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	ENG244
Year/ Level	Second year - First Semester
Specialization	Major
Authorization data of course specification	December 2020

Teaching Hours	Lectures	Tutorial	Practical
	2	1	-

2. Course aims:

No.	Aim
3	Develop the field of construction engineering; to meet the required needs of the market with considering the impacts on society and environment.

3. Learning Outcomes (LOs):

A3.1	Apply engineering design using appropriate building materials and construction method to produce cost-effective solutions
A3.2	Apply sustainable design of insulation layers, floors and stairs rain water
A4.1	Utilize contemporary technologies of architectural drawings for buildings.
A4.2	Utilize codes of practice, and standards of building materials, finishing materials and equipment used
A4.3	Utilize risk management principles of implementation of various stages of construction processes theoretically and field sites.

4. Course Contents:

No.	Topics	week
1	Building and Construction Materials (Stone, Brick, Concrete, Iron)	1
2	Architectural and Structural Symbols and Terms	2
3	Buildings Types (Structural - Walls) and Construction Methods of All Types and Structural Elements.	3-4
4	Insulation Layers, Floors and Stairs Rain water	5-6
5	Building materials, finishing materials and equipment used.	7-9
6	Applications with the implementation of simplified architectural drawings for buildings	10-12
7	Introduction to installations and sanitary extensions of the building	13

8	Study the method of implementation of various stages of construction processes theoretically and field sites.	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	A3.1, A3.2, A4.2
2	Semester work (Quizzes, presentation, Portfolio)	A4.1, A4.3
3	Final Term Examination	A3.1, A3.2, A4.1, A4.2, A4.3

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	20%
2	Semester work (Quizzes, presentation, Portfolio)	13%
3	Final Term Examination	67 %
Total		100 %

8. List of References

No.	Reference List
1	***Arthur Lyons, Materials for Architects and Builders, Routledge, 2019.***
2	***James Douglas, Bill Ransom, Understanding Building Failures, Routledge, 2013.***

3	*Stephen C. Plotner, RSMeans Building Construction Cost Data, John W, 2015.*
4	*NIKOLAS, Davies & JOKINIEMI, Erkki, Dictionary of Architecture and Building construction, 1st Edition. 2008.*

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	Building and Construction Materials (Stone, Brick, Concrete, Iron)	3	A3.1, A4.2
2	Architectural and Structural Symbols and Terms	3	A4.2
3	Buildings Types (Structural - Walls) and Construction Methods of All Types and Structural Elements.	3	A3.1, A4.2
4	Insulation Layers, Floors and Stairs Rain water	3	A3.2
5	Building materials, finishing materials and equipment used.	3	A3.1, A4.2
6	Applications with the implementation of simplified architectural drawings for buildings	3	A4.1
7	Introduction to installations and sanitary extensions of the building	3	A3.1
8	Study the method of implementation of various stages of construction processes theoretically and field sites.	3	A4.2, A4.3

Course Coordinator: Prof. Dr/

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

Date of Approval: December 2019

Course: Building Construction	
Program LOs	**Course LOs**
A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical, and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	A3.1- Apply engineering design using appropriate building materials and construction method to produce cost-effective solutions A3.2- Apply sustainable design of insulation layers, floors and stairs rain water
A4. Utilize contemporary technologies, codes of practice, and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.	A4.1- Utilize contemporary technologies of architectural drawings for buildings. A4.2- Utilize codes of practice, and standards of building materials, finishing materials and equipment used. A4.3- Utilize risk management principles of implementation of various stages of construction processes theoretically and field sites.

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	STE221
Year/ Level	Second year
Specialization	Major
Authorization data of course specification	

Teaching Hours	Lectures	Tutorial	Practical
	4	1	1

2. Course aims:

No.	Aim
4	Accommodate contemporary civil engineering material which is concrete and engage in self- and lifelong learning

3. Learning Outcomes (LOs):

B1.1.	select appropriate concrete mixture for construction of building and infrastructure
B1.2.	use physical measurements and testing in the engineering concepts of properties of concrete
B2.1.	using the properties and strength of concrete in design
B2.2.	Achieve the optimum design of reinforced concrete structures, foundations and earth retaining structures, also of road and airports sanitary works, irrigation, water resources and harbors
B3.1	ensure the quality of civil engineering constructions

4. Course Contents:

No.	Topics	week
1	Properties of fresh concrete: workability, cohesion, segregation and bleeding Laboratory: Standard tests for fresh and hardened concrete.	1-2
2	Properties of hardened concrete: (compressive, tensile, flexural, shear, and bond strengths) Laboratory: Standard tests for fresh and hardened concrete.	3-4
3	Volumetric changes of concrete (shrinkage, creep)	5-6
4	Durability of concrete (carbonation, corrosion process, permeability) - Concrete mix design methods	7-10
5	Non-destructive testing: (rebound hammer, ultrasonic, pulse velocity, core, steel detection.)	11
6	Special types of concrete: (high performance, polymer, fiber and lightweight concrete).	12-13

