Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic Accreditation
Accreditation Department

Academic Program and Course Description Guide

2026

Introduction:

The educational program is a structured set of courses designed to develop students' skills, preparing them for labor market requirements. This program is reviewed and evaluated annually through internal or external audit procedures.

The academic program description provides a summary of the program’s content and its courses, outlining the skills students acquire in alignment with its academic objectives. This description is a fundamental component in obtaining program accreditation and is prepared by faculty members under the supervision of the department's scientific committees.

This guide includes updates to the academic description based on recent developments in the Iraqi educational system. It encompasses the description of traditional programs (semester-based, Courses) in addition to adopting the description of academic programs according to the Bologna Process, as stated in the directive of the Directorate of Studies No. T.M.3/2906 dated 3/5/2023.

In this context, we emphasize the importance of accurately documenting academic program and course descriptions to ensure the continuous improvement of the educational process.

Concepts and terminology:

Academic Program Description: Provides a brief summary outlining the program's vision, mission, and objectives, including a precise description of the intended learning outcomes based on specific learning strategies.

Course Description: Highlights the key features of the course and the expected learning outcomes that students should achieve. This helps assess the extent of their benefit from available learning opportunities and is derived from the program description.

Program Vision: An ambitious depiction of the program's future, making it progressive, inspiring, realistic, and feasible**.**

Program Mission: Defines the objectives and activities required to achieve them while outlining the program's development paths and directions.

Program Objectives: Statements describing what the program aims to accomplish within a specific timeframe. These objectives must be measurable and observable.

Curriculum Structure: Includes all courses within the academic program according to the adopted learning system (semester-based, annual, Bologna Process). It encompasses ministry, university, college, and department requirements, specifying the number of credit hours for each course**.**

Learning Outcomes: The knowledge, skills, and values that students acquire upon successfully completing the academic program. Learning outcomes must be defined for each course to align with the program's objectives**.**

Teaching and Learning Strategies: The methods employed by faculty members to enhance student learning. These include all in-class and extracurricular activities designed to achieve the desired learning outcomes.

Academic Program Description Form

University Name: Mosul

Faculty/Institute: Engineering

Scientific Department: Civil Engineering

Academic or Professional Program Name: Bachelor Civil Engineering

Final Certificate Name: Bachelor of Science in Civil Engineering

Academic System: Bolonga Process (First, Second and Third Levels), Courses (Fourth Level)

Description Preparation Date: 16–04–2026

File Completion Date: 16–04–2026

Signature:

Head of Department Name: Assist. Prof. Dr. Baraa Jabbar Yahmeed

Date: 19/04/2026

Signature:

Scientific Associate Name: Assist. Prof. Dr. Ayman Talib Hameed

Date: 19-4-2026

The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department: Asst. Prof. Rana Burhan Abdulrahman

Date: 19/04/2026

Signature:

Approval of the Dean

Asst. Prof. Omar M. Hamdoon

19-4-2026

1. Program Vision

Developing engineering education in the field of civil engineering to achieve excellence and deliver innovative, high-quality educational programs.

2. Program Mission

Preparing specialized civil engineers with a high level of scientific excellence to keep up with advancements in curricula and scientific research, utilizing these capabilities to serve the community and develop public and private institutions while adhering to human, ethical, and professional values.

3. Program Objectives

- Acquiring fundamental knowledge and skills in civil engineering, specializing in structures, geotechnics, and transportation, to serve the community and facilitate membership in professional associations.
- Establishing engineering practice in civil engineering to meet societal needs.
- Engaging in continuous learning to ensure professional development.
- Gaining creative knowledge that enables graduates to acquire problem solving skills and adapt to rapid and emerging technologies in structural engineering, geotechnics, and transportation, in addition to continuing lifelong learning activities.

4. Program Accreditation

The program is under review by the National Council for the Accreditation of Engineering Education (ICAEE).

5. Other external influences

The Dean's Office of the College of Engineering

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	9	20	0.092	There are three academic systems in the department: Bologna, Semester-based, and Course-based.
College Requirements	2	4	0.018	
Department Requirements	51	192 216	0.89	
Summer Training	1	Met or Not Met		
Other				

* This can include notes whether the course is basic or optional.

7. Program Description

Year/Level		Course Code	Course Name	Credit Hours	
1	The first year	CE101	Mathematics I	75	6.00
2		CE102	Engineering Mechanics I	75	6.00
3		CE103	Engineering Drawing I	30 30	5.00
4		CE104	Geology	30 30	6.00
5		CE105	Statistics I	30	3.00
6		UOM104	Democracy and Human Rights	30	2.00
7		UOM102	English Language 1	30	2.00
8		CE106	Mathematics II	75	7.00
9		CE107	Engineering Mechanics II	75	7.00
10		CE108	Engineering drawing II	30 30	6.00
11		UOM103	Computer 1	15 30	3.00
12		CE109	Statistics II	30	3.00
13		CE110	Electrical Engineering	30	2.00
14		UOM101	Arabic Language 1	30	2.00
15	The second year	CE201	Engineering Mathematics I	60	5.00
16		CE202	Mechanics of Materials I	60	5.00
17		CE203	Fluid mechanics	30 30	5.00
18		CE204	Concrete technology I	30 30	5.00
19		CE205	Engineering surveying I	30 45	6.00

20		UOM2050	The crimes of the Baath regime in Iraq	30	2.00
21		UOM2012	Arabic Language 2	30	2.00
22		CE206	Engineering Mathematics II	60	5.00
23		CE207	Mechanics of Materials II	75	6.00
24		CE208	Building construction and damages assessment	45	3.00
25		CE209	Concrete technology II	30 30	5.00
26		CE210	Engineering surveying II	30 45	6.00
27		UOM2032	Computer 2	15 30	3.00
28		UOM2022	English Language 2	30	2.00
29	The third year	CE301	Engineering analysis	30 30	3
30		CE302	Theory of structures I	75	3
31		CE303	Soil mechanics I	45 30	3
32		CE304	Reinforced concrete I	60	3
33		CE305	Highway Engineering I	45 30	3
34		CE306	Environmental engineering I	30 30	3
35		CE307	Engineering management	30	2
36		CE308	Hydrology	30	2
37		CE309	Numerical analysis	30 30	3
38		CE310	Theory of structures II	75	3
39		CE311	Soil mechanics II	45 30	3
40		CE312	Reinforced concrete II	60	3
41		CE313	Highway Engineering II	45 30	3
42		CE314	Environmental engineering II	30 30	3
43		CE315	Engineering economy	30	2
44		CE316	Hydraulic structures	30	2
45	fourth year		English language- Upper Intermediate	30	2
46		CIV401	Fundamentals of Steel Structures	30	2
47		CIV402	Reinforced Concrete Design	30	2
48		CIV403	Fundamentals of Foundation Engineering	45	3
49		CIV404	Graduation Project I	30	2
50		CIV405	Computer Applications	0 30	1
51		CIV406	Special Topics in Design of Reinforced Concrete Structures	30	2
52		CIV408	Special Topics in Geotechnical Engineering	30	2
53		CIV410	Flexible Pavement Design	30	2
54		ENGG425	Engineering Management	30	2

55		ENGG426	Engineering Economics	30	2
56		CIV412	Graduation Project I I	30	2
57		CIV413	Quantity Survey	30	2
58		CIV414	Sanitary and Environmental Engineering Construction Drawing Steel Structure Design Analysis and Design of Deep Foundations Special Topics in Traffic Engineering Sanitary and Environmental Engineering	45	3
59		CIV415	Construction Drawing	30	1
60		CIV416	Steel Structures Design	30	2
61		CIV419	Analysis and Design of Deep Foundations	30	2
62		CIV421	Special Topics in Traffic Engineering	30	2

8. Expected learning outcomes of the program

Knowledge	
Learning Outcomes (A)	A1. The ability to distinguish, identify, define, formulate, and solve engineering problems by applying engineering principles, science, and mathematics. GOs(i) A2. The ability to produce engineering designs which meet the desired needs within certain constraints by applying both analysis and synthesis in the design process. GOs (ii) A3. The ability to perceive the continual necessity for professional knowledge growth and how to find, assess, assemble, and apply it properly. GOs (vi)
Skills	
Learning Outcomes (B)	B1. The ability to create and carry out proper measurements and tests with quality assurance, analyze and interpret the results, and utilize engineering judgment to make inferences. GOs (iii) B2. The ability to skillfully communicate orally with others and in writing with various managerial levels. GOs (iv) B3. The ability to perceive the continual necessity for professional knowledge growth and how to find, assess, assemble, and apply it properly. GOs (vi)
Ethics	

Learning Outcomes (C)	C1. The ability to perceive ethical and professional responsibilities in engineering cases and make brilliant judgments considering the consequences in worldwide financial, ecological and societal considerations. GOs (v) C2. The ability to work adequately in teams, set up objectives, plan activities, meet due dates and manage risk and uncertainty. GOs (vii)

9. Teaching and Learning Strategies

Strategies and Teaching Methods Adopted for Program Implementation:

1. Delivering theoretical lectures using PowerPoint.
2. Conducting laboratory experiments to apply concepts practically.
3. Utilizing computer labs for training on software and applications.
4. Presenting video lectures to support educational content.
5. Assigning group projects to enhance collaborative work.

10. Evaluation methods

i. Midterm and Final Exams

ii. Quizzes

iii. Reports and Assignments

11. Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)	Number of the teaching staff	
	General	Special		Staff	Lecture
Professor	Civil Engineering	Highway Engineering		2	
		Geotechnical Engineering		2	

		Structural Engineering		1	
Assistant Professor	Civil Engineering	Highway Engineering		2	
		Geotechnical Engineering		3	
		Structural Engineering		8	
		Water		1	
	Mathematic	Functional Analysis		1	
Lecturer	Civil Engineering	Highway Engineering		2	
		Geotechnical Engineering		6	
		Structural Engineering		14	
Assistant Lecturer	Civil Engineering	Highway Engineering		1	
		Geotechnical Engineering		3	
		Structural Engineering		2	
	Management and Economics	Business Administration		1	
	Architecture Engineering	Architectural Design		1	

Professional Development

Mentoring new faculty members

Briefly describes the process used to mentor new, visiting, full-time, and part-time faculty at the institution and department level.

Professional development of faculty members

Briefly describe the academic and professional development plan and arrangements for faculty such as teaching and learning strategies, assessment of learning outcomes, professional development, etc.

12. Acceptance Criterion

The department's capacity is determined within the admission plan based on the department's

intake capacity. This is then sent to the college, the university, and the ministry for official approvals. After the central student admissions are issued by the Ministry of Higher Education and Scientific Research, students are accepted by the ministry based on their grades and their preferences. Afterwards, students apply to the college through the registration office in the Engineering College Deanship, submit the required official documents, and are distributed to the college's departments based on their capacity and the student's preferences, including the possibility of transferring from other departments to the department. Once the student is accepted into the Environmental Engineering Department, registration is completed, and the student begins attending classes in this department.

13. The most important sources of information about the program

- College Website:

https://uomosul.edu.iq/engineering/%d9%82%d8%b3%d9%85-%d8%a7%d9%84%d9%87%d9%86%d8%af%d8%b3%d8%a9-%d8%a7%d9%84%d9%85%d8%af%d9%86%d9%8a%d8%a9-3/

- University Website:

https://uomosul.edu.iq/

14. Program Development Plan

Enhance the quality of education, raise graduate outcomes, and meet the required competencies, the department has adopted the Bologna system for education. This system includes the European Transfer and Accumulation System (ECTS).

Program Skills Outline

				Required program Learning outcomes								
Year/Level	Course Code	Course Name	Basic or optional	Knowledge			Skills			Ethics		
				A1	A2	A3	B1	B2	B3	C1	C2	C3
First	CE101	Mathematics I	Basic	*								
	CE102	Engineering Mechanics I	Basic	*								
	CE103	Engineering Drawing I	Basic	*								
	CE104	Geology	Basic	*	*							
	CE105	Statistics I	Basic	*								
	UOM104	Democracy and Human Rights	Basic							*		
	UOM102	English Language	Basic					*				
	CE106	Mathematics II	Basic	*								
	CE107	Engineering Mechanics II	Basic	*								
	CE108	Engineering Drawing II	Basic	*								
	UOM103	Computer Science	Basic						*			
	CE109	Statistics II	Basic	*								
	CE110	Electrical Engineering	Basic	*								
	UOM101	Arabic Language	Basic					*				

Second	CE201	Engineering Mathematics I	Basic	*									
	CE202	Mechanics of Materials I	Basic	*									
	CE203	Fluid mechanics	Basic	*									
	CE204	Concrete technology I	Basic	*			*						
	CE205	Engineering surveying I	Basic	*			*						
	UOM2050	The crimes of the Baath regime in Iraq	Basic							*			
	UOM2012	Arabic Language 2	Basic					*					
	CE206	Engineering Mathematics II	Basic	*									
	CE207	Mechanics of Materials II	Basic	*									
	CE208	Building construction and damages assessment	Basic	*						*			
	CE209	Concrete technology II	Basic	*			*		*		*		
	CE210	Engineering surveying II	Basic	*			*		*		*		
	UOM2032	Computer 2	Basic	*	*		*		*				
	UOM2022	English Language 2	Basic					*					

Third	CE301	Engineering analysis	Basic	*									
	CE302	Theory of structures I	Basic	*									
	CE303	Soil mechanics I	Basic	*			*			*			
	CE304	Reinforced concrete I	Basic	*	*								
	CE305	Highway Engineering I	Basic	*	*		*						
	CE306	Environmental engineering I	Basic	*			*						
	CE307	Engineering management	Basic	*						*			
	CE308	Hydrology	Basic	*									
	CE309	Numerical analysis	Basic	*									
	CE310	Theory of structures II	Basic	*									
	CE311	Soil mechanics II	Basic	*			*			*	*		
	CE312	Reinforced concrete II	Basic	*	*								
	CE313	Highway Engineering II	Basic	*	*		*				*		
	CE314	Environmental engineering II	Basic	*			*						
	CE315	Engineering economy	Basic	*						*			
	CE316	Hydraulic structures	Basic	*	*								

Fourth	-	English Language – Upper Intermediate	Basic					*					
	CIV401	Fundamentals of Steel Structures	Basic	*	*								
	CIV402	Reinforced Concrete Design	Basic	*	*								
	CIV403	Fundamentals of Foundation Engineering	Basic	*	*								
	CIV404	Graduation Project I	Basic	*	*	*	*	*	*	*	*		
	CIV405	Computer Applications	Basic						*				
	CIV406	Special Topics in Design of Reinforced Concrete Structures	Basic	*	*								
	CIV408	Special Topics in Geotechnical Engineering	Basic	*	*								
	CIV410	Flexible Pavement Design	Basic	*	*								
	ENGC425	Engineering Management	Basic	*						*			
	ENGC426	Engineering Economics	Basic	*						*			
	CIV413	Quantity Surveying	Basic	*						*			
	CIV414	Sanitary and Environmental En gineering	Basic	*	*								
	CIV415	Construction Drawing	Basic						*				
	CIV416	Steel Structure Design	Basic	*	*								
	CIV419	Analysis and Design of Deep Foundations	Basic	*	*								
	CIV421	Special Topics in Traffic Engineering	Basic	*									
	CIV412	Graduation Project II	Basic	*	*	*	*	*	*	*	*		

Please tick the boxes corresponding to the individual program learning outcomes under evaluation.

Course Description Form

1. Course Name:	
Mathematics I	
2. Course Code:	
CE101	
3. Semester / Year:	
First semester / 2025-2026	
4. Description Preparation Date:	
30/07/2026	
5. Available Attendance Forms	
Attendance (Classrooms)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Total SWL: 150 (h/sem) / 6 Credits	
7. Course administrator's name (mention all, if more than one name)	
Assis. Poff. Dr. Mohammed Thanoon Younis Assis. Lec. Ahmad Ibrahim Mohammed	
8. Course Objectives	
Course Objectives	1. Provide the fundamental base for elementary mathematics. 2. Use mathematical functions like trigonometric functions and the application of derivatives to solve some Engineering problems.
9. Teaching and Learning Strategies	
Strategies	The main strategy adopted for delivering this module is to encourage students' active participation in exercises while simultaneously developing their critical thinking skills. This will be achieved through lectures, interactive tutorials, and simple practical experiments involving sampling activities that engage students' interest and promote active learning.

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation method**
1	5	First	Prerequisites for calculus, coordinates and Graphs in the plane	Attendance	Exam
2	5	First	Slope and Equations for lines, functions and their graphs	Attendance	Exam
3	5	First	Shifts, circles and parabolas, A review of trigonometric functions.	Attendance	Exam
4	5	First	Limits and continuity, introduction to limit.	Attendance	Exam
5	5	First	The sandwich theorem and $\frac{\sin\theta}{\theta}$	Attendance	Exam
6	5	First	Limits involving infinity, continuous functions	Attendance	Exam
7	5	First	Derivatives, slopes, Tangent lines and derivatives	Attendance	Exam
8	5	First	Differentiation Rules, Derivatives of Trigonometric functions	Attendance	Exam
9	5	First	The chain rule, implicit differentiation and fractional powers	Attendance	Exam
10	5	First	Applications of derivatives, Related rates of change.	Attendance	Exam
11	5	First	Maxima, minima, curve sketching with y' and y''	Attendance	Exam
12	5	First	Graphing Rational functions, Asymptotes, Optimization	Attendance	Exam
13	5	First	Types of Matrices, operations: sum, multiplication by a scalar, multiplication between two matrices.	Attendance	Exam
14	5	First	Determinants, the adjoint of a matrix, inverse of a matrix	Attendance	Exam
15	5	First	Solving systems of linear equations using Matrices	Attendance	Exam

11. Course Evaluation and Grade Breakdown:

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Attendance and Participation: 10 marks
Quizzes: 10 marks
Homework: 10 marks
Report and Project: 10 marks
Mid-Term Exam: 10 marks
Final Exam: 50 marks

12. Learning and Teaching Resources:	
Prescribed textbooks (syllabus books, if available)	
Main references (sources)	Thomas' Calculus by Finney and Thomas.
Recommended supporting books and references (scientific journals, reports...)	
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Dr. Mohammed Thanoon Younis

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:	
Engineering Mechanics I	
2. Course Code:	
CE102	
3. Semester / Year:	
First semester / 2025-2026	
4. Description Preparation Date:	
30/07/2026	
5. Available Attendance Forms	
Attendance (Classrooms)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Total SWL: 150 (h/sem) / 6 Credits	
7. Course administrator's name (mention all, if more than one name)	
Lec. Nuha Hameedi Jasim Asst. Lec Atheer K. Jumaah	
8. Course Objectives	
Course Objectives	This course aims to introduce the student to the system of units, types of forces and quantities, how to analyze and compose forces, and how to find the resultant force. Students will be able to calculate moments about different points, determine the couple, and transfer forces from one place to another. The student also learns about the effects of forces on static bodies, how to calculate reactions, and methods for analyzing structures such as trusses and frames.
9. Teaching and Learning Strategies	
Strategies	The main strategy adopted for delivering this module is to encourage students' participation in exercises while refining and expanding their critical thinking skills. This is achieved through lectures, interactive tutorials, and simple experiments involving sampling activities that interest students.

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation method**
1	5	First	Introduction, basic concepts, vector and scalar quantities, units and their transformations.	Attendance	Exam
2	5	First	The law of parallelograms; forces and their components; resolution and composition of forces.	Attendance	Exam
3	5	First	The moments of forces; couples.	Attendance	Exam
4	5	First	The resultant.	Attendance	Exam
5	5	First	Determine the resultant location.	Attendance	Exam
6	5	First	The concept of equilibrium and free body diagrams of bodies.	Attendance	Exam
7	5	First	Equilibrium equations for concurrent force systems located in one plane.	Attendance	Exam
8	5	First	Equilibrium of bodies subjected to two or three forces located in one plane.	Attendance	Exam
9	5	First	Equilibrium of bodies subjected to non-concurrent forces located in one plane.	Attendance	Exam
10	5	First	Equilibrium of bodies subjected to non-concurrent forces located in one plane (cont.).	Attendance	Exam
11	5	First	Analysis of trusses: introduction; analysis of trusses by the joint method.	Attendance	Exam
12	5	First	Analysis of trusses by the joint method and by the section method.	Attendance	Exam
13	5	First	Analysis of trusses by the section method; frame analysis.	Attendance	Exam
14	5	First	Frames analysis.	Attendance	Exam
15	5	First	Frames analysis.	Attendance	Exam

11. Course Evaluation and Grade Breakdown:

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Attendance and Participation: 5 marks
Quizzes: 15 marks
Homework: 5 marks
Classwork: 10 marks
Mid-Term Exam: 10 marks
Final Exam: 50 marks

12. Learning and Teaching Resources:	
Prescribed textbooks (syllabus books, if available)	الميكانيك الهندسي-علم السكون/د.نزار جبريل الياس واخرون
Main references (sources)	Engineering Mechanics – Statics, R.C. Hibbeler, 14th edition (2016). Vector mechanics for engineers: Statics by Ferdinand P. Beer.
Recommended supporting books and references (scientific journals, reports...)	
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Nuha Hameedi Jasim

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:	
Engineering Drawing I	
2. Course Code:	
CE103	
3. Semester / Year:	
First semester / 2025-2026	
4. Description Preparation Date:	
30/07/2026	
5. Available Attendance Forms	
Attendance (Classrooms)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Total SWL: 125 (h/sem) / 5 Credits	
7. Course administrator's name (mention all, if more than one name)	
Lec. Ibtesam Hazem Hasan Lec. Sura Abdulrazaaq Majeed	
8. Course Objectives	
Course Objectives	1. To know about different types of lines & use of different types of pencils in an Engineering Drawing. 2. To know how to represent letters & numbers on the drawing sheet. 3. To know how to draw graphic geometry. 4. To know about different types of projection 5. To know projection of points, straight lines, solids, etc. 6. To know the development of different types of surfaces.
9. Teaching and Learning Strategies	
Strategies	The module adopts an interactive learning approach through lectures, practical drawing exercises, manual drafting, and, where appropriate, engineering drawing software. This approach develops students' ability to read, interpret, and produce engineering drawings in accordance with recognized engineering standards and specifications. It also enhances spatial visualization, accuracy in engineering representation, self-directed learning, teamwork, and adherence to professional ethics, preparing students for effective technical communication and for producing engineering drawings required for engineering projects.

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation method**
1	4	Sixth	Introduction to drawing instruments, materials, layout, and sizes of drawing sheets and drawing boards.	Attendance	Exam
2	4	Sixth	Introduction to drawing instruments, materials, layout and sizes of drawing sheets and drawing boards.	Attendance	Exam
3	4	Sixth	Different types of lines in Engineering drawing & Practice of vertical, horizontal and inclined lines.	Attendance	Exam
4	4	Sixth	Basic Graphic	Attendance	Exam
5	4	Sixth	Types of scales	Attendance	Exam
6	4	Sixth	Graphic Geometry: how to draw parallel, perpendicular, & divide lines.	Attendance	Exam
7	4	Sixth	Geometrical figures such as triangles, rectangles, circles, ellipses and curves, hexagons, pentagons with the help of drawing instruments	Attendance	Exam
8	4	Sixth	Reverse Curve or Ogee Curve	Attendance	Exam
9	4	Sixth	Theory of orthographic projections	Attendance	Exam
10	4	Sixth	Types of projection	Attendance	Exam
11	4	Sixth	Projection with parallel and perpendicular rays	Attendance	Exam
12	4	Sixth	Three views of orthographic projection of different objects. (At least one sheet in 3rd angle)	Attendance	Exam
13	4	Sixth	Surface States	Attendance	Exam
14	4	Sixth	Projection of cylinders	Attendance	Exam
15	4	Sixth	Projection on Inclined Surfaces	Attendance	Exam

11. Course Evaluation and Grade Breakdown:

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Quizzes: 20 marks

Homework: 10 marks

Classwork: 10 marks

Mid-Term Exam: 10 marks

Final Exam: 50 marks

12. Learning and Teaching Resources:	
Prescribed textbooks (syllabus books, if available)	
Main references (sources)	Engineering Drawing and Graphic Technology, by French & Vierk, Twelfth edition
Recommended supporting books and references (scientific journals, reports...)	
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Lec. Ibtesam Hazem Hasan

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:	
Geology	
2. Course Code:	
CE104	
3. Semester / Year:	
First semester / 2025-2026	
4. Description Preparation Date:	
30/07/2026	
5. Available Attendance Forms	
Attendance (Classrooms)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Total SWL: 150 (h/sem) / 6 Credits	
7. Course administrator's name (mention all, if more than one name)	
Assist. Prof. Dr. Khawlah Ahmad Khalil Assist. Lec. Abdulnasser Younis Ali	
8. Course Objectives	
Course Objectives	1. Importance of engineering geology for civil engineers. 2. Learning types of minerals and their engineering properties, in addition to clay minerals which have great importance in civil engineering 3. Understanding basic relations in soil and rocks 4. Effect of geological structures on engineering facilities built above and under the earth surface 5. Learning methods of drawing and reading geological, topographic, and contour maps, and calculating the amounts of backfill and cut
9. Teaching and Learning Strategies	
Strategies	The module adopts an interactive learning approach through lectures, practical applications, and case studies to develop students' ability to analyze and solve geological and engineering problems based on the principles of engineering, science, and mathematics. It also promotes self-directed learning and the acquisition of new knowledge, while fostering teamwork skills and adherence to professional ethics, enabling students to work effectively in multidisciplinary engineering projects.

