural analysis for different types of straining actions and stresses.
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 types of connections by understanding design principles of different types of straining actions and stresses. B2.2- Apply analytical thinking to reach the most appropriate solution to engineering problems by analyze the different stresses on the structures

1. Basic Information

Program Title	Civil Engineering
Department offering the Program	Civil Engineering
Department Responsible for the Course	Mathematics and Engineering Physics
Course Code	BAS 183
Year/ Level	Fist Year-First Semester
Specialization	Discipline requirement
Authorization data of course specification	

Teaching Hours	Lectures	Tutorial	Practical
	3	2	0

2. Course aims:

No.	Aim
1	Apply knowledge of statistical methods to solve civil engineering problems

3. Learning Outcomes (LOs):

B1.1	Investigate the concepts and theories of statistical methods appropriate to civil engineer.
B1.2	Describe various statistical mathematics tools appropriate for civil engineer
B1.3	Recognize methodologies of solving engineering problems using statistical methods
B1.4	Describe Random Variables and Probability Distribution, Estimation Theory and sampling distribution, and non-parametric tests.
B1.5	Apply statistical modeling methods and appropriate computational techniques to solve engineering problems.

4. Course Contents:

No.	Topics	Week
1	Data treatment	1-2
2	Probability theorem	3-4
3	Random Variables and Probability Distribution	5-8
4	Some particular Probability Distribution	9-10
5	Estimation Theory and sampling distribution	11-12
6	Non parametric tests (tests of hypotheses)	13-14

5. Teaching and Learning Methods:

No.	Teaching Method
1	Lectures
2	Discussion sessions
3	Interactive lectures
4	Smart Sessions

6. Teaching and Learning Methods for Disable Students:

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

7. Student Assessment:

7.1 Student Assessment Methods:

No.	Evaluation Method	LOs
1	Mid Term Examination	B1.1, B1.2, B1.3,B1.4
2	Semesterworks (quizzes, presentation, portfolio)	B1.1, B1.2, B1.3, B1.4
3	Final Term Examination	B1.1, B1.2, B1.3, B1.4, B1.5

7.2 AssessmentSchedule:

No.	Evaluation 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	20%
2	Semester work (quizzes, presentation, portfolio)	10%
3	Final Term Examination	70%
Total		100%

8. List of References

Reference List
Douglas C. Montgomery, “Applied Statistics and Probability for Engineers,” Wiley, 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	Mathematical statistics	1	B1.1, B1.2
2	Probability theorem	1	B1.1
3	Random Variables and Probability Distribution	1	B1.3,B1.4
4	Some particular Probability Distribution	1	B1.4
5	Estimation Theory and sampling distribution	1	B1.4,B1.5
6	Non parametric tests (tests of hypotheses)	1	B1.4, B1.5

Course Coordinator: Dr. Seham Madkour

Head of Department:

Date of Approval:

Course: Statistical Methods in Civil Engineering		
Program LOs	Course LOs	
B1. 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.	B1.1	Investigate the concepts and theories of statistical methods appropriate to civil engineer.
	B1.2	Describe various statistical mathematics tools appropriate for civil engineer
	B1.3	Recognize methodologies of solving engineering problems using statistical methods
	B1.4	Select appropriate statistical methods and computer-based methods for modeling and analyzing problems.
	B1.5	Apply statistical modeling methods and appropriate computational techniques to solve engineering problems.

1. Basic Information

Program Title	Civil Engineering
Department offering the Program	Civil Engineering
Department Responsible for the Course	Mathematics and Engineering Physics
Course Code	BAS 184
Year/ Level	Fist Year-First Semester
Specialization	Discipline requirement
Authorization data of course specification	

Teaching Hours	Lectures	Tutorial	Practical
	3	2	0

2. Course aims:

No.	Aim
1	Solve differential equations and flux integrals related to civil engineering problems.

3. Learning Outcomes (LOs):

B1.1	Apply appropriate methods for solving higher order ODEs and systems of ODEs direct methods or Laplace transformation
B1.2	Model engineering problems using ordinary differential equations (ODEs) and systems of ODEs
B1.3	Analyze the simple harmonic motion and studying the concept of dynamics vibrations in mechanical systems
B1.4	Use the basic theorems for evaluating and transforming multiple integrals on different domains and coordinate systems.
B1.5	Explain the concepts of vector fields and heat transfer by using the vector calculus and multiple integral theorems

4. Course Contents:

No.	Topics	week
1	Linear homogenous higher order ODEs	1
2	Linear Nonhomogeneous higher order ODEs (Undetermined coefficients)	2
3	Linear Nonhomogeneous higher order ODEs (Variation of parameters)	3
4	Cauchy Euler equation	4-5
5	Laplace transform (LT)	6-8
6	Inverse Laplace transforms	9-10
7	Application of LT for solving systems of ODEs	11-12
8	Series solution of certain classes of ODEs	13-14
9	Vector calculus : gradient, divergence and curl definitions	1-2
10	Multiple integrals (Double integral)	3-4