7	Admixtures (chemical admixtures, mineral admixtures, air entrained admixtures)	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, B1.2, B2.1,
2	Semester work (Quizzes, presentation, Portfolio)	B1.1, B1.2, B2.1, B3.1
3	Final Term Examination	B1.1, B1.2, B2.1, B3.1
4	Practical Examination	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	5.71%
2	Semester work (Quizzes, presentation, Portfolio)	20%
3	Final Term Examination	68.6%
4	Practical Examination	5.71%
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	Properties of fresh concrete: workability, cohesion, segregation and bleeding Laboratory: Standard tests for fresh and hardened concrete.	4	B1.1, B1.2, B3.1
2	Properties of hardened concrete: (compressive, tensile, flexural, shear, and bond strengths) Laboratory: Standard tests for fresh and hardened concrete.	4	B1.1, B1.2, B2.1, B2.2
3	Volumetric changes of concrete (shrinkage, creep)	4	B2.1, B2.2
4	Durability of concrete (carbonation, corrosion process, permeability) - Concrete mix design methods	4	B1.1, B3.1
5	Non-destructive testing: (rebound hammer, ultrasonic, pulse velocity, core, steel detection.)	4	B3.1

6	Special types of concrete: (high performance, polymer, fiber and lightweight concrete).	4	B1.1, B1.2, B3.1
7	Admixtures (chemical admixtures, mineral admixtures, air entrained admixtures)	4	B1.1, B1.2, B3.1

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 concrete mixture for construction of building and infrastructure B1.2. use physical measurements and testing in the engineering concepts of properties of concrete
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 properties and strength of concrete in design B2.2. Achieve the optimum design of reinforced concrete structures, foundations and earth retaining structures, also of road and airports sanitary works, irrigation, water resources and harbors
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 ensure the quality of civil engineering constructions

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 211**
Year/ Level	**Second Year- Second Semester**
Specialization	Major
Authorization data of course specification	

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

2. Course aims:

No.	Aim
1	Master a wide range of hydraulics and hydrology knowledge, techniques and skills to use them in irrigation and drainage projects.

3. Learning Outcomes (LOs):

No.	LOs
B1.1	Apply a full range of civil engineering concepts and techniques of hydrology and fluid Mechanics to solve irrigation and drainage problems.
B1.2	Select appropriate and sustainable technologies for construction of irrigation and drainage projects.
B2.1	Achieve an optimum design for Irrigation and drainage networks.

4. Course Contents:

No.	Topics	week
1	Introduction to Irrigation and Drainage Engineering.	W1
2	Soil, Water and Plants Relationships	W2
3	Water Requirements of Plants	W3
4	Irrigation Methods and Rotations	W4
5	Planning and Design of Canals and Drains Networks.	W5, W6,
6	Sprinkler and Drip Irrigation Systems	W7, W9
7	Open and Subsurface Drainage	W10, W11
8	Overview of Environmental Sustainability of Irrigation Systems	W12, W13
9	Introduction to the Environmental Impact Assessment of Irrigation and Drainage 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	B1.1, B1.2
2	Semester work (Quizzes, presentation, Portfolio)	B1.1, B1.2, B2.1
3	Oral Examination	B1.1, B1.2
4	Final Term Examination	B1.1, B1.2, B2.1

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	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	Oral Examination	**10 %**
4	Final Term Examination	**60 %**
Total		100 %

8. List of References

No.	Reference List
1	Omran, El-Sayed E., and Abdelazim M. Negm, eds. "Technological and Modern Irrigation Environment in Egypt: Best Management Practices & Evaluation." Springer Nature, 2020.
2	Chaudhry, S. and Garg, Sh. "Smart Irrigation Techniques for Water Resource Management". IGI Global Publisher of Timely Knowledge, 2019
3	Waller, Peter, and Muluneh Yitayew. "Irrigation and drainage engineering", Springer, 2016.
4	Biswas, Ranajit Kumar. "Drip and Sprinkler Irrigation." New Delhi, New India Publishing Agency, 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 to Irrigation and Drainage Engineering.	1	B1.1
2	Soil, Water and Plants Relationships	1	B1.1
3	Water Requirements of Plants	1	B1.1
4	Irrigation Methods and Rotations	1	B1.1, B1.2
5	Planning and Design of Canals and Drains Networks.	1	B1.1, B1.2, B2.1
6	Sprinkler and Drip Irrigation Systems	1	B1.1, B1.2, B2.1
7	Open and Subsurface Drainage	1	B1.1, B1.2, B2.1
8	Overview of Environmental Sustainability of Irrigation Systems	1	B1.1
9	Introduction to the Environmental Impact Assessment of Irrigation and Drainage Projects	1	B1.1

Course Coordinator: **Dr. Ahmad Mohammad Sedki Elhamrawy.**

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

Date of Approval: **/ /2021**

Course: Irrigation and drainage engineering	
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 of civil engineering concepts and techniques of hydrology and fluid Mechanics to solve irrigation and drainage problems. B1.2 Select appropriate and sustainable technologies for construction of irrigation and drainage projects.
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 for Irrigation and drainage networks.

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 221**
Year/ Level	**Second Year-First Semester**
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 Hydrological knowledge, techniques and skills to use them to solve Hydrology problems.