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation method**
1	4	First and third	Definition of engineering geology. Definition of laboratory apparatus.	Attendance	Exam
2	4	First and third	Definition of engineering geology, the relationship between geology and civil engineering	Attendance	Exam
3	4	First and third	Definition of natural minerals and their engineering properties, Clay Mineralogy, Types and properties of minerals.	Attendance	Exam
4	4	First and third	Introduction to rocks and their types in the Earth's crust, Definition of igneous and metamorphic rocks, their types and geological characteristics, Study of the types and composition of igneous and metamorphic rocks.	Attendance	Exam
5	4	First and third	Introduction to rocks and their types in the Earth's crust, Definition of sedimentary rocks, their types and geological characteristics, Study of the types and composition of sedimentary rocks.	Attendance	Exam
6	4	First and third	Weathering, erosion and soil formation, Practical exam in minerals and rocks.	Attendance	Exam
7	4	First and third	Geological structures - folds, faults and joints in rocks and their impact on engineering structures, Topographic maps: their characteristics, importance, components, and all types of scale.	Attendance	Exam
8	4	First and third	Physical engineering properties of rocks, method of drawing a topographic section.	Attendance	Exam
9	4	First and third	Mechanical engineering properties of rocks, drawing the topographic section of a given topographic map	Attendance	Exam
10	4	First and third	Midterm Examination.	Attendance	Exam
11	4	First and third	Physical and mechanical engineering properties of soil; method of drawing geological cross-sections of horizontal and vertical layers.	Attendance	Exam
12	4	First and third	Sieve analysis and particle-size distribution by the hydrometer method for soil particles. Method for drawing the geological profile of inclined strata; drawing the geological profile of	Attendance	Exam

			inclined strata for a specific map.		
13	4	First and third	Groundwater: Storage and transportation of groundwater. Calculation of actual and apparent thickness and angle of inclination of inclined layers.	Attendance	Exam
14	4	First and third	Factors affecting groundwater movement and groundwater quality; geological cross-section of folded strata	Attendance	Exam
15	4	First and third	Review	Attendance	Exam

11. Course Evaluation and Grade Breakdown:

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Quizzes: 10 marks
Homework: 5 marks
Classwork: 10 marks
Lab: 15 marks
Mid-Term Exam: 10 marks
Final Exam: 50 marks

12. Learning and Teaching Resources:

Prescribed textbooks (syllabus books, if available)	
Main references (sources)	by Dr. Kinana Muhammad Thabit and Muhammad Omar Al-Ashu, published by the University of Mosul (1993 edition.(
Recommended supporting books and references (scientific journals, reports...)	• Principles of Mineralogy. By Dr. Abdul Hadi Yahya Al-Saigh and Dr. Zaki Abdul Jabbar Al-Jubouri. • Minerals and Rocks. By Dr. Ahmed Mustafa Al-Basili and Dr. Muzaffar Muhammad Mahmoud. • Igneous Petrology. By Dr. Nabil Mustafa Hafez, Dr. Azzam Hashem Al-Samman, Dr. Khaled Jalal Ali, and Dr. Rafid Mahmoud Aziz. • Metamorphic Petrology. By Dr. Rafid Mahmoud Aziz, Dr. Nabil Mustafa Hafez, Dr. Azzam Hashem Al-Samman, and Dr. Khaled Jalal Ali. • Foundations of Sedimentology. By Dr. Muhammad bin Abdul Ghani Mushrif.
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Dr. Khawlah Ahmad Khalil

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:	
Statistics I	
2. Course Code:	
CE105	
3. Semester / Year:	
First semester / 2025-2026	
4. Description Preparation Date:	
30/07/2026	
5. Available Attendance Forms	
Attendance (Classrooms)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Total SWL: 75 (h/sem) / 3 Credits	
7. Course administrator's name (mention all, if more than one name)	
Lec. Mohammed Ghanim Jamil	
8. Course Objectives	
Course Objectives	1. Introducing the student to collecting and presenting statistical data 2. Classifying and tabulating the engineering information in a manner consistent with the data and the field of academic work 3. An ability to conduct experiments, analyze, and interpret data 4. The ability to identify and solve engineering problems. 5. Take the appropriate decision through scientific analysis of information.
9. Teaching and Learning Strategies	
Strategies	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials, and simple experiments involving

	sampling activities that interest students.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation method
1	2	First	General Introduction to Engineering Statistics	Attendance	Exam
2	2	First	Data Presentation: Tabular presentation /Creating Frequency Table.	Attendance	Exam
3	2	First	Graphical presentation (Histogram, Frequency Polygon).	Attendance	Exam
4	2	First	Measures of central tendency (Arithmetic mean, median and mode, the relation between the central tendency measures for unimodal distributions	Attendance	Exam
5	2	First	Measurement of dispersion and variation, absolute dispersion (ungrouped data)	Attendance	Exam
6	2	First	Measurement of dispersion and variation, absolute dispersion (grouped data)	Attendance	Exam
7	2	First	Measurement of dispersion and variation, absolute dispersion (grouped data)	Attendance	Exam
8	2	First	**Probability:** Basic Concepts of Probability Theory	Attendance	Exam
9	2	First	Rule of Probability Additional rule Two events, mutually and non-mutually events	Attendance	Exam
10	2	First	Three events, mutually and non-mutually events	Attendance	Exam
11	2	First	Multiplication rule, Tow events, (independent and dependent events)	Attendance	Exam
12	2	First	The definition of conditional probability and their properties. Bayes' theorem	Attendance	Exam
13	2	First	The definition and classification of random variable (Discrete and Continuous), type of discrete distributions	Attendance	Exam
14	2	First	Discrete probability distributions (Binomial distribution)	Attendance	Exam
15	2	First	Discrete probability distributions Poisson distribution).	Attendance	Exam

11. Course Evaluation and Grade Breakdown:
The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc. Quizzes: 24 marks Homework: 12 marks Classwork: 10 Points Reports: 4 marks Mid-Term Exam: 10 marks Final Exam: 50 marks

12. Learning and Teaching Resources:	
Prescribed textbooks (syllabus books, if available)	
Main references (sources)	Introduction to Statistics, Dr. Khashaa Al-Rawi, University of Mosul, 1993
Recommended supporting books and references (scientific journals, reports...)	Introduction to Probability and Statistics for Engineers, Holický, Milan
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Mohammed Ghanim Jamil

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:	
Democracy and Human Rights	
2. Course Code:	
UOM1040	
3. Semester / Year:	
First semester / 2025-2026	
4. Description Preparation Date:	
30/07/2026	
5. Available Attendance Forms	
Attendance (Classrooms)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Total SWL: 50 (h/sem) / 2 Credits	
7. Course administrator's name (mention all, if more than one name)	
Assi. Lecturer Zahraa Riyadh Ali	
8. Course Objectives	
Course Objectives	The study of Democracy and Human Rights aims to develop a comprehensive understanding of human rights, democracy, and anti-corruption principles, enabling individuals to effectively promote and protect human rights and democratic values within society.
9. Teaching and Learning Strategies	
Strategies	The course adopts an interactive learning approach through lectures, group discussions, case studies, and research projects, while promoting collaborative learning to develop students' critical thinking, analytical, communication, and teamwork skills. It also emphasizes linking human rights concepts to contemporary societal issues and real-world applications, with a variety of assessment methods, including reports, presentations, quizzes, and classroom activities, to evaluate students' knowledge and skills.

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation method**
1	2	First	Definition of human rights and sources of rights (international sources / regional sources / national sources / religious sources).	Attendance	Exam
2	2	First	Characteristics of human rights.	Attendance	Exam and report
3	2	First	The emergence and evolution of human rights.	Attendance	Exam and report
4	2	First	Types of human rights / civil and political rights. Economic and social rights. Environmental, cultural, and developmental rights.	Attendance	Exam and report
5	2	First	Guarantees to prevent human rights violations/guarantees of human rights in Islam.	Attendance	Exam and assignment
6	2	First	Guarantees for the protection of human rights at the national level.	Attendance	Exam and assignment
7	2	First	Guarantees of human rights at the international level.	Attendance	Exam and assignment
8	2	First	The concept of democracy.	Attendance	Exam
9	2	First	Characteristics of a democratic system.	Attendance	assignment
10	2	First	Forms of democratic governance (direct democracy / semi-direct democracy / indirect democracy).	Attendance	Exam
11	2	First	Digital democracy: definition, advantages and disadvantages/manifestations of digital democracy.	Attendance	assignment
12	2	First	The Islamic stance on democracy.	Attendance	Exam and assignment
13	2	First	Critique of the democratic system.	Attendance	Exam and report
14	2	First	Administrative corruption/definition and types.	Attendance	Exam and report
15	3	First	Review	Attendance	Exam

11. Course Evaluation and Grade Breakdown:
The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc. Attendance and Participation: 10 marks Quizzes: 10 marks Homework: 10 marks Report and Project: 10 marks Mid-Term Exam: 10 marks Final Exam: 50 marks

12. Learning and Teaching Resources:	
Prescribed textbooks (syllabus books, if available)	
Main references (sources)	ضمانات حقوق الانسان وحمايتها وفقا للقانون الدولي والتشريع الوطني / نبيل عبد الرحمن ناصر الدين
Recommended supporting books and references (scientific journals, reports...)	الديمقراطية وحقوق الانسان / د. امير عبد العزيز
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Zahraa Riyadh Ali

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:	
English Language 1	
2. Course Code:	
UOM1021	
3. Semester / Year:	
First semester / 2025-2026	
4. Description Preparation Date:	
30/07/2026	
5. Available Attendance Forms	
Attendance (Classrooms)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Total SWL: 75 (h/sem) / 3 Credits	
7. Course administrator's name (mention all, if more than one name)	
Lec. Dr. Rahma Ethar Abdulkareem	
8. Course Objectives	
Course Objectives	The objective of the English class is to develop vocabulary and speaking skills, with a focus on personal introductions and basic conversation topics. Students will learn to express personal information, talk about their world, discuss family and friends, describe their preferences, and communicate about sports, food, and drinks. The class aims to enhance reading and listening skills through engaging texts and audio materials, and to improve writing skills through various writing tasks. Additionally, students will practice proper pronunciation and expand their vocabulary by learning adjectives, question words, and basic language structures. By the end of the course, students will have gained confidence in using English for everyday communication, improved their language proficiency in speaking, reading, writing, and listening, and developed a broader range of vocabulary.
9. Teaching and Learning Strategies	
Strategies	The main strategy for delivering this module is to encourage students' participation in exercises to refine and expand their critical thinking skills. This will be achieved through classes, interactive tutorials, and simple experiments involving sampling activities that interest the students.

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation method**
1	2	Fourth	**Unit 1:** Welcome and Introduction	Attendance	Exam
2	2	Fourth	Vocabulary and Parts of Speech	Attendance	Exam and Report
3	2	Fourth	Countries and Nationalities	Attendance	Exam and Report
4	2	Fourth	Reading and speaking	Attendance	Exam and Report
5	2	Fourth	**Unit 2:** Talking About Yourself	Attendance	Exam and Assignment
6	2	Fourth	Reading and listening	Attendance	Exam and Assignment
7	2	Fourth	**Unit 4:** Family and Friends	Attendance	Exam and Assignment
8	2	Fourth	Reading and listening	Attendance	Exam
9	2	Fourth	**Unit 5:** Ways of Living	Attendance	Assignment
10	2	Fourth	Vocabulary and Pronunciation	Attendance	Exam
11	2	Fourth	**Unit 6:** My Favorite Things	Attendance	Exam and Assignment
12	2	Fourth	Vocabulary and Adjectives	Attendance	Exam
13	2	Fourth	Reading and Writing	Attendance	Exam and Report
14	2	Fourth	Listening and speaking	Attendance	Exam and Report
15	2	Fourth	Revision Week Before the Final Examination	Attendance	Exam

11. Course Evaluation and Grade Breakdown:

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Quizzes: 10 marks
Homework: 10 marks
Classwork: 10 Points
Reports: 10 marks
Mid-Term Exam: 10 marks
Final Exam: 50 marks

12. Learning and Teaching Resources:	
Prescribed textbooks (syllabus books, if available)	
Main references (sources)	New headway, beginner student's book. John and Liz Soars.
Recommended supporting books and references (scientific journals, reports...)	
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Dr. Rahma Ethar Abdulkareem

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

1. Course Name:
Mathematics II
2. Course Code:
CE106
3. Semester / Year:
First semester / 2025-2026
4. Description Preparation Date:
30/07/2026
5. Available Attendance Forms
Attendance (Classrooms)
6. Number of Credit Hours (Total) / Number of Units (Total)
Total SWL: 150 (h/sem) / 6 Credits
7. Course administrator's name (mention all, if more than one name)
Assis. Poff. Dr. Mohammed Thanoon Younis Assis. Lec. Ahmad Ibrahim Mohammed
8. Course Objectives

Course Objectives	1. Provide the fundamental base for elementary mathematics about integration. 2. Use mathematical integration to find the area, length of the curve and volume.
9. Teaching and Learning Strategies	
Strategies	The main strategy adopted for delivering this module is to encourage students' active participation in exercises while simultaneously developing their critical thinking skills. This will be achieved through lectures, interactive tutorials, and simple practical experiments involving sampling activities that engage students' interest and promote active learning.

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation method**
1	5	First	Integrating , finding the area with x-axis	Attendance	Exam
2	5	First	Definite integrals, indefinite integrals	Attendance	Exam
3	5	First	Application of definite integrals, Areas between Curves	Attendance	Exam
4	5	First	Volumes of solids of revolution, Disks and Washers	Attendance	Exam
5	5	First	Cylindrical shells,	Attendance	Exam
6	5	First	length of curves in the plane	Attendance	Exam
7	5	First	Areas of surfaces of Revolution	Attendance	Exam
8	5	First	The calculus of transcended functions, inverse functions,	Attendance	Exam
9	5	First	$\ln x, e^x$ and logarithmic differentiation	Attendance	Exam
10	5	First	General exponential and logarithmic function	Attendance	Exam
11	5	First	Indeterminate forms and l'Hopital's Rules, The inverse of trigonometric functions	Attendance	Exam
12	5	First	Techniques of integration, basic integration formulas	Attendance	Exam
13	5	First	Integration by parts	Attendance	Exam
14	5	First	Trigonometric integrals, Trigonometric substitution	Attendance	Exam
15	5	First	Rational functions and partial fractions	Attendance	Exam

11. Course Evaluation and Grade Breakdown:

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Attendance and Participation: 10 marks

Quizzes: 10 marks

Homework: 10 marks

Report and Project: 10 marks

Mid-Term Exam: 10 marks

Final Exam: 50 marks

12. Learning and Teaching Resources:	
Prescribed textbooks (syllabus books, if available)	
Main references (sources)	Thomas' Calculus by Finney and Thomas.
Recommended supporting books and references (scientific journals, reports...)	
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Dr. Mohammed Thanoon Younis

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:	
Engineering Mechanics II	
2. Course Code:	
CE107	
3. Semester / Year:	
First semester / 2025-2026	
4. Description Preparation Date:	
30/07/2026	
5. Available Attendance Forms	
Attendance (Classrooms)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Total SWL: 175 (h/sem) / 7 Credits	
7. Course administrator's name (mention all, if more than one name)	
Lec. Nuha Hameedi Jasim Asst. Lec Atheer K. Jumaah	
8. Course Objectives	
Course Objectives	This course introduces students to friction through application examples; centroids and centers of gravity; and area moments of inertia, in addition to an introduction to engineering dynamics.
9. Teaching and Learning Strategies	
Strategies	The main strategy adopted for delivering this module is to encourage students' participation in exercises while refining and expanding their critical thinking skills. This is achieved through lectures, interactive tutorials, and simple experiments involving sampling activities that interest students.

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation method**
1	5	First	Introduction, Basic concepts, Reviewing for Engineering Mechanics-I with application examples	Attendance	Exam
2	5	First	Concepts of friction (definitions and application examples)	Attendance	Exam
3	5	First	Problems	Attendance	Exam
4	5	First	Concept of centroids and center of gravities	Attendance	Exam
5	5	First	Centroid by integration	Attendance	Exam
6	5	First	Centroids for combined areas	Attendance	Exam
7	5	First	Problems	Attendance	Exam
8	5	First	Concept of Moment of inertia	Attendance	Exam
9	5	First	Moment of inertia for combined areas	Attendance	Exam
10	5	First	Product of inertia of an area	Attendance	Exam
11	5	First	Problems	Attendance	Exam
12	5	First	Moment of inertia for an area about inclined axes	Attendance	Exam
13	5	First	Problems	Attendance	Exam
14	5	First	Introduction to dynamics (basics, definitions and concepts of projectiles)	Attendance	Exam
15	5	First	Problems	Attendance	Exam

11. Course Evaluation and Grade Breakdown:

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Attendance and Participation: 5 marks
Quizzes: 15 marks
Homework: 5 marks
Classwork: 10 marks
Mid-Term Exam: 10 marks
Final Exam: 50 marks

12. Learning and Teaching Resources:	
Prescribed textbooks (syllabus books, if available)	الميكانيك الهندسي-علم السكون/د.نزار جبريل الياس واخرون
Main references (sources)	Engineering Mechanics – Statics, R.C. Hibbeler, 14th edition (2016). Vector mechanics for engineers: Statics by Ferdinand P. Beer.
Recommended supporting books and references (scientific journals, reports...)	
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Nuha Hameedi Jasim

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:	
Engineering Drawing II	
2. Course Code:	
CE108	
3. Semester / Year:	
First semester / 2025-2026	
4. Description Preparation Date:	
30/07/2026	
5. Available Attendance Forms	
Attendance (Classrooms)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Total SWL: 150 (h/sem) / 6 Credits	
7. Course administrator's name (mention all, if more than one name)	
Lec. Ibtesam Hazem Hasan Lec. Sura Abdulrazaaq Majeed	
8. Course Objectives	
Course Objectives	1. To know about isometric projection. 2. Different lines used for representation of different Engineering Sections. 3. To know how to estimate missing views. 4. Qualifying students to use AutoCAD for engineering drawings efficiently to help them in their designs & projects.
9. Teaching and Learning Strategies	
Strategies	The module adopts an interactive learning approach through lectures, practical drawing exercises, manual drafting, and, where appropriate, engineering drawing software. This approach develops students' ability to read, interpret, and produce engineering drawings in accordance with recognized engineering standards and specifications. It also enhances spatial visualization, accuracy in engineering representation, self-directed learning, teamwork, and adherence to professional ethics, preparing students for effective technical communication and for producing engineering drawings required for engineering projects.

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation method**
1	4	Sixth	Introduction to drawing instruments, materials, layout and sizes of drawing sheets and drawing boards.	Attendance	Exam
2	4	Sixth	Different types of lines in Engineering drawing & Practice of vertical, horizontal and inclined lines.	Attendance	Exam
3	4	Sixth	Basic Graphic	Attendance	Exam
4	4	Sixth	Types of scales	Attendance	Exam
5	4	Sixth	Graphic Geometry: how to draw parallel, perpendicular & divide lines.	Attendance	Exam
6	4	Sixth	Geometrical figures such as triangles, rectangles, circles, ellipses and curves, hexagons, pentagons with the help of drawing instruments	Attendance	Exam
7	4	Sixth	Reverse Curve or Ogee Curve	Attendance	Exam
8	4	Sixth	Theory of orthographic projections	Attendance	Exam
9	4	Sixth	Types of projection	Attendance	Exam
10	4	Sixth	Projection with parallel and perpendicular rays	Attendance	Exam
11	4	Sixth	Three views of orthographic projection of different objects. (At least one sheet in 3rd angle)	Attendance	Exam
12	4	Sixth	Surface States	Attendance	Exam
13	4	Sixth	Projection of cylinders	Attendance	Exam
14	4	Sixth	Projection on Inclined Surfaces	Attendance	Exam
15	4	Sixth	Exam	Attendance	Exam

11. Course Evaluation and Grade Breakdown:

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Quizzes: 20 marks

Homework: 10 marks

Classwork: 10 marks

Mid-Term Exam: 10 marks

Final Exam: 50 marks

12. Learning and Teaching Resources:	
Prescribed textbooks (syllabus books, if available)	
Main references (sources)	Engineering Drawing and Graphic Technology, by French & Vierk, Twelfth edition
Recommended supporting books and references (scientific journals, reports...)	
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Ibtesam Hazem Hasan

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:	
Computer 1	
2. Course Code:	
UOM1031	
3. Semester / Year:	
Second semester / 2025-2026	
4. Description Preparation Date:	
30/07/2026	
5. Available Attendance Forms	
Attendance (Classrooms)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Total SWL: 75 (h/sem) / 3 Credits	
7. Course administrator's name (mention all, if more than one name)	
Asst. Lect. Rowida Salih Khalaf Asst. Lect. Shahad Nathim Sheet	
8. Course Objectives	
Course Objectives	The Module aim is to prepare students to deal with computers. In addition to teaching students the fundamentals of computers and their components. Furthermore, learning how to use two Microsoft Office applications (Word and Excel).
9. Teaching and Learning Strategies	
Strategies	The main strategy for delivering this module is to encourage students' participation in Lab activities while refining and expanding their critical thinking skills. This will be achieved through classes, the laboratory, and by considering types of external searches involving some computer technology that are interesting to the students.

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation method**
1	3	Sixth	Computers and Operating System	Attendance	Exam
2	3	Sixth	Computers and Operating System (Continued)	Attendance	Exam
3	3	Sixth	Software and Hardware Interaction	Attendance	Exam
4	3	Sixth	Software and Hardware Interaction (Continued)	Attendance	Exam
5	3	Sixth	Windows File Management	Attendance	Exam
6	3	Sixth	Operating System Customization	Attendance	Exam
7	3	Sixth	Computer Hardware	Attendance	Exam
8	3	Sixth	Computer Hardware (Continued)	Attendance	Exam
9	3	Sixth	Monthly Exam	Attendance	Exam
10	3		Exploring Microsoft Office 2013	Attendance	Exam
11	3	Sixth	Getting Started with Word Essentials	Attendance	Exam
12	3	Sixth	Editing and Formatting Documents	Attendance	Exam
13	3	Sixth	Getting Started with Excel Essentials	Attendance	Exam
14	3	Sixth	Organizing and Enhancing Worksheets	Attendance	Exam
15	3	Sixth	Preparatory week before the final Exam	Attendance	Exam

11. Course Evaluation and Grade Breakdown:

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Attendance and Participation: 5
Quizzes: 10 marks
Homework: 5 marks
Lab: 10 marks
Reports: 10 marks
Mid-Term Exam: 10 marks
Final Exam: 50 marks

12. Learning and Teaching Resources:	
Prescribed textbooks (syllabus books, if available)	
Main references (sources)	Computer Literacy BASICS: A Comprehensive Guide to IC, (2015) Connie Morrison, Dolores Wells, Lisa Ruffolo Cengage Learning. ISBN: 128576658X
Recommended supporting books and references (scientific journals, reports...)	IC3 GS5 Certification Guide Using Windows 10 & Office 2016
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Rowida Salih Khalaf

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:	
Statistics I	
2. Course Code:	
CE105	
3. Semester / Year:	
First semester / 2025-2026	
4. Description Preparation Date:	
30/07/2026	
5. Available Attendance Forms	
Attendance (Classrooms)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Total SWL: 75 (h/sem) / 3 Credits	
7. Course administrator's name (mention all, if more than one name)	
Lec. Mohammed Ghanim Jamil	
8. Course Objectives	
Course Objectives	1. Introducing the student to collecting and presenting statistical data 2. Classifying and tabulating the engineering information in a manner consistent with the data and the field of academic work 3. An ability to conduct experiments, analyze, and interpret data 4. The ability to identify and solve engineering problems. 5. Take the appropriate decision through scientific analysis of information.
9. Teaching and Learning Strategies	
Strategies	Type something like: The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials, and simple experiments involving

	sampling activities that interest students.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation method
1	2	First	General Introduction to Engineering Statistics	Attendance	Exam
2	2	First	Data Presentation: Tabular presentation /Creating Frequency Table.	Attendance	Exam
3	2	First	Graphical presentation (Histogram, Frequency Polygon).	Attendance	Exam
4	2	First	Measures of central tendency (Arithmetic mean, median and mode, the relation between the central tendency measures for unimodal distributions	Attendance	Exam
5	2	First	Measurement of dispersion and variation, absolute dispersion (ungrouped data)	Attendance	Exam
6	2	First	Measurement of dispersion and variation, absolute dispersion (grouped data)	Attendance	Exam
7	2	First	Measurement of dispersion and variation, absolute dispersion (grouped data)	Attendance	Exam
8	2	First	**Probability:** Basic Concepts of Probability Theory	Attendance	Exam
9	2	First	Rule of Probability Additional rule Two events, mutually and non-mutually events	Attendance	Exam
10	2	First	Three events, mutually and non-mutually events	Attendance	Exam
11	2	First	Multiplication rule, Tow events, (independent and dependent events)	Attendance	Exam
12	2	First	The definition of conditional probability and their properties. Bayes' theorem	Attendance	Exam
13	2	First	The definition and classification of random variable (Discrete and Continuous), type of discrete distributions	Attendance	Exam
14	2	First	Discrete probability distributions (Binomial distribution)	Attendance	Exam
15	2	First	Discrete probability distributions Poisson distribution).	Attendance	Exam

11. Course Evaluation and Grade Breakdown:
The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc. Quizzes: 24 marks Homework: 12 marks Classwork: 10 Points Reports: 4 marks Mid-Term Exam: 10 marks Final Exam: 50 marks

12. Learning and Teaching Resources:	
Prescribed textbooks (syllabus books, if available)	
Main references (sources)	Introduction to Statistics, Dr. Khashaa Al-Rawi, University of Mosul, 1993
Recommended supporting books and references (scientific journals, reports...)	Introduction to Probability and Statistics for Engineers, Holický, Milan
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Mohammed Ghanim Jamil

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:	
Electrical Engineering	
2. Course Code:	
CE110	
3. Semester / Year:	
First semester / 2025-2026	
4. Description Preparation Date:	
30/07/2026	
5. Available Attendance Forms	
Attendance (Classrooms)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Total SWL: 50 (h/sem) / 2 Credits	
7. Course administrator's name (mention all, if more than one name)	
Assist. Lec. Yahya Rehab Hamdi	
8. Course Objectives	
Course Objectives	Learn protection against electric shock when working with electricity; constructing an electrical map of a house or residential building; ensuring proper grounding for a building or house; how to distribute electrical appliances inside the house; constructing electric bell circuits, fluorescent lamp circuits, tester circuits, etc.
9. Teaching and Learning Strategies	
Strategies	The main strategy for delivering this module is to encourage students' participation in exercises while refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials, and by considering types of simple experiments involving some sampling activities that are

	interesting to the students.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation method
1	2	First	Basic Concept & Units: Electricity & atomic structure of substance, current and current density, current flow, electric circuit, E.M. F& potential difference	Attendance	Exam.
2	2	First	international system of unit, abbreviation for multiples & sub-multiples, quantities derived from SI units, units of force-energy-torque and power, relation between energy and heat, electric units, efficiency & percentage efficiency, electromechanical equivalent of element	Attendance	Exam
3	2	First	Ohm's law, resistivity & conductivity	Attendance	Exam
4	2	First	temperature affect, internal resistance of a source, open circuit & short circuit	Attendance	Exam
5	2	First	equivalent resistance: Series-parallel-circulating current method-floating source method & grouping of E.M.F. sources, double subscript	Attendance	Exam
6	2	First	power calculation in D.C circuit	Attendance	Exam
7	2	First	Energy calculation in D.C circuit	Attendance	Exam
8	2	First	Mid-term Exam	Attendance	Exam
9	2	First	General rules for the prevention of electric shock	Attendance	Exam
10	2	First	Grounding resistor calculation	Attendance	Exam
11	2	First	Grounding installation for houses and buildings	Attendance	Exam
12	2	First	Protection and prevention from electric lightning	Attendance	Exam
13	2	First	Distribution of electrical appliances and equipment within residential buildings	Attendance	Exam
14	2	First	Conducting inspections of electrical devices	Attendance	Exam
15	3	First	Voltage drop calculations for transmission lines	Attendance	Exam

11. Course Evaluation and Grade Breakdown:
The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc. Attendance and Participations: 10 marks Quizzes: 10 marks Homework: 10 marks Report and Project: 10 marks Mid-Term Exam: 10 marks Final Exam: 50 marks

12. Learning and Teaching Resources:	
Prescribed textbooks (syllabus books, if available)	Engineering Circuit Analysis 7th Edition by William Hayt, Jack Kemmerly, Steven Durbin (2015)
Main references (sources)	Schaum's Outline of Basic Circuit Analysis, Second Edition (Schaum's Outlines) 2nd Edition, by John O'Malley (2010)
Recommended supporting books and references (scientific journals, reports...)	DC Electrical Circuit Analysis: A Practical Approach. Copyright Year: 2017.
Electronic references, websites	https://www.almrsal.com/post/923401
Curriculum or course description update rate	5%

Course Instructor
Yahya Rehab Hamdi

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:	
Arabic Language 1	
2. Course Code:	
UOM1011	
3. Semester / Year:	
First semester / 2025-2026	
4. Description Preparation Date:	
30/07/2026	
5. Available Attendance Forms	
Attendance (Classrooms)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Total SWL: 50 (h/sem) / 2 Credits	
7. Course administrator's name (mention all, if more than one name)	
Lecturer Dr. Abeer Turki Fathi	
8. Course Objectives	
Course Objectives	1. Arabic Speech & Its Classification. 2. The Arabic Sentence & Its Types. 3. Grammatical Case Endings (Inflection Markers). 4. Arabic Verbs (Sound vs. Weak). 5. Arabic Verbs (Transitivity vs. Intransitivity)..
9. Teaching and Learning Strategies	
Strategies	The main goal of Arabic language lessons is to eliminate difficulties that may accompany certain topics and to convey the required ideas and information to students in ways that are understandable and appropriate to their individual differences. Among the most prominent topics emphasized in the lectures are the rules of the Arabic language and literature. The study comprises lectures, exams, in-class assignments, discussions, and homework.

