Third level

Courses Specifications

First Semester (Fall)

No.	Code	Course Name	Instructor
1	MATH 301	Probability and statistics	Dr:Gamal El aniny
2	ENGR 204	Fundamental of Fluid Mechanics	Dr:Mohamed Hazem
3	CVEE303	Geotechnical Engineering Structures	Dr:Ahmed farg
4	CVEE304	Geotechnical Engineering Lab	Dr:Ahmed farg
5	CVEE306	Reinforced Concrete Structural Design 1	Dr:Mohamed Badway
6	CVEE328	Structural Analysis 3	Dr:Sameh yehia
7	CVEE338	Engineering Surveying	Dr:Mohamed Hazem

1-MATH 301 Probability and statistics:

Course Specification

Course Code:	Course Name
Math301	Probability & Statistics

A- Affiliation	
Relevant program:	Architectural Engineering program Electrical Power Engineering program Civil Engineering program
Department offering the program:	Architectural Engineering program Electrical Power Engineering program Civil Engineering program
Department offering the course:	Basic Science
Date of program operation:	2008 -2009
Date of approval from the Higher Ministry of education	**27/1/2008**
Confirmation date of the program as NARS 2018:	**Department council no (1) 1/7/2021**
Confirmation date of the course as NARS 2018:	**Department council no (1) 1/10/2021**
Date of course operation	**2023-2024**

B-Basic Information

Title	**Probability & Statistics**
Code	**MATH 301**
Credit Hours	**3 Cr. Hrs.**
Lectures	**2 Hrs.**
Tutorial	**2 Hrs.**
Practical	**0Hrs.**
Total	**4 Hrs.**
Prerequisite	Math 102
Instructor Name/Email	**Dr. Gamal El -Anany** **gamalanani75@gmail.com**

C- Professional Information

1- Course core:

The course introduces students to some important statistical concepts and techniques that are of common application in engineering. Covers graphical and numerical summaries of data, plotting data, probabilities of random events, random variables, properties of density and distribution functions, measures of location and dispersion, expected values, independence of random variables, scaling and adding random variables, the binomial Poisson and normal distributions, the central limit theorem, hypothesis testing, confidence intervals, t test, paired t test, standard errors, least squares, residuals, correlation, examples of regression, quality control, clustering of rare events.

2-Course Learning Objectives: oC	
oC1	Understand the concept of statistics and probability theory.
oC2	Understand the methods to calculate the measures of central tendency and the measures of dispersion
oC3	Understand the coefficient of skewness
oC4	Be familiar with probability and the rules of probability.
oC5	Understand the methods to find the conditional probability, Bayes' theorem
oC6	Be familiar with discrete and continuous probability, and its applications

3-Program objectives served by the course:	
O5	Conduct professional research that solves civil problems.
O6	Professional development based on self-learning and continuous learning.
O11	Conducting scientific research.

4-The relation between the course objectives and the program objectiveso	
Course objectives	**Program objectives**
OC1	O5,O6,O11
OC2	O5,O6,O11
OC3	O5,O6,O11
OC4	O5,O6,O11
OC5	O5,O6,O11
OC6	O5,O6,O11

5-Learning outcomes of the course (LOs)	
Upon the completion of the course the student should be able to:	
LO1	Identify, formulate basic science and mathematics.
LO2	Simulate, analyse and interpret data.
LO4	Use statistical analyses and objective engineering judgment to draw conclusions.
LO17	Apply engineering fundamentals, basic science and mathematics.
LO33	Practice self-learning and other learning strategies.

6- Program competencies served by the course:	
Upon the completion of the Program the student should be able to:	
C1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.
C2	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.
C10	Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.

7- The relation between the course learning outcomes and the program competencies		
Course (LOs)		program competencies
1	LO1,LO17	C1
2	LO2,LO4	C2
3	LO33	C10

8- Course Contents

Topic	Lecture hours	Tutorial hours	Practical hours	LOS
1- The course introduces students to some important statistical concepts.	2	2	0	LO1, LO2
2- techniques that are of common application in engineering.	2	2	0	LO33
3- Covers graphical and numerical summaries of data.	2	2	0	LO4, LO1
4- plotting data, probabilities of random events.	2	2	0	LO17
5- random variables, properties of density and distribution functions	2	2	0	LO33, LO2
6- measures of location and dispersion	2	2	0	LO17, LO2
7- expected values, independence of random variables	2	2	0	LO1, LO2
8- midterm	20			LO1, LO2, LO4
9- scaling and adding random variables, the binomial Poisson and normal distributions	2	2	0	LO2
10- the central limit theorem, hypothesis testing, confidence intervals	2	2	0	LO17
11- t test, paired t test, standard errors,	2	2	0	LO1, LO2
12- least squares, residuals	2	2	0	LO1, LO2
13- correlation, examples of regression, quality control,	2	2	0	LO1, LO2
14- clustering of rare events.	2	2	0	LO1, LO2
15- Revision	2	2	0	LO1, LO2
16- Final Exam	50			LO1, LO2, LO4, LO33
total	28	28	0	

9-The Teaching and Learning Methods and their relation to the Los of the course						
Course learning Outcomes (LOs) / **Teaching and Learning Methods**	LO7	LO13	LO29	LO34	LO29	Lo22
Interavctive lectures						
Presentations and Movies						
Discussions						
Tutorials/Sketches						
Problem solving						
Brain storming						
Lab						
Site visits						
Researches						
Modelling						
Cooperative work						

Notes

- The research concerns the cooperative work, the discussion, the site visit and the presentations.
- The project concerns the brain storming and the problem solving.
- Online lectures used as hybrid learning, but in case of totally on line learning all the used teaching and learning methods will be on line.

10-Student assessment Method						
Assessment method and its relation to the Los of the course						
Course learning Outcomes (LOs) / **Assessment method**	**Tools of assessment**					
	LO7	LO13	LO29	LO34	LO29	Lo22
Quizzes/ exams						
Presentations and Movies						
Discussions						
Sheets and Sketches						
Problem solving						
lab						
Site visits						
Researches and reports						
Modelling						
Cooperative work						

11- Grading System / Week					
Content	**Time schedule of assessment**		**Marks**		
Quizzes	Quiz (1)	Week (4)		(5) marks	(50) marks
	Quiz (2)	Week (8)		(5) marks	
Discussions		Weekly(6)	(5) %	(10) marks	
Sheets and Sketches		Every week	(0) %		
Researches and reports		Every week	(30) %		
Practical modelling		Every week	(15) %		
Attendance		weekly		(10) marks	
Mid-term exam		Week (8)		(20) marks	
final exam		Week (16)		(50) marks	
Total				(100) marks	

12- List of references:	
a- Course notes	**Lecture notes and handouts**
b- Required books	Mendenhall, W., Introduction to Probability and Statistics, Boston: Duxbury Press, 10thEd., 1999.

c- Recommended books	• Barry C. Arnold, N. Balakrishnan, H.N. Nag raja, A First Course in Order Statistic, John Wiley& Sons, Inc., 1992. • Kevin R.M Murphy, Brett Myers, Statistical Power Analysis, A Simple and General Model for Traditional and Modern Hypothesis Tests, Lawrence Erlbaum Associates,2nd Ed., 2004. • • Rosencrantz, W., Introduction to Probability and Statistics for Scientists and Engineers, New York: McGraw –Hill, 1997. • Ross S., A First Course in Probability Englewood Cliffs, NJ: Prentice Hall, 4th Ed.,1994. • Rozanov, Y.A., Probability Theory: A Concise Course, New York: Dover, 1997. • Terrell, G., Mathematical Statistics:A Unified Introduction, New York: Springer – Verlag, 1999
d- Periodicals, Web sites, etc	**No periodicals are needed.** Web Sites related to Mathematics and Mathematical engineering as: www.math.hmc.edu, www.tutorial.math.lamar.edu, www.web.mit.edu

13- Facilities required for teaching and learning:
Lecturer notes , Library- Internet - Data show - E-Learning moodle

14-Requirements for Disable facilities:
• Appropriate teaching design studios including presentation board, data show. • Google class room . E- learning Moodle

Course coordinator:	Dr.Gamal El-Anany
program Coordinator	
(Head of the Department)	
Date:	2023/2024

2-ENGR204 Fundamentals of fluid mechanics:.

Course Specification

Course Code:	Course Name
ENGR 204	Fundamentals of fluid mechanics

A- Affiliation

Relevant program:	Civil program Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering
Date of program operation:	2009-2010
Date of approval from the Higher Ministry of education	27/1/2008
date	2023 - 2024

B-Basic Information

Title	Fundamentals of fluid mechanics
Code	ENGR 204
Credit Hours	3 Cr. Hrs.
Lectures	2 Hrs.
Tutorial	2Hrs.
Practical	0Hrs.
Total	4 Hrs.
Prerequisite	--
Instructor name	Dr. Tamer Elgohary

C- Professional Information

1-Course core:

Fluid properties, fluid statics, Buoyancy and floatation, Kinematics of fluid flow. Energy considerations in steady flow. Conservation of mass and energy, continuity and Bernoulli's equations. Forces due to fluids in motion, momentum equation, similitude and dimensional analysis – Steady incompressible flow in pressure conduits: Laminar Viscous effects for laminar and turbulent flow. Friction and Minor losses – pipelines and pipe networks.

2-Course Learning Objectives: oC	
oC1	Determine the fluid pressure and use various devices for measuring fluid pressure.
oC2	Calculate hydrostatic force and use of law of conservation mass to fluid flow.
oC3	Apply Bernoulli's equation to fluid flow problems and boundary layer theory to determine lift and drag forces on a submerged body.
oC4	Apply appropriate equations and principles to analyze pipe flow problems
oC5	Use of different fluid flow measuring devices. L4 ..
oC6	Prove the fluid theories
oC7	Apply the fluid experiments

3-Program objectives served by the course:	
O1	Being creativity and imagine in the design process.
O4	Implementing projects that adopt a solution to a contemporary societal problem that depends on various civil designs and construction applications and keeping pace with Cods and legislation.
O5	Conduct professional research that solves civil problems.
O6	Professional development based on self-learning and continuous learning.
O8	Gain experience in effective communication with the surrounding community.
O9	Qualification to deal with the latest materials and systems that can transform engineering drawings into a real condition that meets the needs of the client and the era.
O11	Conducting scientific research.

4-The relation between the course objectives and the program objectives	
Course objectives	**Program objectives**
oC1	O1,O9
oC2	O1,O4,O5
oC3	O1,O8
oC4	O1,O4,O6
oC5	O1,O9
oC6	O1,O5
oC7	1,O5,O11

5-Learning outcomes of the course (LOs)	
Upon the completion of the course the student should be able to:	
LO16	Solve complex engineering problems.
LO4	Use statistical analyses and objective engineering judgment to draw conclusions.
LO33	Practice self-learning and other learning strategies.
LO8	Select appropriate and sustainable technologies for the construction of buildings, infrastructures and water structures.
LO9	Analysis structure mechanical-properties, and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.
LO24	Use numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques.

6- Program competencies served by the course:	
Upon the completion of the Program the student should be able to:	
Lo1	Conduct physical and multimedia modeling
Lo2	analyze the range of patterns and traditions that have shaped and sustained cultures and the way that they can inform design process
Lo3	Practice research to investigate the various dimensions of housing problem, the approaches policies that could motivate the students to solve real problem.
Lo4	Use PowerPoint as a technical tool to present the research.
Lo5	Use PowerPoint to integrate with research and projects.