3. Learning Outcomes (LOs):

No.	LOs
B1.1	Apply a full range of hydrological concepts to analyze hydrologic processes and calculate Hydrological losses.
B1.2	Select sustainable technologies to guide and remediate floods and Regulating equations of surface flow.
B3.1	Plan the simulation of hydrological phenomena, ground water hydrology and storage in rivers.
B3.2	Manage interference of saline water in coastal areas and applications in both surface and groundwater flows.

4. Course Contents:

No.	Topics	week
1	Introduction to engineering hydrology - Units of measurement - Description, measurement, and analysis of hydrologic processes.	W1, W2
2	Definition of hydrological cycle - Precipitation and types - Hydrological losses and methods of measurement.	W3
3	Definition of evaporation, transpiration and cold - Regulating equations of surface flow.	W4, W5
4	Drawing and analysis of water curves - Guidance and remediation of floods.	W6, W7
5	Groundwater hydrology - Groundwater in Egypt - Examples and case studies.	W9
6	Introduction to hydrological simulation - Design of aquifers - Calculation of storage in rivers.	W10, W11
7	Interference of saline water in coastal areas, (Salt water intrusion).	W12
8	Nile river hydrology – Case studies and applications in both surface and groundwater flows.	W13, 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	B1.1, B1.2
2	Semester work (Quizzes, presentation, Portfolio)	B3.1
3	Oral Examination	B1.1, B3.1
4	Final Term Examination	B1.1, B1.2, B3.1, B3.2

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	**20 %**
4	Final Term Examination	**60 %**
Total		100 %

8. List of References

No.	Reference List
1	Elsalmian, S. "Handbook of Engineering Hydrology: Environmental Hydrology and Water Management (1st Ed.)". ISBN: 9781466552494, CRC Press, 2014.
2	Warren Viessman, Jr. and Gary L. Lewis. "Introduction to Hydrology (5th International Edition)". ISBN-13: 978-0132763608, Pearson Education, 2011.
3	Subramanya, K. "Engineering Hydrology (3rd edition)". ISBN-13: 978-0070151468, McGraw-Hill Education, 2009

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 to engineering hydrology - Units of measurement - Description, measurement, and analysis of hydrologic processes.	1	B1.1
2	Definition of hydrological cycle - Precipitation and types - Hydrological losses and methods of measurement.	1	B1.1
3	Definition of evaporation, transpiration and cold - Regulating equations of surface flow.	1	B1.2, B3.1
4	Drawing and analysis of water curves - Guidance and remediation of floods.	1	B1.2, B3.1
5	Groundwater hydrology - Groundwater in Egypt - Examples and case studies.	1	B3.1
6	Introduction to hydrological simulation - Design of aquifers - Calculation of storage in rivers.	1	B3.1
7	Interference of saline water in coastal areas, (Salt water intrusion).	1	B3.2
8	Nile river hydrology – Case studies and applications in both surface and groundwater flows.	1	B3.1, B3.2

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

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

Date of Approval: **/ /2021**

Course: Hydrology	
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 of hydrological concepts to analyze hydrologic processes and calculate Hydrological losses. B1.2 Select sustainable technologies to guide and remediate floods and regulating equations of surface flow.
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 the simulation of hydrological phenomena, ground water hydrology and storage in rivers. B3.2 Manage interference of saline water in coastal areas and applications in both surface and groundwater flows.

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

1. Basic Information

Program Title	Civil Engineering Program
Department offering the Program	Public Works Department
Department Responsible for the Course	Public Works Department
Course Code	PWE 211
Year/ Level	Second Year-First 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 Topographic Surveying & Geodesy techniques to use them in civil engineering projects

3. Learning Outcomes (LOs):

B1.1	Select geodetic and topographic problem using MATLAB
B1.2	Select appropriate ICT tools to a variety of geodetic engineering problems
B3.1	Manage the design system of tunnels and excavations using Theodolite and Total station observation.
B3.2	Plan solutions to engineering problems, often based on limited and possibly contradictory information

4. Course Contents:

No.	Topics	week
1	Map projection, transformation of coordinates	1
2	geodesy, geometric geodesy	2
3	triangulation, adjustment of traverse net using bebbov method, strength of triangulation.	3
4	Observations, data corrections and reductions. (Theodolite Applications	4
5	Reduction of observations to the ellipsoid and Reduction from the ellipsoid to the projection plane	5
6	Total Station Measurement and Analysis of observations. (Total Station Applications)	6
7	Network adjustment and Analysis of adjustment. Principle of GIS, Least square theory using condition equation method and parametric method	7
8	Route Surveying: Horizontal And Vertical Curves	9
9	Shape of Earth Surface, Historic Development, Geoid, Reference Ellipsoid and Spheroid, Coordinate Systems, Datum	10

10	. GNSS, traverse Network adjustment and Analysis of adjustment.	11
11	Theory of errors , equal weight, un equal weight and error propagation	12-13
12	Principle of photogrammetry, Principle of remote sensing.	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 B1.2**
2	Practical	**B3.1**
3	Oral	**B1.1 B3.2**
4	Final Term Examination	**B1.1 B1.2 B3.2**