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation method**
1	2	First	Arabic Speech: Definition, categories, and the distinguishing features of each category.	Attendance	Exam.
2	2	First	The Arabic Sentence: Definition and types: nominal sentences and verbal sentences.	Attendance	Report
3	2	First	Grammatical Case Endings: Primary and secondary case markers.	Attendance	Classwork
4	2	First	The Arabic Verb: Classification according to regularity and irregularity (sound and weak verbs).	Attendance	Report & Exam.
5	2	First	The Arabic Verb: Classification according to transitivity and intransitivity.	Attendance	Report
6	2	First	The Arabic Verb: Classification according to tense (past, present, and imperative).	Attendance	Homework
7	2	First	Numbers in Arabic: Masculine and feminine forms and their grammatical usage.	Attendance	Homework
8	2	First	Punctuation Marks in Arabic	Attendance	Homework & Exam.
9	2	First	Writing.	Attendance	Exam.
10	2	First	Rules for Writing the Hamzah.	Attendance	Exam.
11	2	First	The Tied Tāʾ and the Open Tāʾ	Attendance	Homework & Exam.
12	2	First	"Say, Do Not Say": Common errors made by Arabic speakers and writers.	Attendance	Report
13	2	First	The Declarative Style.	Attendance	Homework
14	2	First	The Non-Declarative Style.	Attendance	Homework
15	3	First	Language Skills: Developing linguistic appreciation and improving learners' writing and expression.	Attendance	Exam.

11. Course Evaluation and Grade Breakdown:
The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc. Attendance and Participations: 10 marks Quizzes: 10 marks Homework: 10 marks Report and Project: 10 marks Mid-Term Exam: 10 marks Final Exam: 50 marks

12. Learning and Teaching Resources:	
Prescribed textbooks (syllabus books, if available)	
Main references (sources)	جامع الدروس العربية: الشيخ مصطفى الغلاييني
Recommended supporting books and references (scientific journals, reports...)	الجملة العربية: تأليفها وأقسامها د. فاضل السامرائي
Electronic references, websites	https://www.almrsal.com/post/923401
Curriculum or course description update rate	5%

Course Instructor
Dr. Abeer Turki Fathi

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:
Mathematics III
2. Course Code:
CE201
3. Semester / Year:
First semester / 2025-2026
4. Description Preparation Date:
30/07/2026
5. Available Attendance Forms
Attendance (Classrooms)
6. Number of Credit Hours (Total) / Number of Units (Total)
Total SWL: 125 (h/sem) / 5 Credits
7. Course administrator's name (mention all, if more than one name)
Asst. Prof. Dr. Asaad Mohammed Azhar Msbah Lec. Revan Nahith Wadee
8. Course Objectives

Course Objectives	1. Provide the fundamental base for elementary mathematics for functions in more than one variable. 2. Use mathematical differentiation and integration to solve some engineering problems.
9. Teaching and Learning Strategies	
Strategies	The main strategy for delivering this course is to encourage students to participate in solving mathematical problems while simultaneously developing their problem-solving skills by exploring multiple approaches. This strategy is achieved through classroom instruction and interactive discussion sessions.

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation method**
1	5	First	Partial Derivative.	Attendance	Exam.
2	5	First	Second-order partial derivative, higher-order partial derivative	Attendance	Report
3	5	First	Chain Rule,	Attendance	Classwork
4	5	First	Maximum and Minimum & Saddle Point	Attendance	Report & Exam.
5	5	First	Lagrange Multipliers	Attendance	Report
6	5	First	Introduction to Multiple Integration	Attendance	Homework
7	5	First	Multiple Integrals, Double and Iterated Integrals over Rectangles	Attendance	Homework
8	5	First	Double Integrals over General Regions, Area by Double Integration	Attendance	Homework & Exam.
9	5	First	Double Integrals in Polar Form	Attendance	Exam.
10	5	First	Moments and Centers of Mass.	Attendance	Exam.
11	5	First	Introduction to Hyperbolic Functions. Identities of Hyperbolic Functions. Graphs of Hyperbolic Functions	Attendance	Homework & Exam.
12	5	First	Derivative and Integral of Hyperbolic Functions. Graphs of Inverse Hyperbolic Functions. Identities of Inverse Hyperbolic Functions	Attendance	Report
13	5	First	Derivative of Inverse Hyperbolic Functions. The integral of Inverse Hyperbolic Functions. Relationship between Inverse Hyperbolic Functions and Logarithm Formula	Attendance	Homework
14	5	First	Application of Hyperbolic Functions: Catenary Solve an engineering problem about catenary	Attendance	Homework
15	5	First	Preparatory week before the final Exam	Attendance	Exam.

11. Course Evaluation and Grade Breakdown:
The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc. Attendance and participation: 5 Points Quiz exams: 30 Points Homework: 5 Points Mid exam: 10 Points Final Exam.: 50 Points

12. Learning and Teaching Resources:	
Prescribed textbooks (syllabus books, if available)	
Recommended supporting books and references (scientific journals, reports...)	Thomas' Calculus by Finney and Thomas.
Electronic references, websites	
Curriculum or course description update rate	Thomas’ Calculus Early Transcendentals - Thirteenth Edition
Recommended supporting books and references (scientific journals, reports...)	5%

Course Instructor
Dr. Asaad Mohamed Azhar Msbah

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:
Mechanics of Materials I
2. Course Code:
CE202
3. Semester / Year:
First semester / 2025-2026
4. Description Preparation Date:
30/07/2026
5. Available Attendance Forms
Attendance (Classrooms)
6. Number of Credit Hours (Total) / Number of Units (Total)
Total SWL: 125 (h/sem) / 5 Credits
7. Course administrator's name (mention all, if more than one name)
Lec. Dr. Ali Natheer Abdul Baki Lec. Dr. Khalid Ahmed Abdullah

8. Course Objectives	
Course Objectives	1. Teaching students the developed stresses, strains, and the effects of Poisson's ratio in various types of structural elements. 2. Teaching students the developed stresses due to changes in temperature or torsion. 3. Teaching students detailed drawings of the shear and moment diagrams and the calculation of deflection and rotation in beams and drawing of the elastic curve.
9. Teaching and Learning Strategies	
Strategies	The main strategy for delivering this module is to encourage students' participation in exercises to refine and expand their critical thinking skills. This will be achieved through classes and interactive tutorials.

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation method**
1	4	First	Introduction – Simple stress	Attendance	Exam and assignment
2	4	First	Simple stress (normal stress, shearing stress and bearing stress)	Attendance	Exam and assignment
3	4	First	Simple strain (Stress – Strain relationship and Hook's Law)	Attendance	Exam and assignment
4	4	First	Simple strain (Poisson's ratio and statically indeterminate members)	Attendance	Exam and assignment
5	4	First	Simple strain caused by thermal stresses	Attendance	Exam and assignment
6	4	First	Torsion	Attendance	Exam and assignment
7	4	First	Torsion + Mid-term Exam	Attendance	Exam and assignment
8	4	First	Shear and moment in beams/shear and moment diagram (Equations method)	Attendance	Exam and assignment
9	4	First	Shear and moment diagram (Equations method)	Attendance	Exam and assignment
10	4	First	Shear and moment diagram (Area method)	Attendance	Exam and assignment
11	4	First	Shear and moment diagram (Area method)	Attendance	Exam and assignment
12	4	First	Deflection in beams (Double integration method)	Attendance	Exam and assignment
13	4	First	Deflection in beams (Moment-area method)	Attendance	Exam and assignment
14	4	First	Deflection in beams (Moment-area method)	Attendance	Exam and assignment
15	4	First	Deflection in beams (Moment-area method)	Attendance	Exam and assignment

11. Course Evaluation and Grade Breakdown:

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Quizzes: 24 marks
Homework: 5 marks
Classwork: 6 marks
Report: 5 marks
Mid exam: 10 marks
Final Exam.: 50 marks

12. Learning and Teaching Resources:	
Prescribed textbooks (syllabus books, if available)	Strength of Materials; Andrew Pytel; Ferdinand Leon Singer
Recommended supporting books and references (scientific journals, reports...)	Mechanics of Materials; Ferdinand P. Beer, E. Russell Johnston Jr., John T. DeWolf, David F. Mazurek
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Dr. Ali Natheer Abdul Baki

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:
Fluid Mechanics
2. Course Code:
CE203
3. Semester / Year:
First semester / 2025-2026
4. Description Preparation Date:
30/07/2026
5. Available Attendance Forms
Attendance (Classrooms)
6. Number of Credit Hours (Total) / Number of Units (Total)
Total SWL: 125 (h/sem) / 5 Credits
7. Course administrator's name (mention all, if more than one name)
Lec. Dr. Khansaa Abdulelah Ahmed
8. Course Objectives

Course Objectives	**The study of Fluid Mechanics aims** to understand the behavior of liquids and gases and their fundamental properties, such as density, viscosity, and pressure, as well as to examine how fluids flow and interact under different conditions. It also aims to analyze and design fluid transport systems, including pipelines, channels, pumps, and turbines, to ensure efficient, safe operation. Furthermore, it involves learning methods to measure and control flow rate, pressure, and velocity in various industrial applications. Fluid mechanics forms the foundation for the study of aerodynamics and hydrodynamics, contributing to the development and performance improvement of aircraft, automobiles, ships, and submarines. In addition, it seeks to reduce energy losses in fluid systems by analyzing head loss, thereby improving energy efficiency, reducing operating costs, and achieving more reliable engineering performance.

9. Teaching and Learning Strategies	
Strategies	**The teaching methods of Fluid Mechanics** rely on lectures to explain fundamental concepts, problem-solving exercises to develop students' analytical and application skills, and laboratory experiments to provide practical experience. In addition, electronic resources and interactive learning tools are used to support self-learning and enhance students' understanding of the subject.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation method
1	2	First	Fluid Definition, Units and Dimensions, Fluid Properties	Attendance	Exam
2	2	First and third	Viscosity and Newton's Law of Viscosity	Attendance	Exam and Report
3	2	First	Ideal and Real Fluids, Capillary Action and Surface Tension	Attendance	Exam and Report
4	2	Third	Static Fluids, Pascal's Law, and the Basic Equation of Static Fluids	Attendance	Exam and Report
5	2	First	Pressure in Fluids, Types of Pressure, and Pressure Measurement Devices	Attendance	Exam and Assignment
6	2	First	Fluid Kinematics, Types of Flow, and the Continuity Equation	Attendance	Exam and Assignment
7	2	First	Mid-term Examination	Attendance	Mid-term Exam
8	2	First	Bernoulli Equation	Attendance	Exam
9	2	First	Applications of the Bernoulli Equation	Attendance	Assignment
10	2	First	Momentum Equation and Its Applications	Attendance	Exam and Assignment
11	2	Third	Pumps and Turbines	Attendance	Exam and Assignment
12	2	First	Flow in Real Fluids and Head Loss	Attendance	Assignment
13	2	First	Multiple Pipe Systems, Pipes in Parallel, and Pipes in Series	Attendance	Assignment
14	2	Third	Three-Reservoir Problems	Attendance	Exam and Assignment
15	2	First	Flow in Open Channels	Attendance	Exam and Assignment

11. Course Evaluation and Grade Breakdown:
The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc. Quizzes: 15 marks Attendance and participation: 5 marks Homework: 5 marks Lab.: 15 marks Final exam: 50 marks

12. Learning and Teaching Resources:	
Prescribed textbooks (syllabus books, if available)	
Recommended supporting books and references (scientific journals, reports...)	Street, R.L., Watters, G.Z. and Vennard, J.K., 1996. Elementary fluid mechanics. *(John Wiley)*.
Electronic references, websites	
Curriculum or course description update rate	Cimbala, J.M. and Cengel, Y.A., 2006. *Fluid mechanics: fundamentals and applications*. McGraw-Hill Higher Education.
Recommended supporting books and references (scientific journals, reports...)	5%

Course Instructor
Dr. Khansaa Abdulelah Ahmed

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:	
Concrete Technology I	
2. Course Code:	
CE204	
3. Semester / Year:	
First semester / 2025-2026	
4. Description Preparation Date:	
30/07/2026	
5. Available Attendance Forms	
Attendance (Classrooms)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Total SWL: 125 (h/sem) / 5 Credits	
7. Course administrator's name (mention all, if more than one name)	
Prof. Dr. Sufyan Younis Ahmad Lect. Dr. Eman khalid Ibrahaim Lec. Zeena Adel Mohammed Lec. Rifa Deli Ahmed	
8. Course Objectives	
Course Objectives	1. Introducing all construction materials, specifically cement and aggregate. 2. Finding the composition of different types of cement and the properties of cement with all tests used to determine cement properties. 3. Study the properties of aggregate with all tests that are conducted to find these properties. 4. Study the effect of cement and aggregate properties on the properties of concrete based on workability, strength, and durability. 5. Study how to calculate the bulking factor in aggregate to calculate the actual volume provided in site. 6. Study how to correct the weight of fine and coarse aggregate based on their humidity conditions. 7. Focus on sustainable materials (environmentally friendly materials) that can be used as a replacement for construction materials, including supplementary cementitious materials and recycled aggregate. 8. An ability to identify, analyze, and solve complex engineering problems according to principles of engineering, science, and mathematics. 9. An ability to acquire and apply new knowledge and use appropriate learning strategies. 10. An ability to participate and work professionally and ethically in different projects to function on multi-disciplinary teams.

9. Teaching and Learning Strategies	
Strategies	The course develops students' knowledge and practical skills in quality control of construction materials in accordance with ASTM, BS EN, and IQS standards, testing and evaluating the properties of cement, aggregates, and water, understanding the behavior of fresh concrete under different environmental conditions, designing concrete mix proportions and adjusting them for aggregate moisture, and applying sustainable materials to enhance the performance and durability of concrete.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation method
1	2	3	Identify the introduction of construction methods	Attendance	Exam
2	2	3	Identify Cement Composition	Attendance	Exam
3	2	3	Identify Main Compounds of Cement and Their Effect on Hydration Process	Attendance	Exam
4	2	3	Identify Types of Cements, Manufacturing and Their Uses	Attendance	Exam
5	2	3	Identify Microstructure of Cement Paste	Attendance	Exam
6	2	3	Identify Gel Pores-Strength Correlation	Attendance	Exam
7	2	3	Term Exam	Attendance	Exam
8	2	3	Identify Concrete Ingredients	Attendance	Exam
9	2	3	Identify Rheology of Concrete, Workability, Plasticity and its Coarseness	Attendance	Exam
10	2	3	Identify Properties of fresh concrete	Attendance	Exam
11	2	3	Identify Tests for ordinary Portland cement (Normal consistency) and (Setting time)	Attendance	Exam
12	2	3	Identify Tests for mortar of cement (Compressive strength, Tensile strength and effect of curing conditions on strength)	Attendance	Exam
13	2	3	Identify Workability and Coarseness of concrete	Attendance	Exam
14	2	3	Identify sustainable materials (environmentally friendly materials)	Attendance	Exam
15	2	3	Identify sustainable materials (environmentally friendly materials)	Attendance	Exam

Details Covered Topics and the required time for the laboratory part /session

Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation method
1	2	3	Identify writing a good technical report	Attendance	Exam
2	2	3	Identify Tests for ordinary Portland cement (Normal consistency)	Attendance	Exam
3	2	3	Identify Tests for ordinary Portland cement (Setting time)	Attendance	Exam
4	2	3	Identify Tests for mortar of cement (Compressive strength and effect of curing conditions on strength)	Attendance	Exam
5	2	3	Identify Tests for mortar of cement (Tensile strength)	Attendance	Exam
6	2	3	Identify Sieve analysis of coarse aggregates	Attendance	Exam
7	2	3	Identify Sieve analysis of fine aggregates	Attendance	Exam
8	2	3	Identify Midterm Exam	Attendance	Exam
9	2	3	Identify Tests for aggregates (Specific gravity for fine and coarse aggregates)	Attendance	Exam
10	2	3	Identify Tests for aggregates (Unit weight)	Attendance	Exam
11	2	3	Identify Tests for aggregates (Moisture content)	Attendance	Exam
12	2	3	Identify Tests for aggregates (Absorption)	Attendance	Exam
13	2	3	Identify Tests for clay and concrete blocks	Attendance	Exam
14	2	3	Identify Tests for tiles	Attendance	Exam
15	2	3	Identify Tests for tiles	Attendance	Exam

11. Course Evaluation and Grade Breakdown:

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Quizzes: 24
Homework: 6
Project: 10
Midterm: 10
Final Exam: 50

12. Learning and Teaching Resources:	
Prescribed textbooks (syllabus books, if available)	
Recommended supporting books and references (scientific journals, reports...)	Troxell, Kelly, and Davis. (1968). Composition and Properties of Concrete, 2nd edition- McGraw-Hill Book Company, 480 pp. Varghese P.C. (2015). Building Materials Paperback, second edition, Prentice Hall India Learning Private Limited; 283 pp.
Electronic references, websites	Nevile A.M. (1995). Properties of Concrete, fourth and final Edition- Pearson Education Limited, 846 pp.
Curriculum or course description update rate	American Society for Testing and Materials (ASTM) 2. British Standards (BS) 3. Iraqi Standard Specifications
Recommended supporting books and references (scientific journals, reports...)	5%

Course Instructor
Prof. Dr. Sufyan Younis Ahmad

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:	
Engineering Surveying I	
2. Course Code:	
CE205	
3. Semester / Year:	
First semester / 2025-2026	
4. Description Preparation Date:	
30/07/2026	
5. Available Attendance Forms	
Attendance (Classrooms)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Total SWL: 150 (h/sem) / 6 Credits	
7. Course administrator's name (mention all, if more than one name)	
Lec. Dr. Yazin Abdul-Ellah Ahmed Lec. Zeena Ahmed Salih	
8. Course Objectives	
Course Objectives	1. To develop problem-solving skills and understanding of surveying theory through the application of techniques. 2. To understand linear and level measurements. 3. This course deals with the basic concept of surveying. 4. This is the basic subject for surveying. 5. To understand instruments. 6. To understand contouring.
9. Teaching and Learning Strategies	
Strategies	The main strategy for delivering this module is to encourage students' participation in exercises to refine and expand their critical thinking skills. This will be achieved through classes, interactive tutorials, and consideration of simple activities that interest students.

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation method**
1	5	First	Introduction to surveying, basic definitions	Attendance	Exam
2	5	First & third	Angles and conversions	Attendance	Exam
3	5	First	Types of errors	Attendance	Exam
4	5	First	Basic surveying tools	Attendance	Exam
5	5	First, third	Measuring lines	Attendance	Exam and report
6	5	First	Types of obstacles	Attendance	Exam
7	5	First	Systematic errors in tape measurements	Attendance	Exam
8	2	First & third	Midterm Examination	Attendance	Exam
9	5	First & third	Basic leveling definitions, Optics of levels &types of levels	Attendance	Exam
10	5	First, third	HI method of leveling	Attendance	Exam and report
11	5	First, third	Check leveling, two peg test, Effect of curvature and refraction	Attendance	Exam and report
12	5	First, third	Reciprocal leveling	Attendance	Exam and report
13	5	First, third	Longitudinal and cross sections, Contouring	Attendance	Exam and report
14	5	First, third	Contouring	Attendance	Exam and report
15	3	First, third	Contouring	Attendance	Exam and report

11. Course Evaluation and Grade Breakdown:

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Quizzes:14 marks

Classwork: 3 marks

Homework: 3 marks

Midterm exam: 10 marks

Exam for Lab part:10 marks

Reports for lab part:10 marks

Final exam: 50 marks

12. Learning and Teaching Resources:	
Prescribed textbooks (syllabus books, if available)	
Recommended supporting books and references (scientific journals, reports...)	Kavanagh, Barry and Diane K. Slattery. Surveying with Construction Applications. 8th ed., Pearson Education, Inc., 2014.
Electronic references, websites	Kavanagh, Barry and Diane K. Slattery. Surveying with Construction Applications. 8th ed., Pearson Education, Inc., 2014.
Curriculum or course description update rate	https://www.coursera.org/browse/physical-science-and-engineering/civil-engineering
Recommended supporting books and references (scientific journals, reports...)	5%

Course Instructor
Dr. Yazin Abdul-Ellah Ahmed

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:	
The crimes of the Baath regime in Iraq	
2. Course Code:	
UOM2050	
3. Semester / Year:	
First semester / 2025-2026	
4. Description Preparation Date:	
30/07/2026	
5. Available Attendance Forms	
Attendance (Classrooms)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Total SWL: 50 (h/sem) / 2 Credits	
7. Course administrator's name (mention all, if more than one name)	
Lecturer: Shatha Chachan	
8. Course Objectives	
Course Objectives	1. Raising students' awareness of the crimes committed by the Ba'ath regime in Iraq. 2. Guiding students to become familiar with and knowledgeable about crimes. 3. Educating students about the seriousness of the crimes.
9. Teaching and Learning Strategies	
Strategies	The strategy adopted in teaching this course is to provide interactive lectures that encourage student participation through discussions, asking questions, and using various educational tools, in addition to adopting a values-based learning approach by discussing the human and ethical dimensions of the topics presented, which contributes to enhancing awareness of human values and developing students' critical and analytical thinking skills.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation method
1	2	First	Political Crimes	Attendance	Classwork
2	2	First	Social Crimes	Attendance	Report & Exam.
3	2	First	The Crime of Suppressing the Sha'ban Uprising	Attendance	Report
4	2	First	Psychological Crimes and Their Effects	Attendance	Homework
5	2	First	Crimes of the Ba'ath Regime According to the Iraqi High Criminal	Attendance	Homework
6	2	First	Court Law of 2005	Attendance	Homework & Exam.
7	2	First	Crimes Related to the Friday Prayer Incident	Attendance	Exam.
8	2	First	Mass Grave Crimes	Attendance	Exam.
9	2	First	Bombing of Holy Shrines	Attendance	Homework & Exam.
10	2	First	The Chemical Attack on Halabja	Attendance	Report
11	2	First	Use of Internationally Prohibited Weapons	Attendance	Homework
12	2	First	Use of Internationally Prohibited Weapons Environmental Crimes of the Ba'ath Regime in Iraq	Attendance	Homework
13	2	First	Mass Grave Incidents and Genocide Committed by the Ba'ath Regime in Iraq	Attendance	Exam.
14	2	First	Political Crimes	Attendance	Classwork
15	2	First	Social Crimes	Attendance	Report & Exam.

11. Course Evaluation and Grade Breakdown:

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Quizzes: 10 Points
Homework: 7 Points
Report and Project: 16 Points
Classwork: 7 Points
Mid-Term Exam: 10 Points
Final Exam: 50 Points

12. Learning and Teaching Resources:	
Prescribed textbooks (syllabus books, if available) كتاب المقرر جرائم نظام البعث في العراق من قبل وزارة التعليم العالي والبعث العلمي	
Recommended supporting books and references (scientific journals, reports...)	
Electronic references, websites	
Curriculum or course description update rate	
Recommended supporting books and references (scientific journals, reports...)	5%

Course Instructor
Shatha Chachan

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

1. Course Name:	
Arabic Language 2	
2. Course Code:	
UOM2012	
3. Semester / Year:	
First semester / 2025-2026	
4. Description Preparation Date:	
30/07/2026	
5. Available Attendance Forms	
Attendance (Classrooms)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Total SWL: 50 (h/sem) / 2 Credits	
7. Course administrator's name (mention all, if more than one name)	
Lecturer Dr. Abeer Turki Fathi	
8. Course Objectives	
Course Objectives	The aim of this course is to enable the student to read correctly and to acquire the ability to use the language effectively in communicating with others, including fluency, clarity of expression, and good communication skills. It also aims to cultivate good listening skills, develop students' literary style, and train them to speak clear, correct Arabic.
9. Teaching and Learning Strategies	
Strategies	The main goal of Arabic language lessons is to eliminate difficulties that may accompany certain topics and to convey the required ideas and information to students in ways that are understandable and appropriate to their individual differences. Among the most prominent topics emphasized in the lectures are the rules of the Arabic language and literature. The study comprises lectures, exams, in-class assignments, discussions, and homework.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation method
1	2	First	Arabic Grammar (Syntax)	Attendance	Exam.
2	2	First	Subject and Predicate	Attendance	Report
3	2	First	Subject and Predicate Modifiers	Attendance	Classwork
4	2	First	Arabic grammar (Kana wakhawatuha)	Attendance	Report & Exam.
5	2	First	Arabic grammar (Inna wakhawatuha)	Attendance	Report
6	2	First	Arabic grammar (Dhanna wakhawatuha)	Attendance	Homework
7	2	First	Accusative Nouns	Attendance	Homework
8	2	First	The Absolute Object	Attendance	Homework & Exam.
9	2	First	Linguistic Errors	Attendance	Exam.
10	2	First	Spelling	Attendance	Exam.
11	2	First	Literature in the Abbasid Era	Attendance	Homework & Exam.
12	2	First	The Poet Al-Mutanabbi	Attendance	Report
13	2	First	The Poet Abu Tammam	Attendance	Homework
14	2	First	The Poet Abu Firas Al-Hamdani	Attendance	Homework
15	3	First	Review and prepare for the final exam	Attendance	Exam.