7- The relation between the course learning outcomes and the program competencies		
program competencies		Course (Los)
1	LO16	Lo1
2	LO4	Lo2
3	LO33	Lo3
4	LO24	Lo4
5	LO8,LO9	Lo5

8-Course Content

Week No.	Topic	Lecture hr.	Tutorial hr.	Practical hr.	Los
1	Course introduction and it is objectives	2	2	0	Lo1, Lo2
2	Basic of concept design	2	2	0	Lo1
3	Basic of house design	2	2	0	Lo2
4	Basic of house design	2	2	0	Lo3
5	Research, Quiz I	2	2	0	Lo4
6	Basic of disable people design	2	2	0	Lo2
7	Basic of parking design	2	2	0	Lo2
8	Midterm exam	15			Lo3
9	Basic of school design	2	Lo4	0	Lo4
10	Basic of school design	2	Lo2	0	Lo2
11	Basic of daycare design	2	Lo2	0	Lo2
12	modelling	2	2	0	Lo5
13	Quiz II ,research	2	2	0	Lo3
14	Semifinal Project.	2	2	0	Lo4
15	Final project	2	2	0	Lo4
16	**Final exam**	60			Lo1, Lo5
Total hours		28	2	0	

9-The Teaching and Learning Methods and their relation to the Los of the course					
Course learning Outcomes (Los) / Teaching and Learning Methods	Lo1	Lo2	Lo3	Lo4	Lo5
On line / face to face Lectures Projects.					
Tutorials: sheets/ sketches.					
Problem solving.					
Brain storming.					
Practical: lab.					
Discovering					
Site visit.					
Reports/ researches.					
Cooperative work.					
presentation					
Discussion					
Modeling					

10-Student assessment Method					
Assessment method and its relation to the Los of the course					
Course learning Outcomes (Los) / Assessment method	Tools of assessment				
	Lo1	Lo2	Lo3	Lo4	Lo5
Quizzes/ exams					
Mid -term exam					
sheets/ sketches					
projects					

Practical: lab					
Oral exam					
discussions					
Reports/ researches					
presentation					
modeling					

11- Grading System / Week

Content	Time schedule of assessment		Marks		
Quizzes	Quiz (1)	Week (5)		(5) marks	(40) marks
	Quiz (2)	Week (5,13)		(5) marks	
Discussions		Weekly(6)	(5) %	(10) marks	
Sheets and Sketches		none	(0) %		
Researches and reports		Week (5,1 3)	(30) %		
Practical modelling		Week (13)	(15) %		
Attendance		weekly		(5) marks	
Mid-term exam		Week (8)		(15) marks	
final exam		Week (16)		(60) marks	
Total				(100) marks	

12-List of references:

a- Course notes

- Student have to take written not based on the instructor's lecture
- Submission must be a periodical technical presentation.
- Final submission is A1 paper and technical presentation.
- The discussion and students' participants are very essential.
- The evaluations are internal periodical assessments.
- Student grades are available and posted in the class.
- Only group work is allowed.

b- Required books	1. P.N. Modi and S.M. Seth, Fluid Mechanics (18th edition) Standard Book House,2017. 2. A.K. Jain, Fluid Mechanics, Khanna publishers,2010 3. A text book of Fluid Mechanics and Hydraulic Machines (7th edition) Laxmi publications(P) ltd; New Delhi, 2000
c- Recommended books	1. L. Victor, Streeter and E. Benjamin Wylie, Fluid Mechanics, Tata McGraw Hill,1985. 2. M. Franck White, Fluid Mechanics, Tata McGraw Hill,2017. 3. K. Subramanya, Theory and Applications of Fluid Mechanics, Tata McGraw Hill,2001. 4. A text book of Fluid Mechanics and Hydraulic Machines by R. K. Rajput, S. chand Technical 5. fluid mechanics an Introduction F.Rathakrishnan 6. Thermodynamics Yuns A.cengel

13- Facilities required for teaching and learning:

- References in library
- Appropriate teaching design studios including presentation board, data show
- Google classroom ,E- learning Moodle

14-Requirements for Disable facilities:

- Extra assignments
- On line extra teaching hours

Course Instructor	**Dr. Tamer Elgohary**
program Coordinator	
Head of the Department	Dr. Ashraf Abdelkhalek
Date	2023-2024

3-CVEE303 Geotechnical Engineering Structures:

Course Specification

Course Code:	Course Name
CVEE 303	Geotechnical Engineering Structures

A- Affiliation

Relevant program:	Civil program Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering
Date of program operation:	2009-2010
Date of approval from the Higher Ministry of education	27/1/2008
date	2023 - 2024

B-Basic Information

Title	Geotechnical Engineering Structures
Code	CVEE 303
Credit Hours	3 Cr. Hrs.
Lectures	2 Hrs.
Tutorial	2 Hrs.
Practical	0Hrs.
Total	4 Hrs.
Prerequisite	ENGR 205
Instructor name	Dr.mahmoud fawzy

C- Professional Information

1- Course Core

The course covers subsurface exploration and site investigation including testing and evaluation, bearing capacity of shallow foundations in different types of soils, settlement analysis (consolidation and immediate), Earth pressure theories, Shear Strength, Slope Stability and methods of stability analysis, Dewatering, computer aided profile data reduction and recording, interpretation of field and laboratory data. , design of retaining structures

2-Course Learning Objectives: (oc)	
oc1	This course presents geotechnical engineering Structures design.
oc2	Learn index properties of soil.
oc3	Acquire skills to classify the soil.
oc4	Knowing the stress in soil.
oc5	Learn soil consolidation and permeability.
oc6	Applications on soil compaction.

3-program objectives served by the course: (o)	
Upon the completion of the course the student should be able to:	
O1	Being creativity and imagine in the design process.
O2	Apply strategies to solve societal problems.
O3	Maintain the built environment with its social, economic and environmental aspects to achieve the 2030 sustainable development goals.
O4	Implementing projects that adopt a solution to a contemporary societal problem that depends on various civil designs and construction applications and keeping pace with Cods and legislation.
O5	Conduct professional research that solves civil problems.

4-The relation between the course objectives and the program objectives	
Course objectives	**program objectives**
oc1	O1
oc 2	O1,O2
oc 3	O1,O2,O3
oc 4	O1
oc 5	O1 ,O3
oc 6	O1,O4,O5

5- Program LOs served by the course:	
Upon the completion of the course the student should be able to:	
LO6	Define standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.
LO26	Plan and manage construction processes.
LO8	Select appropriate and sustainable technologies for the construction of buildings, infrastructures and water structures.
LO9	Analysis structure mechanical-properties, and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.

6- Learning outcomes of the course (LOs)	
Upon the completion of the Program the student should be able to:	
Lo1	Identify and compute the design loads on a typical highway section.
Lo2	Identify the principles of soil properties.
Lo3	Select appropriate solutions for engineering problems based on analytical thinking
Lo4	Integrate knowledge of mathematics, science, information technology, design, business context and engineering practice to solve engineering problems
Lo5	Professionally merge the engineering knowledge, understanding, and feedback to improve geometric, and structural design of geotechnical.
Lo6	Plan, design, construct, operate and control of all types of geotechnical engineering structures .

7- The relation between the course learning outcomes and the program competencies		
	program competencies	Course (Los)
1	LO6,	Lo1
2	LO26	Lo2
3	LO8,	Lo3
4	LO26	Lo4
5	LO9	Lo5
6	LO26	Lo6

8- Course Content and their to the course LOs					
Week No.	Topic	Lecture hr.	Tutorial hr.	Practical hours	Los
1	Introduction to geotechnical engineering Structures design	2	2	0	Lo1, Lo2

2	Definitions and relations of soil.	2	2	0	Lo1
3	Soil properties index.	2	2	0	Lo2
4	Grading for fine soil using hydrometer.	2	2	0	Lo3
5	Sieve analysis.	2	2	0	Lo4
6	Soil consistency.	2	2	0	Lo2
7	Unified soil classification system.	2	2	0	Lo2
8	**Mid-term exam**	15			Lo1,Lo5,
9	Compaction of soil.	2	2	0	Lo4
10	Stress in soil	2	2	0	Lo3
11	Stress distribution.	2	2	0	Lo6
12	Permeability of soil.	2	2	0	Lo5
13	Consolidation of soil.	2	2	0	Lo6
14	Settlement of buildings.	2	2	0	Lo4
15	**Final exam**	60			Lo1,lo6
Total hours		24	24	0	

9-The Teaching and Learning Methods and their relation to the Los of the course

Course learning Outcomes (Los) / Teaching and Learning Methods	Lo1	Lo2	Lo3	Lo4	Lo5	Lo6
On line / face to face lectures						
Tutorials: sheets/ sketches						
projects						
Problem solving						
Brain storming						
Practical: lab						
discovering						
Site visit						
Reports/ researches						

Cooperative work						
presentation						
Discussion						
modelling						

10- Student assessment method

Course learning Outcomes (Los) / Assessment method	Lo1	Lo2	Lo3	Lo4	Lo5	Lo6
quizzes						
Mid -term exam						
Final exam						
sheets/ sketches						
projects						
Practical: lab						
Oral exam						
discussions						
Reports/ researches						
presentation						
modelling						

11- Grading System / Week

Content	Time schedule of assessment		Marks		
Quizzes	Quiz (1)	Week (6)		(5) marks	(40) marks
	Quiz (2)	Week (14)		(5) marks	
Discussions		Weekly	(40) %		

Sheets and Sketches		Week (7-10-13)	(60) %	(10) marks	
Researches and reports		Week (14)	(0) %		
the Projects			(0) %		
Practical modelling			(0) %		
Attendance		weekly		(5) marks	
Mid-term exam		Week (8)		(15) marks	
final exam		Week (15)		(60) marks	
Total				(100) marks	

12- List of references:	
a. **Course notes**	N.A
b. **Rquired books**	• Soil mechanics (Dr/ Amr Radwan) • soil mechanics and foundations muni Buhl john Wiley son, Inc. 2011 • mechanics of materials Ferdinand p.bear • معجم مصطلحات ميكانيكا التربة • principles of foundation engineering brajam.das
c. **Recommended books**	الكود المصري لميكانيكا التربه و الاساسات
d. **Periodicals, Web sites, etc**	N.A

13- Facilities required for teaching and learning:
Appropriate teaching design studios including presentation board, data show • Google classroom ,E- learning

14- Requirements for Disable facilities:
• On line teaching hours if it is needed • Extra assignments

Course coordinator:	**Dr.mahmoud fawzy**
program Coordinator	Civil Engineering
Head of the Department	Dr ashraf abelkhalek mostafa
Date:	2023/2024

4-CVEE304 Geotechnical Engineering Lab

Course Specification

Course Code:	Course Name
CVEE 304	Geotechnical Engineering Lab

A- Affiliation

Relevant program:	Civil program Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering
Date of program operation:	2009-2010
Date of approval from the Higher Ministry of education	27/1/2008
date	2023 - 2024

B-Basic Information

Title	Geotechnical Engineering Lab
Code	CVEE 304
Credit Hours	1 Cr. Hrs.
Lectures	0Hrs.
Tutorial	0 Hrs.
Practical	2 Hrs.
Total	1 Hrs.
Prerequisite	CVEE 303
Instructor name/Email	Dr.Mahmoud fawzy

C- Professional Information

1- Course Core
Includes experiments in soil mechanics. Laboratory experiments cover geotechnical test equipment and techniques. Includes the applications of testing principles to the measurement of fundamental aspects of soil behavior from classification to engineering properties. Emphasizes rigorous techniques to measure mechanical behavior under various boundary conditions. Provides exposure to error estimation. Utilizes standard test methods and equipment to assess physical, mechanical, chemical and hydraulic properties of soils for application in civil engineering design. Includes laboratory work on classification and engineering tests on intact and weathered rock.

2-Course Learning Objectives: (oc)	
oc1	This course includes experiments in soil mechanics.
oc2	Learn laboratory experiments cover geotechnical test equipment and techniques.
oc3	Acquire skills to apply of testing principles to the measurement of fundamental aspects of soil behavior from classification to engineering properties.
oc4	Knowing the emphasizes rigorous techniques to measure mechanical behavior under various boundary conditions.
oc5	Learn laboratory work on classification and engineering tests on intact and weathered rock.

3-program objectives served by the course: (o)	
Upon the completion of the course the student should be able to:	
O1	Being creativity and imagine in the design process.
O2	Apply strategies to solve societal problems.
O4	Implementing projects that adopt a solution to a contemporary societal problem that depends on various civil designs and construction applications and keeping pace with Cods and legislation.

O5	Conduct professional research that solves civil problems.
O11	Conducting scientific research.