7.2 Assessment Schedule:

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

7.3 Weighting of Assessments:

No.	Assessment Method	Weights
1	Semester work (Quizzes, presentation, Portfolio)	20%
2	Practical	10%
3	Oral	10%
4	Final Term Examination	60%
Total		100 %

8. List of References

No.	Reference List
1	***A., Raymond, S. and Baker, R., "Surveying", 7th edition, Addison Wesley Longman, 2005***
2	***Bannister, A., Raymond, S. and Baker R., "Surveying", 7th edition, Addison Wesley Longman Limited, England, 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 Practical
7	Lab facilities

]10. Matrix of Knowledge and Skills of the Course:

No.	Topic	aim	LO's
1	Map projection, transformation of coordinates	4	**B1.1**
2	geodesy, geometric geodesy	4	**B1.1**
3	triangulation, adjustment of traverse net using bebbov method, strength of triangulation.	4	**B1.1 B1.2**
4	Observations, data corrections and reductions. (Theodolite Applications	4	**B1.2**
5	Reduction of observations to the ellipsoid and Reduction from the ellipsoid to the projection plane	4	**B1.2 B3.1**
6	Total Station Measurement and Analysis of observations. (Total Station Applications)	4	**B3.1**
7	Network adjustment and Analysis of adjustment. Principle of GIS, Least square theory using condition equation method and parametric method	4	**B1.1**
8	Route Surveying: Horizontal And Vertical Curves	4	**B3.2**
9	Shape of Earth Surface, Historic Development, Geoid, Reference Ellipsoid and Spheroid, Coordinate Systems, Datum	4	**B3.1 B3.2**
10	. GNSS, traverse Network adjustment and Analysis of adjustment.	4	**B1.2**

11	Theory of errors , equal weight, un equal weight and error propagation	4	**B3.1**
12	Principle of photogrammetry, Principle of remote sensing.	4	**B3.2 B1.2**

Course Coordinator:

1. Mahmoud El Mowafy Ebrahim Shitewy
2. محمد السعيد السيد محمود زهران

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

Date of Approval:

Course : Topographic surveying and geodesy	
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 geodetic and topographic problem using MATLAB **B1.2**- Select appropriate ICT tools to a variety of geodetic engineering problems
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 the design system of tunnels and excavations using Theodolite and Total station observation. **B3.1** Plan solutions to engineering problems, often based on limited and possibly contradictory information

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	PWE 221
Year/ Level	Second Year – Second Semester
Specialization	Major
Authorization data of course specification	

Teaching Hours	Lectures	Tutorial	Practical
	2	1	0

2. Course aims:

No.	Aim
2	Apply knowledge of Geology and Soil Mechanics in solving dams, buildings and tunnels problems

3. Learning Outcomes (LOs):

B2.1	Achieve an optimum design of Foundations, tunnels, excavations and Earth Retaining Structures.
B2.2	Achieve an optimum solution of geological maps, Dams and tunnels
B3.1	Plan techniques and strategies for Permeability of Soil problems
B3.2	Manage calculation processes of Settlement of building by Geotechnical Fundamentals
B3.3	Manage Ground Water problems considering balanced costs, benefits, safety, and reliability

4. Course Contents:

No.	Topics	week
1	Introduction to soil mechanics: soil and soil properties; soil types and soil structure-soil formation	1
2	Soil Composition: Terminology and Volumetric and Weight Definitions and Relations	2
3	Mechanical Analysis of soil and Soil classification systems	3
4	Soil consistency and Atterberg limits	4
5	Soil compaction	5
6	Soil permeability	6
7	Soil stresses	7
8	Compressability and Consolidation and settlement	9-10
9	Soil shear strength theory	11-12
10	Introduction to geology and origins of Earth-rock composition-geological mapping in Egypt	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	Semester work (Quizzes, presentation, Portfolio)	B2.1 B2.2
2	Oral Examination	B2.1 B2.2 B3.1
3	Final Term Examination	B2.1 B2.2 B3.1 B3.2 B3.3

7.2 Assessment Schedule:

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

7.3 Weighting of Assessments:

No.	Assessment Method	Weights
1	Semester work (Quizzes, presentation, Portfolio)	20%
2	Oral Examination	10%
3	Final Term Examination	70%
Total		100 %

8. List of References

No.	Reference List
1	***Braja Das, "Principles of Geotechnical Engineering", 2010.***
2	***Mayne, P. W., and Campanella, R. G. (2005). on Soil Mechanics and Geotechnical Engineering, International Society of Soil Mechanics and Geotechnical Engineering (ISSMGE), London, 2, 721–724.***

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 to soil mechanics: soil and soil properties; soil types and soil structure-soil formation	2	B2.1 B2.2
2	Soil Composition: Terminology and Volumetric and Weight Definitions and Relations	2	B2.1B2.2
3	Mechanical Analysis of soil and Soil classification systems	2	B2.1 B2.2
4	Soil consistency and Atterberg limits	2	B2.2
5	Soil compaction	2	B2.2
6	Soil permeability	2	B3.1 B3.2 B3.3
7	Soil stresses	2	B2.2 B3.1
8	Compressability and Consolidation and settlement	2	B2.1 B3.1 B3.2
9	Soil shear strength theory	2	B2.2
10	Introduction to geology and origins of Earth-rock composition-geological mapping in Egypt	2	B2.2B3.3