11. Course Evaluation and Grade Breakdown:

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Quizzes: 15 Points

Homework: 10 Points

Report and Project: 5 Points

Classwork: 10 Points

Mid-Term Exam: 10 Points

Final Exam: 50 Points

12. Learning and Teaching Resources:	
Prescribed textbooks (syllabus books, if available)	
Main references (sources)	النحو الوافي / عباس حسن
Recommended supporting books and references (scientific journals, reports...)	في الأدب العباسي / محمد مهدي البصير
Electronic references, websites	https://uomosul.edu.iq/en/engineering/environmental-engineering-dept/
Curriculum or course description update rate	5%

Course Instructor
Dr. Abeer Turki Fathi

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:
Mathematics IV
2. Course Code:
CE206
3. Semester / Year:
First semester / 2025-2026
4. Description Preparation Date:
30/07/2026
5. Available Attendance Forms
Attendance (Classrooms)
6. Number of Credit Hours (Total) / Number of Units (Total)
Total SWL: 125 (h/sem) / 5 Credits
7. Course administrator's name (mention all, if more than one name)
Asst. Prof. Dr. Asaad Mohammed Azhar Msbah Lec. Revan Nahith Wadee
8. Course Objectives

Course Objectives	1. Provide the fundamental base for elementary mathematics for functions in more than one variable. 2. Use mathematical differentiation and integration to solve some engineering problems.
9. Teaching and Learning Strategies	
Strategies	The main strategy for delivering this course is to encourage students to participate in solving mathematical problems while simultaneously developing their problem-solving skills by exploring multiple approaches. This strategy is achieved through classroom instruction and interactive discussion sessions.

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation method**
1	4	First	Three-Dimensional Coordinate Systems, The Distance Between Two Points Vectors, Component Form, Vector Algebra Operations, Properties of Vector Operations, Midpoint of a Line Segment	Attendance	Exam.
2	4	First	The Dot Product, Angle Between Vectors. The Angle Between Two Nonzero Vectors u and v, Orthogonal Vectors, Dot Product Properties and Vector Projections.	Attendance	Report
3	4	First	The Cross Product, The Cross Product of Two Vectors in Space, Parallel Vectors Properties of the Cross Product, Area of a Parallelogram, Calculating the Cross Product as a Determinant	Attendance	Classwork
4	4	First	Lines and Planes in Space.	Attendance	Report & Exam.
5	4	First	Vector Equation for a Line.	Attendance	Report
6	4	First	Parametric Equations for a Line, The Distance from a Point to a Line in Space	Attendance	Homework
7	4	First	An Equation for a Plane in Space, Equation for a Plane, Lines of Intersection, The Distance from a Point to a Plane, Angles Between Planes	Attendance	Homework
8	4	First	Differential Equations: Definition, Classification, order and degree	Attendance	Homework & Exam.
9	4	First	DEs Homogeneity and linearity of the DEs, Generation of the Des	Attendance	Exam.
10	4	First	First order First degree DEs by Separable method	Attendance	Exam.
11	4	First	First order First degree DEs by linear and nonlinear DEs method	Attendance	Homework & Exam.
12	4	First	First order First degree DEs by Exact and non-Exact DEs method	Attendance	Report
13	4	First	Second order DEs for X-is missing, y-missing	Attendance	Homework
14	4	First	Higher Order DEs – Complementary solution + Particular integral).	Attendance	Homework
15	5	First	Preparatory week before the final Exam	Attendance	Exam.

11. Course Evaluation and Grade Breakdown:
The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc. Attendance and participation: 5 marks Quiz exams: 30 marks Homework: 5 marks Mid exam: 10 marks Final Exam.: 50 marks

12. Learning and Teaching Resources:	
Prescribed textbooks (syllabus books, if available)	
Recommended supporting books and references (scientific journals, reports...)	Thomas' Calculus by Finney and Thomas.
Electronic references, websites	
Curriculum or course description update rate	Thomas’ Calculus Early Transcendentals - Thirteenth Edition
Recommended supporting books and references (scientific journals, reports...)	5%

Course Instructor
Dr. Asaad Mohamed Azhar Msbah

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:	
Mechanics of Materials II	
2. Course Code:	
CE207	
3. Semester / Year:	
Second semester / 2025-2026	
4. Description Preparation Date:	
30/07/2026	
5. Available Attendance Forms	
Attendance (Classrooms)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Total SWL: 150 (h/sem) / 6 Credits	
7. Course administrator's name (mention all, if more than one name)	
Lec. Dr. Ali Natheer Abdul Baki Lec. Dr. Khalid Ahmed Abdullah	
8. Course Objectives	
Course Objectives	1. Teaching students the developed Tensile and compressive bending stresses in beams (symmetrical and unsymmetrical cross-sections). 2. Teaching students the developed Shear stress in beams. 3. Teaching students the developed Combined stresses in beams 4. Teaching students the developed stresses in beams by Mohr's Circle method
9. Teaching and Learning Strategies	
Strategies	The main strategy for delivering this module is to encourage students' participation in exercises to refine and expand their critical thinking skills. This will be achieved through classes and interactive tutorials.

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation method**
1	5	First	Introduction – shear and bending moment in beam	Attendance	Exam and assignment
2	5	First	Tensile and compressive bending stresses in beams (symmetrical and unsymmetrical cross-sections)	Attendance	Exam and assignment
3	5	First	Tensile and compressive bending stresses in beams (symmetrical and unsymmetrical cross-sections)	Attendance	Exam and assignment
4	5	First	Shear stress in solid section beams	Attendance	Exam and assignment
5	5	First	Shear stress in different sections of beams	Attendance	Exam and assignment
6	5	First	Shear stress in different sections of beams	Attendance	Exam and assignment
7	5	First	Mid-term Exam + Introduction - Combined stresses	Attendance	Exam and assignment
8	5	First	Combined stresses in various structural members	Attendance	Exam and assignment
9	5	First	Combined stress in beams (axial and flexural)	Attendance	Exam and assignment
10	5	First	Combined stresses in beams (axial and torsional)	Attendance	Exam and assignment
11	5	First	Combined stresses in beams (torsional and flexural).	Attendance	Exam and assignment
12	5	First	Combined stresses in beams (axial, torsional, and flexural)	Attendance	Exam and assignment
13	5	First	Stresses in a cross-section beam by equations	Attendance	Exam and assignment
14	5	First	Stresses in a cross-section beam by Mohr's Circle	Attendance	Exam and assignment
15	5	First	Stresses in a cross-section beam by Mohr's Circle	Attendance	Exam and assignment

11. Course Evaluation and Grade Breakdown:

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Quizzes: 24 marks
Homework: 5 marks
Classwork: 6 marks
Report: 5 marks
Mid exam: 10 marks
Final Exam.: 50 marks

12. Learning and Teaching Resources:	
Prescribed textbooks (syllabus books, if available)	Strength of Materials; Andrew Pytel; Ferdinand Leon Singer
Recommended supporting books and references (scientific journals, reports...)	Mechanics of Materials; Ferdinand P. Beer, E. Russell Johnston Jr., John T. DeWolf, David F. Mazurek
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Dr. Ali Natheer Abdul Baki

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:	
Building Construction and Damage Assessment	
2. Course Code:	
CE208	
3. Semester / Year:	
Second semester / 2025-2026	
4. Description Preparation Date:	
30/07/2026	
5. Available Attendance Forms	
Attendance (Classrooms)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Total SWL: 75 (h/sem) / 3 Credits	
7. Course administrator's name (mention all, if more than one name)	
Lec. Zeena Adel Mohammed Lec. Abdul Nasser Younis	
8. Course Objectives	
Course Objectives	1. Developing students' skills in identifying building types from a structural perspective. 2. Covering the fundamental stages of building construction. 3. Addressing construction-related issues and challenges encountered during the execution phase. 4. Developing students' skills in understanding structural specification requirements. 5. Explaining the causes of deterioration and damage in buildings. 6. Developing skills for site investigation and covering key on-site remedial methods for buildings
9. Teaching and Learning Strategies	
Strategies	The course adopts an interactive learning approach through lectures, case studies, practical applications, and, where feasible, field visits. It also incorporates problem-based and project-based learning to develop students' skills in analyzing and assessing building damage and preparing technical reports. This approach enhances critical thinking, teamwork, and the integration of theoretical knowledge with practical applications.

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation method**
1	3	5	General introduction to buildings (on-site construction vs. prefabricated construction)	Attendence	Exam
2	3	5	Types of buildings based on construction method (structural, non-structural, construction)	Attendence	Exam
3	3	5	Earth excavation and filling works	Attendence	Exam
4	3	5	Groundwater drainage and site dewatering methods	Attendence	Exam
5	3	5	Foundation works soil characteristics and their relationship to foundations, and types of settlement	Attendence	Exam
6	3	5	Pile works: classification by type, materials, and construction methods	Attendence	Exam
7	3	5	Beams (types of Beams and steel angle supports).	Attendence	Exam
8	3	5	Columns (classification of concrete and steel columns),	Attendence	Exam
9	3	5	floors, ceilings, and types of applied loads	Attendence	Exam
10	3	5	Formwork operations and timber formwork design	Attendence	Exam
11	3	5	Construction joints and bonding materials	Attendence	Exam
12	3	5	Concrete work, including transportation and compaction methods	Attendence	Exam
13	3	5	Steps for assessing structural damage, diagnosing causes, and preparing visual inspection reports	Attendence	Exam
14	3	5	Standardized on-site and laboratory tests for assessing structural damage	Attendence	Exam
15	3	5	Mechanisms of moisture ingress into buildings and methods for damp-proofing walls, floors, and basements	Attendence	Exam

11. Course Evaluation and Grade Breakdown:
The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc. الحضور والمناقشة: 6 درجات الامتحان اليومي: 20 درجة الواجب البيتي: 4 درجات الحلقات النقاشية: 10 درجات الامتحان الشهري: 10 درجات الامتحان النهائي: 50 درجة Attendance and Participation: 6 marks Quizzes: 20 marks Homework: 4 marks Report and Project: 10 marks Mid-Term Exam: 10 marks Final Exam: 50 marks

12. Learning and Teaching Resources:	
Prescribed textbooks (syllabus books, if available)	
Main references (sources)	Building Construction – Authored by Artin Levon and Zuhair Sako Building Assembly – Authored by Anis Jawad Testing and Evaluation of Concrete Structures
Recommended supporting books and references (scientific journals, reports...)	Testing and Evaluation of Concrete Structures
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Dr. Abeer Turki Fathi

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:
Concrete Technology II
2. Course Code:
CE209
3. Semester / Year:
Second semester / 2025-2026
4. Description Preparation Date:
30/07/2026
5. Available Attendance Forms
Attendance (Classrooms)
6. Number of Credit Hours (Total) / Number of Units (Total)
Total SWL: 125 (h/sem) / 5 Credits
7. Course administrator's name (mention all, if more than one name)
Prof. Dr. Sufyan Younis Ahmad Lect. Dr. Eman khalid Ibrahaim Lec. Zeena Adel Mohammed Lec. Rifa Deli Ahmed
8. Course Objectives

Course Objectives	1. Finding bleeding and plastic shrinkage in fresh concrete. 2. Identifying the properties of hardened concrete. 3. Identifying Factors affecting the properties of hardened concrete 4. Study the effect of w/c ratio on concrete strength and durability. 5. Study the effect of test conditions on concrete strength. 6. Study the effect of cement type and aggregate nature on concrete strength. 7. Methods to measure tensile strength of hardened concrete and its relationship with compressive strength. 8. Calculating the modulus of elasticity of concrete according to different international codes. 9. Calculating the drying shrinkage in concrete and its effect on durability. 10. Design of concrete mix based on ACI Method. 11. Acceptance of compressive strength results with respect to the Iraqi Code.

9. Teaching and Learning Strategies	
Strategies	The course develops students' knowledge and skills in understanding the factors affecting the properties and durability of concrete, analyzing the influence of concrete constituents and the water–cement ratio on its performance, applying engineering codes and standards to determine concrete properties, designing concrete mixtures according to the ACI method, and evaluating concrete strength results in accordance with the Iraqi Standard Specification (IQS).

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation method
1	4	3	Temperature of fresh concrete, concrete in cold and hot weather	Attendance	Exam
2	4	3	Properties of hardened concrete, type of cement and nature of aggregate	Attendance	Exam
3	4	3	Properties of hardened concrete, w/c ratio, curing condition and weather condition	Attendance	Exam
4	4	3	Properties of hardened concrete. Factors affecting compression and tension in concrete & Relation between Compression and Tension strength of concrete	Attendance	Exam
5	4	3	Methods of testing tensile concrete strength	Attendance	Exam
6	4	3	Modulus of elasticity and Poisson's ratio of concrete	Attendance	Exam
7	4	3	Permeability and durability of concrete	Attendance	Exam
8	4	3	Midterm exam	Attendance	Exam
9	4	3	Drying Shrinkage of concrete	Attendance	Exam
10	4	3	Design method of concrete components (Absolute Volume), Static quality control of concrete	Attendance	Exam
11	4	3	ACI and B.S design method	Attendance	Exam
12	4	3	Effect of shape of the concrete specimen on the compressive strength	Attendance	Exam
13	4	3	Non-destructive testing of concrete (Hammer test and ultrasonic test)	Attendance	Exam
14	4	3	Non-destructive testing of concrete (Core test and loading test)	Attendance	Exam
15	4	3	Non-destructive testing of concrete (Core test and loading test)	Attendance	Exam

11. Course Evaluation and Grade Breakdown:
The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc. Quizzes: 24 Homework: 6 Project: 10 Midterm: 10 Final Exam: 50

12. Learning and Teaching Resources:	
Prescribed textbooks (syllabus books, if available)	
Recommended supporting books and references (scientific journals, reports...)	Troxell, Kelly, and Davis. (1968). Composition and Properties of Concrete, 2nd edition- McGraw-Hill Book Company, 480 pp. Varghese P.C. (2015). Building Materials Paperback, second edition, Prentice Hall India Learning Private Limited; 283 pp.
Electronic references, websites	Nevile A.M. (1995). Properties of Concrete, fourth and final Edition- Pearson Education Limited, 846 pp.
Curriculum or course description update rate	American Society for Testing and Materials (ASTM) 2. British Standards (BS) 3. Iraqi Standard Specifications
Recommended supporting books and references (scientific journals, reports...)	5%

Course Instructor
Prof. Dr. Sufyan Younis Ahmad

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:	
Engineering Surveying II	
2. Course Code:	
CE210	
3. Semester / Year:	
Second semester / 2025-2026	
4. Description Preparation Date:	
30/07/2026	
5. Available Attendance Forms	
Attendance (Classrooms)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Total SWL: 150 (h/sem) / 6 Credits	
7. Course administrator's name (mention all, if more than one name)	
Lec. Dr. Yazin Abdul-Ellah Ahmed Lec. Zeena Ahmed Salih	
8. Course Objectives	
Course Objectives	1. To develop problem-solving skills and understanding of surveying theory through the application of techniques. 2. To understand measurements. 3. This course deals with the basic concept of surveying. 4. This is the basic subject for surveying. 5. To understand angles and bear problems. 6. To perform surveying.
9. Teaching and Learning Strategies	
Strategies	The primary strategy for delivering this course is to foster student engagement through practical exercises while advancing their critical thinking capabilities. This is accomplished through instructional lectures, interactive learning sessions, and concise, engaging student-centered activities.

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation method**
1	5	First	Introduction to Theodolites	Attendance	Exam
2	5	First	Types of Angles	Attendance	Exam
3	5	First, third	Theodolite Setup: Centering and Leveling	Attendance	Exam
4	5	First	Types of Bearings and Conversions	Attendance	Exam
5	5	First	Coordinates	Attendance	Exam
6	5	First	Open and closed traverse	Attendance	Exam
7	5	First, third	Trigonometric leveling	Attendance	Exam and report
8	2	First & third	Midterm Examination	Attendance	Exam
9	5	First, third	Total Station and laser scanning	Attendance	Exam and report
10	5	First & third	GPS Surveying	Attendance	Exam
11	5	First	Areas Calculation	Attendance	Exam
12	5	First, third	Area Computation Using Coordinates	Attendance	Exam and report
13	5	First, third	Volume Computation Using Contours & Points	Attendance	Exam and report
14	5	First, third	Horizontal and Vertical Curves	Attendance	Exam and report
15	3	First & third	Final Exam	Attendance	Exam

11. Course Evaluation and Grade Breakdown:

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Quizzes:14 marks

Classwork: 3 marks

Homework: 3 marks

Midterm exam: 10 marks

Exam for Lab part:10 marks

Reports for lab part:10 marks

Final exam: 50 marks

12. Learning and Teaching Resources:	
Prescribed textbooks (syllabus books, if available)	
Recommended supporting books and references (scientific journals, reports...)	Kavanagh, Barry and Diane K. Slattery. Surveying with Construction Applications. 8th ed., Pearson Education, Inc., 2014.
Electronic references, websites	Kavanagh, Barry and Diane K. Slattery. Surveying with Construction Applications. 8th ed., Pearson Education, Inc., 2014.
Curriculum or course description update rate	https://www.coursera.org/browse/physical-science-and-engineering/civil-engineering
Recommended supporting books and references (scientific journals, reports...)	5%

Course Instructor
Dr. Yazin Abdul-Ellah Ahmed

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:	
Computer 2	
2. Course Code:	
UOM2032	
3. Semester / Year:	
Second semester / 2025-2026	
4. Description Preparation Date:	
30/07/2026	
5. Available Attendance Forms	
Attendance (Classrooms)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Total SWL: 75 (h/sem) / 3 Credits	
7. Course administrator's name (mention all, if more than one name)	
Asst. prof. Dr. Nadiya Sadeek Ismail	
8. Course Objectives	
Course Objectives	1. Utilize the computer for fundamental tasks. 2. Identify and discuss the hardware components of the computer system. 3. Create documents using a word processor and create presentations. 4. Conduct research on the Internet. 5. An introduction to Artificial Intelligence
9. Teaching and Learning Strategies	
Strategies	The main strategy for delivering this module is to encourage students' participation in Lab activities while refining and expanding their critical thinking skills. This will be achieved through classes and laboratory work, and by considering the type of external search involving computer technologies that interest the students.

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation method**
1	3	6	Security and Networking: What is a network? Types of networks. Basic network components. Network Security Basics. Understanding network threats. Network Troubleshooting	Attendance	Exam
2	3	6	**E-Commerce:** Concepts of Electronic banking services include online banking: ATM and debit card services, Phone banking, SMS banking, electronic alerts, and mobile banking	Attendance	Exam and assignment
3	3	6	**Computer Troubleshooting**: Identifying and solving common hardware and software problems that computer users encounter. Basic troubleshooting techniques and tools for diagnosing and resolving issues.	Attendance	Exam
4	3	6	Introduction to AI: Definition of AI, History of AI, AI Techniques and Approaches, Challenges and Ethical Considerations.	Attendance	Exam
5	3	6	Al in Our Daily Lives: Al in smartphones and virtual assistants like Siri or Google Assistant.)	Attendance	Exam
6	3	6	**Applications of Al:** Education, Healthcare, Finance, Transportation, Marketing and Advertising.	Attendance	Exam
7	3	6	**Applications of Al:** Education, Healthcare, Finance, Transportation, Marketing and Advertising.	Attendance	Exam
8	3	6	**Al and Society:** (How Al affects social, Al and international relations, Al and the future of humanity.)	Attendance	Exam and assignment
9	3	6	**Al and Society:** (How Al affects social, Al and international relations, Al and the future of humanity.)	Attendance	Exam
10	2	6	Midterm Examination.	Attendance	Exam
11	3	6	Ethical Challenges in Al: (Al ethics, privacy and surveillance, the impact of Al on the job market.)	Attendance	Exam
12	3	6	Ethical Challenges in Al: (Al ethics, privacy and surveillance, the impact of Al on the job market.)	Attendance	Exam and assignment
13	3	6	The Future of Al (Future trends in Al, recent research and emerging technologies.)	Attendance	Exam

14	4	6	The Future of Al (Future trends in Al, recent research and emerging technologies.)	Attendance	Exam
15	4	6	The Future of Al (Future trends in Al, recent research and emerging technologies.)	Attendance	Exam

11. Course Evaluation and Grade Breakdown:
The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc. Quizzes: 10 marks Assignments: 10 marks Lab: 10 marks Reports: 10 marks Mid-Term Exam: 10 marks Final Exam: 50 marks

12. Learning and Teaching Resources:	
Prescribed textbooks (syllabus books, if available)	
Main references (sources)	Graham Brown, David Watson, "Cambridge IGCSE Information and Communication Technology", 3rd Edition (2020)
Recommended supporting books and references (scientific journals, reports...)	Alan Evans, Kendall Martin, Mary Anne Poatsy, "Technology in Action Complete", 16th Edition (2020).
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Dr. Nadiya Sadeek Ismail

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:	
English Language 2	
2. Course Code:	
UOM2022	
3. Semester / Year:	
Second semester / 2025-2026	
4. Description Preparation Date:	
30/07/2026	
5. Available Attendance Forms	
Attendance (Classrooms)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Total SWL: 50 (h/sem) / 2 Credits	
7. Course administrator's name (mention all, if more than one name)	
Lecturer Dr. Rahma Ethar Abdulkareem	
8. Course Objectives	
Course Objectives	1. To study grammar (verb tenses, sentence structure, question words, adverbs and adjectives, quantity, articles, verb patterns, prepositions, comparative and superlative). 2. To learn Vocabulary, focusing on all academic words, specifically in the civil engineering field. 3. To study comprehensive reading in a variety of subjects. 4. To focus on listening and speaking using videos and conversations between students in class. 5. To study how to write an academic paragraph.
9. Teaching and Learning Strategies	
Strategies	The main strategy for delivering this module is to encourage students' participation in exercises to refine and expand their critical thinking skills. This will be achieved through classes, interactive tutorials, and simple experiments involving sampling activities that interest students.

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation method**
1	2	Fourth	Grammar/ Verb tenses and examples (present, past, future)/ Vocabulary / Reading, listening, speaking	Attendance	Exam.
2	2	Fourth	Grammar/ Verb tenses and examples (present) / Vocabulary / Reading, listening, speaking	Attendance	Report
3	2	Fourth	Grammar/ Verb tenses and examples (past) / Vocabulary / Reading, listening, speaking	Attendance	Classwork
4	2	Fourth	Grammar/ Quantity/ Vocabulary/ Reading, listening, speaking	Attendance	Report & Exam.
5	2	Fourth	Grammar/ Verb tenses and examples (future) / Vocabulary / Reading, listening, speaking	Attendance	Report
6	2	Fourth	Grammar/ Comparative & Superlatives / Vocabulary / Reading, listening, speaking	Attendance	Homework
7	2	Fourth	Grammar/ Verb tenses and examples (present perfect) / Vocabulary / Reading, listening, speaking	Attendance	Homework
8	2	Fourth	Grammar/ have to, should / Vocabulary / Reading, listening, speaking	Attendance	Homework & Exam.
9	2	Fourth	Grammar/ Verb tenses and examples (past perfect) / Vocabulary / Reading, listening, speaking	Attendance	Exam.
10	2	Fourth	Grammar/ Verb tenses and examples (passive) / Vocabulary / Reading, listening, speaking	Attendance	Exam.
11	2	Fourth	Grammar/ Verb tenses and examples (present perfect continuous) / Vocabulary / Reading, listening, speaking	Attendance	Homework & Exam.
12	2	Fourth	Writing an academic paragraph / Reading, listening, speaking	Attendance	Report
13	2	Fourth	Grammar/ if condition / Vocabulary / Reading, listening, speaking	Attendance	Homework
14	2	Fourth	Writing / Paraphrasing / Reading, listening, speaking	Attendance	Homework
15	2	Fourth	Writing / Paraphrasing / Reading, listening, speaking	Attendance	Exam.

11. Course Evaluation and Grade Breakdown:
The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc. Quizzes: 10 Points Homework: 10 Points Seminars: 10 Points Classwork: 10 Points Mid-Term Exam: 10 Points Final Exam: 50 Points

12. Learning and Teaching Resources:	
Prescribed textbooks (syllabus books, if available)	
Main references (sources)	Headway Pre-Intermediate Student's Book-Fourth Edition
Recommended supporting books and references (scientific journals, reports...)	Headway Pre-Intermediate Student's Book-Fourth Edition
Electronic references, websites	https://meet.google.com/yof-ngkn-ssc
Curriculum or course description update rate	5%

Course Instructor
Dr. Rahma Ethar Abdulkareem

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:	
Differential Equations	
2. Course Code:	
CE301	
3. Semester / Year:	
First semester / 2025-2026	
4. Description Preparation Date:	
30/07/2026	
5. Available Attendance Forms	
Attendance (Classrooms)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Total SWL: 100 (h/sem) / 4 Credits	
7. Course administrator's name (mention all, if more than one name)	
Prof. Dr. Salwa Mubarak Abdullah, Asst. prof. Dr. Nadiya Sadeek Ismail	
8. Course Objectives	
Course Objectives	1. Developing problem-solving skills and understanding differential equations through the application of techniques. 2. To make students familiar with second-order differential equations, higher-order linear differential equations, differential equation systems, characteristic values, and characteristic vectors 3. This course deals with Fourier series, half-range expansions of odd and even functions 4. This is the basic subject for simultaneous solving of differential equations using the D operator to enable the student to understand and start using mathematical equations. 5. To make the students familiar with the use of numerical methods to solve equations, including iterative methods, and how to find the completion in different ways. 6. To perform numerical integration and numerical derivative. 7. The use of matrices to solve the system of equations in different ways, as well as using the numerical solution to solve first and second-degree differential equations in numerical ways.
9. Teaching and Learning Strategies	
Strategies	The course is designed to enhance students' critical thinking, analytical reasoning, and problem-solving abilities by engaging them in engineering-related challenges. Instruction is delivered through a combination of lectures, practical demonstrations, problem-solving activities, and small-group discussions. The course also fosters students' capacity to take responsibility for their learning while developing effective independent study habits and collaborative teamwork skills.