4-The relation between the course objectives and the program objectives		
Course objectives		program objectives
1	oc1	O1
2	oc 2	O1,O2,O5
3	oc 3	O1,O2,O4
4	oc 4	O1,O2,O4
5	oc 5	O1 ,O5,O11

5- Program LOs served by the course:	
Upon the completion of the course the student should be able to:	
LO6	Define standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.
LO26	Plan and manage construction processes
LO8	Select appropriate and sustainable technologies for the construction of buildings, infrastructures and water structures.
LO9	Analysis structure mechanical-properties, and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.

6- Learning outcomes of the course (LOs)	
Upon the completion of the Program the student should be able to:	
Lo1	Identify and compute the design loads on a typical highway section.
Lo2	Identify the principles of soil properties.
Lo3	Select appropriate solutions for engineering problems based on analytical thinking
Lo4	Integrate knowledge of mathematics, science, information technology, design, business context and engineering practice to solve engineering problems
Lo5	Professionally merge the engineering knowledge, understanding, and feedback to improve geometric, and structural design of geotechnical.

Lo6	Plan, design, construct, operate and control of all types of geotechnical engineering structures .

7- The relation between the course learning outcomes and the program competencies		
program competencies		Course (LOs)
1	LO26	Lo1
2	LO9, LO6	Lo2
3	LO9	Lo3
4	LO6	Lo4
5	LO26	Lo5
6	LO8	Lo6

8- Course Content and their to the course LOs

Week No.	Topic	Lecture hr.	Tutorial hr.	Practical hours	Los
1	Organic material.	0	0	2	Lo1
2	Water content.	0	0	2	Lo2
3	Specific gravity.	0	0	2	Lo3
4	Sieve analysis.	0	0	2	Lo4
5	Liquid limit.	0	0	2	Lo2
6	Plastic limit.	0	0	2	Lo3
7	Sand cone.	0	0	2	Lo4
8	**Mid-term exam**	10			Lo1,lo4
9	Hydrometer.	0	0	2	Lo4
10	Standard proctor.	0	0	2	Lo2
11	Modified proctor.	0	0	2	Lo3
12	Falling head permeability.	0	0	2	Lo4

13	Constant head permeability.	0	0	2	Lo4
14	Revision.	0	0	2	Lo1,lo6
15	**Final exam**	50			Lo1,lo6
Total hours		0	0	26	

9-The Teaching and Learning Methods and their relation to the Los of the course

Course learning Outcomes (LOs) / Teaching and Learning Methods	Lo1	Lo2	Lo3	Lo4	Lo5	Lo6
On line / face to face lectures						
Tutorials: sheets/ sketches						
projects						
Problem solving						
Brain storming						
Practical: lab						
discovering						
Site visit						
Reports/ researches						
Cooperative work						
presentation						
Discussion						
modelling						

10- Student assessment method		
Assessment method and its relation to the Los of the course		

Course learning Outcomes (LOs)

Assessment method	Lo1	Lo2	Lo3	Lo4	Lo5	Lo6
quizzes						
Mid -term exam						
Final exam						
sheets/ sketches						
projects						
Practical: lab						
Oral exam						
discussions						
Reports/ researches						
presentation						
modelling						

11- Grading System / Week					
Content	**Time schedule of assessment**		**Marks**		
Quizzes	Quiz (1)	Week (6)			(50) marks
	Quiz (2)	Week (14)			
Discussions		Weekly		(10) marks	
Sheets and Sketches		Week (7-10-13)			
Researches and reports		Week (14)		(10) marks	
the Projects					
Practical modelling				(20) marks	
Attendance		weekly		(10) marks	
Mid-term exam		Week (8)		(10) marks	
final exam		Week (15)		(50) marks	
Total				(100) marks	

12- List of references:	
a- Course notes	

b- Rquired books	• Soil mechanics (Dr/ Amr Radwan) • soil mechanics and foundations muni Buhl john Wiley son, Inc. 2011 • mechanics of materials Ferdinand p.bear • معجم مصطلحات ميكانيكا التربة • principles of foundation engineering brajam.das
c- Recommended books	الكود المصري لميكانيكا التربه و الاساسات
d- Periodicals, Web sites, etc	

13- Facilities required for teaching and learning:
• Appropriate teaching design studios including presentation board, data show • Google classroom • E- learning

14- Requirements for Disable facilities:
• On line teaching hours if it is needed • Extra assignments

Course coordinator:	Dr.Ahmed Farag
program Coordinator	Civil Engineering
Head of the Department	
Date:	2022/2023

5-CVEE306 Reinforced Concrete Structural Design 1:

Course Specification

Course Code:	Course Name
CVEE 306	Reinforced Concrete Design 1

A- Affiliation

Department offering the program:	Civil Engineering
Relevant program:	Civil Engineering
Department offering the course:	Civil Engineering
Date of program operation:	2009-2010
Date of approval from the Higher Ministry of Education	27/1/2008
Date of course operation	2023-2024

B-Basic Information

Title	Reinforced Concrete Design 1
Code	CVEE 306
Credit Hours	3 Cr. Hrs.
Lectures	2 Hrs.
Tutorial	2 Hrs.
Practical	0 Hrs.
Total	4 Hrs.
Prerequisite	CVEE 301
Instructor name/Email	Dr waleed abdallah

C- Professional Information

1-Course core:

Properties of plain concrete and reinforced concrete, behavior of composite sections, ultimate strength and working stress, load distribution, design of structural elements, beams (Simple beams, continuous beams, cantilever beams), Check of shears, columns (Short), detailing of reinforcing steel. Analysis and design of beams sectors rectangular sectors and in the form of (T and L) sections - verification of shear - design short columns - reinforcement details - design in accordance Egyptian code.

2-Course Learning Objectives: (oc)	
Oc1	Know what is reinforced concrete.
Oc2	Compute the loads acting on beams using load distribution.
Oc3	Apply first principal equations for beam design.
Oc4	Apply limit state method for beam design.
Oc5	Know how to design short columns.

3-Program objectives served by the course: (o)	
Upon the completion of the course, the student should be able to:	
O1	Being creativity and imagine in the design process.
O2	Apply strategies to solve societal problems.
O4	Implementing projects that adopt a solution to a contemporary societal problem that depends on various civil designs and construction applications and keeping pace with Cods and legislation.
O5	Conduct professional research that solves civil problems.
O9	Qualification to deal with the latest materials and systems that can transform engineering drawings into a real condition that meets the needs of the client and the era.

4-The relation between the course objectives and the program objectives	
Course objectives	**program objectives**
oc1	O1, O2
oc 2	O1,O9
oc 3	O1,O2,O5
oc 4	O1,O2,O5
oc 5	O1, O4

5- Program LOs served by the course:	
Upon the completion of the course, the student should be able to:	
LO5	Display 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.
LO19	Apply engineering design processes to produce cost-effective solutions that meet specified needs.
LO25	Produce designs for Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures

6- Learning outcomes of the course (LOs)	
Upon the completion of the Program, the student should be able to:	
Lo1	Identify and compute the design loads on concrete beams.
Lo2	Illustrated the first principles of structural design for reinforced concrete sections.
Lo3	Design of reinforced concrete sections using charts (C1 & J).
Lo4	Behavior of reinforced concrete sections applied to flexural moment and/or normal compression force.
Lo5	Design for reinforced concrete beams for flexural moment, shear, and torsion.
Lo6	Drawing reinforcement details for reinforced concrete beams and short columns.

7-The relation between the course learning outcomes and the program competencies		
	Course (LOs)	program competencies
1	LO5	Lo1
2	LO19	Lo2
3	LO19	Lo3
4	LO19,LO25	Lo4
5	LO25	Lo5
6	LO19	Lo6

8- Course Content and they're to the course LOs					
Week No.	**Topic**	**Lecture hr.**	**Tutorial hr.**	**Practical hours**	**Los**
1	Load distribution on beam	2	2	0	Lo1
2	First principal (over and under reinforcement)	2	2	0	Lo2
3	Beam design using the first principal	2	2	0	Lo3
4	First principal (over and under reinforcement)	2	2	0	Lo4
5	Beam design using the first principal	2	2	0	Lo2
6	Beam design using design limits	2	2	0	Lo3
7	Check of shear for beam	2	2	0	Lo4
8	**Mid-term exam**	**Mid-term exam**			Lo1,lo3
9	Reinforcement details for beams	2	2	0	Lo1
10	Examples for design beams	2	2	0	Lo2
11	Design of short column	2	2	0	Lo3
12	Examples for design short column	2	2	0	Lo4
13	Revision for all course content	2	2	0	Lo5
14	Quiz (1)	2	2	0	Lo4
15	Quiz (2)	2	2	0	Lo1,lo5
16	**Final exam**	**Final exam**			Lo1-lo6
Total hours		28	28	28	

9-The Teaching and Learning Methods and their relation to the Los of the course:						
Course learning Outcomes (Los) / The Teaching and Learning Methods	Lo1	Lo2	Lo3	Lo4	Lo5	Lo6
Online / face-to-face lectures						
Tutorials: sheets/ sketches						

projects						
Problem-solving						
Brainstorming						
Practical: lab						
discovering						
Site visit						
Reports/ researches						
Cooperative work						
presentation						
Discussion						
modeling						

10- Student assessment method						
Course learning Outcomes (LOs) / Assessment method	Lo1	Lo2	Lo3	Lo4	Lo5	Lo6
quizzes						
Mid-term exam						
Final exam						
sheets/ sketches						
projects						
Practical: lab						
Oral exam						
discussions						
Reports/ researches						

presentation						
modeling						

11- Grading System / Week					
Content	**Time schedule of assessment**		**Marks**		
Quizzes	Quiz (1)	Week (14)		(10) marks	(60) marks
	Quiz (2)	Week (15)		(10) marks	
Discussions		Weekly	(40) %	(10) marks	
Sheets and Sketches		Week (7-10-11-13)	(60) %		
Researches and reports			(0) %		
the Projects			(0) %		
Practical modelling			(0) %		
Attendance		weekly		(10) marks	
Mid-term exam		Week (8)		(20) marks	
final exam		Week (16)		(40) marks	
Total				(100) marks	

12- List of references:	
a. **Course Notes**	
b. **required books**	Design of Reinforced Concrete Structure - Volume 1 - Prof. Mashhour Ghoneim & Prof. Mahmoud El-Mihilmy. 2012
c. **recommended books**	• Egyptian Code design for reinforced concrete2020 • design of reinforced concrete Jack McCormick john Wiley son, Inc. 2005 • fundamentals of reinforced and M.Hilal printed and bound in Egypt by zaman presses • properties of matter dr.o.a. Omar Pearson prentice hall 1994 • properties of concrete A.M. Neville Pearson prentice hall 1995 • Design of reinforced M.Hilal Pearson prentice hall • the construction of buildings volume (1) Ribery the English language book society 1980

d. **periodicals, Web sites, etc**	

13- Facilities required for teaching and learning:
• Appropriate teaching design studios including presentation board, data show • Google Classroom • E-learning

14-Requirements for Disable facilities:
• Online teaching hours if it is needed • Extra assignments

Course coordinator:	**Dr waleed abdallah**
program coordinator	Civil Engineering
Head of the Department	Dr.Ashraf Abdel khalek Mostafa
Date:	2023/2024

6- CVEE328 Structural Analysis III;

Course Specification

Course Code:	Course Name
CVEE 328	Structural Analysis III

A- Affiliation

Department offering the program:	Civil Engineering
Relevant program:	Civil Engineering
Department offering the course:	Civil Engineering
Date of program operation:	2009-2010
Date of approval from the Higher Ministry of Education	27/1/2008
Date of course operation	2023-2024

B-Basic Information

Title	Structural Analysis III
Code	CVEE 328
Credit Hours	2 Cr. Hrs.
Lectures	2 Hrs.
Tutorial	2 Hrs.
Practical	0 Hrs.
Total	4 Hrs.
Prerequisite	CVEE 302
Instructor name/Email	Assistant Professor. Mohamed Hamdy El-Feky mhfeky@zu.edu.eg

C. Professional Information

1-Course core:

The course explores structural systems; loading on structures (wind and earthquake loads), virtual work method, stiffness and flexibility methods; matrix formulation of the stiffness and flexibility methods, direct stiffness method, introduction to finite element method, computer analysis and design of 2D and 3D framed structures and high-rise buildings. Emphasizes team-based learning through specific design projects.