Course Coordinator:

1. Magdy Abd El Halim Mohamed Zayed 

2. Murad Henry Zaki Ebrahim 

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

Date of Approval:

Course: Geology and Soil Mechanics	
Program LOs	Course LOs
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 Foundations, tunnels, excavations and Earth Retaining Structures. B2.2 Achieve an optimum solution of geological maps, Dams and tunnels
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 techniques and strategies for Permeability of Soil problems B3.2 Manage calculation processes of Settlement of building by Geotechnical Fundamentals B3.3 Manage Ground Water problems considering balanced costs, benefits, safety, and reliability

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	PWE 231
Year/ Level	Second Year-Second Semester:
Specialization	Major
Authorization data of course specification	

Teaching Hours	Lectures	Tutorial	Practical
	2	1	

2. Course aims:

No.	Aim
3	Create the field of civil engineering in order to meet the necessary needs while taking into account the effects on society and environment.

3. Learning Outcomes (LOs):

B2.1	achieve an optimum design of the transportation and the socio-economic environment, components of transportation systems.
B2.2	evaluate the transportation impact studies and evaluation techniques of transportation projects.
B3.1	plane highway geometric elements.
B3.2	manage traffic flow, capacity analysis, and traffic safety analysis

4. Course Contents:

No.	Topics	week
1	transportation and the socio-economic environment,	1
2	components of transportation systems,	2-3
3	different modes of transportation,	4
4	design controls, fundamentals of vehicle motion,	5
5	vehicle stability on horizontal curves, design of key highway geometric elements,	6-7
6	fundamentals of traffic flow theory, capacity analysis,	9-11
7	fundamentals of transportation planning methodologies,	12
8	introduction to traffic safety analysis,	13
9	introduction to transportation impact studies and evaluation techniques of transportation projects.	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	Semester work (Quizzes, presentation, Portfolio)	B3.1
2	Final Term Examination	B2.1, B2.2, B3.1, B3.2

7.2 Assessment Schedule:

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

7.3 Weighting of Assessments:

No.	Assessment Method	Weights
1	Semester work (Quizzes, presentation, Portfolio)	20%
2	Final Term Examination	80%
Total		100 %

8. List of References

No.	Reference List
1	Roess, R. P., E. S. Prassas, and W. R. McShane., "Traffic Engineering", Fourth Edition, International Edition, Pearson, 2011.
2	Ortuzar, J.D. and L.G. Willumsen., "Modelling Transport", Third Edition, Jon Wiley&Sons, Inc., 2011.
3	Papacostas, C.S. and Prevedouros, P.D., "Transportation Engineering and Planning", Third Edition, Pearson Canada, Toronto, 2000.

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	transportation and the socio-economic environment,	3	B2.1
2	components of transportation systems,	3	B2.1, B2.2
3	different modes of transportation,	3	B2.1
4	design controls, fundamentals of vehicle motion,	3	B3.1
5	vehicle stability on horizontal curves, design of key highway geometric elements,	3	B3.1
6	fundamentals of traffic flow theory, capacity analysis,	3	B3.2
7	fundamentals of transportation planning methodologies,	3	B3.2
8	introduction to traffic safety analysis,	3	B3.2
9	introduction to transportation impact studies and evaluation techniques of transportation projects.	3	B2.2, B3.2

Course Coordinator:

1. El Sayed Abd El Azim Mohamed El Shewally
2. Usama Elrawy Ali Shahdah
3. Sanya Riad El Agamy Foda

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

Date of Approval:

Course: Transportation and traffic Engineering	
Program LOs	**Course LOs**
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 plane highway geometric elements. B3.2 manage traffic flow, capacity analysis, and traffic safety analysis
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 the transportation and the socio-economic environment ,components of transportation systems. B2.2 evaluate the transportation impact studies and evaluation techniques of transportation projects.

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

1. Basic Information

Program Title	Civil Engineering Program
Department offering the Program	Public Works Engineering department
Department Responsible for the Course	Public Works Engineering department
Course Code	PWE 241
Year/ Level	Second Year-Second Semester
Specialization	Major
Authorization data of course specification	

Teaching Hours	Lectures	Tutorial	Practical
	2	2	0

2. Course aims:

No.	Aim
6	Design different types of drinking water projects like drinking water treatment plant units, elevated tanks and drinking water network.

3. Learning Outcomes (LOs):

C2.1	Achieve an optimum design of drinking water treatment plant units.
C2.2	Achieve an optimum design of water network system.
C7.1	Select adequate water network system.
C7.2	Design water network components.