11	Multiple integrals (Triple integral)	5-6
12	Line integral and Surface integral	7-10
13	Green theory	11-12
14	Gauss and Stock theories with applications	13-14

5. Teaching and Learning Methods:

No.	Teaching Method
1	Lectures
2	Discussion Sessions
3	Interactive lectures
4	Flipped classroom

6.Teaching and Learning Methods for Disable Students:

No.	Teaching Method	Reason
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, B1.2, B1.4
2	Semesterworks (quizzes,presentation, portfolio)	B1.1, B1.2, B1.3, B1.4, B1.5
3	Final Term Examination	B1.1, B1.2, B1.3, B1.4, B1.5

7.2 AssessmentSchedule:

No.	Assessment Method	Weeks
1	Mid Term Examination	8
2	Semester works (quizzes, presentation, portfolio)	weekly
3	Final Term Examination	15

7.3 Weighting of Assessment:

No.	Assessment Method	Weights
1	Mid Term Examination	17%
2	Semester works (quizzes, presentation, portfolio)	10%
3	Final Term Examination	73%
Total		100%

8. List of References

No.	Reference List
1	Lecture notes prepared by Course coordinators and Lecturers in Mathematics and Engineering Physics Department.
2	Dennis J. Zill, Advanced Engineering Mathematics Jones & Bartlett Learning, 6th edition (2016)

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.	Topics	Aim	LO's
1	Linear homogenous higher order ODEs	1	B1.1
2	Linear Nonhomogeneous higher order ODEs (Undetermined coefficients)	1	B1.1 B1.2
3	Linear Nonhomogeneous higher order ODEs (Variation of parameters)	1	B1.1, B1.2
4	Cauchy Euler equation	1	B1.1
5	Laplace transform (LT)	1	B1.1
6	Inverse Laplace transforms	1	B1.1
7	Application of LT for solving systems of ODEs	1	B1.2, B1.3
8	Series solution of certain class of ODE	1	B1.1
9	Vector calculus : gradient, divergence and curl definitions	1	B1.5
10	Multiple integrals (Double integral)	1	B1.4
11	Multiple integrals (Triple integral)	1	B1.4
12	Line integral and Surface integral	1	B1.5
13	Green theory	1	B1.4, B1.5
14	Gauss and Stocke theories with applications	1	B1.4, B1.5

Course Coordinator: Dr. Seham Madkour

Head of Department:

Date of Approval:

Course: Mathematics 3		
Program LOs	Course LOs	
B1. 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.	B1.1	Applying appropriate methods for solving higher order ODEs and systems od ODEs direct methods or Laplace transformation
	B1.2	Modeling engineering problems using ordinary differential equations (ODEs) and systems of ODEs
	B1.3	Analyzing the simple harmonic motion and studying the concept of dynamics vibrations in mechanical systems
	B1.4	Using the basic theorems for evaluating and transforming multiple integrals on different domains and coordinate systems.
	B1.5	Explain the concepts of vector fields and heat transfer by using the vector calculus and multiple integral theorems

Course Specification:

Communication and presentation skills

1. Basic Information

Program Title	Civil Engineering program.		
Department offering the Program	Structural Engineering department		
Department Responsible for the Course	Structural Engineering department		
Course Code	MUR114		
Year/ Level	1st year – 2nd semester		
Specialization	University requirement		
Authorization data of course specification			
Teaching hours	**Lectures**	**Tutorial**	**Practical**
	2	2	0

2. Course aims:

No.	aim
5	Lead and Communicate effectively with multidisciplinary teams in construction projects and display professional and ethical responsibilities; and contextual understanding to Manage and supervise construction project

3. Learning Outcomes (LOs):

No.	LOs
A8.1	Illustrate the concepts of communication skills.
A8.2	Practice oral and non-verbal communication.
A8.3	Write report and letter
A8.4	Display the advantages and disadvantages of presentations
A8.5	Plan the management presentation with four stages.
A10.1	Practice self- learning strategy.