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation method**
1	3	First	Second-order Linear Differential Equation.	Attendance	Exam.
2	3	First	Solving Problems and applications of Higher Order Linear Differential Equations.	Attendance	Exam.
3	3	First	Applications.	Attendance	Exam.
4	3	First	Solved problems.	Attendance	Exam.
5	3	First	Matrices and determinants	Attendance	Exam.
6	3	First	Eigenvalue and Eigen vectors.	Attendance	Exam.
7	3	First	Solution of simultaneous DES using the operator D	Attendance	Exam.
8	3	First	Fourier series, even and odd function half-range expansions	Attendance	Exam.
9	3	First	Fourier Series Applications	Attendance	Exam.
10	3	First	Midterm Examination.	Attendance	Exam.
11	3	First	Partial Differential Equation, Wave Equation, Solve Problems, and Applications	Attendance	Exam.
12	3	First	Partial Differential Equation, Heat Equation, Solve Problems, and Applications	Attendance	Exam.
13	3	First	Free Longitudinal Vibration on Beams, Solve Problems, and Applications	Attendance	Exam.
14	3	First	Free Transverse Vibration on Beams: Solve Problems and Applications	Attendance	Exam.
15	3	First	Review	Attendance	Exam.

11. Course Evaluation and Grade Breakdown:

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Quizzes: 15 marks
Homework: 10 marks
Report and Project: 5 marks
Classwork: 10 marks
Mid-Term Exam: 10 marks
Final Exam: 50 Points

12. Learning and Teaching Resources:	
Prescribed textbooks (syllabus books, if available)	
Main references (sources)	1. Erwin Kreyszig, "Advanced engineering mathematics"John wiley & sons, sixth edition, 1988 2.C. Ray Wylie, " Advanced engineering mathematics" McGRAW-Hill ,INC, Ltd,, fourth edition, 1975.
Recommended supporting books and references (scientific journals, reports...)	Kiusalaas, " Numerical Methods in Engineering with MATLAB", Campridge University press, 2005.
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Dr. Salwa Mubarak Abdullah

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:	
Theory of Structures I	
2. Course Code:	
CE302	
3. Semester / Year:	
First semester / 2025-2026	
4. Description Preparation Date:	
30/07/2026	
5. Available Attendance Forms	
Attendance (Classrooms)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Total SWL: 125 (h/sem) / 5 Credits	
7. Course administrator's name (mention all, if more than one name)	
Assist. Prof. Dr. Jasim Ali Abdullah Assist. Prof. Dr. Oday Asal Salih	
8. Course Objectives	
Course Objectives	Students are introduced to the structural components of engineering structures through the study of their configuration and classification. Building on this foundation, the course progressively develops students' knowledge as future civil engineers, enabling them to analyze statically determinate structures and evaluate their stability. The course also covers the calculation of structural deflections using various methods, including the **Principle of Virtual Work**, **Castigliano's First Theorem**, and the **Conjugate Beam Method**. Finally, students learn to construct **influence lines** for statically determinate structures, including **beams**, **trusses**, and **girders**.
9. Teaching and Learning Strategies	
Strategies	The module adopts an interactive learning approach that develops students' knowledge and skills in the classification and analysis of statically determinate structures, the construction of shear force and bending moment diagrams, the calculation of structural deflections using various analytical methods, and the development of influence lines for structural members. This approach enhances students' structural analysis capabilities and strengthens the integration of theoretical concepts with practical engineering applications.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation method
1	4	First	Introduction of the theory of structures and general discussion of the stability of structures.	Attendance	Exam
2	4	First and third	Discuss the stability and determinacy of Beams, Frames and Trusses.	Attendance	Exam and report
3	4	First and fifth	Analysis of statically determinate Beams and draw the shear forces and moments diagrams.	Attendance	Exam and report
4	4	Third	Analysis of statically determinate Frames and draw the normal force, shear forces and moments diagrams.	Attendance	Exam and report
5	4	First	Analysis the determinate Trusses by Joint Method.	Attendance	Exam and assignment
6	4	First	Analysis the determinate Trusses by Section Method.	Attendance	Exam and assignment
7	4	First	Design of tension members. Selection of sections	Attendance	Exam and assignment
8	4	First	Deformations of Beams By Virtual Work Method. Deformations of Frames By Virtual Work Method.	Attendance	Exam
9	4	First	Deformations of Trusses By Virtual Work Method	Attendance	assignment
10	4	Fifth	Deformations of Beams & Frames By Castigliano's First Theorem Method.	Attendance	Exam
11	4	First and third	Deformations of Trusses By Castigliano's First Theorem Method	Attendance	assignment
12	4	First and third	Deformations of Beams By Conjugate Beam Method	Attendance	Exam and assignment
13	4	First and third	Influence Lines of Trusses.	Attendance	Exam and report
14	4	First and third	Influence Lines of Girders.	Attendance	Exam and report
15	4	First and third	Review	Attendance	Exam.

11. Course Evaluation and Grade Breakdown:

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Quizzes: 20 marks
Homework: 10 marks
Report and Project: 10 marks
Mid-Term Exam: 10 marks
Final Exam: 50 Points

12. Learning and Teaching Resources:	
Prescribed textbooks (syllabus books, if available)	
Main references (sources)	Structural Analysis, Russell C. Hibbeler, Pearson Education Limited, 10th edition, 2020.
Recommended supporting books and references (scientific journals, reports...)	Structural Analysis, Aslam Kassimali Cengage Learning, 6th edition, 2019.
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Dr. Jasim Ali Abdullah

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:	
Soil Mechanics I	
2. Course Code:	
CE303	
3. Semester / Year:	
First semester / 2025-2026	
4. Description Preparation Date:	
30/07/2026	
5. Available Attendance Forms	
Attendance (Classrooms)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Total SWL: 150 (h/sem) / 6 Credits	
7. Course administrator's name (mention all, if more than one name)	
Prof. Dr. Moataz A. Alobaydi Prof. Amina Ahmead Khaleel	
8. Course Objectives	
Course Objectives	The course aims to provide students with fundamental knowledge of soil mechanics, including the nature, composition, and engineering behavior of soils. It develops an understanding of the weight–volume relationships of soils and their engineering applications, as well as the hydraulic properties of soils and the principles governing water flow through porous media. The course also covers the analysis of internal stresses in soil masses, the influence of the groundwater table, and the distribution and transmission of stresses within soils. These concepts provide the basis for evaluating the bearing capacity and compressibility of soils. Finally, the course addresses soil compressibility and the calculation of total settlement, time-dependent settlement, and differential settlement, emphasizing their significance in the safe and economical design of geotechnical and civil engineering structures.
9. Teaching and Learning Strategies	
Strategies	The course encourages students to develop critical thinking, analytical, and problem-solving skills through the solution of engineering problems. Teaching methods include lectures, practical demonstrations, laboratory sessions, problem-solving exercises, and small-group discussions. The course also promotes students' ability to assume responsibility and work effectively in both independent and collaborative learning environments.

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation method**
1	3	First	Weight–Volume Relationships.	Attendance	Exam
2	3	First and third	Physical and engineering properties of soils, soil index properties (soil plasticity and Atterberg limits {consistency limits, liquid limit, plastic limit}), clay activity, relative density, sensitivity, flow curve, flow index, shrinkage limit and shrinkage index, and the Hydrometer test.	Attendance	Exam and report
3	3	First	Soil gradation and soil classification (the Unified Soil Classification System (USCS), the AASHTO Soil Classification System, the MIT Soil Classification System, and the triangular classification system).	Attendance	Exam and report
4	3	Third	Hydraulic properties: Introduction to flow through porous media. Capillarity and surface tension. Soil permeability.	Attendance	Exam and report
5	3	First	Seepage through soils (Laplace's equation, flow net, flow net construction, flow lines, equipotential lines, calculation of the quantity of seepage through flow nets for non-homogeneous soils, seepage pressure, critical hydraulic gradient, and calculation of seepage pressure and uplift force).	Attendance	Exam and assignment
6	3	First	Seepage beneath and through earth structures, soil boiling, critical conditions in hydraulic structures, and piping.	Attendance	Exam and assignment
7	3	First	Seepage through earth structures and determination of the phreatic surface in earth dams, soil filters, and the design requirements for sand filters.	Attendance	Exam and assignment
8	3	First	Stresses in soil masses (total and effective stresses). Internal stresses in soil masses (total stress, effective stress, and neutral stress (pore water pressure) in soils).	Attendance	Exam
9	3	First	Stresses induced by external loads for different loading areas. Stresses induced by a single concentrated load or multiple concentrated loads. Stresses induced by a uniformly distributed line load.	Attendance	assignment
10	3	Fifth	Midterm Examination.	Attendance	Exam
11	3	First and third	Stresses induced by a uniformly distributed strip load. Stresses induced by a triangularly distributed strip load.	Attendance	assignment
12	3	First and third	Stresses induced by irregularly loaded areas using Newmark's method.	Attendance	Exam and assignmen

					t
13	3	First and third	Compaction: basic principles, compaction theory, compaction mechanics and the role of water in the compaction process, the fundamental variables affecting the compaction process, the relationship between dry density and water content, and the compaction curve.	Attendance	Exam and report
14	3	First and third	Laboratory compaction, the saturation curve, changes in the structure of cohesive soils during compaction, the effects of compaction on soil properties, field compaction, and quality control of field compaction operations.	Attendance	Exam and report
15	3		Review	Attendance	Exam.

11. Course Evaluation and Grade Breakdown:
The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc. Quizzes: 20 marks Homework: 10 marks Report and Project: 10 marks Mid-Term Exam: 10 marks Final Exam: 50 Points

12. Learning and Teaching Resources:	
Prescribed textbooks (syllabus books, if available)	Principles of Geotechnical Engineering, (2004), Braja M. Das, 5th edition 2002, copyright by Wadsworth Group/United Stated.
Main references (sources)	العشو، محمد عمر ، 1991" مبادى ميكانيك التربة" ، كلية الهندسة ، جامعة الموصل.
Recommended supporting books and references (scientific journals, reports...)	Bowels J.E. (1978): Engineering properties of soils and their measure mends, second edition. McGraw-Hill books company.
Electronic references, websites	Whitlow, R. (1983): Basic soil mechanics, Construction Press, London and New York. Annual Book of ASTM Standards, volume 04.08 : Soil and Rock (I) Published by ASTM in 2000
Curriculum or course description update rate	5%

Course Instructor
Dr. Moataz A. Alobaydi

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:	
Reinforced Concrete I	
2. Course Code:	
CE304	
3. Semester / Year:	
First semester / 2025-2026	
4. Description Preparation Date:	
30/07/2026	
5. Available Attendance Forms	
Attendance (Classrooms)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Total SWL: 125 (h/sem) / 5 Credits	
7. Course administrator's name (mention all, if more than one name)	
Assist. Prof. Dr. Rabi M. Najem Assist. Prof. Dr. Hala J. Mohammed	
8. Course Objectives	
Course Objectives	1. Develop students' ability to design safe and economical reinforced concrete structural members in accordance with engineering design principles. 2. Enable students to apply structural analysis principles to determine design actions resulting from applied loads. 3. Develop students' ability to select appropriate structural sections and reinforcement to satisfy safety, serviceability, and economy requirements. 4. Develop students' proficiency in applying the provisions of **ACI 318-08** in the design and detailing of reinforced concrete members. 5. Develop problem-solving skills to address practical reinforced concrete design and construction challenges.
9. Teaching and Learning Strategies	
Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials, and by considering the types of simple experiments involving some sampling activities that are interesting to the students.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation method
1	4	Second	Introduction	Attendance	Exam
2	4	Second	types of failure.	Attendance	Exam
3	4	Second	Introduction	Attendance	Exam
4	4	Second	the ACI 318-19 (American Concrete Institute) standard.	Attendance	Exam
5	4	Second	Analysis of RC beam using Allowable Stress Method (ASM).	Attendance	Exam
6	4	Second	designing of RC beam using Allowable Stress Method (ASM).	Attendance	Exam
7	4	Second	Analysis of reinforced concrete beams using the Ultimate Stress Method (USM).	Attendance	Exam
8	4	Second	Midterm Examination.	Attendance	Exam
9	4	Second	design of reinforced concrete beams using the Ultimate Stress Method (USM).	Attendance	Exam
10	4	Second	design of double reinforcement RC beams.	Attendance	Exam
11	4	Second	design of Tee shape reinforcement RC beams.	Attendance	Exam
12	4	Second	design of special shape reinforcement RC beams.	Attendance	Exam
13	4	Second	Design for shear strength	Attendance	Exam
14	4	Second	Design for torsion	Attendance	Exam
15	4	Second	Review	Attendance	Exam

11. Course Evaluation and Grade Breakdown:

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Quizzes: 20 marks

Homework: 10 marks

Report and Project: 10 marks

Mid-Term Exam: 10 marks

Final Exam: 50 marks

12. Learning and Teaching Resources:		
Prescribed textbooks (syllabus books, if available)	اساسيات الخرسانة المسلحة، ا.د. سعد علي الطعان، جامعة الموصل، 1993.	
Main references (sources)	Building Code Requirements for Structural Concrete (ACI 318M-08) and Commentary	
Recommended supporting books and references (scientific journals, reports...)		
Electronic references, websites		
Curriculum or course description update rate		5%

Course Instructor
Dr. Rabi M. Najem

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:	
Highway Engineering I	
2. Course Code:	
CE305	
3. Semester / Year:	
First semester / 2025-2026	
4. Description Preparation Date:	
30/07/2026	
5. Available Attendance Forms	
Attendance (Classrooms)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Total SWL: 125 (h/sem) / 5 Credits	
7. Course administrator's name (mention all, if more than one name)	
Assis. Prof. Dr. Mohammad Ahmed Humoody	
8. Course Objectives	
Course Objectives	1. Formation of engineering skills that ensure design, construction, operations, maintenance 2. Optimizing road and transport systems 3. Mainly focused on the engineering design of roads from a technical point of view
9. Teaching and Learning Strategies	
Strategies	The course adopts an interactive learning approach through lectures, practical applications, case studies, and project-based activities, with a focus on the planning and geometric design of highways in accordance with engineering standards, analyzing geometric and traffic elements, and using engineering software where appropriate to develop problem-solving skills and bridge theoretical concepts with practical engineering applications.

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation method**
1	3	First and third	HIGHWAYS as PART of the TRANSPORTATION SYSTEM Transportation Engineering, Transportation System, Traffic or (Transportation) Engineering, Highway Transportation Elements	Attendance	Exam.
2	3	First and third	ROAD USER Driver Characteristics and Senses, Visual Critical Characteristics, Fields of Vision, Perception-Reaction Time, Pedestrian Characteristics	Attendance	Exam.
3	3	First and third	VEHICLE (A) Static Characteristics, (B) Operational Characteristics (C) Environmental Characteristics, VEHICLE VARIABLE	Attendance	Exam.
4	3	First and third	ROAD CHARACTERISTICS Highway Functional Classifications, Highway Classifications, Sight Distance Type, Stopping Sight Distance, Passing Sight Distance Highway Design Manual Classification	Attendance	Exam.
5	3	First and third	Highway Surveys and Location Office Study of Existing Information, Reconnaissance Survey, Preliminary Location Survey, Final Location Survey, Location of Recreational and Scenic Routes, Location of Highways in Urban Areas Principles of Bridge Location, Survey Methods	Attendance	Exam.
6	3	First and third	HIGHWAY EARTHWORK5 General Method of Procedure, Volume of Earthwork, Haul and Overhaul, Computing Ordinates of the Mass Diagram, Interpretation of the Mass Diagram,	Attendance	Exam.
7	3	First and third	Geometric Design Principles of Highway Factors Influencing Highway Design, Volume and Flow Rate, Daily Volumes., Hourly Volumes. DESIGN OF THE ALIGNMENT Geometric Design Elements, Vertical Alignment, Horizontal Alignment, Cross-section	Attendance	Exam.
8-10	3	First and third	VERTICAL ALIGNMENT Types of Vertical Curves, Length of Crest Vertical Curves, Minimum Length of Sag Vertical Curves Based on SSD, Based on Comfort Based on Appearance, Drainage Based Length of Crest and Sag Vertical Curves Based on K, Sight Distance at Undercrossing, Turning point, Combined Sag and Crest Vertical Curves, Grades, General for Vertical Alignment,	Attendance	Exam.

11-14	3	First and third	HORIZONTAL ALIGNMENT Vehicle Cornering and Superelevation, Simple Curves (dynamic & geometry), Formulas for Simple Curves. Field Location of a Simple Horizontal Curve, Transition Curves, Length of Spiral Curves. Length of Superelevation Runoff, Attainment of Superelevation. Curve Widening of Horizontal Curves, Curve Radii Based on Stopping Sight Distance, Cross-Section Elements, Width, Medians, Barriers., Cross,	Attendance	Exam.
15	3	First and third	Review	Attendance	Exam.

11. Course Evaluation and Grade Breakdown:

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Attendance and Precipitation: 5
Quizzes: 10 marks
Homework: 10 marks
Report and Project: 15 marks
Mid-Term Exam: 10 marks
Final Exam: 50 Points

12. Learning and Teaching Resources:

Prescribed textbooks (syllabus books, if available)	Nicholas J. Garber and Lester A. Hoel. "Traffic and Highway Engineering". RPK Editorial Services, Inc. 5th edition, 2020.
Main references (sources)	AASHTO. A Policy on Geometric Design of Highways and Streets. American Association of State Highway and Transportation Officials, Washington, D.C., 2014.
Recommended supporting books and references (scientific journals, reports...)	American Society for Testing and Materials (ASTM), (2003). Standard Specification, Section 4, Vol. 04-03, West Conshohocken, PA. The Asphalt Institute, "Laboratory Mixing and Compaction Temperatures" Executive Offices and Research Center, Research Park Drive, P.O. Box. 14052, Lexington, KY 40512-4052, USA. Asphalt Institute Technical Bulletin.
Electronic references, websites	https://www.nationalacademies.org/trb/transportation-research-board
Curriculum or course description update rate	5%

Course Instructor
Dr. Mohammad Ahmed Humoody

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:	
Engineering Project Management	
2. Course Code:	
CE306	
3. Semester / Year:	
First semester / 2025-2026	
4. Description Preparation Date:	
30/07/2026	
5. Available Attendance Forms	
Attendance (Classrooms)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Total SWL: 50 (h/sem) / 2 Credits	
7. Course administrator's name (mention all, if more than one name)	
Lec. Dr. Rakan Farooq Qasim	
8. Course Objectives	
Course Objectives	1. Introducing the student to the importance of studying the engineering management course. 2. Introducing the student to the importance of time control in engineering projects. 3. Training the student to create work progress tables 4. Training the student to make tables of quantities 5. Teach the student the importance of controlling quality in projects 6. Introducing the student to professional ethics and risk management.
9. Teaching and Learning Strategies	
Strategies	The course develops students' knowledge and skills in planning and managing engineering projects, applying principles of time, cost, quality, and risk management, using project management tools and software, and analyzing case studies to support effective decision-making through interactive learning, practical applications, and teamwork.

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation method**
1	2	Fifth	General concepts about engineering management	Attendance	Exam.
2	2	Fifth	Engineering contracts	Attendance	Exam.
3	2	Fifth	Professional Ethics	Attendance	Exam.
4	2	Fifth	Risk Management	Attendance	Exam.
5	2	Fifth	Bar chart and frequency distribution	Attendance	Exam.
6	2	Fifth	Bar chart and frequency distribution	Attendance	Exam.
7	2	Fifth	How to calculate the critical path by contract	Attendance	Exam.
8	2	Fifth	How to calculate the critical path by contract	Attendance	Exam.
9	2	Fifth	PERT path method	Attendance	Exam.
10	2	Fifth	PERT path method	Attendance	Exam.
11	2	Fifth	PERT path method	Attendance	Exam.
12	2	Fifth	Primavera	Attendance	Exam.
13	2	Fifth	Primavera	Attendance	Exam.
14	2	Fifth	Tables of quantities and cost calculations	Attendance	Exam.
15	2	Fifth	Cash flow	Attendance	Exam.

11. Course Evaluation and Grade Breakdown:

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Quizzes: 15 marks
Homework: 10 marks
Report and Project: 5 marks
Classwork: 10 marks
Mid-Term Exam: 10 marks
Final Exam: 50 Points

12. Learning and Teaching Resources:	
Prescribed textbooks (syllabus books, if available)	
Main references (sources)	
Recommended supporting books and references (scientific journals, reports...)	
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Dr. Rakan Farooq Qasim

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:	
Hydraulic Structures	
2. Course Code:	
CE316	
3. Semester / Year:	
First semester / 2025-2026	
4. Description Preparation Date:	
30/07/2026	
5. Available Attendance Forms	
Attendance (Classrooms)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Total SWL: 75 (h/sem) / 3 Credits	
7. Course administrator's name (mention all, if more than one name)	
Assist. Prof. Dr. Ayman Talib Hameed	
8. Course Objectives	
Course Objectives	This course aims to provide civil engineers with basic information about the types of hydraulic structures, their importance, and the various methods used to calculate the pressures generated on the structure and the uplift pressure. It also to provide students with information on the design of some small and large hydraulic structures, with explaining some of the problems that the structure is exposed and how to solve the problems.
9. Teaching and Learning Strategies	
Strategies	The strategy of this course is to encourage student for participation in presentations and exercises, in same times honing and expanding their thinking and skills. This will be achieved through lectures, scholarly resources, interactive tutorials, and by considering the type of simple experiments that include some sampling activities that interest students.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation method
1	2	1	Introduction to hydraulic structures, types of hydraulic structures	Attendance	Exam
2	2	1	Hydraulic jump and it is advantages in the design of hydraulic structures, Draw the water surface profile of hydraulic jump and types of energy dissipators	Attendance	Exam
3	2	1	Types and designs of stilling basins	Attendance	Exam
4	2	1	Design of concrete floors using (Bligh's theory + Line's theory), design of concrete floors using (Khosali's theory)	Attendance	Exam
5	2	1	Design of concrete floors using (Bligh's theory + Line's theory), design of concrete floors using (Khosali's theory)	Attendance	Exam
6	2	1	Types of culverts, hydraulic design of culverts	Attendance	Exam
7	2	1	Spillways, design of Ogee spillway	Attendance	Exam
8	2	1	Types and design of cross drainage work	Attendance	Exam
9	2	1	Types and design of cross drainage work	Attendance	Exam
10	2	1	Types of syphon, Design of syphon	Attendance	Exam
11	2	1	Protection works, Design of scour	Attendance	Exam
12	2	1	Canal regulation works, Types of regulators, Design of regulators	Attendance	Exam
13	2	1	Canal regulation works, Types of regulators, Design of regulators	Attendance	Exam
14	2	1	Dams, Design of concrete gravity dam	Attendance	Exam
15	2	1	Dams, Design of concrete gravity dam	Attendance	Exam

11. Course Evaluation and Grade Breakdown:

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Quizzes: 20 marks
Homework: 10 marks
Report and Project: 10 marks
Mid-Term Exam: 10 marks
Final Exam: 50 Points

12. Learning and Teaching Resources:		
Prescribed textbooks (syllabus books, if available)	Varshneny R.S. (1979). " Theory and design of irrigation structures (volume 1&volume2)", 4th, N.C.Jain.	
Main references (sources)	1. Arora K. R. (2006), "Irrigation, Water Power and Water Recourses Engineering ", 4th Reprint Edition, A. K. Jain, For standard Publishers distributors, 1705-B. Nai Sarak. Delhi-110006. 2. Santosh Kumear (1999), "Irrigation Engineering and Hydraulic Structures", 14th Reviers edition in S.I. Units, Hanna Publishers,2-B. Nathmarket. Naisarak, Delhi-110006. 3. Irrigation, Water Power and Water Recourses Engineering, Dr. K. R. Arora, 4th Reprint Edition 2006.	
Recommended supporting books and references (scientific journals, reports...)		
Electronic references, websites		
Curriculum or course description update rate		5%

Course Instructor
Dr. Ayman Talib Hameed

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:	
Numerical Analysis	
2. Course Code:	
CE308	
3. Semester / Year:	
First semester / 2025-2026	
4. Description Preparation Date:	
30/07/2026	
5. Available Attendance Forms	
Attendance (Classrooms)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Total SWL: 100 (h/sem) / 4 Credits	
7. Course administrator's name (mention all, if more than one name)	
Prof. Dr. Salwa Mubarak Abdullah, Asst. prof. Dr. Nadiya Sadeek Ismail	
8. Course Objectives	
Course Objectives	1. To develop problem-solving skills and understanding numerical analysis through the application of techniques. 2. To make students familiar with the use of numerical methods to solve equations, including iterative methods, and how to find the solution in different ways. 3. This course covers numerical integration and differentiation, and the use of matrices to solve systems of equations in various ways. 4. This is the basic subject for the numerical solution of first- and second-degree differential equations in numerical ways 5. To make students familiar with the MATLAB program for solving problems and finding solutions in different ways.
9. Teaching and Learning Strategies	
Strategies	The main strategy for delivering this module is to encourage students' participation in exercises to refine and expand their critical thinking skills. This will be achieved through classes, interactive tutorials, and simple experiments involving sampling activities that interest students. As well as using programs like MATLAB to experimentally apply the theoretical concepts that the student studies throughout the course

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation method
1	3	First	Numerical Methods in General, Introduction.	Attendance	Exam.
2	3	First	Solution of Equations by Iteration, fixed-point iteration method, Newton-Raphson method, and Secant method.	Attendance	Exam.
3	3	First	Interpolation, Linear Interpolation, Quadratic Interpolation, Newton's Divided Difference Interpolation.	Attendance	Exam.
4	3	First	Equal spacing: Newton's Forward Difference Formula, Equal spacing: Newton's Backward Difference Interpolation, Lagrangian Interpolation.	Attendance	Exam.
5	3	First	Numerical Integration and Differentiation.	Attendance	Exam.
6	3	First	System of Linear Equations, Gauss Elimination.	Attendance	Exam.
7	3	First	System of Linear Equations, LU Factorization	Attendance	Exam.
8	3	First	System of Linear Equations, Gauss-Seidel Iteration Method	Attendance	Exam.
9	3	First	System of Linear Equations, Inverse Matrix	Attendance	Exam.
10	3	First	Midterm Exam	Attendance	Exam.
11	3	First	Method of Least Squares	Attendance	Exam.
12	3	First	General introduction to MATLAB	Attendance	Exam.
13	3	First	How to use MATLAB (using M- files)	Attendance	Exam.
14	3	First	Writing equations in MATLAB Practical applications of MATLAB	Attendance	Exam.
15	3	First	Review	Attendance	Exam.