4. Course Contents:

No.	Topics	week
1	Drinking water quality standards, the characteristics of potable water, water resources available for treatment plants	1
2	preliminary studies to calculate the required flow, estimate the number of population for the future, components of water treatment plants	2
3	design of water intakes	3
4	coagulation	4
5	flocculation	5
6	sedimentation	6
7	filtration	7
8	disinfection	9
9	design criteria for water networks	10
10	Special pieces used in networks	11
11	Elevated tanks design	12
12	design of valves and fire hydrants	13
13	testing and evaluation of water networks	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	Semester work (Quizzes, presentation, Portfolio)	C2.1, C7.1
2	Oral Examination	C2.1, C2.2
3	Final Term Examination	C2.1, C2.2, C7.1, C7.2

7.2 Assessment Schedule:

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

7.3 Weighting of Assessments:

No.	Assessment Method	Weights
1	Semester work (Quizzes, presentation, Portfolio)	30%
2	Oral Examination	10%
3	Final Term Examination	60%
Total		100 %

8. List of References

No.	Reference List
1	***Ronald L. Droste, Ronald L. Gehr., "Theory and Practice of Water and Wastewater Treatment," 2nd Edition, WILEY, 2018.***
2	***Qasim S.R., Motley E. M. and Zhu G., "Water Works Engineering: Planning, Design & Operation," A hand book, Eastern Economy Edition, 2004.***

9. Facilities Required for Teaching and Learning:

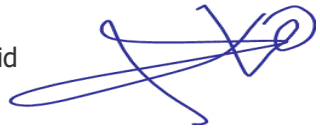
No.	Facility
1	Lecture Classroom
2	White Board
3	Data Show System
4	Visualizer
5	Presenter
6	Sound System

10. Matrix of Knowledge and Skills of the Course:

No.	Topic	aim	LO's
1	Drinking water quality standards, the characteristics of potable water, water resources available for treatment plants	6	C2.1
2	preliminary studies to calculate the required flow, estimate the number of population for the future, components of water treatment plants	6	C2.1
3	design of water intakes	6	C2.1
4	coagulation	6	C2.1
5	flocculation	6	C2.1
6	sedimentation	6	C2.1
7	filtration	6	C2.1
8	disinfection	6	C2.1
9	design criteria for water networks	6	C2.2, C7.1
10	Special pieces used in networks	6	C7.2
11	Elevated tanks design	6	C7.2
12	design of valves and fire hydrants	6	C7.2
13	testing and evaluation of water networks	6	C2.2

Course Coordinator:

1. Mohamed Ahmed Abd El Hakim Mosaad 

2. Hani Mahanna Shehata El Said 

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

Date of Approval:

Course: Drinking Water Engineering	
Program LOs	**Course LOs**
C2. Achieve an optimum design of Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures, Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Hydraulics, Water Resources and Harbors.	C2.1 Achieve an optimum design of drinking water treatment plant units. C2.2 Achieve an optimum design of water network system.
C7. Select and design adequate water control structures, irrigation and water networks, sewerage systems and pumping stations.	C7.1 Select adequate water network system. C7.2 Design water network components.

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	STE231
Year/ Level	Second Year- Second Semester
Specialization	Major
Authorization data of course specification	

Teaching Hours	Lectures	Tutorial	Practical
	3	2	

2. Course aims:

No.	Aim
1	Master a wide range of design knowledge, techniques and analysis to use them in reinforced concrete elements.

3. Learning Outcomes (LOs):

B1.1	Applying Structural Analysis and Mechanics, Properties and Strength of Materials.
B1.2	Applying a full range of design philosophy and methods of design.
B2.1	Achieve an optimum design of reinforced concrete sections subjected to bending moment and shear stresses.
B2.2	Achieve an optimum design of reinforced concrete beams, solid slabs, walls, columns and sections subjected to moment and axial loads.

4. Course Contents:

No.	Topics	week
1	Introduction to reinforced concrete - Design philosophy and methods of design.	1
2	Design of reinforced concrete sections subjected to bending moment.	2-3
3	Development length, splices, curtailment of bars and reinforcement details.	4
4	Shear stresses in concrete beams.	5
5	Design of solid slabs.	6-7
6	Design of continuous beams.	9
7	Design and analysis of columns and sections subjected to moment and axial loads.	10-12
8	Design of reinforced concrete walls.	13
9	Design of R/C sections using working stress method.	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	B2.1
2	Semester work (Quizzes, presentation, Portfolio)	B2.2
3	Oral Examination	B1.1, B1.2
4	Final Term Examination	B1.1, 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	13.33 %
2	Semester work (Quizzes, presentation, Portfolio)	20 %
3	Oral Examination	6.67 %
4	Final Term Examination	60 %
Total		100 %

8. List of References

No.	Reference List
1	Macgregor, J.G., "Reinforced Concrete Mechanics & Design", Prentice-Hall International Inc., New Jersey, USA, 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.	Topic	aim	LO's
1	Introduction to reinforced concrete - Design philosophy and methods of design.	1	B1.1, B1.2
2	Design of reinforced concrete sections subjected to bending moment.	1	B2.1
3	Development length, splices, curtailment of bars and reinforcement details.	1	B2.1
4	Shear stresses in concrete beams.	1	B2.1
5	Design of solid slabs.	1	B2.2
6	Design of continuous beams.	1	B2.2
7	Design and analysis of columns and sections subjected to moment and axial loads.	1	B2.2
8	Design of reinforced concrete walls.	1	B2.2
9	Design of R/C sections using working stress method.	1	B1.2