2-Course Learning Objectives: (oc)	
Oc1	Explores different types of structural systems
Oc2	Study cases of loading on structures
Oc3	Construct stiffness and flexibility matrices
Oc4	Knowledge of finite element method, computer analysis by software package in 2D and 3D structures.
Oc5	Apply and emphasizes team based learning through specific design projects

3-Program objectives served by the course: (o)	
Upon the completion of the course, the student should be able to:	
O1	Being creativity and imagine in the design process.
O2	Apply strategies to solve societal problems.
O4	Implementing projects that adopt a solution to a contemporary societal problem that depends on various civil designs and construction applications and keeping pace with Cods and legislation.
O7	Developing skills in employing modern computer programs in the analysis, design and modeling process.

4-The relation between the course objectives and the program objectives	
Course objectives	**program objectives**
oc1	O1, O2
oc 2	O1
oc 3	O1,O2,O4
oc 4	O1,O2,O4
oc 5	O1, O7

5- Program LOs served by the course:	
Upon the completion of the course, the student should be able to:	
LO5	Display 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.
LO19	Apply engineering design processes to produce cost-effective solutions that meet specified needs.
LO24	Use numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques.
LO25	Produce designs for Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures
LO31	Use creative, innovative and flexible thinking.

6- Learning outcomes of the course (LOs)	
Upon the completion of the Program, the student should be able to:	
Lo1	Select appropriate mathematical methods for modeling and analyzing structural problems.
Lo2	Basics of information and communication technology
Lo3	Principles of design including elements design, process and/or a system related to specific disciplines
Lo4	Analyze systems, processes and components critically
Lo5	Carry out specialized engineering designs
Lo6	Observe, record and analyze data in laboratory and in the field

7-The relation between the course learning outcomes and the program competencies	
program competencies	Course (LOs)
LO5	Lo1
LO31	Lo2
LO24	Lo3
LO19,LO25	Lo4
LO25	Lo5
LO19	Lo6

8- Course Content and they're to the course Los					
Week No.	**Topic**	**Lecture hr.**	**Tutorial hr.**	**Practical hours**	**Los**
1	Explores different types of structural systems	2	2	0	Lo1
2	Deflection using double integration	2	2	0	Lo2
3	Deflection using double integration (Examples)	2	2	0	Lo3
4	Deflection using Conjugate beam	2	2	0	Lo4
5	Deflection using Conjugate beam (Examples)	2	2	0	Lo2
6	Deflection using Virtual work	2	2	0	Lo3
7	**Mid-term exam**	**15**			Lo1,lo3
8	Deflection using Virtual work (Examples)	2	2	0	Lo4
9	Analysis of indeterminate structures using consistent deformation	2	2	0	Lo2
10	Analysis of indeterminate structures using consistent deformation (Examples)	2	2	0	Lo3
11	Analysis of indeterminate structures using 3-Moment Equations	2	2	0	Lo4
12	Analysis of indeterminate structures using 3-Moment Equations (Examples)	2	2	0	Lo6
13	Analysis of indeterminate structures using Moment Distributions	2	2	0	Lo5
14	Analysis of indeterminate structures using Moment Distributions (Examples)	2	2	0	Lo4
15	Analysis of indeterminate structures using Slope deflection	2	2	0	Lo6
16	**Final exam**	**60**			Lo1,lo6
Total hours		28	28	0	

9- The Teaching and Learning Methods and their relation to the Los of the course						
Course learning Outcomes (Los) / Teaching and Learning Methods	Lo1	Lo2	Lo3	Lo4	Lo5	Lo6
Online / face-to-face lectures						

Tutorials: sheets/ sketches						
projects						
Problem-solving						
Brainstorming						
Practical: lab						
discovering						
Site visit						
Reports/ researches						
Cooperative work						
presentation						
Discussion						
modeling						

10- Student assessment method						
Assessment method and its relation to the Los of the course						
Course learning Outcomes (LOs) / **Assessment method**	Lo1	Lo2	Lo3	Lo4	Lo5	Lo6
quizzes						
Mid-term exam						
Final exam						
sheets/ sketches						
projects						
Practical: lab						
Oral exam						
discussions						
Reports/ researches						

presentation						
modeling						

11- Grading System / Week					
Content	**Time schedule of assessment**		**Marks**		
Quizzes		Week (2)		(5) marks	(40) marks
		Week (4)		(5) marks	
Discussions		Weekly	(50) %	(15) marks	
Sheets and Sketches		Week (3)	(20) %		
Researches and reports			(30) %		
the Projects			(0) %	(0)marks	
Practical modelling			(0) %		
Attendance		weekly			
Mid-term exam		Week (3)		(15) marks	
final exam		Week (6)		(60) marks	
Total				(100) marks	

12- List of references:	
a- CourseNotes	
b- requiredd books	• Design of Reinforced Concrete Structure - Volume 1,2,3 - Prof. Mashhour Ghoneim & Prof. Mahmoud El-Mihilmy. 2012 • structure systems ralph Rapson -hannskribandal in Germany • structural engineering hand book edwinH.Gaylord mc grew- hill book company 1979
c- recommended books	Egyptian Code design for reinforced concrete2020.

d- periodicals, Web sites, etc	

13- Facilities required for teaching and learning:

- Appropriate teaching design studios including presentation board, data show
- Google Classroom
- E-learning

14-Requirements for Disable facilities:

- Online teaching hours if it is needed
- Extra assignments

Course coordinator:	**Dr. Mohamed Hamdy El-Feky**
program coordinator	Civil Engineering
Head of the Department	Dr.Ashraf Abdel khalek Mostafa
Date:	2023/2024

7-CVEE338 Engineering Surveying:

Course Specification

Course Code:	Course Name
CVEE 338	Engineering Surveying

A- Affiliation

Department offering the program:	Civil Engineering
Relevant program:	Civil Engineering
Department offering the course:	Civil Engineering
Date of program operation:	2009-2010
Date of approval from the Higher Ministry of Education	27/1/2008
Date of course operation	2023-2024

B-Basic Information

Title	Engineering Surveying
Code	CVEE 338
Credit Hours	3 Cr. Hrs.
Lectures	2 Hrs.
Tutorial	2 Hrs.
Practical	0 Hrs.
Total	4 Hrs.
Prerequisite	CVEE 203
Instructor name/Email	Dr tarek waleed

1- Course Core

The course is consideration of a planar Earth surface is refined by Earth curvature effects as measurement corrections in some survey measurements. Advances in digital surveying equipment and measurement techniques are reviewed. An overview of types of maps is given with emphasis on planimetric versus topographic maps. Different roles of surveying in engineering surveying projects are examined. An introduction to map projections, grid coordinates computations and coordinate system transformation. Vertical control is considered in view of different methods for height difference determination. The use of precise level and precise staff is discussed; along with calculations of precise leveling. Indirect methods for height difference determination; tachometry, and trigonometric leveling are compared. Calculations are conducted for Earth curvature and refraction effects on height differences. Applications of leveling; longitudinal (profile) leveling, cross section leveling, grid leveling are presented; along with contours calculations, volume and earthwork computations. The Total station (TS) and its applications in setting out is investigated. Methods of setting out are discussed in relation to; highways, roads, different types of curves, airports and runways, tunnel survey, and three-dimensional deformation monitoring of natural land and engineering structures. Introduction to concepts of photogrammetry and remote sensing in engineering projects.

2-Course Learning Objectives: (oc)	
oc1	Developed an understanding of the principles of civil drawing.
oc2	Understood the basic skills of surveying work including distance and angles measurements.
oc3	Developed the skill for using surveying instrumentation.
oc4	Understood how to collect, document, and analyze surveying measurements
oc5	Learned how to conduct a variety of surveying exercises with emphasis on layout surveys.
oc6	Developed an understanding of applying basic surveying techniques in the field.
oc7	Demonstrated an understanding of how to perform basic surveying computations.

3-program objectives served by the course: (o)	
Upon the completion of the course the student should be able to:	
O1	Being creativity and imagine in the design process.
O2	Apply strategies to solve societal problems.
O4	Implementing projects that adopt a solution to a contemporary societal problem that depends on various civil designs and construction applications and keeping pace with Cods and legislation.
O6	Professional development based on self-learning and continuous learning.

O9	Qualification to deal with the latest materials and systems that can transform engineering drawings into a real condition that meets the needs of the client and the era.

4-The relation between the course objectives and the program objectives	
Course objectives	**program objectives**
oc 1	O1,O2
oc 2	O1,O2,O4
oc 3	O1,O2,O4
oc 4	O1,O2
oc 5	O1,O2,O6
oc 6	O1,O2,O9
oc 7	O1,O2

5- Program LOs served by the course:	
Upon the completion of the course the student should be able to:	
LO23	Use contemporary tools to implement engineering design drawings, and presentations.
LO24	Use numerical techniques or physical measurements and/or testing by applying a full range of civil engineering concepts and techniques.
LO29	Work efficiently as an individual and share in team works.
LO8	Select appropriate and sustainable technologies for the construction of buildings, infrastructures and water structures.

6- Learning outcomes of the course (LOs)	
Upon the completion of the Program the student should be able to:	
Lo1	Describe the concepts of plane surveying, including the Public Land Survey System
Lo2	Properly set up and operate plane surveying equipment.
Lo3	Interpret and record data and field notes.
Lo4	Analyze and compute survey and engineering findings.

7-The relation between the course learning outcomes and the program competencies	
program competencies	**Course (LOs)**

1	LO29	Lo1
2	LO23	Lo2
3	LO8	Lo3
4	LO24	Lo4

8- Course Content and their to the course LOs

Week No.	Topic	Lecture hr.	Tutorial hr.	Practical hours	Los
1	Introduction to PlaneSurveying	2	2	0	Lo1
2	Field Notes: Preparation and Use of Field Notes	2	2	0	Lo2
3	Land Surveying and Measurement Error	2	2	0	Lo3
4	Leveling	2	2	0	Lo4
5	Distance Measurement	2	2	0	Lo2
6	Horizontal Curves	2	2	0	Lo3
7	Quiz(1)	2	2	0	Lo1,lo3
8	**Mid-term exam**	15			Lo1,lo3
9	Vertical Curves	2	2	0	Lo2
10	Electronic Instruments and Electronic Measurements	2	2	0	Lo4
11	Traversing	2	2	0	Lo2
12	Mapping Surveys	2	2	0	Lo3
13	Introduction to Public Land Survey System	2	2	0	Lo4
14	Introduction to Public Land Survey System	2	2	0	Lo3
15	Quiz(2)	2	2	0	Lo4
15	**Final exam**	60			Lo1,lo4
Total hours		28	28	0	

9- The Teaching and Learning Methods and their relation to the Los of the course

Course learning Outcomes (LOs) / The Teaching and Learning Methods	Lo1	Lo2	Lo3	Lo4
On line / face to face lectures				
Tutorials: sheets/ sketches				
projects				
Problem solving				

Brain storming				
Practical: lab				
discovering				
Site visit				
Reports/ researches				
Cooperative work				
presentation				
Discussion				
modelling				

10- Student assessment method				
Assessment method and its relation to the Los of the course				
Course learning Outcomes (LOs) / **Assessment method**	Lo1	Lo2	Lo3	Lo4
quizzes				
Mid -term exam				
Final exam				
sheets/ sketches				
projects				
Practical: lab				
Oral exam				
discussions				
Reports/ researches				
presentation				
modelling				

11- Grading System / Week					
Content	**Time schedule of assessment**		**Marks**		
Quizzes	Quiz (1)	Week (7)		(5) marks	(40) marks
	Quiz (2)	Week (15)		(5) marks	
Discussions		Weekly	(40) %	(10) marks	
Sheets and Sketches		Week (7-10-13-15)	(60) %		
Researches and reports		Week (13)	(0) %		
the Projects			(0) %		
Practical modelling			(0) %		
Attendance		weekly		(5) marks	
Mid-term exam		Week (8)		(15) marks	
final exam		Week (16)		(60) marks	