11. Course Evaluation and Grade Breakdown:

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Quizzes: 20 marks
Homework: 10 marks
Lab: 15 marks
Assignment: 5 marks
Mid-Term Exam: 10 marks
Final Exam: 50 marks

12. Learning and Teaching Resources:	
Prescribed textbooks (syllabus books, if available)	
Main references (sources)	1. Erwin Kreyszig, "Advanced engineering mathematics"John wiley & sons, sixth edition, 1988 2.C. Ray Wylie, " Advanced engineering mathematics" McGRAW-Hill ,INC, Ltd,, fourth edition, 1975.
Recommended supporting books and references (scientific journals, reports...)	Kiusalaas, " Numerical Methods in Engineering with MATLAB", Campridge University press, 2005.
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Dr. Salwa Mubarak Abdullah

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:	
Theory of Structures II	
2. Course Code:	
CE309	
3. Semester / Year:	
First semester / 2025-2026	
4. Description Preparation Date:	
30/07/2026	
5. Available Attendance Forms	
Attendance (Classrooms)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Total SWL: 125 (h/sem) / 5 Credits	
7. Course administrator's name (mention all, if more than one name)	
Assist. Prof. Dr. Jasim Ali Abdullah Assist. Prof. Dr. Oday Asal Salih	
8. Course Objectives	
Course Objectives	Using the method of consistent deformations, the method of least work, the slope-deflection method, and the moment distribution method, students will learn how to analyze statically indeterminate beams, trusses, rigid frames, and composite structures. Line of influence for structures whose properties are statically uncertain.
9. Teaching and Learning Strategies	
Strategies	The module adopts an interactive learning approach through lectures, practical exercises, and engineering problem-solving sessions. It develops students' ability to analyze statically indeterminate structures, determine internal forces, construct shear force, bending moment, and influence line diagrams, and apply structural analysis principles to practical engineering problems.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation method
1	4	First	Approximate analysis for statically indeterminate structures	Attendance	Exam
2	4	First	Analysis of statically indeterminate beams, trusses, rigid frames, and composite structures by the method of consistent deformations	Attendance	Exam and report
3	4	First	Analysis of statically indeterminate beams, trusses, rigid frames, and composite structures by the method of consistent deformations	Attendance	Exam and report
4	4	First	Analysis of statically indeterminate beams, trusses, rigid frames, and composite structures by the method of least work	Attendance	Exam and report
5	4	First	Analysis of statically indeterminate beams, trusses, rigid frames, and composite structures by the method of least work	Attendance	Exam and assignment
6	4	First	Analysis of statically indeterminate beams and rigid frames without joint translation by the slope-deflection method	Attendance	Exam and assignment
7	4	First	Analysis of statically indeterminate beams and rigid frames without joint translation by the slope-deflection method	Attendance	Exam and assignment
8	4	First	Analysis of statically indeterminate rigid frames with one, two, and several degrees of freedom of joint translation by the slope-deflection method	Attendance	Exam
9	4	First	Analysis of statically indeterminate rigid frames without joint translation by moment distribution	Attendance	assignment
10	4	First	Analysis of statically indeterminate rigid frames without joint translation by moment distribution	Attendance	Exam
11	4	First	Analysis of statically indeterminate rigid frames without joint translation by moment distribution (Modified Stiffness factors)	Attendance	assignment
12	4	First	Analysis of statically indeterminate rigid frames with one degree of freedom of joint translation by moment distribution	Attendance	Exam and assignment
13	4	First	Analysis of statically indeterminate rigid frames with one degree of freedom of joint translation by moment distribution	Attendance	Exam and report
14	4	First	Influence line for statically indeterminate structure, Maxwell's law, Betti's law	Attendance	Exam and report
15	4	First	Approximate analysis for statically indeterminate structures	Attendance	Exam.

11. Course Evaluation and Grade Breakdown:
The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc. Quizzes: 20 marks Homework: 10 marks Report and Project: 10 marks Mid-Term Exam: 10 marks Final Exam: 50 Points

12. Learning and Teaching Resources:	
Prescribed textbooks (syllabus books, if available)	
Main references (sources)	Structural Analysis, Russell C. Hibbeler, Pearson Education Limited, 10th edition, 2020.
Recommended supporting books and references (scientific journals, reports...)	Structural Analysis, Aslam Kassimali Cengage Learning, 6th edition, 2019.
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Dr. Jasim Ali Abdullah

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:	
Soil Mechanics II	
2. Course Code:	
CE310	
3. Semester / Year:	
First semester / 2025-2026	
4. Description Preparation Date:	
30/07/2026	
5. Available Attendance Forms	
Attendance (Classrooms)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Total SWL: 150 (h/sem) / 6 Credits	
7. Course administrator's name (mention all, if more than one name)	
Prof. Dr. Moataz A. Alobaydi Prof. Amina Ahmead Khaleel	
8. Course Objectives	
Course Objectives	This module aims to provide students with the knowledge required to understand the shear strength of soils and to determine parameters such as **cohesion** and the **angle of internal friction**. It also enables students to evaluate the bearing capacity of different soil types and understand their behavior under applied loads, providing the foundation for geotechnical engineering design and analysis.
9. Teaching and Learning Strategies	
Strategies	The module adopts an interactive learning approach that encourages students to think critically, analyze, and draw conclusions in solving engineering problems. Teaching methods include lectures, practical demonstrations, engineering problem-solving sessions, practical classes, exercises, tutorials, and small-group discussions. The module also promotes students' sense of responsibility, independent learning, and active participation throughout the learning process.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation method
1	3	First	General introduction	Attendance	Exam
2	3	First and third	Soil shear strength	Attendance	Exam and report
3	3	First and fifth	Shear strength of the soil and factors affecting it, failure planes and principal stresses, normal and shear stress calculation	Attendance	Exam and report
4	3	Third	Representation of the failure plane on Mohr's Circle, properties of Mohr's Circle, failure theory and Mohr Envelope, factors affecting shear strength of soil, types of shear strength testing	Attendance	Exam and report
5	3	First	Shear strength of cohesive soil	Attendance	Exam and assignment
6	3	First	Shear strength of cohesionless soil	Attendance	Exam and assignment
7	3	First	Failure theory and Mohr Envelope, lab shear strength testing	Attendance	Exam and assignment
8	3	First	Retaining structures and lateral earth pressure	Attendance	Exam
9	3	First	Types of lateral earth pressure, lateral earth pressure coefficients	Attendance	assignment
10	3	Fifth	One-dimensional consolidation theory	Attendance	Exam
11	3	First and third	Coefficients of consolidation, final consolidation settlement	Attendance	assignment
12	3	First and third	Degree of consolidation	Attendance	Exam and assignment
13	3	First and third	Problems of time rate of consolidation	Attendance	Exam and report
14	3	First and third	Problems of consolidation	Attendance	Exam and report
15	3		Review	Attendance	Exam.

11. Course Evaluation and Grade Breakdown:

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Quizzes: 20 marks
Homework: 10 marks
Report and Project: 10 marks
Mid-Term Exam: 10 marks
Final Exam: 50 Points

12. Learning and Teaching Resources:	
Prescribed textbooks (syllabus books, if available)	Principles of Geotechnical Engineering, (2004), Braja M. Das, 5th edition 2002, copyright by Wadsworth Group/United Stated.
Main references (sources)	Member, Muhammad Omar, 1991 "Principles of Soil Mechanics", College of Engineering, University of Mosul.
Recommended supporting books and references (scientific journals, reports...)	Bowels J.E. (1978): Engineering properties of soils and their measure mends, second edition. McGraw-Hill books company.
Electronic references, websites	Whitlow, R. (1983): Basic soil mechanics, Construction Press, London and New York. Annual Book of ASTM Standards, volume 04.08 : Soil and Rock (I) Published by ASTM in 2000
Curriculum or course description update rate	5%

Course Instructor
Dr. Moataz A. Alobaydi

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:	
Reinforced Concrete I	
2. Course Code:	
CE304	
3. Semester / Year:	
First semester / 2025-2026	
4. Description Preparation Date:	
30/07/2026	
5. Available Attendance Forms	
Attendance (Classrooms)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Total SWL: 125 (h/sem) / 5 Credits	
7. Course administrator's name (mention all, if more than one name)	
Assist. Prof. Dr. Rabi M. Najem, Assist. Prof. Dr. Hala J. Mohammed	
8. Course Objectives	
Course Objectives	1. Develop students' ability to design safe and economically reinforced concrete structural members in accordance with engineering design principles. 2. Enable students to apply structural analysis principles to determine the effects of design loads on reinforced concrete structures. 3. Develop students' ability to select appropriate reinforced concrete sections and reinforcement detailing that satisfy safety, serviceability, and economic requirements. 4. Develop students' proficiency in applying the provisions of the American Concrete Institute Code (ACI 318-08) in the design and detailing of reinforced concrete structural members. 5. Develop engineering problem-solving skills related to the design and construction of reinforced concrete structures.
9. Teaching and Learning Strategies	
Strategies	The module adopts an interactive learning approach through lectures, practical exercises, engineering problem-solving sessions, and case studies, with a focus on the analysis and design of reinforced concrete structural members in accordance with the ACI Code requirements. It develops students' ability to produce safe and economical designs, apply reinforcement detailing, and address design and construction challenges while integrating theoretical concepts with practical engineering applications

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation method
1	4	Second	Column types and structural behavior of concrete and steel under pure axial compression.	Attendance	Exam
2	4	Second	Design of short square and rectangular columns under pure axial load.	Attendance	Exam
3	4	Second	Design of short circular columns and spiral reinforcement ratios.	Attendance	Exam
4	4	Second	Eccentric loading and the concept of uniaxial bending.	Attendance	Exam
5	4	Second	Fundamental principles for constructing interaction diagrams (P_n - M_n)	Attendance	Exam
6	4	Second	Calculating key governing points (Pure Axial, Balanced Point, Pure Bending).	Attendance	Exam
7	4	Second	Utilizing design charts and normalized interaction diagrams.	Attendance	Exam
8	4	Second	Midterm Examination.	Attendance	Exam
9	4	Second	Slenderness ratio, second-order effects, and the P-\Delta effect.	Attendance	Exam
10	4	Second	Slenderness limits, unbraced length (L_u), and Sway vs. Non-Sway frames.	Attendance	Exam
11	4	Second	ACI Moment Magnification Method for non-sway and sway frames.	Attendance	Exam
12	4	Second	Bond stress, anchorage mechanisms, and development length for straight bars.	Attendance	Exam
13	4	Second	Compression development length and standard mechanical hooks (h_d).	Attendance	Exam
14	4	Second	Lap splices (Tension vs. Compression) and mechanical couplers	Attendance	Exam
15	4	Second	Integrated design problems connecting columns and structural reinforcement details.	Attendance	Exam

11. Course Evaluation and Grade Breakdown:

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Quizzes: 20 marks

Homework: 10 marks

Report and Project: 10 marks

Mid-Term Exam: 10 marks

Final Exam: 50 marks

12. Learning and Teaching Resources:		
Prescribed textbooks (syllabus books, if available)	اساسيات الخرسانة المسلحة، ا.د. سعد علي الطعان، جامعة الموصل، 1993.	
Main references (sources)	Building Code Requirements for Structural Concrete (ACI 318M-08) and Commentary	
Recommended supporting books and references (scientific journals, reports...)		
Electronic references, websites		
Curriculum or course description update rate		5%

Course Instructor
Dr. Rabi M. Najem

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:	
Highway Engineering II	
2. Course Code:	
CE313	
3. Semester / Year:	
Second semester / 2025-2026	
4. Description Preparation Date:	
30/07/2026	
5. Available Attendance Forms	
Attendance (Classrooms)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Total SWL: 150 (h/sem) / 6 Credits	
7. Course administrator's name (mention all, if more than one name)	
Assis. Prof. Dr. Mohammad Ahmed Humoody	
8. Course Objectives	
Course Objectives	1. Formation of engineering skills that ensure design, construction, operations, and maintenance 2. Optimizing road and transport systems 3. Mainly focused on the engineering design of roads from a technical point of view
9. Teaching and Learning Strategies	
Strategies	The module adopts an interactive learning approach through lectures, practical exercises, case studies, and project-based learning, with a focus on planning and designing highways in accordance with recognized engineering standards. It develops students' ability to analyze geometric and traffic design elements and, where appropriate, utilizes engineering software, while enhancing problem-solving skills and integrating theoretical knowledge with practical applications.

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or Subject Name**	**Learning Method**	**Evaluation method**
1	5	First and third	Pavement Types and Design Factors Historical Developments: Pavement Types, Design Elements for Flexible versus Rigid	Attendance	Exam.
2	5	First and third	Definition of Flexible Pavement, Advantages and Disadvantages of Flexible Pavement,	Attendance	Exam.
3	5	First and third	Definition of Rigid Pavement: Advantages and Disadvantages of Rigid Pavement,	Attendance	Exam.
4	5	First and third	Stresses and Strains in Flexible Pavements Stresses in a homogeneous mass, Layered Systems, Fundamental design concepts	Attendance	Exam.
5	5	First and third	Pavement Performance Distresses in flexible pavements, Types of flexible pavement failure, Subgrade failure types, Temperature failure types, Precipitation, Methods of measuring distress	Attendance	Exam.
6	5	First and third	Pavement Design Procedures Material Characterization, Characterization of Subgrade, Subbase Courses, Base Courses, Asphaltic Layers	Attendance	Exam.
7	5	First and third	Analysis of Traffic Loading for Pavement Design Wheel Load Influence on Pavements, Tire Contact Pressure on Pavement, Vehicle Speed, Axle Configuration, Repetition of Loads, Equivalent Single Axle Load Approach, Concepts of Reliability in Pavement Design, Drainage Design	Attendance	Exam.
8-10	5	First and third	Design of Flexible Pavement (AASHTO Method) AASHTO DESIGN EQUATION FOR FLEXIBLE PAVEMENT, Required Structural Number (SNR), Layer Coefficient (ai), Drainage Coefficient (mi), Equivalent Single Axle Load ($W18$), Reliability (%R), Standard Deviation (ZR), Standard Deviation (SO), Resilient Modulus (MR), Change in Serviceability (ΔPSI)	Attendance	Exam.
11-12	5	First and third	Design of Flexible Pavement (Asphalt Institute Method) Asphalt Institute Method, AI Fatigue Cracking Model, AI Rutting Failure Model, ASPHALT INSTITUTE PAVEMENT DESIGN METHODOLOGY, Determination of cumulative ESAL, Selection of subgrade resilient modulus, Selection of layer materials, Selection of bitumen grade, Thickness determination (procedure)	Attendance	Exam.

13	5	First and third	Pavement Construction & Maintenance Surface Course, Binder Course, Base Course, Subbase Course, Subgrade, Seal Coat, Tack Coat, Prime Coat	Attendance	Exam.
14	5	First and third	Design of Rigid Pavements Design Considerations, Modulus of Subgrade Reaction, Drainage, Joint load transfer coefficient (J), Thickness Design of Rigid Pavements	Attendance	Exam.
15	5	First and third	Joints in Concrete Pavements Expansion Joints, Contraction Joints, Hinge Joints, Construction Joints, Dowel Bars, Tie Bars	Attendance	Exam.

11. Course Evaluation and Grade Breakdown:

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Attendance and Participation: 5 marks
Quizzes: 10 marks
Homework: 10 marks
lab: 15 marks
Mid-Term Exam: 10 marks
Final Exam: 50 marks

12. Learning and Teaching Resources:

Prescribed textbooks (syllabus books, if available)	Nicholas J. Garber and Lester A. Hoel. "Traffic and Highway Engineering". RPK Editorial Services, Inc. 5th edition, 2020.
Main references (sources)	AASHTO. A Policy on Geometric Design of Highways and Streets. American Association of State Highway and Transportation Officials, Washington, D.C., 2014.
Recommended supporting books and references (scientific journals, reports...)	American Society for Testing and Materials (ASTM), (2003). Standard Specification, Section 4, Vol. 04-03, West Conshohocken, PA. The Asphalt Institute, "Laboratory Mixing and Compaction Temperatures" Executive Offices and Research Center, Research Park Drive, P.O. Box. 14052, Lexington, KY 40512-4052, USA. Asphalt Institute Technical Bulletin.
Electronic references, websites	https://www.nationalacademies.org/trb/transportation-research-board
Curriculum or course description update rate	5%

Course Instructor
Dr. Mohammad Ahmed Humoody

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:	
Engineering Project Design and Planning	
2. Course Code:	
CE314	
3. Semester / Year:	
First semester / 2025-2026	
4. Description Preparation Date:	
30/07/2026	
5. Available Attendance Forms	
Attendance (Classrooms)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Total SWL: 50 (h/sem) / 2 Credits	
7. Course administrator's name (mention all, if more than one name)	
Assist. Prof. Dr. Khawla Ahmed Khalil, Assist. Lec. Atheer Khadir Jumaa	
8. Course Objectives	
Course Objectives	1. Introduce students to the importance of the civil engineering graduation project, the process of selecting an appropriate topic, the stages of project preparation, and the tools and skills required to successfully complete it in alignment with the Civil Engineering Program Learning Outcomes (PLOs). 2. Develop students' proficiency in the use of modern engineering software for the preparation, analysis, and design of graduation projects. 3. Develop students' skills in the structural analysis and design of multi-story buildings, including slabs, beams, columns, foundations, and other structural members, using specialized engineering software. 4. Develop students' ability to apply safety, economy, and the requirements of relevant engineering codes and standards in the design and implementation of civil engineering structures.

9. Teaching and Learning Strategies	
Strategies	The module adopts an interactive learning approach through lectures, mini-projects, engineering case studies, and the use of specialized engineering software. It develops students' ability to plan and design civil engineering projects, prepare and analyze structural models in accordance with relevant engineering codes and standards, and prepare engineering drawings and technical reports. The module also promotes teamwork, critical thinking, engineering problem-solving, and the integration of theoretical knowledge with practical applications in civil engineering design.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation method
1	2	6	**Introduction to the Civil Engineering Graduation Project:** objectives, importance, project selection, and the characteristics of a successful project.	Attendance	Exam
2	2	6	**Engineering Project Planning:** preparation of the work plan, literature review, selection of engineering codes and standards, and preparation of technical reports and presentations.	Attendance	Exam
3	2	6	Introduction to engineering software used in civil engineering projects, including **STAAD.Pro, ETABS, SAFE, AutoCAD, and Excel**, and selection of the appropriate software for the project.	Attendance	Exam
4	2	6	Introduction to **STAAD.Pro**: creating a new project, defining materials, structural sections, and unit systems.	Attendance	Exam
5	2	6	Developing the structural model: defining joints, structural members, and support conditions.	Attendance	Exam
6	2	6	Defining load cases, load combinations, and design loads in accordance with relevant engineering codes.	Attendance	Exam
7	2	6	Structural analysis, interpretation of results, extraction of displacements and internal forces, and verification of the analytical model.	Attendance	Exam
8	2	6	**Midterm Examination.**	Attendance	Exam
9	2	6	Design of reinforced concrete beams and slabs using engineering software.	Attendance	Exam

10	2	6	Design of reinforced concrete columns and frames and verification of compliance with code requirements.	Attendance	Exam
11	2	6	Foundation design, design checks, and safety and economy requirements.	Attendance	Exam
12	2	6	Integrated project: analysis and design of a multi-story building using engineering software.	Attendance	Exam
13	2	6	Preparation of structural drawings, extraction of analysis and design results, and preparation of the project technical report.	Attendance	Exam
14	2	6	Presentation and discussion of student projects, design review, error identification, and improvement of engineering solutions.	Attendance	Exam
15	2	6	**Course Review.**	Attendance	Exam

11. Course Evaluation and Grade Breakdown:
The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc. Quizzes: 20 marks Homework: 10 marks Report and Project: 10 marks Mid-Term Exam: 10 marks Final Exam: 50 marks

12. Learning and Teaching Resources:	
Prescribed textbooks (syllabus books, if available)	
Main references (sources)	1.
Recommended supporting books and references (scientific journals, reports...)	
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Dr. Khawla Ahmed Khalil

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:	
Hydraulic Structures	
2. Course Code:	
CE316	
3. Semester / Year:	
First semester / 2025-2026	
4. Description Preparation Date:	
30/07/2026	
5. Available Attendance Forms	
Attendance (Classrooms)	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Total SWL: 75 (h/sem) / 3 Credits	
7. Course administrator's name (mention all, if more than one name)	
Assist. Prof. Dr. Ayman Talib Hameed	
8. Course Objectives	
Course Objectives	This course aims to provide civil engineers with basic information about the types of hydraulic structures, their importance, and the various methods used to calculate the pressures generated on the structure and the uplift pressure. It also to provide students with information on the design of some small and large hydraulic structures, with explaining some of the problems that the structure is exposed and how to solve the problems.
9. Teaching and Learning Strategies	
Strategies	The strategy of this course is to encourage student for participation in presentations and exercises, in same times honing and expanding their thinking and skills. This will be achieved through lectures, scholarly resources, interactive tutorials, and by considering the type of simple experiments that include some sampling activities that interest students.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation method
1	2	1	Introduction to hydraulic structures, types of hydraulic structures	Attendance	Exam
2	2	1	Hydraulic jump and it is advantages in the design of hydraulic structures, Draw the water surface profile of hydraulic jump and types of energy dissipators	Attendance	Exam
3	2	1	Types and designs of stilling basins	Attendance	Exam
4	2	1	Design of concrete floors using (Bligh's theory + Line's theory), design of concrete floors using (Khosali's theory)	Attendance	Exam
5	2	1	Design of concrete floors using (Bligh's theory + Line's theory), design of concrete floors using (Khosali's theory)	Attendance	Exam
6	2	1	Types of culverts, hydraulic design of culverts	Attendance	Exam
7	2	1	Spillways, design of Ogee spillway	Attendance	Exam
8	2	1	Types and design of cross drainage work	Attendance	Exam
9	2	1	Types and design of cross drainage work	Attendance	Exam
10	2	1	Types of syphon, Design of syphon	Attendance	Exam
11	2	1	Protection works, Design of scour	Attendance	Exam
12	2	1	Canal regulation works, Types of regulators, Design of regulators	Attendance	Exam
13	2	1	Canal regulation works, Types of regulators, Design of regulators	Attendance	Exam
14	2	1	Dams, Design of concrete gravity dam	Attendance	Exam
15	2	1	Dams, Design of concrete gravity dam	Attendance	Exam

11. Course Evaluation and Grade Breakdown:

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Quizzes: 20 marks
Homework: 10 marks
Report and Project: 10 marks
Mid-Term Exam: 10 marks
Final Exam: 50 Points

12. Learning and Teaching Resources:		
Prescribed textbooks (syllabus books, if available)	Varshneny R.S. (1979). " Theory and design of irrigation structures (volume 1&volume2)", 4th, N.C.Jain.	
Main references (sources)	1. Arora K. R. (2006), "Irrigation, Water Power and Water Recourses Engineering ", 4th Reprint Edition, A. K. Jain, For standard Publishers distributors, 1705-B. Nai Sarak. Delhi-110006. 2. Santosh Kumear (1999), "Irrigation Engineering and Hydraulic Structures", 14th Reviers edition in S.I. Units, Hanna Publishers,2-B. Nathmarket. Naisarak, Delhi-110006. 3. Irrigation, Water Power and Water Recourses Engineering, Dr. K. R. Arora, 4th Reprint Edition 2006.	
Recommended supporting books and references (scientific journals, reports...)		
Electronic references, websites		
Curriculum or course description update rate		5%

Course Instructor
Dr. Ayman Talib Hameed

Head of Department
Assist. Prof. Dr. Baraa Jabbar Mahmood

Course Description Form

1. Course Name:	
Reinforced Concrete Design I	
2. Course Code:	
CE401	
3. Semester / Year:	
First Semester / 2025-2026	
4. Description Preparation Date:	
1-9-2025	
5. Available Attendance Forms	
Attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
60 hr / 3 Credit	
7. Course administrator's name (mention all, if more than one name)	
Prof. Dr. Suhaib Y. Kasim Al-Darzi, Assist. Prof Dr. Muna M. Hano	
8. Course Objectives	
Course Objectives	1. Develop students' ability to analyze and design one-way and two-way reinforced concrete slabs. 2. Enable students to design ribbed, hollow-block, and flat slabs in accordance with the adopted design code. 3. Develop students' skills in designing reinforced concrete stairs. 4. Apply the Yield Line Theory in the analysis and design of slabs. 5. Ensure safety, serviceability, and economy requirements in structural design
9. Teaching and Learning Strategies	
Strategy	The module adopts an **interactive and practical learning approach** through lectures, design problem-solving, engineering exercises, and case studies, focusing on the analysis and design of various types of reinforced concrete slabs and stairs in accordance with the adopted design code. It develops students' skills in selecting appropriate dimensions and reinforcement, applying **Yield Line Theory**, and checking **strength, serviceability, safety, and economic requirements**, thereby enhancing analytical thinking and engineering problem-solving skills.

10. Course structures					
Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation method
1	3	2	Introduction: Review the principles of reinforced concrete design, Design of one-way slabs, and continuous beams	Attendance	Assignments, quizzes, and exams
2	3	2	Design area of steel reinforcement and minimum area for shrinkage and temp. in slab and flexure for beams. Approximate bent or cutoff points and maximum spacing for main and secondary reinforcement.		
3	3	2	Beam loads, critical moment, and shear sections in beams. Detailing for reinforcement of continuous beams and slabs. Detailing for reinforcement of continuous beams and slabs.		
4	3	2	Two-way edge-supported slabs, Minimum slab thickness, Direct design method and limitations. Total static moment (panel moment). Middle and edge strip width and moment distribution.		
5	3	2	Check shear strength and flexure, and calculate steel reinforcement, checking minimum area and max spacing. Design for beam supporting two-way slabs. Design by moment coefficient method.		
6	3	2	Flat slabs and flat plates: Minimum thickness of a beamless slab according to the ACI code. Effective span length and minimum drop panel dimension. The drop panel dimensions and requirements. Check for punching shear strength and diagonal shear. Application of direct design method.		
7	3	2	Design of flexural reinforcement at all critical moment sections. Check the minimum and maximum spacing. Design by moment coefficient method. Openings in flat slab construction. Detailing of reinforcing steel considering minimum extension bar lengths.		
8	3	2	One-way ribbed slabs, Code limitations and dimensions. Diagonal shear, solid part. Voided slabs, equivalent rib width. Design for steel reinforcements in ribs and topping slab. Hollow block floor.		
9	3	2	Mid-term exam		
10	3	2	Design of reinforced concrete stairs, Stair types and stair limitations. Design stairs mainly reinforced in the transverse direction. Design stairs longitudinally reinforced. Effective spans, loading and moment calculation.		
11	3	2	The calculations of the positive and negative moments, checking shear on the stairs. Reinforcement and structural details of the stairs.		
12	3	2	Yield line theory of slab analysis, yielding slabs and development of plastic hinges. Guidelines to establish patterns of yield lines and axes of rotations in slabs. Axes of rotation and failure shape. Analysis by equilibrium method.		