Course Coordinator: Prof. Dr. Ahmed Mahmoud Yousef

Head of Department: Prof. Dr. Ahmed Mahmoud Yousef

Date of Approval: December 2019

Course: Reinforced Concrete 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 Applying Structural Analysis and Mechanics, Properties and Strength of Materials. B1.2 Applying a full range of design philosophy and methods of design.
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 reinforced concrete sections subjected to bending moment and shear stresses. B2.2 Achieve an optimum design of reinforced concrete beams, solid slabs, walls, columns and sections subjected to moment and axial loads.

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	ENG111		
Year/ Level	2nd year – 1st semester		
Specialization	Faculty requirement		
Authorization data of course specification			
Teaching hours	**Lectures**	**Tutorial**	**Practical**
	2	1	0

2. Course aims:

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

3. Learning Outcomes (LOs):

No.	LOs
A8.1	List the elements of writing strategy.
A8.2	Prepare the technical report according to elements of writing strategy.
A8.3	Write a technical report
A8.4	Identify the categories and structure of formal reports
A8.5	Use technical writing rules in writing: laboratory report, field report, periodic reports, proposal, theses and dissertations and CV

4. Course Contents:

No.	Topics
1	Introduction to technical writing - elements of writing strategy
2	Planning technical reports
3	Writing a technical report: using illustrations, organizing and numbering, writing reference lists and appendices.
4	Formal reports: categories of formal reports, structure of formal reports
5	Applications in report writing: laboratory report, field report, periodic

	reports, proposal, theses and dissertations
6	Ethical considerations and plagiarism - making presentation - writing a successful CV.

5. Teaching and Learning Methods:

No.	Teaching Method	LOs
1	Interactive lectures (hybrid learning)	
2	Flipped classroom	

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
2	Final exam.	A8.2, A8.3, A8.4, A8.5

7.2 Assessment Schedule:

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

7.3 Weighting of Assessment:

No.	Assessment Method	Weights
1	Semester work (reports, presentation, formative assessment)	30
2	Final exam.	70
Total		100

8. List of References

No.	Reference List
1	***G. J. Alred, W. E. Oliu, The Handbook of Technical Writing, 12th Edition, Bedford/St. Martin's;***

	2018

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 technical writing - elements of writing strategy		A8.1
2	Planning technical reports		A8.2
3	Writing a technical report: using illustrations, organizing and numbering, writing reference lists and appendices.		A8.3
4	Formal reports: categories of formal reports, structure of formal reports		A8.4
5	Applications in report writing: laboratory report, field report, periodic reports, proposal, theses and dissertations		A8.5
6	Ethical considerations and plagiarism - making presentation - writing a successful CV.		A8.5

Course Coordinator :

Prof. Dr. Ahmed Tahawia

Head of Department: Prof. Dr. Ahmed Youssef

Date of Approval: August 2021

Technical reports writing	
Program' LOs	**Course LOs**
A8. Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	A8.1 List the elements of writing strategy. A8.2 Prepare the technical report according to elements of writing strategy. A8.3 Write a technical report A8.4 Identify the categories and structure of formal reports A8.5 Use technical writing rules in writing: laboratory report, field report, periodic reports, proposal, theses and dissertations and CV

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	STE211
Year/ Level	Second year - First 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 solving the problems of elastic deformations of structures and statically indeterminate structures.

3. Learning Outcomes (LOs):

B1.1	Select appropriate mathematical methods for analysis of elastic deformations of structures and statically indeterminate structures.
B1.2	Apply the concepts of structural analysis for elastic deformations of structures and statically indeterminate structures.
B2.1	Achieve an optimum design by analysis statically indeterminate structures and of elastic deformations of structures.
B2.2	Apply the basic principles of analysis statically indeterminate structures by 3 moments equation and method of consistent deformations.

4. Course Contents:

No.	Topics	week
1	Elastic deformations of structures	1-2-3-4-5
2	Statically indeterminate structures by Method of Consistent Deformations	6-7-9-10
3	Statically indeterminate structures by 3 moments equation	11-12
4	Effect of Temperature & Forced Displacements	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)	B1.1
3	Oral Examination	B1.2, B2.2
4	Final Term Examination	B1.1, 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	15%
2	Semester work (Quizzes, presentation, Portfolio)	15%
3	Oral Examination	10 %
4	Final Term Examination	60 %
Total		100 %

8. List of References

No.	Reference List
1	*Hibbeler, R. C. Structural Analysis, Eighth Edition. Pearson prentice Hall. New Jersey. USA.2015*
2	*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	Elastic deformations of structures	1	B1.1, B1.2
2	Statically indeterminate structures by Method of Consistent Deformations	1	B1.1, B1.2
3	Statically indeterminate structures by 3 moments equation	1	B1.2, B2.1
4	Effect of Temperature & Forced Displacements	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 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- Select appropriate mathematical methods for analysis of elastic deformations of structures and statically indeterminate structures. B1.2- Apply the concepts of structural analysis for elastic deformations of structures and statically indeterminate 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 by analysis statically indeterminate structures and of elastic deformations of structures. B2.2- Apply the basic principles of analysis statically indeterminate structures by 3 moments equation and method of consistent deformations.