Total				(100) marks

12- List of references:	
a. **Course notes**	Staff lectures notes.
b. **Rquired books**	• Agor, R. (1981), "Advanced Surveying". Channa Publishers, Press. • Anderson, J. M. and E. Mikhail, (1997), "Surveying: Theory and Practice", McGrawHill, New York. • Brinker, R. C. and P. R. Wolf, (1988), "Elementary Surveying", 8th ed., Harper & Row, New York. • Mikhail, E., and F. Ackermann (1976), "Observation and least squares". Harper and Row Publishers Inc., New Yor. • Schofield, W. and M. Breach (2001),"Engineering Surveying", ISBN–13: 978-0-7506-6949-8 • surveying seventh edition • دار النشر شريف ابو المجد تصدع المنشأت الخرسانية وطرق اصلاحها للجامعات 2007
c. **Recommended books**	• Introduction to Surveying.
d. **Periodicals, Web sites, etc**	Non

13- Facilities required for teaching and learning:
• Appropriate teaching design studios including presentation board, data show • Google classroom • E- learning

14- Requirements for Disable facilities:
• On line teaching hours if it is needed • Extra assignments

Course coordinator:	**Dr tarek waleed**
program Coordinator	Civil Engineering
Head of the Department	Dr.Ashraf Abdel khalek Mostafa
Date:	2023/2024

Third level

Courses Specifications

Second Semester (Fall)

No.	Cod	Course Name	Instructor
1	MATH 302	Linear Algebra and Matrices	Dr:Gamal El aniny
2	BASE306	Research methods	Dr:Amera marie
3	ENGR 302	General Mechanical &Electric Engineering	Dr:El doskey Eid
4	CVEE312	Reinforced Concrete Structural Design 2	Dr:Mohamed Badway
5	CVEE211	Civil Drawing 2	Dr:Sameh yehia
6	CVEE307	Fundamentals of Hydraulic Engineering	Dr:Mohamed Hazem
7	CVEE310	Geotechnical Engineering Design	Dr:Ahmed Farag

1-MATH 302 Linear Algebra and Matrices:

Course Specification

Course Code:	Course Name
Math 302	Linear Algebra and Matrices

A- Affiliation	
Relevant program:	Architectural Engineering program Electrical Power Engineering program Civil Engineering program
Department offering the program:	Architectural Engineering program Electrical Power Engineering program Civil Engineering program
Department offering the course:	Basic Science
Date of program operation:	2008 -2009
Date of approval from the Higher Ministry of education	**27/1/2008**
Confirmation date of the program as NARS 2018:	**Department council no (1) 1/7/2021**
Confirmation date of the course as NARS 2018:	**Department council no (1) 1/10/2021**
Date of course operation	**2023-2024**

B-Basic Information

Title	**Linear Algebra and Matrices**
Code	**Math302**
Credit Hours	**3 Cr. Hrs.**
Lectures	**2 Hrs.**
practical	**0Hrs.**
Tutorial	**2 Hrs.**
Total	**4 Hrs.**
Prerequisite	Math 202
Instructor Name/Email	**Dr. Gamal El -Anany gamalanani75@gmail.com**

C- Professional Information

1-Course core:

Covers systems of linear equation, algebra of matrices, linear transformations, determinants, vector spaces, inner product spaces, eigenvalues and eigenvectors, diagonalization and orthogonally, special matrices and applications. The use of computer software such as MathCAD, mathematic, or MATLAB is essential.

2-Course Learning Objectives: (oc)	
oc1	Understand the classification of ordinary differential equations
oc2	Understand the methods to solve first order differential equations.
oc3	Understand the methods to solve second order differential equations.
oc4	Be familiar with Laplace transforms

3-program objectives served by the course: (o)	
Upon the completion of the course the student should be able to:	
O1	Being creativity and imagine in the design process.
O2	Apply strategies to solve societal problems.
O6	Professional development based on self-learning and continuous learning.

4-The relation between the course objectives and the program objectives	
Course objectives	**program objectives**
oc 1	O1,O2,O6
oc 2	O1,O2,O6
oc 3	O1,O2,O6
oc 4	O1,O2,O6

5-Learning outcomes of the course (LOs): (Lo)	
Upon the completion of the course the student should be able to:	
LO1	Identify, formulate basic science and mathematics.
LO2	Simulate, analyse and interpret data
LO3	Assess and evaluate findings.
LO16	Solve complex engineering problems.
LO17	Apply engineering fundamentals, basic science and mathematics.
LO33	Practice self-learning and other learning strategies.
6-Program competencies served by the course:	

Upon the completion of the Program the student should be able to:	
C1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.
C2	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.
C10	Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.

7-The relation between the course learning outcomes and the program competencies

	Course (LOs)	program competencies
1	LO1,LO16,LO17	C1
2	LO2,LO3	C2
3	LO33	C10

6- Contents

Topic	Lecture hours	Tutorial hours	Practical hours	LOS
1- The concept of matrices	2	2	0	LO1, LO2, LO3
2- Covers systems of linear equation	2	2	0	LO1, LO2, LO3
3- algebra of matrices	2	2	0	LO1, LO2, LO3
4- linear transformations	2	2	0	LO1, LO2, LO3
5- determinants	2	2	0	LO1, LO2, LO3
6- vector spaces	2	2	0	LO1, LO2, LO3
7- inner product spaces	2	2	0	LO1, LO2, LO3
8- midterm	20			LO1, LO2, LO3, LO16, LO17, LO33
9- eigenvalues and eigenvectors	2	2	0	LO16, LO33
10- diagonalization	2	2	0	LO16, LO33

11- orthogonally	2	2	0	LO16, LO33
12- special matrices and applications	2	2	0	LO16, LO33
13- The use of computer software such as MathCAD	2	2	0	LO16, LO33
14- MATLAB	2	2	0	LO16, LO33
15- Revision	2	2	0	LO1, LO2, LO3
16- Final Exam	50			LO1, LO2, LO3, LO16, LO17, LO33
total	28	28	0	

9- The Teaching and Learning Methods and their relation to the Los of the course

Course learning Outcomes (LOs) / The Teaching and Learning Methods	LO1	LO2	LO16	LO17	LO33	LO3
Interavctive lectures						
Presentations and Movies						
Tutorials/Sketches						
Problem solving						
Brain storming						
Lab						
Site visits						
Researches						
Modelling						
Cooperative work						
Discussion						
modelling						

10- Student assessment method						
Assessment method and its relation to the Los of the course						
Course learning Outcomes (LOs) / **Assessment method**	LO1	LO2	LO16	LO17	LO33	LO3
Quizzes/ exams						
Presentations and Movies						
Discussions						
Sheets and Sketches						
Problem solving						
lab						
Site visits						
Researches and reports						
Modelling						
Cooperative work						

Notes

- The research concerns the cooperative work, the discussion, and the presentations.
- The exercises concerns the brain storming and the problem solving.
- Online lectures used as hybrid learning , but in case of totally on line learning all the used teaching and learning methods will be on line.

11- Grading System / Week					
Content	**Time schedule of assessment**		**Marks**		
Quizzes	Quiz (1)	Week (4)		(5) marks	(30) marks
	Quiz (2)	Week (8)		(5) marks	
Discussions		Week(6)	(40) %	(10) marks	
Sheets and Sketches		Every week	(60) %		
Researches and reports		Every week	(0) %		
lab		weekly	(0) %		
Attendance		weekly		(5) marks	
Mid-term exam		Week (8)		(20) marks	
final exam		Week (16)		(50) marks	
Total				(100) marks	

12- List of references:	
a- Course notes	Lecture notes and handouts
b- Required books	• Mary Attenborough, Engineering Mathematics, McGraw - HILL Book Company Europe, 1994. • Anthony croft,Robert Davison, Engineering Mathematics A modern Foundation for Electrical, Electronic & Control Engineering, Addison - Wesley - Publishing Company, 1992
c- Recommended books	Swokowski, E, Olinick ,M and Pence, D., Calculus, PWS Publishing Company - Boston, 1994
d- Periodicals, Web sites, etc	**No periodicals are needed.** Web Sites related to Mathematics and Mathematical engineering as: **www.math.hmc.edu,** **www.tutorial.math.lamar.edu,** **www.web.mit.edu**

13-Facilities required for teaching and learning:
Lecturer notes , Library- Internet - Data show - E-Learning moodle

14-Requirements for Disable facilities:
• Appropriate teaching design studios including presentation board, data show. • Google class room E- learning Moodle

Course coordinator:	Dr.Gamal El-Anany
program Coordinator	
(Head of the Department)	
Date:	2023/2024

2-BASE306 Research methods:

Course Specification

Course Code:	Course Name
Base 306	**Research Tools**

A- Affiliation	
Relevant program:	Architectural Engineering program Electrical Power Engineering program Civil Engineering program
Department offering the program:	Architectural Engineering program Electrical Power Engineering program Civil Engineering program
Department offering the course:	Basic Sciences
Date of program operation:	2008 -2009
Date of approval from the Higher Ministry of education	**27/1/2008**
Confirmation date of the program as NARS 2018:	**Department council no (1)**
Confirmation date of the course as NARS 2018:	**Department council no (1)**
Date of course operation	**2023-2024**

B-Basic Information

Title	**Research Tools**
Code	**Base 306**
Credit Hours	**3Hr**
Lectures	**2Hr**
Tutorial	**2HR**
practical	**0Hr**
Total	**4Hr**
Prerequisite	**--**
Instructor name/Email	**Dr Doaa fathy**

1- Course core:

Develops the skills to produce effective persuasive writing with a focus on organization, content, analysis of readings, and critical thinking. Provides training in the use and integration of sources, library, and online research.

2-Course Learning Objectives:	
oc1	Developing a basic understanding of Steps to prepare the research and write the report.
oc2	Studying the application of Research Tools
oc3	Studying how to improve theoretically and practically.
oc4	Discuss the Qualities of a good researcher, Criteria for preparing a good report.
Oc5	Analysis of Scientific research data analysis, Raw data views.

3-program objectives served by the course: (o)	
Upon the completion of the course the student should be able to:	
O1	Being creativity and imagine in the design process.
O2	Apply strategies to solve societal problems.
O6	Professional development based on self-learning and continuous learning.

4-The relation between the course objectives and the program objectives	
Course objectives	**program objectives**
oc 1	O1,O2,O6
oc 2	O1,O2,O6
oc 3	O1,O2,O6
oc 4	O1,O2,O6
oc 4	O1,O2,O6

5-Learning outcomes of the course (LOs): (Lo)

Upon the completion of the course the student should be able to:	
LO21	Conduct techniques and methods of investigation as researches and reports.
LO23	Use contemporary tools to implement engineering design drawings, and presentations.
LO30	Communicate to convey ideas verbally, numerically, graphically, and using symbols effectively with a range of audiences.
LO31	Use creative, innovative and flexible thinking.
LO32	Acquire entrepreneurial and leadership skills to anticipate and respond to new situations.

6-Program competencies served by the course:	
Upon the completion of the Program the student should be able to:	
C5	Practice research techniques and methods of investigation as an inherent part of learning.
C8	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.
C9	Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.

7-The relation between the course learning outcomes and the program competencies

	Course (LOs)	program competencies
1	LO21	C5
2	LO23,LO30	C8
3	LO31,LO32	C9

8- Course Contents

Topic	Lecture hours	Tutorial hours	Practical hours	LOS
1- Science and Scientific Research	2	2	0	LO21, LO23
2- Fundamentals of scientific research	2	2	0	LO21, LO23
3- Ways to gain knowledge	2	2	0	LO21, LO23, LO31
4- Research hypotheses and their formulation	2	2	0	LO21, LO23, LO31

5- Scientific research tools	2	2	0	LO21, LO23, LO31
6- Steps to configure the research tool	2	2	0	LO21, LO23, LO31
7- characteristics of the research tool	2	2	0	LO21, LO23, LO31
8- midterm	20			LO21, LO23, LO31, LO31, LO32, LO30
9- Research Methods	2	2	0	LO31
10- Research Categories	2	2	0	LO21, LO23
11- The study Community and samples	2	2	0	LO21, LO23
12- Steps to prepare the research and write the report	2	2	0	LO21, LO23, LO31
13- Organizing the research and writing its report	2	2	0	LO21, LO23, LO31
14- Qualities of a good researcher	2	2	0	LO21, LO23
15- Revision	2	2	0	LO21, LO23
16- Final Exam	50			LO21, LO23, LO31, LO31, LO32, LO30
total	28	28	0	

9- The Teaching and Learning Methods and their relation to the Los of the course

Course learning Outcomes (LOs) / The Teaching and Learning Methods	LO21	LO23	LO30	LO31	LO32
Interactive lectures					
Presentations and Movies					
Discussions					
Tutorials/Sketches					
Problem solving					

Brain storming					
Lab					
Site visits					
Researches					
Modelling					
Cooperative work					

Notes
- The research concerns the cooperative work, the discussion, and the presentations.
- The exercises concerns the brain storming and the problem solving.
- Online lectures used as hybrid learning , but in case of totally on line learning all the used teaching and learning methods will be on line.