13	3	2	Virtual work method. Isotopically and orthotopically reinforced slabs. Components of work methods. Different types of loading. Circular and polygon slab panels.		
14	3	2	Slabs with large openings. Optimization method for load calculation. Circular and prismatic slabs. Slabs with large openings.		
15	3	2	Review		

11. Course Evaluation and Grade Breakdown

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Attendance and Participation: 5 marks

Quizzes: 10 marks

Homework: 5 marks

Report and Project:

Mid-Term Exam: 20 marks

Final Exam: 60 marks

12. Learning and Teaching Resources

Prescribed textbooks (syllabus books, if available)	Arthur H. Nilson, David Darwin, Charles W. Dolan (2010). Design of concrete structures", McGraw-Hill Education.
Main references (sources)	ACI Committee 318. (2014). Building code requirements for structural concrete: (ACI 318-14); and commentary (ACI 318R-14). Farmington Hills, MI: American Concrete Institute.
Recommended supporting books and references (scientific journals, reports...)	
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Dr. Suhaib Y. Kasim

Head of Department
Assist. Prof. Dr. Baraa J. Mahmood

Course Description Form

1. Course Name:	
Foundation Engineering I	
2. Course Code:	
CE402	
3. Semester / Year:	
First Semester / 2025-2026	
4. Description Preparation Date:	
1-9-2025	
5. Available Attendance Forms	
Attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
60 hr / 3 Credit	
7. Course administrator's name (mention all, if more than one name)	
Prof Dr. Abdulrahman H. Al-Daood Assist. Prof. Dr. Qutayba N.Qasim	
8. Course Objectives	
Course Objectives	1. Introducing students to the most important field investigations for various civil engineering projects 2. Provide students with sufficient information on studying the bearing capacity of soil under foundations. 3. Provide students with sufficient information to calculate and estimate settlement in various structures. 4. Introduce students to the design of various types of foundations.
9. Teaching and Learning Strategies	
Strategy	The module adopts an **interactive and practical learning approach** through lectures, engineering problem-solving, applied exercises, and case studies, focusing on analyzing soil properties, determining bearing capacity and settlement, and selecting and designing appropriate foundations. The module also develops students' skills in analyzing geotechnical problems, applying design principles and adopted codes, and linking theoretical concepts to practical applications in foundation and structural design.

10. Course structures					
Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation method
1	3	2	Introduction and General Information (Definition of foundation engineering and types of foundations)	Attendance	Assignments, quizzes, and exams
2	3	2	Introduction to field investigations		
3	3	2	Introduction to field investigations		
4	3	2	Calculating soil bearing capacity for different types of foundations		
5	3	2	Calculating soil bearing capacity for different types of foundations		
6	3	2	Bearing capacity of clay soil		
7	3	2	Bearing capacity of sandy soil		
8	3	2	Calculate the settlement under the foundations		
9	3	2	Introduction to foundation designs		
10	3	2	Structural design of single column foundations		
11	3	2	Design of reinforced and unreinforced wall foundations		
12	3	2	Rectangular continuous foundation design		
13	3	2	Mat foundation design with applications		
14	3	2	Mat foundation design with applications		
15	3	2	Mat foundation design with applications		

11. Course Evaluation and Grade Breakdown

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.
Attendance and participation: 4 marks
Quizzes: 12 marks
Homework: 4 marks
Report and Project:
Mid-Term Exam: 20 marks
Final Exam: 60 marks

12. Learning and Teaching Resources	
Prescribed textbooks (syllabus books, if available)	"Principles of Foundation Engineering", 2018, Braja M. Dass, 9th Edition, SI Edition.
Main references (sources)	Foundation Design and Analysis, 1996, Joseph E. Bowles.
Recommended supporting books and references (scientific journals, reports...)	
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Dr. Abdulrahman H. Al-Daood

Head of Department
Assist. Prof. Dr. Baraa J. Mahmood

Course Description Form

1. Course Name:	
Steel Design I	
2. Course Code:	
CE403	
3. Semester / Year:	
First Semester / 2025-2026	
4. Description Preparation Date:	
1-9-2025	
5. Available Attendance Forms	
Attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
45 hr / 2 Credit	
7. Course administrator's name (mention all, if more than one name)	
Assist. Prof Dr. Baraa J. Mahmood Assist. Prof. Dr. Kaythar A. Ibrahim	
8. Course Objectives	
Course Objectives	1. Understand the principles of steel structure design, section properties, and design methods. 2. Analyze and design steel members subjected to tensile loads. 3. Analyze and design steel members subjected to axial compression loads. 4. Check buckling and stability conditions and select appropriate steel sections. 5. Apply the adopted design codes to steel member design while satisfying safety and economic requirements.
9. Teaching and Learning Strategies	
Strategy	The module adopts an **interactive and practical learning approach** through lectures, design exercises, problem-solving, and case studies, focusing on the application of **AISC 360** in the analysis and design of steel members. Students are trained to design tension and compression members, check failure and stability conditions, and select appropriate sections while meeting **safety and economic requirements.**

10. Course structures					
Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation method
1	3	2	Introduction to structural steel design, including material properties, steel sections, and stress–strain behavior, with application of ANSI/AISC 360-16 and the AISC Manual (AISCM). Covers design methods (LRFD and ASD) and load combinations.	Attendance	Assignments, quizzes, and exams
2	3	2	Steel sections and fabrication methods (rolled, built-up sections)		
3	3	2	Design philosophies: LRFD vs ASD, load combinations, Design basis, and limit states in steel structures		
4	3	2	Limit States and Failure Modes in Steel Members: Gross section yielding, Net section fracture, Buckling and instability, and Block shear failure		
5	3	2	Behavior of Tension Members: Load transfer in tension members, Stress distribution in gross and net sections, Effect of holes, staggered holes, and connections, Shear lag phenomenon, and Efficiency of tension members.		
6	3	2	Block Shear Failure and Combined Checks: Block shear failure Mechanism, Identification of block shear paths, AISC equations and applications, controlling limit state selection.		
7	3	2	Design of Tension Members: Section selection, check the selected section, and comparison with the applied load.		
8	3	2	Built-up tension members.		
9	3	2	Introduction to Compression Members, Behavior of axially loaded compression members, Stability and buckling concepts.		
10	3	2	Elastic Buckling of Columns, Euler buckling theory, slenderness ratio, Effective length, and boundary conditions.		
11	3	2	Inelastic Buckling Behavior, Inelastic buckling, and column strength curves.		
12	3	2	Design compressive strength of compression members.		
13	3	2	Effective length of columns in frames and alignment charts. Stiffness-reduction factors. Design of compression members.		
14	3	2	Analysis of built-up compression members.		
15	3	2	Connection requirements for built-up compression members are composed of rolled shapes. Base plate for concentrically loaded columns.		

11. Course Evaluation and Grade Breakdown
The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc. Attendance and Participation: Quizzes: 20 marks Homework: 10 marks Report and Project: 10 marks Mid-Term Exam: 10 marks Final Exam: 60 marks

12. Learning and Teaching Resources	
Prescribed textbooks (syllabus books, if available)	Structural Steel Design, Jack C. McCormac and Stephen F. Csernak, Pearson Education Limited, 6th edition, 2018.
Main references (sources)	AISC Construction Manual, 15th Edition. 2017
Recommended supporting books and references (scientific journals, reports...)	
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Dr. Baraa J. Mahmood

Head of Department
Assist. Prof. Dr. Baraa J. Mahmood

Course Description Form

1. Course Name:	
Traffic Engineering I	
2. Course Code:	
CE404	
3. Semester / Year:	
First Semester / 2025-2026	
4. Description Preparation Date:	
1-9-2025	
5. Available Attendance Forms	
Attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
30 hr / 2 Credit	
7. Course administrator's name (mention all, if more than one name)	
Assist. Prof Dr. Mohammed Yasseen Taha	
8. Course Objectives	
Course Objectives	1. Understand the general principles of traffic engineering and the characteristics of traffic engineering 2. Identify the role of traffic engineering within transportation engineering in life 3. Understand the introduction of traffic flow theory. 4. Analyze traffic volume data and find all its variables. 5. Describe the analysis of traffic speed data. 6. Study and classify travel time. 7. Analyze and evaluate the delays on different highway classes. 8. Identify and analyze the traffic headway and spacing.
9. Teaching and Learning Strategies	
Strategy	The student acquires knowledge of the characteristics of traffic engineering and the ability to distinguish, define, analyze and address the most important engineering and mathematical problems and issues in the field of traffic engineering and for specific types of roads distributed on the urban and rural road network and the method of finding the necessary immediate and future solutions and developing the appropriate design and planning for each of them.

10. Course structures					
Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation method
1	2	1	Introduction, fundamentals, and definition of transportation engineering.	Attendance	Assignments, quizzes, and exams
2	2	1	Introduction to Traffic Engineering, importance and impact.		
3	2	1	Traffic engineering and highway functional classification		
4	2	1	Road users' characteristics.		
5	2	1	Vehicle: static characteristics and operational characteristics		
6	2	1	Linear and non-linear analysis of vehicle acceleration.		
7	2	1	Road characteristics and traffic flow models.		
8	2	1	Traffic speed studies (concept, definition and calculation)		
9	2	1	Traffic volume variations.		
10	2	1	Traffic volume counts and estimation		
11	2	1	Traffic volume-speed-density (concept, definition and calculation)		
12	2	1	Travel time and delay studies: definitions, applications & methods		
13	2	1	Travel time and delay studies: analysis and calculations.		
14	2	1	Introduction to traffic safety.		
15	2	1	Accident studies: definitions, applications and classification		

11. Course Evaluation and Grade Breakdown

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Attendance and Participation:

Quizzes: 20 marks

Homework: 10 marks

Report and Project: 10 marks

Mid-Term Exam: 10 marks

Final Exam: 60 marks

12. Learning and Teaching Resources	
Prescribed textbooks (syllabus books, if available)	1. Nicholas J. Garber, and Lester A. Hoel," Traffic and Highway Engineering", Fourth Edition, Cengage Learning, Canada, pp. 99-150, 2009. 2. CA O'Flaherty, and et al," Transport Planning and Traffic Engineering", First Edition, 1997, Published by CRC Press, p. 544, Reprinted 2018.
Main references (sources)	Institute of Transportation Engineers**,** H. Douglas Robertson, Joseph E. Hummer, and Donna C. Nelson," Manual of Transportation Engineering Studies ", Prentice Hall Englewood Cliffs, NJ**,** 1999.
Recommended supporting books and references (scientific journals, reports...)	
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Dr. Mohammed Yasseen Taha

Head of Department
Assist. Prof. Dr. Baraa J. Mahmood

Course Description Form

1. Course Name:	
Sanitary Engineering I	
2. Course Code:	
CE405	
3. Semester / Year:	
First Semester / 2025-2026	
4. Description Preparation Date:	
1-9-2025	
5. Available Attendance Forms	
Attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
30 hrs. / 2 credits	
7. Course administrator's name (mention all, if more than one name)	
Assist. Lec. Yousif Hassan Najim	
8. Course Objectives	
Course Objectives	1. Identify the components of water supply and wastewater systems and understand the principles of their design and operation. 2. Estimate water demands, forecast population growth, and determine the required flows for water supply and firefighting systems. 3. Understand water quality, types of impurities, and appropriate treatment methods in accordance with adopted standards. 4. Apply engineering principles to the design of water intakes and drinking water treatment units. 5. Apply environmental and public health regulations and requirements to water supply and wastewater projects. 6. Link theoretical concepts to practical applications in the design and operation of environmental engineering projects.
9. Teaching and Learning Strategies	
Strategy	The module adopts an interactive, practical learning approach through lectures, engineering problem-solving, numerical exercises, case studies, and practical experiments, with a focus on the design and operation of water supply and wastewater systems, as well as drinking water treatment plants. It develops students' analytical and problem-solving skills, their ability to apply engineering standards, and their ability to link theoretical concepts to practical applications while addressing public health and environmental protection requirements.

10. Course structures					
Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation method
1	2	1	Introduction to the components of the water supply system	Attendance	Assignments, quizzes, and exams
2	2	1	Introduction to sewerage		
3	2	1	Variations in water use		
4	2	1	Fire-fighting requirements		
5	2	1	Water Treatment Plant		
6	2	1	Population projections		
7	2	1	Water quality, parameters, and standards		
8	2	1	Types and classification of impurities in water		
9	2	1	Environmental laws and regulations		
10	2	1	Intake unit in the water treatment plant		
11	2	1	A design model for a river intake		
12	2	1	Coagulation and flocculation		
13	2	1	Types of mixers used in coagulation and flocculation basins		
14	2	1	Design example for coagulation basins		
15	2	1	Design example for a flocculation basin		

11. Course Evaluation and Grade Breakdown

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Attendance and Participation:

Quizzes: 20 marks

Homework: 10 marks

Report and Project: 10 marks

Mid-Term Exam: 10 marks
Final Exam: 60 marks

12. Learning and Teaching Resources	
Prescribed textbooks (syllabus books, if available)	Water supply and sewerage by E.W Steel. &Terence J. McGhee (1990)
Main references (sources)	Water and wastewater engineering, Mackenzie L. Davis. Ph D P.E, BCEE (2010). Design of water supply pipe networks by John Wiley & sons. (2008)
Recommended supporting books and references (scientific journals, reports...)	
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Yousif Hassan Najim

Head of Department
Assist. Prof. Dr. Baraa J. Mahmood

Course Description Form

1. Course Name:	
Computer Application I	
2. Course Code:	
CE406	
3. Semester / Year:	
First Semester / 2025-2026	
4. Description Preparation Date:	
1-9-2025	
5. Available Attendance Forms	
Attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
45 hr / 2 Credit	
7. Course administrator's name (mention all, if more than one name)	
Assist. Prof Ashtar Saleh Ahmed Assist. Prof. Dr. Mohammed N. Jaro Lec. Sura Abdul Razzaq Majeed	
8. Course Objectives	
Course Objectives	1. Introduce students to the principles of the Stiffness Matrix Method and its applications in structural analysis. 2. Enable students to use STAAD.Pro for modeling and analyzing structural systems. 3. Train students to define material and section properties and apply various loads to structural models. 4. Develop students' ability to analyze and interpret structural analysis results, including displacements, internal forces, and reactions. 5. Enable students to design basic structural elements using STAAD.Pro in accordance with the adopted design codes. 6. Develop students' skills in identifying modeling errors, preparing engineering reports and drawings, and linking theoretical knowledge with computer-based applications.

9. Teaching and Learning Strategies	
Strategy	The module adopts an **interactive, practical learning approach, using lectures and applied exercises to explain the principles of the Stiffness Matrix Method, along with hands-on training with** engineering software for structural modeling, analysis, and design. Project-based learning, problem-solving, and collaborative learning are employed, while self-directed learning is encouraged and continuous feedback is provided to link theoretical concepts to computer-based engineering applications.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation method
1	3	6	Types of structures and degrees of freedom.	Attendance	Assignments, quizzes, and exams
2	3	6	Stiffness Matrix Method and assumptions.		
3	3	6	Lenzberg Stiffness Matrix.		
4	3	6	Stiffness Matrix for Beams.		
5	3	6	Solving beam analysis problems using the Stiffness Matrix Method (Beam Examples).		
6	3	6	Solving beam analysis problems using the Stiffness Matrix Method (Beam Examples).		
7	3	6	Introduction to **STAAD.Pro**.		
8	3	6	Structural modeling using **STAAD.Pro**.		
9	3	6	Analysis of structural elements under different types of loading.		
10	3	6	Analysis and design of multi-story framed structures.		
11	3	6	Introduction to **PLAXIS**.		
12	3	6	Analysis of foundation settlement on granular soil.		
13	3	6	Analysis of foundation settlement on cohesive soil.		
14	3	6	Analysis of settlement of strip foundations.		
15	3	6	Review.		

11. Course Evaluation and Grade Breakdown
The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc. Attendance and Participation: 3 marks Quizzes: 5 marks Homework: 3 marks Lab: 25 marks Mid-Term Exam: 14 marks Final Exam: 50 marks

12. Learning and Teaching Resources	
Prescribed textbooks (syllabus books, if available)	
Main references (sources)	
Recommended supporting books and references (scientific journals, reports...)	
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Ashtar Saleh Ahmed

Head of Department
Assist. Prof. Dr. Baraa J. Mahmood

Course Description Form

1. Course Name:	
Estimation	
2. Course Code:	
CE407	
3. Semester / Year:	
First Semester / 2025-2026	
4. Description Preparation Date:	
1-9-2025	
5. Available Attendance Forms	
Attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
30 hr / 2 Credit	
7. Course administrator's name (mention all, if more than one name)	
Lec. Mohammed Ghanin Jameel	
8. Course Objectives	
Course Objectives	1. Understand the concept, types, and importance of quantity surveying and cost estimation in construction projects. 2. Develop students' skills in calculating construction quantities and preparing Bills of Quantities. 3. Develop students' ability to estimate and analyze the costs of construction works and projects. 4. Enable students to apply engineering measurement methods and modern techniques in quantity takeoff and cost estimation.
9. Teaching and Learning Strategies	
Strategy	The module adopts an **interactive and practical learning approach** through lectures and applied exercises to explain the principles of the Stiffness Matrix Method, along with hands-on training using engineering software for structural modeling, analysis, and design. Project-based learning, problem-solving, and collaborative learning are employed, while encouraging self-directed learning and providing continuous feedback to link theoretical concepts with computer-based and engineering application

10. Course structures					
Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation method
1-2	3	1	Quantity Surveying	Attendance	Assignments, quizzes, and exams
3-4	3	1	Structural Works		
5-6	3	1	Bill of Quantities (BOQ)		
7-8	3	1	Reinforced Concrete		
9-12	3	1	Earthworks		
13-15	3	1	Specifications		

11. Course Evaluation and Grade Breakdown

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Attendance and Participation: 5 marks

Quizzes: 10 marks

Homework: 5 marks

Mid-Term Exam: 20 marks

Final Exam: 60 marks

12. Learning and Teaching Resources

Prescribed textbooks (syllabus books, if available)	"التخمين والمواصفات" مدحت فضيل
Main references (sources)	التخمين والمواصفات القياسية" م.د. لوئ محمد عباس الشذر / جامعة الكوفة "
Recommended supporting books and references (scientific journals, reports...)	
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Mohammed Ghanin Jameel

Head of Department
Assist. Prof. Dr. Baraa J. Mahmood

Course Description Form

1. Course Name:	
Structural Drawing	
2. Course Code:	
CE408	
3. Semester / Year:	
First Semester / 2025-2026	
4. Description Preparation Date:	
1-9-2025	
5. Available Attendance Forms	
Attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
30 hrs / 1 Credit	
7. Course administrator's name (mention all, if more than one name)	
Lec. Ahmed A. Mohammed Ali, Lec. Zena Adel Mohammed	
8. Course Objectives	
Course Objectives	1. Introduce students to the principles and fundamentals of structural drafting and the symbols used in engineering drawings. 2. Develop students' ability to read and interpret structural drawings and details of various structural elements. 3. Train students to prepare structural drawings and reinforcement details for reinforced concrete elements. 4. Enable students to use engineering drafting software, such as AutoCAD, to prepare and modify structural drawings. 5. Develop students' skills in producing accurate and clear structural drawings in accordance with adopted codes and specifications.
9. Teaching and Learning Strategies	
Strategy	The module adopts an **interactive and practical learning approach** through lectures, practical exercises, and training in reading and preparing structural drawings and reinforcement details, using engineering drafting software such as **AutoCAD**. It focuses on applying adopted codes and specifications, developing accuracy and technical skills, and linking structural design principles with working drawings and practical applications.

10. Course structures					
Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation method
1	2	6	General Introduction to Structural Drawing and detailed course contents.	Attendance	Assignments, quizzes, and exams
2	2	6	Types of Structural Foundations: Strip Foundations and Wall Footings.		
3	2	6	Isolated Footings.		
4	2	6	Continuous Foundations.		
5	2	6	Raft Foundations.		
6	2	6	Column Layouts and Drawing of Column Details.		
7	2	6	Reinforcement Layout for One-Way and Two-Way Slabs.		
8	2	6	Slab Sections.		
9	2	6	Midterm Examination.		
10	2	6	Detailing of Beams and Drawing of Beam Sections.		
11	2	6	Detailing the Beam-to-Column Connection.		
12	2	6	Column Layout and Drawing of Column Details.		
13	2	6	Method of Drawing Reinforcement Details for Staircases.		
14	2	6	Methods of Reading and Interpreting Structural Drawings and Plans.		
15	2	6	Review.		

11. Course Evaluation and Grade Breakdown

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Attendance and Participation: 4 marks

Quizzes: 7 marks

Homework: 12 marks

Practical: 7 marks

Mid-Term Exam: 20 marks

Final Exam: 50 marks

12. Learning and Teaching Resources	
Prescribed textbooks (syllabus books, if available)	Construction Drawing, 2020, Rabi. M. Najim, University of Mosul
Main references (sources)	ACI Detailing Manual.
Recommended supporting books and references (scientific journals, reports...)	
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Ahmed A. Mohammed Ali

Head of Department
Assist. Prof. Dr. Baraa J. Mahmood

Course Description Form

1. Course Name:	
Architectural Design	
2. Course Code:	
CE409	
3. Semester / Year:	
First Semester / 2025-2026	
4. Description Preparation Date:	
1-9-2025	
5. Available Attendance Forms	
Attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
30 hr / 2 Credit	
7. Course administrator's name (mention all, if more than one name)	
Assist. Lect. Shahd Nazim Sheet	
8. Course Objectives	
Course Objectives	1. **Develop students' creative thinking** to formulate architectural and structural solutions that integrate function and form. 2. **Introduce students to the fundamental principles of architectural design**, including proportion, lighting, ventilation, and functional relationships between spaces. 3. **Develop students' ability to integrate structural systems with the functional and architectural requirements of buildings.** 4. **Develop students' skills in creating innovative design solutions** that address user needs, technological developments, and sustainability requirements. 5. **Develop students' ability to analyze case studies** and use them to develop design ideas and solutions. 6. **Enhance students' critical and creative thinking skills and perseverance** in developing architectural and structural design concepts

9. Teaching and Learning Strategies	
Strategy	The module adopts an **interactive and creative learning approach** through lectures, discussions, examples and case study analysis, and the use of **brainstorming and open-ended, in-depth questions** to stimulate students' creative thinking. It focuses on developing students' ability to generate and discuss architectural and structural solutions and to integrate functional, architectural, and structural requirements in building design.

10. Course structures					
Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation method
1	2	1	Introduction and definition of the topic	Attendance	Assignments, quizzes, and exams
2	2	1	Architectural design and its importance		
3	2	1	The formation system in architecture		
4	2	1	Organized relationships in the formation of architecture		
5	2	1	Design principles		
6	2	1	The concept of uniqueness in architecture		
7	2	1	Architectural design determinants		
8	2	1	Scale and proportion		
9	2	1	Midterm exam		
10	2	1	The golden ratio		
11	2	1	Mass and space		
12	2	1	Islamic architecture		
13	2	1	Analyze examples and discuss reports		
14	2	1	Discussing real-life examples in civil engineering		
15	2	1	Review		

11. Course Evaluation and Grade Breakdown	
The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc. Attendance and Participation: 5 marks Quizzes: 10 marks Homework: 5 marks Report and Project: Mid-Term Exam: 20 marks Final Exam: 50 marks	
12. Learning and Teaching Resources	
Prescribed textbooks (syllabus books, if available)	1- Joseph De Chiara, "Time-Saver Standards for Building Types." 2- Ernst Neufert ,"Neufert Architects' Data"
Main references (sources)	3- Architecture: Form, Space, and Order" by Francis D.K. Ching 4- "أساسيات العمارة" – تأليف: محمد حسين حمدان
Recommended supporting books and references (scientific journals, reports...)	
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Shahd Nazim Sheet

Head of Department
Assist. Prof. Dr. Baraa J. Mahmood

Course Description Form

1. Course Name:	
Reinforced Concrete Design II	
2. Course Code:	
CE411	
3. Semester / Year:	
Second Semester / 2025-2026	
4. Description Preparation Date:	
1-9-2025	
5. Available Attendance Forms	
Attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
60 hr / 3 Credit	
7. Course administrator's name (mention all, if more than one name)	
Prof. Dr. Suhaib Y. Kasim Al-Darzi, Assist. Prof Dr. Muna M. Hano	
8. Course Objectives	
Course Objectives	1. Understand the principles of designing and constructing precast and prestressed concrete elements. 2. Analyze and design connections, brackets, and precast elements in accordance with design requirements. 3. Understand the principles and methods of prestressing and analyze stress at different stages. 4. Calculate prestress losses and evaluate their effects on the performance and strength of structural elements. 5. Design concrete bridge elements and calculate shear and flexural stresses and reinforcement requirements. 6. Link theoretical concepts to practical applications to achieve structural safety and efficiency

9. Teaching and Learning Strategies	
Strategy	The module adopts an **interactive and practical learning approach** through lectures, design exercises, and engineering problem-solving, focusing on the analysis and design of prestressed concrete members and reinforced concrete bridges in accordance with international codes such as **ACI and AASHTO**. Students are trained to analyze, and design prestressed flexural members and reinforced concrete bridges, linking theoretical concepts with practical design applications and developing their engineering problem-solving skills

10. Course structures					
Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation method
1	3	2	Introduction: review the principles of precast reinforced concrete design	Attendance	Assignments, quizzes, and exams
2	3	2	Precast construction advantages and disadvantages. Prefabricated elements, dimension limitations.		
3	3	2	Types of joint connections, shear friction theory, design of brackets and corbels.		
4	3	2	Examples: Brackets, End beam.		
5	3	2	Homework, Tutorial, Quiz		
6	3	2	The principles of prestressing, theory and method of load application. Material properties and types, prestressed and ordinary steel high strength concrete.		
7	3	2	Types and methods of prestressing, Stress analysis at different stages.		
8	3	2	Principles of limit stress at initial and after losses. Cracking, cracking load and factor against cracking.		
9	3	2	Ultimate strength of prestressed concrete and factor of safety. Types of losses in prestressed concrete.		
10	3	2	Lump sum losses estimation, detailed estimation of losses in prestressed concrete.		
11	3	2	Tutorial, Quiz		
12	3	2	Type of loading used for bridge design. Design of slab bridge and edge beam.		
13	3	2	Deck girder bridges, span length, minimum depth, loading criteria. Shear and flexural stress calculation at different sections along the span.		