4. Course Contents:

No.	Topics
1	Introduction to communication
2	Communication process - communication skills
3	Oral and non-verbal communication and report writing
4	Letter writing and interview
5	Planning a management presentation - everyday management presentations
6	Advantages and disadvantages of presentations
7	Four-stage presentation planning process (identify the aim, profile the audience, define the key message statement, and outline the scope)
8	Audience profiling -presentation environment

9	Management presentation planning guidelines.

5. Teaching and Learning Methods:

No.	Teaching Method	LOs
1	Interactive lectures (hybrid learning)	A8.1, A8.3, A8.4, A8.5
2	Flipped classroom	A8.2
3	Self-learning	A10.1

6. Teaching and Learning Methods 0f Disable Students:

No.	Teaching Method	Reason
1	Non	

7. Student Assessment:

7.1 Student Assessment Methods:

No.	Assessment Method	LOs
1	Semester work (reports, presentation, formative assessment)	A8.1, A8.2, A8.3, A8.4, A8.5, A10.1
2	Final exam.	A8.1, A8.3, A8.4, A8.5

7.2 Assessment Schedule:

No.	Assessment Method	Weeks
1	Semester work (reports, presentation)	Every 2 week
2	Final exam.	14

7.3 Weighting of Assessment:

No.	Assessment Method	Marking	Weights
1	Semester work (reports, presentation)	40	40 %
2	Final exam.	60	60 %
Total		50	100%

8. List of References

No.	Reference List

1	***Joan van Emden, Lucinda Becker, Presentation Skills for Students, 3rd Edition, Red Globe Press, 2016***
2	***M. Wa Mutua, S. Mwaniki, P. Kyalo, B. Sugut, Communication Skills: A University Book, Succex Publishers, 2016***

9. Facilities Required for Teaching and Learning:

No.	Facility
1	Lecture Classroom
2	Library
3	Internet
4	Data Show System
5	Visualizer
6	Presenter

10. Matrix of Knowledge and Skills of the Course:

No.	Topic	aim	LOs
1	Introduction to communication	1	A8.1
2	Communication process - communication skills		A8.1
3	Oral and non-verbal communication and report writing		A8.2, A8.3, A10.1
4	Letter writing and interview		A8.3
5	Planning a management presentation - everyday management presentations		A8.5
6	Advantages and disadvantages of presentations		A8.4
7	Four-stage presentation planning process (identify the aim, profile the audience, define the key message statement, and outline the scope)		A8.5
8	Audience profiling -presentation environment		A8.5
9	Management presentation planning guidelines.		A8.5, A10.1

Course Coordinator:

Head of Department: Prof. Dr. Ahmed Youssef

Date of Approval: August 2021

Communication and presentation skills	
Program' LOs	**Course LOs**
A8. Communicate effectively–graphically, verbally and in writing–with a range of audiences using contemporary tools.	A8.1Illustrate the concepts of communication skills. A8.2 Practice oral and non-verbal communication. A8.3 Write report and letter A8.4Display the advantages and disadvantages of presentations. A8.5 Plan the management presentation with four stages.
A10. Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.	A10.1 Practice self- learning strategy.

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		
Department Responsible for the Course	Structural Engineering Department		
Course Code	STE123		
Year/ Level	First Year-Second Semester		
Specialization	Major		
Teaching Hours	Lectures	Tutorial	Practical
	2	0	1

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	Cement (Manufacturing, Chemical composition, Hydration of cement, Physical and mechanical properties).	1-3
2	Testing of cement and major types of cement.	4-5
3	Aggregates (Types, Physical, chemical and mechanical properties)	6-9
4	Testing of aggregates	10-11
4	Mixing water.	12
5	Reinforcing steel.	13

6	Introduction to nanotechnology.	14

5. Teaching and Learning Methods:

No.	Teaching Method
1	Interactive lectures (hybrid learning)
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 Examination (written)	B1.1, B3.1
2	Semester work (Formative - quizzes – presentation)	B3.1
3	Practical Examination	B1.2
4	Oral Examination	B3.2
5	Final Term Examination (written)	B1.1,B3.1,B3.2

7.2 Assessment Schedule:

No.	Assessment Method	Weeks
1	Mid Term Examination (written)	8
2	Semester work (Formative - quizzes – presentation)	Weekly
3	Practical Examination	14
4	Oral Examination	14
5	Final Term Examination (written)	15

7.3 Weighting of Assessments:

No.	Assessment Method	Weights

1	Mid Term Examination (written)	5
2	Semester work (Formative - quizzes – presentation)	5
3	Practical Examination	10
4	Oral Examination	10
5	Final Term Examination (written)	70
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	Cement (Manufacturing, Chemical composition, Hydration of cement, Physical and mechanical properties).	3	B1.2, B3.1
2	Testing of cement and major types of cement.	3	B1.2
3	Aggregates (Types, Physical, chemical and mechanical properties)	3	B1.2, B3.1
4	Testing of aggregates	3	B1.2
5	Mixing water.	3	B3.1
6	Reinforcing steel.	3	B3.1
7	Introduction to nanotechnology.	3	B3.2

Course Coordinator: Prof. Dr. Ahmed Tahawya

Head of Department: Prof. Dr. / Ahmed Mahmoud Yousef Mohamed Salem

Date of Approval:

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	**Irrigation and Hydraulics Dept.**
Department Responsible for the Course	**Irrigation and Hydraulics Dept.**
Course Code	**ENG 222**
Year/ Level	**First Year-First Semester**
Specialization	Major
Authorization data of course specification	

Teaching Hours	Lectures	Tutorial	Practical
	2	**1**	**-**

2. Course aims:

No.	Aim
5	Lead and communicate effectively with all civil engineering disciplines and understand professional and legal responsibilities; and project management and 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	LOs
1	Mid Term Examination	A6.1, A6.2
2	Semester work (Quizzes, presentation, Portfolio)	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 (Quizzes, presentation, Portfolio)	**weekly**
3	Final Term Examination	**15**

7.3 Weighting of Assessments:

No.	Assessment Method	Weights
1	Mid Term Examination	**15 %**
2	Semester work (Quizzes, presentation, Portfolio)	**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.
3	Will Hughes, Ronan Champion, John Murdoch “Construction Contracts: Law and Management” Routledge, 2015.

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	5	A6.1
2	Criminal liability for the engineer and the contractor for not taking into account the technical assets in construction	5	A6.1, A6.2
3	Contracts of engineering works liabilities and arbitration-legislation of industrial safety and environment	5	A6.1
4	Legal rules of civil law and related contracting	5	A6.1, A6.2
5	Building codes	5	A6.2
6	Claims and disputes and arbitration	5	A9.1
7	Demand and supply balance	5	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.	5	A9.1, A9.2

Course Coordinator: **Prof. Dr. Samy Khalf-Allah**

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

Date of Approval: **/ /2021**

Course: Law & Economic Engineering	
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.

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

1. Basic Information

Program Title	Civil Engineering Program
Department offering the Program	Structure Engineering Department
Department Responsible for the Course	Structure Engineering Department
Course Code	MUR223
Year/ Level	First year – first semester
Specialization	Manor
Authorization data of course specification	

Teaching Hours	Lectures	Tutorial	Practical
	2		

2. Course aims:

No.	Aim
5	Managing and supervising construction projects with engineering team through professional and ethical responsibilities using the principles of Entrepreneurship and Marketing.

3. Learning Outcomes (LOs):

A7.1.	Doing work effectively with a team in construction projects using principles of entrepreneurship and marketing
A7.2	Work with different cultures and different jobs in construction projects with assessment of performance, responsibility and professional ethics in engineering fields.
A8.1	Making effective communication with different people before construction and make relationship with customer and promoting the culture of free labor
A8.2	Making business plans from different sources using graphical, verbale and written information Skills and perfect communication with others in engineering projects

4. Course Contents:

No.	Topics	week
1	Fundamentals and principles of entrepreneurship and practical applications	1-3
2	The importance of entrepreneurship in marketing	4-6
3	Promoting the culture of free labor	7-9
4	Skills to search for information from different sources - The writing skills for business plan in pilot projects	10
5	Marketing cost and profitability analysis	11
6	value added - Target area	12
7	Marketing before building product - Relationship with customer	13
8	Assessment of performance, responsibility and professional ethics in engineering fields.	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	A7.1 A8.1
2	Semester work (Quizzes, presentation, Portfolio)	A7.2 A8.2
3	Final Term Examination	A7.1 A7.1 A8.2

7.2 Assessment Schedule:2

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	20
2	Semester work (Quizzes, presentation, Portfolio)	10
3	Final Term Examination	70
Total		100 %

8. List of References

No.	Reference List
1	*Sonny N. and Ayantuni G., Entrepreneurship Marketing, CBC press, 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	Fundamentals and principles of entrepreneurship and practical applications	5	A7.1
2	The importance of entrepreneurship in marketing	5	A7.1 A7.2
3	Promoting the culture of free labor	5	A8.1
4	Skills to search for information from different sources - The writing skills for business plan in pilot projects	5	A8.2
5	Marketing cost and profitability analysis	5	A7.2
6	value added - Target area	5	A8.1 A8.2
7	Marketing before building product - Relationship with customer	5	A8.1
8	Assessment of performance, responsibility and professional ethics in engineering fields.	5	A7.2

Course Coordinator:

Head of Department: Prof. Dr.

Date of Approval: December 2019

Course: Entrepreneurship and Marketing	
Program LOs	**Course Los**
A7. Function efficiently as an individual and as a member of multi-disciplinary and multicultural teams .	A7.1. Doing work effectively with a team in construction projects using principles of entrepreneurship and marketing A7.2 Work with different cultures and different jobs in construction projects with assessment of performance, responsibility and professional ethics in engineering fields.
A8. Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools .	A8.1. Making effective communication with different people before construction and make relationship with customer and promoting the culture of free labor A8.2. Making business plans from different sources using graphical, verbale and written information Skills and perfect communication with others in engineering projects