10- Student assessment method

Assessment method and its relation to the Los of the course

Course learning Outcomes (LOs) / Assessment method	LO21	LO23	LO30	LO31	LO32
Quizzes/ exams					
Presentations and Movies					
Discussions					
Sheets and Sketches					
Site visits					
Researches and reports					
Modelling					
Cooperative work					

11- Grading System / Week

Content	Time schedule of assessment		Marks		
Quizzes	Quiz (1)	Week (4)		(5) marks	(50) marks
	Quiz (2)	Week (8)		(5) marks	

Discussions		Week(6)	(5) %	(10) marks	
Sheets and Sketches		Every week	(45) %		
Researches and reports		Every week	(10) %		
lab		weekly	(10) %		
Attendance		weekly		(10) marks	
Mid-term exam		Week (8)		(20) marks	
final exam		Week (16)		(50) marks	
Total				(100) marks	

12- List of references:

a- Course notes	**Lecture notes and handouts**
b- Required books	• Murdoch-Eaton, Deborah, et al. "What do medical students understand by research and research skills? Identifying research opportunities within undergraduate projects." Medical Teacher 32.3 (2010): e152-e160.
c- Recommended books	The Research Methods Knowledge Base, 3rd Edition, by William M. K. Trochim (Author), James P. Donnelly
d- Periodicals, Web sites, etc	**No periodicals are needed.** **Sites. https://www.educatorstechnology.com/2017/04/12-of-best-research-methodology.html**

13- Facilities required for teaching and learning:

Lecturer notes, Library- Internet - Data show - E-Learning Moodle

14-Requirements for Disable facilities:

- Appropriate teaching design studios including presentation board, data show- Google classroom, E-learning Moodle

Course coordinator:	**Dr Doaa fathy**
program coordinator	
(Head of the Department)	Dr ashraf abelkhalek mostafa
Date:	2023/2024

3-ENGR302 General Mechanical & Electrical:

Course Specification

Course Code:	Course Name
ENGR 302	General Mechanical & Electrical Engineering

A- Affiliation	
Relevant program:	Architectural Engineering program Electrical Power Engineering program Civil Engineering program
Department offering the program:	Architectural Engineering program Electrical Power Engineering program Civil Engineering program
Department offering the course:	Basic Science
Date of program operation:	2008 -2009
Date of approval from the Higher Ministry of education	**27/1/2008**
Confirmation date of the program as NARS 2018:	**Department council no (1) 1/7/2021**
Confirmation date of the course as NARS 2018:	**Department council no (1) 1/10/2021**
Date of course operation	**2023-2024**

B-Basic Information

Title	General Mechanical & Electrical Engineering
Code	ENGR 302
Credit Hours	3
Lectures	2
Tutorial	2
practical	0
Total	4
Prerequisite	PHYS 102, MATH 201
Instructor name/Email	Eldesouki.eid@sva.edu.eg

C- Professional Information

1- Course core:

Ideal and practical sources, Energy of a supply source, Series and parallel connections of loads. Voltage dividers & current dividers. Fuses and automatic circuit breaker. Three-phase systems; transmission lines; electrical insulation; star & delta connections; electrical measurements; transformers; DC machines; synchronous machines; induction motors, switchgear and substation apparatus, electric heating. Fundamentals of energy transformation and exchange systems. Sizing, matching and installation of electrical, mechanical, plumbing, heating, ventilation and air conditioning (HVAC) and machining systems.

2-Course Learning Objectives: (oc)	
oc1	Developing a basic understanding of Mechanical & Electrical Engineering
oc2	Studying the application of Mechanical & Electrical Engineering
oc3	Studying how to improve theoretically and practically.
oc4	Discuss the techniques of environmental engineering.
oc5	Energy sources, Series and parallel connections of loads. Voltage dividers & current dividers. Fuses and automatic circuit breaker. Three-phase systems; transmission lines; electrical insulation; star & delta connections; electrical measurements; transformers; DC machines; synchronous machines; induction motors, switchgear and substation apparatus, electric heating. Fundamentals of energy transformation and exchange systems. Sizing, matching and installation of electrical, mechanical, plumbing, heating, ventilation and air conditioning (HVAC) and machining systems.

3-program objectives served by the course: (o)	
Upon the completion of the course the student should be able to:	
O1	Being creativity and imagine in the design process.
O2	Apply strategies to solve societal problems.
O3	Maintain the built environment with its social, economic and environmental aspects to achieve the 2030 sustainable development goals.
O4	Implementing projects that adopt a solution to a contemporary societal problem that depends on various civil designs and construction applications and keeping pace with Cods and legislation.

4-The relation between the course objectives and the program objectives	
Course objectives	**program objectives**
oc 1	O1,O2
oc 2	O1,O2,O4
oc 3	O1,O2
oc 4	O1,O2,O3
oc 5	O1,O2

5-Learning outcomes of the course (LOs): (Lo)	
Upon the completion of the course the student should be able to:	
LO1	Identify, formulate basic science and mathematics.
LO2	Simulate, analyze and interpret data.
LO3	Assess and evaluate findings.
LO33	Practice self-learning and other learning strategies.

6-Program competencies served by the course:	
Upon the completion of the Program the student should be able to:	
C1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.
C2	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.
C5	Practice research techniques and methods of investigation as an inherent part of learning.

7-The relation between the course learning outcomes and the program competencies		
Course (LOs)		**program competencies**
1	LO1	C1
2	LO2,LO3	C2
3	LO33	C5

8- Course Contents				
Topic	**Lecture hours**	**Tutorial hours**	**Practical hours**	**LOS**
Energy of a supply source.	2	2	0	LO1, LO2
Series and parallel connections of loads.	2	2	0	LO1,LO2
Voltage dividers & current dividers. Fuses and automatic circuit breaker	2	2	0	LO1,LO2
Three-phase systems	2	2	0	LO1,LO2
Transmission lines; electrical insulation; star & delta connections	2	2	0	LO1, LO2
Electrical measurements	2	2	0	LO1, LO2
Transformers, DC machines	2	2	0	LO1, LO2
midterm				LO1, LO2, LO3,LO33
Pipe system Sizing and drainage	2	2	0	LO1,LO2
Installation of electrical equipment and lighting	2	2	0	LO1,LO2
Mechanical plumbing, fire fitting	2	2	0	LO1,LO2
Air heating, ventilation	2	2	0	LO1,LO2
Central air conditioning	2	2	0	LO1,LO2
(HVAC)	2	2	0	LO1,LO2, LO33
Revision	2	2	0	LO1,LO2
Final Exam		3		LO1,LO2, LO33
total	28	28	0	

9- The Teaching and Learning Methods and their relation to the Los of the course				
Course learning Outcomes (LOs) / The Teaching and Learning Methods	LO1	LO2	LO3	LO33
Interactive lectures				
Presentations and Movies				
Discussions				
Tutorials/Sketches				
Problem solving				
Brain storming				
Lab				
Site visits				
Researches				
Modelling				
Cooperative work				

Notes

- The research concerns the cooperative work, the discussion, and the presentations.
- The exercises concerns the brain storming and the problem solving.
- Online lectures used as hybrid learning , but in case of totally on line learning all the used teaching and learning methods will be on line.

10- Student assessment method				
Course learning Outcomes (LOs) / Assessment method	LO1	LO2	LO3	LO33
Quizzes/ exams				
Presentations and Movies				
Discussions				
Sheets and Sketches				
Problem solving				
lab				
Site visits				
Researches and reports				
Modelling				
Cooperative work				

11- Grading System / Week					
Content	**Time schedule of assessment**		**Marks**		
Quizzes	Quiz (1)	Week (4)		(5) marks	(30) marks
	Quiz (2)	Week (8)		(5) marks	
Discussions		Week(6)	(5) %	(10) marks	
Sheets and Sketches		Every week	(45) %		
Researches and reports		Every week	(10) %		
Attendance		weekly		(10) marks	
Mid-term exam		Week (8)		(20) marks	
final exam		Week (16)		(50) marks	
Total				(100) marks	

12- List of references:	
a- Course notes	**Lecture notes and handouts**
b- Required books	Building Services Engineering, Fourth edition David V. Chadderton, published 2004 by Spon Press 11 New Fetter Lane, London EC4P 4EE
c- Recommended books	N.A
d- Periodicals, Web sites, etc	**No periodicals are needed.**

13-Facilities required for teaching and learning:
Lecturer notes , Internet - Data show - E-Learning Moodle

14-Requirements for Disable facilities:
• Appropriate teaching design studios including presentation board, data show, lab for modelling • Google class room E- Learning Moodle

Course coordinator:	Eldesouki Eid
program Coordinator	Prof. Amera Marey
(Head of the Department)	Prof. Amera Marey
Date:	2023/2024

4-CVEE312 Reinforced Concrete Structural Design 2:

Course Specification

Course Code:	Course Name
CVEE 312	**Reinforced Concrete Design 2**

A- Affiliation

Department offering the program:	Civil Engineering
Relevant program:	Civil Engineering
Department offering the course:	Civil Engineering
Date of program operation:	2009-2010
Date of approval from the Higher Ministry of Education	27/1/2008
Date of course operation	2023-2024

B-Basic Information

Title	Reinforced Concrete Design2
Code	CVEE 312
Credit Hours	3 Cr. Hrs.
Lectures	2 Hrs.
Tutorial	2 Hrs.
practical	0Hrs.
Total	4 Hrs.
Prerequisite	CVEE 306
Instructor name	Dr fayza abdelzaher

C- Professional Information

1-Course core:

Design of solid slabs (one-way and two-way solid slabs), Design of Hollow block slabs (one-way and two-way slabs), Design of paneled beam slabs, design of flat slabs, detailing of reinforcing steel.

2-Course Learning Objectives: (oc)	
Oc1	Understand the concept of load transfer on slabs.
Oc2	Compute the loads acting on slabs using load distribution.
Oc3	Develop safe design for solid slab design.
Oc4	Develop safe design for Hollow Block slab.
Oc5	Develop a safe design for the paneled beam slab.
Oc6	Develop a safe design for the Arch slab.

3-Program objectives served by the course: (o)	
Upon the completion of the course, the student should be able to:	
O1	Being creativity and imagine in the design process.
O2	Apply strategies to solve societal problems.
O3	Maintain the built environment with its social, economic and environmental aspects to achieve the 2030 sustainable development goals.
O4	Implementing projects that adopt a solution to a contemporary societal problem that depends on various civil designs and construction applications and keeping pace with Cods and legislation.

4-The relation between the course objectives and the program objectives	
Course objectives	**program objectives**
oc1	O1, O2
oc 2	O1
oc 3	O1-O3
oc 4	O3
oc 5	O2,O4

5-Learning outcomes of the course (LOs)	
Upon the completion of the course, the student should be able to:	
LO10	Display relevant topics for Transportation and Traffic, Roadways and Airports, Railways, Sanitary Works, Irrigation, Water Resources and Harbors.
LO25	Produce designs for Reinforced Concrete and Steel Structures, Foundations and Earth Retaining Structures.
LO29	Work efficiently as an individual and share in team works.