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	STE212
Year/ Level	Second year - second Semester
Specialization	Major
Authorization data of course specification	December 2020

Teaching Hours	Lectures	Tutorial	Practical
	4	1	-

2. Course aims:

No.	Aim
2	Apply the basic principles of theory of structures for analyzing statically indeterminate structures

3. Learning Outcomes (LOs):

B1.1	Select appropriate mathematical methods and solutions for analysis of statically indeterminate structures by using slope deflection, moment distribution and stiffness method.
B1.2	Apply the concepts of structural analysis for Buckling Analysis.
B2.1	Achieve an optimum design of different types of structural element by understanding Buckling Analysis and Stresses in prestressed concrete.
B2.2	Apply analytical thinking to reach the most appropriate solution to engineering problems by dynamic analysis for single degree of freedom system.

4. Course Contents:

No.	Topics	week
1	Buckling Analysis	1-2
2	Slope deflection method	3-5
3	Moment distribution method	6-7
4	Stiffness method	9-11
5	Stresses in prestressed concrete	12
6	Dynamic analysis: single degree of freedom system	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)	B1.1, 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	17%
2	Semester work (Quizzes, presentation, Portfolio)	17%
3	Oral Examination	6 %
4	Final Term Examination	60 %
Total		100 %

8. List of References

No.	Reference List
1	*Mohamed Naguib ,“ Analysis of Structures by displacement methods”, 2010*
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	Buckling Analysis	2	B1.1, B1.2
2	Slope deflection method	2	B1.1, B1.2
3	Moment distribution method	2	B2.2, B1.2
4	Stiffness method	2	B2.2, B1.1
5	Stresses in prestressed concrete	2	B2.1, B1.2
6	Dynamic analysis: single degree of freedom system	2	B2.1, B2.2

Course Coordinator: Prof. Dr/Mohamed Nagib Mohamed Abou El Saad

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

Date of Approval: December 2019

Course: Theory of structures 4	
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 statically indeterminate structures by using slope deflection, moment distribution and stiffness method. B1.2- Apply the concepts of structural analysis for Buckling Analysis.
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 structural element by understanding Buckling Analysis and Stresses in prestressed concrete. B2.2- Apply analytical thinking to reach the most appropriate solution to engineering problems by dynamic analysis for single degree of freedom system.

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

1. Basic Information

Program Title	Civil Engineering Program
Department offering the Program	Civil Engineering Program
Department Responsible for the Course	Civil Engineering Program
Course Code	ENG112
Year/ Level	Summer of the 1st year
Specialization	Faculty requirement
Authorization data of course specification	
Time Period	4 Weeks / year

2. Course aims:

No.	aim
5	Lead and communicate effectively with multidisciplinary teams in the summer training and display professional and ethical responsibilities during the training, and contextual understanding to Manage and supervise construction project.

3. Learning Outcomes (LOs):

No.	LOs
A2.1	Conduct appropriate experimentation.
A2.2	Interpret data which is obtained from experiments.
A7.1	Function efficiently as an individual or within group.
A8.1	Communicate effectively–graphically, verbally and in writing.

4. Course Contents:

No.	Topics
1	Students promoted to the 2nd year are to carry out professional training inside the faculty, or in specialized training centers

5. Teaching and Learning Methods:

No.	Teaching Method	LOs
1	Workshop	A7.1, A8.1
2	Discussion Sessions	A2.2

3	Practical	A2.1, A2.2, A7.1, A8.1

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	Observation [supervisors]]	A2.1, A7.1
2	Short Reports	A2.2
3	Final report	A8.1
4	Discussion by a committee	A7.1

7.2 Assessment Schedule:

No.	Assessment Method	Weeks
1	Observation [supervisors]	Every week
2	Short Reports	Every week
3	Final report	5
4	Discussion by a committee	5

7.3 Weighting of Assessment:

No.	Assessment Method	Marking	Weights
1	Observation [supervisors]	5	20 %
2	Short Reports	5	5 %
3	Final report	15	25 %
4	Discussion by a committee	25	50 %
Total		50	100%

8. List of References

No.	Reference List
1	Scientific References and reports related to the discipline.

9. Facilities Required for Teaching and Learning:

No.	Facility
1	Lab.
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	The activities of the authority and the relation with the discipline.	1	A2.1, A2.2, A7.1, A8.1

Course Coordinator:

Head of Department:

Date of Approval:

Training 1	
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**Conduct appropriate experimentation. A2.2 Interpret data which is obtained from experiments.
A7. Function efficiently as an individual and as a member of multi-disciplinary and multicultural teams.	A7.1 Function efficiently as an individual or within group.
A8. Communicate effectively–graphically, verbally and in writing–with a range of audiences using contemporary tools.	A8.1 Communicate effectively–graphically, verbally and in writing.