6-Program competencies served by the course:	
Upon the completion of the Program, the student should be able to:	
Lo1	Identify and compute the design loads on reinforced concrete solid slabs.
Lo2	Design of reinforced concrete Hollow block slabs (one-way and two-way slabs.
Lo3	Design of paneled beam slabs, and design of flat slabs.
Lo4	Behavior of punching shear-reinforced concrete in flat slabs.
Lo5	Drawing reinforcement details for reinforced concrete on all slabs.
Lo6	Plan, design, construct, operate, control and carry out maintenance of all types of systems.

7-The relation between the course learning outcomes and the program competencies		
	program competencies	Course (Los)
1	LO25	Lo1
2	LO29	Lo2
3	LO10,	Lo3
4	LO25	Lo4
5	LO25	Lo5
6	LO29	Lo6

8- Course Content and they're to the course LOs					
Week No.	**Topic**	**Lecture hr.**	**Tutorial hr.**	**Practical hours**	**LOs**
1	Introduction	2	2	0	Lo1
2	Load distribution on slab	2	2	0	Lo1
3	One-way Solid slab design	2	2	0	Lo1,Lo5
4	Two-way Solid slab design	2	2	0	Lo1, Lo2
5	One-way hollow block slab design.	2	2	0	Lo2, Lo5
6	two-way hollow block slab design	2	2	0	Lo2, Lo5
7	(1) Quiz	2	2	0	Lo1, Lo2
8	**Mid-term exam**	20			
9	Introduction to Flat slab design	2	2	0	Lo3, Lo5
10	Design of Flat slab with drop panel	2	2	0	Lo3, Lo5
11	Design of flat slab with column head	2	2	0	Lo3
12	Design of paneled beam slab	2	2	0	Lo3, Lo5
13	Design of arch slab	2	2	0	Lo3 Lo5
14	Revision for all course content	2	2	0	Lo4: Lo5
15	Quiz (2)	2	2	0	Lo3: Lo4
16	**Final exam**	50			Lo1,lo6 Lo3: Lo6
Total hours		28	28	0	0

9-The Teaching and Learning Methods and their relation to the Los of the course:						
Course learning Outcomes (Los) / The Teaching and Learning Methods	Lo1	Lo2	Lo3	Lo4	Lo5	Lo6
Online / face-to-face lectures						
Tutorials: sheets/ sketches						
projects						
Problem-solving						
Brainstorming						
Practical: lab						
discovering						
Site visit						
Reports/ researches						
Cooperative work						
presentation						
Discussion						
modeling						

10- Student assessment method						
Course learning Outcomes (LOs) / Assessment method	Lo1	Lo2	Lo3	Lo4	Lo5	Lo6
quizzes						
Mid-term exam						
Final exam						
sheets/ sketches						
projects						

Practical: lab						
Oral exam						
discussions						
Reports/ researches						
presentation						
modeling						

11- Grading System / Week					
Content	**Time schedule of assessment**		**Marks**		
Quizzes	Quiz (1)	Week (14)		(10) marks	(60) marks
	Quiz (2)	Week (15)		(10) marks	
Discussions		Weekly	(40) %	(10) marks	
Sheets and Sketches		Week (7-10-11-13)	(60) %		
Researches and reports			(0) %		
the Projects			(0) %		
Practical modelling			(0) %		
Attendance		weekly		(10) marks	
Mid-term exam		Week (8)		(20) marks	
final exam		Week (16)		(40) marks	
Total				(100) marks	

12- List of references:	
a. **CourseNotes**	
b. **required books**	Design of Reinforced Concrete Structure - Volume 2 - Prof. Mashhour Ghoneim & Prof. Mahmoud El-Mihilmy. • **design of reinforced concrete Jack McCormick john Wiley son, Inc. 2005** • **design of reinforced concrete Jack McCormack**
c. **Recommended books**	.Egyptian Code design for reinforced concrete2020
d. **periodicals, Web sites, etc**	

13- Facilities required for teaching and learning:
• Appropriate teaching design studios including presentation board, data show • Google Classroom • E-learning

14-Requirements for Disable facilities:
• Online teaching hours if it is needed • Extra assignments

Course coordinator:	**Dr fayza abdelzaher**
program coordinator	Civil Engineering
Head of the Department	Dr.Ashraf Abdel khalek Mostafa
Date:	2023/2024

5-CVEE211 Civil Drawing 2:

Course Specification

Course Code:	Course Name
CVEE 211	Civil Drawing II

A- Affiliation

Department offering the program:	Civil Engineering
Relevant program:	Civil Engineering
Department offering the course:	Civil Engineering
Date of program operation:	2009-2010
Date of approval from the Higher Ministry of Education	27/1/2008
Date of course operation	2023-2024

B-Basic Information

Title	Civil Drawing II
Code	CVEE 211
Credit Hours	1 Cr. Hrs.
Lectures	1 Hrs.
Tutorial	0 Hrs.
practical	2Hrs.
Total	3 Hrs.
Prerequisite	CVEE 210
Instructor name	Dr Mohamed hamdy

C- Professional Information

1- Course Core

This course is concerned with an introduction to the general use of computers and file management. It covers 2D drawing using several graphics software programs to enable students to execute various 2D Civil drawings in the forms of plans, elevations and sections. This course will prepare students to be computer-literate, familiar with commercial software and provide a basic working vocabulary and knowledge of computing and information concepts.

2-Course Learning Objectives: (oc)	
Oc1	Developed an understanding of the principles of civil drawing.
Oc2	Know metallic sheds: Column base, Riveted joints
Oc3	Understand the Connections between girders and beams, Columns and beams
Oc4	Content of Steel bridges: Truss connections, Main girders (upper and lower chords, verticals and diagonals)
Oc5	Content of Cross girders and stringers
Oc6	Draw the Reinforced concrete structures: Footings, Column slabs and beams.
Oc7	Know about Irrigation structures: Earth works, Retaining walls, Bridges, Culverts, Syphons, Regulators, Weirs, Symmetrical and unsymmetrical locks. 1 credit in three hour lab.

3-Program objectives served by the course: (o)	
Upon the completion of the course, the student should be able to:	
O1	Being creativity and imagine in the design process.
O2	Apply strategies to solve societal problems.
O3	Maintain the built environment with its social, economic and environmental aspects to achieve the 2030 sustainable development goals.
O4	Implementing projects that adopt a solution to a contemporary societal problem that depends on various civil designs and construction applications and keeping pace with Cods and legislation.
O6	Professional development based on self-learning and continuous learning.

4-The relation between the course objectives and the program objectives	
Course objectives	**program objectives**
oc1	O1, O2
oc 2	O1
oc 3	O1,O3,O4
oc 4	O1, O2
oc 5	O1, O2
oc6	O1,O2,O6
oc7	O1, O2,O3

5- Program LOs served by the course:	
Upon the completion of the course, the student should be able to:	
LO20	Use contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements.
LO23	Use contemporary tools to implement engineering design drawings, and presentations.
LO32	Acquire entrepreneurial and leadership skills to anticipate and respond to new situations.
LO33	Practice self-learning and other learning strategies.

6- Learning outcomes of the course (LOs)	
Upon the completion of the Program the student should be able to:	
Lo1	Describe the concepts of plane surveying, including the Public Land Survey System
Lo2	Properly set up and operate plane surveying equipment.
Lo3	Interpret and record data and field notes.
Lo4	Analyze and compute survey and engineering findings.

7-The relation between the course learning outcomes and the program competencies		
	Course (LOs)	**program competencies**
1	LO20,LO23	Lo1
2	LO32	Lo2
3	LO33	Lo3
4	LO23	Lo4

8- Course Content and their to the course LOs					
Week No.	**Topic**	**Lecture hr.**	**Tutorial hr.**	**Practical hours**	**LOs**
1	Introduction to software package (AutoCAD) and definitions.	1	2	0	Lo1
2	Explain software interface and orders I.	1	2	0	Lo2, Lo3
3	Explain software interface and orders II	1	2	0	Lo2, Lo3
4	Three projections for different drawings	1	2	0	Lo1, Lo3
5	Three projections for mechanical drawings.	1	2	0	Lo2
6	Three projections for civil drawings (steel /concrete sections).	1	2	0	Lo2, Lo3
7	**Mid-term exam**	20			Lo1,lo3
8	Architectural Drawings I.	1	2	0	Lo2
9	Architectural Drawings II.	1	2	0	Lo1, Lo2
10	Convert Architectural Plan to Structural Plans.	1	2	0	Lo2
11	Explain software interface and orders III.	1	2	0	Lo2
12	Structural Drawings I.	1	2	0	Lo4
13	Structural Drawings II.	1	2	0	Lo3, Lo4
14	Structural Plans for different Systems I	1	2	0	Lo3
15	Structural Plans for different .Systems II	1	2	0	Lo4
16	**Final exam**	50			Lo1,lo4
Total hours		14	28	0	

9- The Teaching and Learning Methods and their relation to the Los of the course				
	Lo1	Lo2	Lo3	Lo4
On line / face to face lectures				
Tutorials: sheets/ sketches				

projects				
Problem solving				
Brain storming				
Practical: lab				
discovering				
Site visit				
Reports/ researches				
Cooperative work				
presentation				
Discussion				
modelling				

10- Student assessment method

1. **Assessment method and its relation to the Los of the course**

Course ILOs	Lo1	Lo2	Lo3	Lo4
quizzes				
Mid -term exam				
Final exam				
sheets/ sketches				
projects				
Practical: lab				
Oral exam				
discussions				
Reports/ researches				
presentation				
modelling				

11- Grading System / Week

Content	**Time schedule of assessment**		**Marks**		
Quizzes	Quiz (1)	Week (7)		(5) marks	(40) marks
	Quiz (2)	Week (15)		(5) marks	
Discussions		Weekly	(40) %	(10) marks	
Sheets and Sketches		Week (7-10-13-15)	(60) %		
Researches and reports			(0) %		
the Projects			(0) %		
Practical modelling			(0) %		
Attendance		weekly		(5) marks	
Mid-term exam		Week (8)		(15) marks	
final exam		Week (16)		(60) marks	
Total				(100) marks	

12- List of references:	
a. **Course notes**	Staff lectures notes.
b. **Rquired books**	- Design of Steel Structures by Jay Shen, Bulent Akbas and Onur Seker. - Steel Structures Design by Prof. Dr. Abdelrahman Khalil. - building construction drawing W.B McK
c. **Recommended books**	Civil Engineer drawing
d. **Periodicals, Web sites, etc**	

13- Facilities required for teaching and learning:
• Appropriate teaching design studios including presentation board, data show • Google classroom • E- learning

14- Requirements for Disable facilities:
• On line teaching hours if it is needed • Extra assignments

Course coordinator:	**Dr Mohamed hamdy**
program Coordinator	Civil Engineering
Head of the Department	Dr.Ashraf Abdel khalek Mostafa
Date:	2023/2024

6-CVEE307 Fundamental of Hydraulic Engineering:

Course Specification

Course Code:	Course Name
CVEE 307	Fundamental of Hydraulic Engineering

A- Affiliation

Relevant program:	Civil program Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering
Date of program operation:	2009-2010
Date of approval from the Higher Ministry of education	27/1/2008
date	2023 - 2024

B-Basic Information

Title	Fundamental of Hydraulic Engineering
Code	CVEE 307
Credit Hours	3 Cr. Hrs.
Lectures	2 Hrs.
Tutorial	2Hrs.
practical	0Hrs.
Total	2 Hrs.
Prerequisite	ENGR 204
Instructor name/Email	Dr. Mohamed Hazem mmhazem83@gmail.com

C- Professional Information

1-Course core:

Uniform flow in open channels: Chezy and Manning Equations – specific energy- critical depth – Hydraulic jump – Energy and force equations and applications / Nonuniform flow in Open channels: Flow profiles- differential equation of varied flow – integration of the differential equation of gradually varied flow, hydraulic machines (Pumps and Turbines): Types, Performance and testing.

2-Course Learning Objectives: (oc)	
oc1	Analyze the properties and nature of a fluid, and assess the forces associated with static fluid systems.
oc2	Analyze the behavioral characteristics and parameters of fluid flowing in pipelines and apply theories of fluid behavior in open channel systems to civil engineering problems.
oc3	Determine pipe size and pumping requirements for fluid flowing in pipelines and use computer/software packages to analyse/design fluid flow systems.
oc4	Identify the operating principles of hydraulic machines and demonstrate experiments in fluid kinetic & present appropriate findings of experimental work.
oc5	Use of different fluid flow measuring devices.
oc6	Prove the hydraulic theories
oc7	Apply the hydraulic experiments

3-program objectives served by the course: (o)	
Upon the completion of the course the student should be able to:	
O1	Being creativity and imagine in the design process.
O2	Apply strategies to solve societal problems.
O6	Professional development based on self-learning and continuous learning.
O9	Qualification to deal with the latest materials and systems that can transform engineering drawings into a real condition that meets the needs of the client and the era.
O11	Conducting scientific research.

4-The relation between the course objectives and the program objectives	
Course objectives	**program objectives**
oc1	O1,O2
oc 2	O1,O2,O9
oc 3	O1,O2,O6
oc 4	O1,O2,O11
oc 5	O1,O2,O9
oc 6	O1,O2
oc 7	O1,O2,O11

5- Program competencies served by the course:	
Upon the completion of the course, the student should be able to:	
LO8	Select appropriate and sustainable technologies for the construction of buildings, infrastructures and water structures.
LO9	Analysis structure mechanical-properties, and Strength of Materials, Surveying, Soil Mechanics, Hydrology and Fluid Mechanics.
LO19	Apply engineering design processes to produce cost-effective solutions that meet specified needs.
LO33	Practice self-learning and other learning strategies.

6- Learning outcomes of the course (Los)	
Upon the completion of the Program the student should be able to:	
Lo1	Conduct physical and multimedia modeling
Lo2	analyze the range of patterns and traditions that have shaped and sustained cultures and the way that they can inform design process
Lo3	Practice research to investigate the various dimensions of housing problem, the approaches policies that could motivate the students to solve real problem.
Lo4	Use PowerPoint as a technical tool to present the research.

7-The relation between the course learning outcomes and the program competencies		
Course (LOs)		**program competencies**
1	LO33	Lo1
2	LO8	Lo2
3	LO19	Lo3

4	LO9	Lo4

8-Course Content					
Week No.	Topic	Lecture hr.	Tutorial hr.	Practical hr.	Los
1	- Course introduction and it is objectives	2	2	0	Lo1
2	Basic of concept design	2	2	0	Lo2, Lo3
3	Basic of house design	2	2	0	Lo2, Lo3
4	Basic of house design	2	2	0	Lo1, Lo3
5	Quiz I . research	2	2	0	Lo2
6	Basic of disable people design	2	2	0	Lo1
7	Basic of parking design	2	2	0	Lo2, Lo3
8	Midterm exam	15			Lo1,lo3
9	Basic of school design	2	2	0	Lo1, Lo3
10	Basic of school design	2	2	0	Lo1
11	Basic of daycare design	2	2	0	Lo2, Lo3
12	modelling	2	2	0	Lo3, Lo4
13	Quiz II ,research	2	2	0	Lo1, Lo3
14	Semifinal Project.	2	2	0	Lo4
15	Final project	2	2	0	Lo2, Lo3
16	**Final exam**	60			Lo1,lo4
Total hours		28	28	0	

9- The Teaching and Learning Methods and their relation to the Los of the course

	Lo1	Lo2	Lo3	Lo4

On line / face to face lectures				
Tutorials: sheets/ sketches				
projects				
Problem solving				
Brain storming				
Practical: lab				
discovering				
Site visit				
Reports/ researches				
Cooperative work				
presentation				
Discussion				
modelling				

10- Student assessment method

1. **Assessment method and its relation to the Los of the course**

Course ILOs	Lo1	Lo2	Lo3	Lo4
quizzes				
Mid -term exam				
Final exam				
sheets/ sketches				
projects				
Practical: lab				
Oral exam				
discussions				
Reports/ researches				
presentation				
modelling				

11- Grading System / Week

Content	**Time schedule of assessment**		**Marks**		
Quizzes	Quiz (1)	Week (5)		(5) marks	(40) marks
	Quiz (2)	Week (5,13)		(5) marks	
Discussions		Every week for any student	(5) %	(10) marks	
Presentations and Movies					
Sheets and Sketches		NONE	(10) %		
Researches and reports		Week (5,1 3)	(30) %		
the Projects	Semi Final	Week (14)	(30) %		

	Final	Week (15)			
Practical modelling		Week (13)	(15) %		
Attendance		weekly		(5) marks	
Mid-term exam		Week (8)		(15) marks	
final exam		Week (16)		(60) marks	
Total				(100) marks	

12-List of references:	
a- Course notes	– Student have to take written not based on the instructor's lecture – Submission must be a periodical technical presentation. – Final submission is A1 paper and technical presentation. – The discussion and students' participants are very essential. – The evaluations are internal periodical assessments. – Student grades are available and posted in the class. – Only group work is allowed.
b- Required books	1. A.K. Jain, Fluid Mechanics, Khanna publishers,2010 2. A text book of Fluid Mechanics and Hydraulic Machines (7th edition) Laxmi publications(P) ltd; New Delhi, 2000
c- Recommended books	Andrew L. Simon & Scott F. Korom, "Hydraulics, 4/E", Prentice Hall, ISBN: 01322135132 (1997)2. M. Franck White, Fluid Mechanics, Tata McGraw Hill,2017.

13- Facilities required for teaching and learning:

- References in library
- Appropriate teaching design studios including presentation board, data show
- Google classroom
- E- learning Moodle

14-Requirements for Disable facilities:

- Extra assignments
- On line extra teaching hours

Course Instructor	DR. Mohamed Hazem
program Coordinator	Dr. Doaa Fathy
Head of the Department	Dr. Ashraf Abdelkhalek
Date	2023-2024

7-CVEE310 Geotechnical Engineering Design:

Course Specification

Course Code:	Course Name
CVEE 310	Geotechnical Engineering Design

A- Affiliation

Relevant program:	Civil program Engineering
Department offering the program:	Civil Engineering
Department offering the course:	Civil Engineering
Date of program operation:	2009-2010
Date of approval from the Higher Ministry of education	27/1/2008
date	2023 - 2024

B-Basic Information

Title	Geotechnical Engineering Design
Code	CVEE 310
Credit Hours	3 Cr. Hrs.
Lectures	2 Hrs.
Tutorial	2 Hrs.
Practical	0Hrs.
Total	4 Hrs.
Prerequisite	CVEE 303
Instructor name/Email	Dr. Mahmoud fawzy

C- Professional Information

1- Course Core

The course covers subsurface exploration and site investigation including testing and evaluation, bearing capacity of shallow foundations in different types of soils, settlement analysis (consolidation and immediate), Earth pressure theories, Shear Strength, Slope Stability and methods of stability analysis, Dewatering, computer aided profile data reduction and recording, interpretation of field and laboratory data. , design of retaining structures.

2-Course Learning Objectives: (oc)	
oc1	This course introduces the study of geotechnical engineering design.
oc2	Learn investigate and explore the site.
oc3	Acquire skills to design retaining structure.
oc4	Knowing stability of slope methods.
oc5	Learn lateral earth pressure.
oc6	Applications on Bearing capacity problems.

3-program objectives served by the course: (o)	
Upon the completion of the course the student should be able to:	
O1	Being creativity and imagine in the design process.
O2	Apply strategies to solve societal problems.
O6	Professional development based on self-learning and continuous learning.
O11	Conducting scientific research.

4-The relation between the course objectives and the program objectives	
Course objectives	**program objectives**
oc1	O1,O2
oc 2	O1,O2
oc 3	O1,O2,O6
oc 4	O1,O2,O11
oc 5	O1,O2
oc 6	O1,O2

5- Program competencies served by the course:	
Upon the completion of the course the student should be able to:	
LO19	Apply engineering design processes to produce cost-effective solutions that meet specified needs.
LO7	State the factors affecting the engineering projects.
LO34	maintain safety in the implementation of the project.

6- Learning outcomes of the course (Los):	
Upon the completion of the Program the student should be able to:	
Lo1	the study of geotechnical engineering design
Lo2	Learn investigate and explore the site.
Lo3	Acquire skills to design retaining structure.
Lo4	Knowing stability of slope methods.
Lo5	Learn lateral earth pressure.
Lo6	Applications on Bearing capacity problems

7-The relation between the course learning outcomes and the program competencies		
	program competencies	Course (Los)
1	LO19	Lo1
2	LO7	Lo2
3	LO19	Lo3
4	LO34	Lo4
5	LO19	Lo5
6	LO34	Lo6

8- Course Content and their to the course LOs					
Week No.	Topic	Lecture hr.	Tutorial hr.	Practical hours	LOs
1	Introduction	2	2	0	Lo1
2	Shear strength (shear box test).	2	2	0	Lo2, Lo3
3	Shear strength (un-confined and triaxial test)	2	2	0	Lo2, Lo3

4	Lateral earth pressure	2	2	0	Lo1, Lo3
5	Lateral earth pressure	2	2	0	Lo2
6	Retaining structure (retaining wall)	2	2	0	Lo1
7	Retaining structure	2	2	0	Lo2, Lo3
8	**Mid-term exam**	20			Lo1,lo3
9	Stability of slopes	2	2	0	Lo1
10	Stability of slopes	2	2	0	Lo4
11	Bearing capacity of soil	2	2	0	Lo3, Lo5
12	Bearing `capacity of soil	2	2	0	Lo5, Lo6
13	Site investigation	2	2	0	Lo6
14	Site investigation	2	2	0	Lo6
15	**Final exam**	40			Lo1,lo6
Total hours		26	26	0	

9- The Teaching and Learning Methods and their relation to the Los of the course

	Lo1	Lo2	Lo3	Lo4	Lo5	Lo6
On line / face to face lectures						
Tutorials: sheets/ sketches						
projects						
Problem solving						
Brain storming						
Practical: lab						
discovering						
Site visit						
Reports/ researches						
Cooperative work						
presentation						
Discussion						
modelling						

Notes

- The research concerns the cooperative work, the discussion, the site visit and the presentations.
- The Tutorials concerns the brain storming and the problem solving.
- Online lectures used as hybrid learning , but in case of totally on line learning all the used teaching and learning methods will be on line.

10- Student assessment method

a. Assessment method and its relation to the Los of the course						
Course ILOs	Lo1	Lo2	Lo3	Lo4	Lo5	Lo6
quizzes						
Mid -term exam						
Final exam						
sheets/ sketches						
projects						
Practical: lab						
Oral exam						
discussions						
Reports/ researches						
presentation						
modelling						

11- Grading System / Week

Content	ime schedule of assessment		Marks		
Quizzes	Quiz (1)	Week (6)		(5) marks	(60) marks
	Quiz (2)	Week (13)		(5) marks	
Discussions		Weekly	(40) %	(10) marks	
Sheets and Sketches		Week (7-10-13-15)	(50) %		
Researches and reports		Week (13)	(10) %		
the Projects			(0) %		
Practical modelling			(0) %		
Attendance		weekly		(10) marks	
Mid-term exam		Week (8)		(20) marks	
final exam		Week (15)		(40) marks	
Total				(100) marks	

12- List of references:	
a. **Course notes**	
b. **Rquired books**	• Soil mechanics (Dr/ Amr Radwan) • **soil mechanics and foundations muni Buhl john Wiley son, Inc 2011** • **mechanics of materials Ferdinand p.bear** • **معجم مصطلحات ميكانيكا التربة** • **principles of foundation engineering brajam.das**
c. **Recommended books**	الكود المصري لميكانيكا التربة و الاساسات
d. **Periodicals, Web sites, etc**	www.caterpillar.com

13- Facilities required for teaching and learning:
• Appropriate teaching design studios including presentation board, data show • Google classroom E- learning

14- Requirements for Disable facilities:
• On line teaching hours if it is needed • Extra assignments

Course coordinator:	**Dr. Mahmoud fawzy**
program Coordinator	Civil Engineering
Head of the Department	Dr.Ashraf Abdel khalek Mostafa
Date:	2023/2024