14	3	2	Design for deck reinforcement, girders flexural and diagonal reinforcement. Design for exterior girders and intermediate diaphragms.		
15	3	2	Review		

11. Course Evaluation and Grade Breakdown

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Attendance and Participation: 5 marks

Quizzes: 10 marks

Homework: 5 marks

Report and Project:

Mid-Term Exam: 20 marks

Final Exam: 60 marks

12. Learning and Teaching Resources

Prescribed textbooks (syllabus books, if available)	Arthur H. Nilson, David Darwin, Charles W. Dolan (2010). Design of concrete structures", McGraw-Hill Education.
Main references (sources)	ACI Committee 318. (2014). Building code requirements for structural concrete: (ACI 318-14); and commentary (ACI 318R-14). Farmington Hills, MI: American Concrete Institute.
Recommended supporting books and references (scientific journals, reports...)	
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Dr. Suhaib Y. Kasim

Head of Department
Assist. Prof. Dr. Baraa J. Mahmood

Course Description Form

1. Course Name:	
Foundation Engineering II	
2. Course Code:	
CE412	
3. Semester / Year:	
Second Semester / 2025-2026	
4. Description Preparation Date:	
1-9-2025	
5. Available Attendance Forms	
Attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
60 hr / 3 Credit	
7. Course administrator's name (mention all, if more than one name)	
Prof Dr. Abdulrahman H. Al-Daood, Assist. Prof. Dr. Muwafaq Abbo Awad	
8. Course Objectives	
Course Objectives	1. Calculate the ultimate load-bearing capacity of piles and evaluate their ability to withstand applied loads. 2. Understand the principles of analysis and design of deep foundations to satisfy safety and efficiency requirements. 3. Apply appropriate engineering methods to solve pile design problems. 4. Analyze and interpret pile load test results to evaluate soil–pile behavior. 5. Calculate the expected settlement of pile foundations and assess its effect on structural performance. 6. Identify earth-retaining systems, such as retaining walls and sheet piles. 7. Understand the role of retaining systems in supporting soil and maintaining structural stability
9. Teaching and Learning Strategies	
Strategy	The module adopts an **interactive and practical learning approach** through lectures, engineering problem-solving, applied exercises, and case studies, focusing on analyzing soil properties, determining bearing capacity and settlement, and selecting and designing appropriate foundations. The module also develops students' skills in analyzing geotechnical problems, applying design principles and adopted codes, and linking theoretical concepts to practical applications in foundation and structural design.

10. Course structures					
Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation method
1	3	2	Definition, types of piles, and their structural characteristics	Attendance	Assignments, quizzes, and exams
2	3	2	Estimating pile length, point bearing pile, friction piles, installation of piles, load transfer mechanisms		
3	3	2	Pile capacity in cohesionless soils with examples		
4	3	2	Pile capacity in cohesive soils with examples		
5	3	2	Pile capacity of c-ø soils		
6	3	2	Group of piles and pile group efficiency with examples		
7	3	2	Pile subjected to moment and pile load test		
8	3	2	Settlement of piles and pile groups Mid-term exam		
9	3	2	Introduction to lateral earth pressure theory- Rankine horizontal surface - problems		
10	3	2	Rankine lateral earth pressure theory- inclined surface-problems		
11	3	2	Coulomb active and passive lateral earth pressure theory- problems		
12	3	2	Definitions, types of retaining walls, geotechnical proportioning of retaining walls, Applications of lateral earth pressure theories, stability of retaining walls against overturning		
13	3	2	Stability of retaining walls against overturning and sliding problems		
14	3	2	Introduction, types of sheet piles, applications, construction methods, cantilevered sheet piles penetrating sand		
15	3	2	Sheet piles penetrating clay- problems		

11. Course Evaluation and Grade Breakdown	
The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc. Attendance and participation: 4 marks Quizzes: 12 marks Homework: 4 marks Report and Project: Mid-Term Exam: 20 marks Final Exam: 60 marks	
12. Learning and Teaching Resources	
Prescribed textbooks (syllabus books, if available)	"Principles of Foundation Engineering", 2018, Braja M. Dass, 9th Edition, SI Edition.
Main references (sources)	Foundation Design and Analysis, 1996, Joseph E. Bowles.
Recommended supporting books and references (scientific journals, reports...)	
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Dr. Abdulrahman H. Al-Daood

Head of Department
Assist. Prof. Dr. Baraa J. Mahmood

Course Description Form

1. Course Name:	
Steel Design II	
2. Course Code:	
CE413	
3. Semester / Year:	
Second Semester / 2025-2026	
4. Description Preparation Date:	
1-9-2025	
5. Available Attendance Forms	
Attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
45 hr / 2 Credit	
7. Course administrator's name (mention all, if more than one name)	
Assist. Prof Dr. Baraa J. Mahmood, Assist. Prof. Dr. Kaythar A. Ibrahim	
8. Course Objectives	
Course Objectives	1. Review and apply the fundamental concepts of Steel Design I. 2. Understand the plastic behavior of steel sections and calculate yield moment, plastic moment, and shape factor. 3. Develop students' ability to analyze and design steel beams subjected to flexural moments. 4. Evaluate beam stability and check buckling conditions, including lateral-torsional buckling. 5. Select appropriate steel sections and verify their strength in accordance with the adopted design code. 6. Develop design problem-solving skills while satisfying safety and economic efficiency requirements in steel structure design
9. Teaching and Learning Strategies	
Strategy	The module adopts an interactive, practical learning approach through lectures, design exercises, problem-solving, and case studies, focusing on applying AISC 360 to the analysis and design of steel members. Students are trained to design beams under flexure, columns under eccentric compression, and steel connections, while checking failure, stability, and limit states and selecting suitable sections according to safety and economic requirements.

10. Course structures					
Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation method
1	3	2	Review of steel design I and structural Loading, review of axial member design concepts, load combinations for bending and combined actions, and structural analysis results interpretation.	Attendance	Assignments, quizzes, and exams
2	3	2	Behavior of flexural Members, stress distribution in bending, elastic vs plastic behavior, plastic moment concept, influence of cross-sectional shape (shape factor).		
3	3	2	Section classification, compact, non-compact, and slender sections, local buckling behavior, width-to-thickness limits, and the effect of section classification on design strength.		
4	3	2	Design of flexural members (strength limit state), flexural strength equations, design of laterally supported beams, LRFD and ASD checks, and selection of economical sections.		
5	3	2	Lateral-torsional buckling (LTB) of beams, mechanism of lateral-torsional buckling, unbraced length concept, C_b factor, elastic and inelastic buckling regions.		
6	3	2	Design of beams using equations and charts.		
7	3	2	Shear of beam and deflection limits.		
8	3	2	Introduction to beam-column members, combined axial force and bending, P–Δ and P–δ effects, and interaction between axial load and moment.		
9	3	2	Beam-column interaction equations, interaction diagrams, code-based interaction equations, and design philosophy for combined loading.		
10	3	2	Beam-columns under uniaxial bending, design procedure for uniaxial bending, moment amplification, and stability checks.		
11	3	2	Beam-columns under biaxial bending, biaxial bending behavior, and application of interaction equations.		
12	3	2	Introduction to steel connections, load transfer mechanisms in connections, and types of steel. connections.		
13	3	2	Bolted connections, bearing-type and slip-critical connections, design of bolts and connection elements.		
14	3	2	Welded connections, types of welds and welding symbols, and strength and design of welded joints.		

15	3	2	Integrated design and review, integrated member and connection design.		

11. Course Evaluation and Grade Breakdown

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Attendance and Participation:

Quizzes: 20 marks

Homework: 10 marks

Report and Project: 10 marks

Mid-Term Exam: 10 marks

Final Exam: 60 marks

12. Learning and Teaching Resources

Prescribed textbooks (syllabus books, if available)	Structural Steel Design, Jack C. McCormac and Stephen F. Csernak, Pearson Education Limited, 6th edition, 2018.
Main references (sources)	AISC Construction Manual, 15th Edition. 2017
Recommended supporting books and references (scientific journals, reports...)	
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Dr. Baraa J. Mahmood

Head of Department
Assist. Prof. Dr. Baraa J. Mahmood

Course Description Form

1. Course Name:	
Traffic Engineering II	
2. Course Code:	
CE414	
3. Semester / Year:	
Second Semester / 2025-2026	
4. Description Preparation Date:	
1-9-2025	
5. Available Attendance Forms	
Attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
30 hr / 2 Credit	
7. Course administrator's name (mention all, if more than one name)	
Assist. Prof Dr. Mohammed Yasseen Taha	
8. Course Objectives	
Course Objectives	1. Understand the general principles of traffic engineering and the characteristics of traffic engineering 2. Identify the role of traffic engineering within transportation engineering in life 3. Analyze and design data for traffic characteristics and find the LOS for freeways 4. Analyze and design data for traffic characteristics and find the LOS for multi-lane highways 5. Study and classify intersections of all types on the road network 6. Analyze and evaluate the signalized intersections' performance. 7. Analyze and design parking.
9. Teaching and Learning Strategies	
Strategy	The student acquires knowledge of the characteristics of traffic engineering and the ability to distinguish, define, analyze and address the most important engineering and mathematical problems and issues in the field of traffic engineering and for specific types of roads distributed on the urban and rural road network and the method of finding the necessary immediate and future solutions and developing the appropriate design and planning for each of them.

10. Course structures					
Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation method
1	2	1	Introduction to Traffic Engineering Studies	Attendance	Assignments, quizzes, and exams
2	2	1	Study of parking, its types, design, importance, and impact on traffic		
3	2	1	Definition and classification of freeways and identification of their parts		
4	2	1	Study the factors affecting freeway traffic		
5	2	1	Analysis of traffic characteristics in a basic freeway segment		
6	2	1	Finding the level of service in a basic freeway segment		
7	2	1	Design and planning of traffic in a basic freeway segment		
8	2	1	Definition and classification of multi-lane roads and their sections		
9	2	1	Analysis of traffic characteristics in multi-lane highways		
10	2	1	Finding the level of service in multi-lane highways		
11	2	1	Design and planning of traffic in multi-lane highways		
12	2	1	Definition and classification of traffic intersections and their functions		
13	2	1	Study of methods of analyzing the signalized intersections		
14	2	1	Design and timing for the signalized intersections		
15	2	1	Evaluation of traffic operation at the signalized intersections		

11. Course Evaluation and Grade Breakdown

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Attendance and Participation:

Quizzes: 20 marks

Homework: 10 marks

Report and Project: 10 marks

Mid-Term Exam: 10 marks

Final Exam: 60 marks

12. Learning and Teaching Resources	
Prescribed textbooks (syllabus books, if available)	1. Nicholas J. Garber, and Lester A. Hoel," Traffic and Highway Engineering", Fourth Edition, Cengage Learning, Canada, pp. 99-150, 2009. 2. CA O'Flaherty, and et al," Transport Planning and Traffic Engineering", First Edition, 1997, Published by CRC Press, p. 544, Reprinted 2018.
Main references (sources)	Institute of Transportation Engineers**,** H. Douglas Robertson, Joseph E. Hummer, and Donna C. Nelson," Manual of Transportation Engineering Studies ", Prentice Hall Englewood Cliffs, NJ**,** 1999.
Recommended supporting books and references (scientific journals, reports...)	
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Dr. Mohammed Yasseen Taha

Head of Department
Assist. Prof. Dr. Baraa J. Mahmood

Course Description Form

1. Course Name:	
Sanitary Engineering II	
2. Course Code:	
CE415	
3. Semester / Year:	
Second Semester / 2025-2026	
4. Description Preparation Date:	
1-9-2025	
5. Available Attendance Forms	
Attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
30 hrs. / 2 credits	
7. Course administrator's name (mention all, if more than one name)	
Assist. Lec. Yousif Hassan Najim	
8. Course Objectives	
Course Objectives	1. Understand the components and design principles of water supply and wastewater networks. 2. Apply hydraulic principles to calculate design flows and design pipeline networks. 3. Determine appropriate pipe diameters, slopes, depths, and pressures. 4. Design supporting network components, such as tanks, manholes, and pumping stations. 5. Read engineering drawings and prepare preliminary design solutions for networks. 6. Select design solutions that achieve efficiency, safety, economy, and sustainability.
9. Teaching and Learning Strategies	
Strategy	The module adopts an interactive, practical learning approach through lectures, engineering problem-solving, numerical exercises, case studies, and practical experiments, focusing on the design and operation of water supply and wastewater networks, as well as drinking water treatment plants. It develops students' analytical and problem-solving skills and their ability to apply engineering standards, while linking theoretical concepts to practical applications and addressing public health and environmental protection requirements

10. Course structures					
Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation method
1	2	1	Introduction to Water Supply and Sewerage Systems	Attendance	Assignments, quizzes, and exams
2	2	1	Design Data and Engineering Surveying		
3	2	1	Water Sources and Components of the Water Supply System		
4	2	1	Hydraulic Fundamentals of Water Supply Networks		
5	2	1	Planning of Water Distribution Networks		
6	2	1	Hydraulic Design of Water Supply Networks		
7	2	1	Reservoirs, Pumping Stations, and Network Appurtenances		
8	2	1	Practical Applications and Review of Water Supply Network Design		
9	2	1	Introduction to Sewerage Networks and Their Types		
10	2	1	Estimation of Discharges in Sewerage Networks		
11	2	1	Hydraulic Principles for Sewer Design		
12	2	1	Hydraulic Design of Sewer Lines		
13	2	1	Manholes, Appurtenances, and Lifting Stations		
14	2	1	Planning of Sewerage Networks and Reading Longitudinal Profiles		
15	2	1	Integration between Water Supply and Sewerage Networks and Environmental Aspects		

11. Course Evaluation and Grade Breakdown

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Attendance and Participation:

Quizzes: 20 marks

Homework: 10 marks

Report and Project: 10 marks

Mid-Term Exam: 10 marks

Final Exam: 60 marks

12. Learning and Teaching Resources	
Prescribed textbooks (syllabus books, if available)	Water supply and sewerage by E.W Steel. &Terence J. McGhee (1990)
Main references (sources)	Water and wastewater engineering, Mackenzie L. Davis. Ph D P.E, BCEE (2010). Design of water supply pipe networks by John Wiley & sons. (2008)
Recommended supporting books and references (scientific journals, reports...)	
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Yousif Hassan Najim

Head of Department
Assist. Prof. Dr. Baraa J. Mahmood

Course Description Form

1. Course Name:	
Computer Application II	
2. Course Code:	
CE416	
3. Semester / Year:	
Second semester / 2025-2026	
4. Description Preparation Date:	
1-9-2025	
5. Available Attendance Forms	
Attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
45 hr / 2 Credit	
7. Course administrator's name (mention all, if more than one name)	
Assist. Prof Ashtar Saleh Ahmed Assist. Prof. Dr. Mohammed N. Jaro Lec. Sura Abdul Razzaq Majeed	
8. Course Objectives	
Course Objectives	1. Understand the Stiffness Matrix Method and its applications in structural analysis. 2. Train students to use STAAD.Pro for modeling, analysis, and design of structural systems. 3. Define material and section properties and apply various loads to structural models. 4. Analyze and interpret analysis results, including displacements, internal forces, and reactions. 5. Design basic structural elements using the software in accordance with adopted design codes. 6. Identify and correct modeling errors and prepare engineering reports and drawings. 7. Link theoretical concepts to computer-based and practical applications in civil engineering.

9. Teaching and Learning Strategies	
Strategy	The module adopts an **interactive, practical learning approach, using lectures and applied exercises to explain the principles of the Stiffness Matrix Method, along with hands-on training with** engineering software for structural modeling, analysis, and design. Project-based learning, problem-solving, and collaborative learning are employed, while self-directed learning is encouraged and continuous feedback is provided to link theoretical concepts to computer-based engineering applications.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation method
1	3	6	Analysis of continuous beams using the Stiffness Matrix Method	Attendance	Assignments, quizzes, and exams
2	3	6	Analysis of trusses		
3	3	6	Analysis of plane frames using the Stiffness Matrix Method		
4	3	6	Two-Dimensional (2D) Structural Stiffness Matrix		
5	3	6	Analysis of 2D structural systems using the Stiffness Matrix Method		
6	3	6	Analysis and design of foundations and structural members		
7	3	6	Comparison of design results with specifications		
8	3	6	Comparison of design results with specifications		
9	3	6	Preparation of the engineering report		
10	3	6	Preparation of the engineering report		
11	3	6	Introduction to PLAXIS Dynamics		
12	3	6	Analysis of earthquake-induced vibrations		
13	3	6	Analysis of vibrations caused by traffic		
14	3	6	Analysis of vibrations caused by machinery operation		
15	3	6	Review		

11. Course Evaluation and Grade Breakdown
The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc. Attendance and Participation: 3 marks Quizzes: 5 marks Homework: 3 marks Lab: 25 marks Mid-Term Exam: 14 marks Final Exam: 50 marks

12. Learning and Teaching Resources	
Prescribed textbooks (syllabus books, if available)	
Main references (sources)	
Recommended supporting books and references (scientific journals, reports...)	
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Ashtar Saleh Ahmed

Head of Department
Assist. Prof. Dr. Baraa J. Mahmood

Course Description Form

1. Course Name:	
Construction Methods	
2. Course Code:	
CE417	
3. Semester / Year:	
Second Semester / 2025-2026	
4. Description Preparation Date:	
1-9-2025	
5. Available Attendance Forms	
Attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
30 hr / 2 Credit	
7. Course administrator's name (mention all, if more than one name)	
Lec. Riffa Dalli Hamed	
8. Course Objectives	
Course Objectives	1. Understand traditional and modern construction methods and techniques and their application on construction sites. 2. Identify types of construction equipment and understand their safe and efficient use. 3. Understand the relationship between engineering design and practical construction, and develop construction plans for construction projects.
9. Teaching and Learning Strategies	
Strategy	The module adopts an interactive, practical learning approach through lectures, case studies, practical exercises, and, when possible, field visits, focusing on traditional and modern construction methods and techniques, as well as construction equipment and its safe and efficient use. It links engineering design with practical construction and project execution planning, developing students' skills in solving construction problems and applying safety and quality requirements.

10. Course structures					
Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation method
1	2	1	Introduction to the construction industry	Attendance	Assignments, quizzes, and exams
2	2	1	Introduction to engineering evaluation.		
3	2	1	Rolling Resistance.		
4	2	1	Coefficient of Traction.		
5	2	1	Types of methods for compaction of soil.		
6	2	1	Soil Specification		
7	2	1	Swelling and shrinkage of soil		
8	2	1	Calculation of the cost of wood forms.		
9	2	1	Properties of tractors.		
10	2	1	Properties of bulldozer and productivity,		
11	2	1	Regression calculation of rod		
12	2	1	Foundation injection		
13	2	1	Properties of scrapers		
14	2	1	Scrapers Productivity.		
15	2	1	Review		

11. Course Evaluation and Grade Breakdown

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Attendance and Participation: 4 marks

Quizzes: 10 marks

Homework: 4 marks

Mid-Term Exam: 22 marks

Final Exam: 60 marks

12. Learning and Teaching Resources	
Prescribed textbooks (syllabus books, if available)	Planning, equipment and construction methods, Mohammed Ayoub Sabry
Main references (sources)	Construction Methods and Estimation, Abdul Rahman Adnan.
Recommended supporting books and references (scientific journals, reports...)	
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Riffa Dalli Hamed

Head of Department
Assist. Prof. Dr. Baraa J. Mahmood

Course Description Form

1. Course Name:
Applied Chemistry
2. Course Code:
CE418
3. Semester / Year:
Second Semester / 2025-2026
4. Description Preparation Date:
1-9-2025
5. Available Attendance Forms
Attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
30 hr / 2 Credit
7. Course administrator's name (mention all, if more than one name)
Lec. Dr. Eman Khalid Ibrahim
8. Course Objectives

Course Objectives	1. Understand the chemistry of cement production, its types and properties, and the mechanism and products of cement hydration. 2. Understand the role of chemical and mineral admixtures, polymers, and fibers in improving the properties of concrete and asphalt mixtures. 3. Analyze the effects of chemical factors, such as sulfate and acid attack and reinforcement corrosion, on concrete durability. 4. Understand the principles of green concrete production and the use of recycled materials, waste, and environmentally friendly materials in concrete mixtures. 5. Link chemical principles to engineering applications to improve the properties, durability, and sustainability of construction materials.

9. Teaching and Learning Strategies	
Strategy	The module adopts an **interactive, practical learning approach through lectures, discussions, practical experiments, and case studies on construction materials, with a focus on understanding the chemical reactions that affect** cement, concrete, and asphalt mixtures. It also develops students' ability to analyze the effects of admixtures, fibers, recycled materials, and environmental factors on the properties and durability of materials, while linking chemical concepts to engineering applications and sustainability

10. Course structures

Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation method
1	2	1	Introduction to the Chemistry of Cement Compounds, Their Types and Properties	Attendance	Assignments, quizzes, and exams
2	2	1	Types and Specifications of Cement		
3	2	1	Hydration of Individual Cement Phases and Reaction Products		
4	2	1	Chemical and Mineral Admixtures for Concrete, Including Composite Cement		
5	2	1	Midterm Examination		
6	2	1	Polymers		
7	2	1	Effect of Fibers on Concrete Properties		
8	2	1	Sulfate and Acid Attack on Concrete and Their Effects on Durability		
9	2	1	Alkali–Silica Reaction and Its Effect on Concrete Durability		
10	2	1	Reinforcement Corrosion in Concrete and Its Effect on Durability		
11	2	1	Mechanism of Crack Formation in Plastic and Hardened Concrete		
12	2	1	Production of Green Concrete Using Environmentally Friendly Materials		
13	2	1	Use of Recycled Materials and Waste and Their Effects on Concrete Properties		
14	2	1	Chemical Composition of Soil		
15	2	1	Chemical Stabilization of Soil		

11. Course Evaluation and Grade Breakdown	
The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc. Attendance and Participation: 10 marks Quizzes: 12 marks Homework: 5 marks Mid-Term Exam: 18 marks Final Exam: 60 marks	
12. Learning and Teaching Resources	
Prescribed textbooks (syllabus books, if available)	Nevile A.M. (1995). Properties of Concrete, fourth and final Edition-Pearson Education Limited, 846 pp.
Main references (sources)	Ttroxell, Kelly, and Davis. (1968). Composition and Properties of Concrete, 2nd edition -McGraw-Hill book company, 480 pp.
Recommended supporting books and references (scientific journals, reports...)	
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Dr. Eman Khalid Ibrahim

Head of Department
Assist. Prof. Dr. Baraa J. Mahmood

Course Description Form

1. Course Name:	
Structural Drawing	
2. Course Code:	
CE408	
3. Semester / Year:	
Second Semester / 2025-2026	
4. Description Preparation Date:	
1-9-2025	
5. Available Attendance Forms	
Attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
30 hrs / 1 Credit	
7. Course administrator's name (mention all, if more than one name)	
Lec. Ahmed A. Mohammed Ali, Lec. Zena Adel Mohammed	
8. Course Objectives	
Course Objectives	1. Introduce students to the principles and fundamentals of structural drafting and the symbols used in engineering drawings. 2. Develop students' ability to read and interpret structural drawings and details of various structural elements. 3. Train students to prepare structural drawings and reinforcement details for reinforced concrete elements. 4. Enable students to use engineering drafting software, such as AutoCAD, to prepare and modify structural drawings. 5. Develop students' skills in producing accurate and clear structural drawings in accordance with adopted codes and specifications.
9. Teaching and Learning Strategies	
Strategy	The module adopts an **interactive and practical learning approach** through lectures, practical exercises, and training in reading and preparing structural drawings and reinforcement details, using engineering drafting software such as **AutoCAD**. It focuses on applying adopted codes and specifications, developing accuracy and technical skills, and linking structural design principles with working drawings and practical applications.

10. Course structures					
Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation method
1	2	6	General Introduction to Structural Drawing and detailed course contents.	Attendance	Assignments, quizzes, and exams
2	2	6	Types of Structural Foundations: Strip Foundations and Wall Footings.		
3	2	6	Isolated Footings.		
4	2	6	Continuous Foundations.		
5	2	6	Raft Foundations.		
6	2	6	Column Layouts and Drawing of Column Details.		
7	2	6	Reinforcement Layout for One-Way and Two-Way Slabs.		
8	2	6	Slab Sections.		
9	2	6	Midterm Examination.		
10	2	6	Detailing of Beams and Drawing of Beam Sections.		
11	2	6	Detailing the Beam-to-Column Connection.		
12	2	6	Column Layout and Drawing of Column Details.		
13	2	6	Method of Drawing Reinforcement Details for Staircases.		
14	2	6	Methods of Reading and Interpreting Structural Drawings and Plans.		
15	2	6	Review.		

11. Course Evaluation and Grade Breakdown

The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc.

Attendance and Participation: 4 marks

Quizzes: 7 marks

Homework: 12 marks

Practical: 7 marks

Mid-Term Exam: 20 marks

Final Exam: 50 marks

12. Learning and Teaching Resources	
Prescribed textbooks (syllabus books, if available)	Construction Drawing, 2020, Rabi. M. Najim, University of Mosul
Main references (sources)	ACI Detailing Manual.
Recommended supporting books and references (scientific journals, reports...)	
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Ahmed A. Mohammed Ali

Head of Department
Assist. Prof. Dr. Baraa J. Mahmood

Course Description Form

1. Course Name:	
Architectural Design	
2. Course Code:	
CE409	
3. Semester / Year:	
Second Semester / 2025-2026	
4. Description Preparation Date:	
1-9-2025	
5. Available Attendance Forms	
Attendance	
6. Number of Credit Hours (Total) / Number of Units (Total)	
30 hr / 2 Credit	
7. Course administrator's name (mention all, if more than one name)	
Assist. Lect. Shahd Nazim Sheet	
8. Course Objectives	
Course Objectives	1. **Develop students' creative thinking** to formulate architectural and structural solutions that integrate function and form. 2. **Introduce students to the fundamental principles of architectural design**, including proportion, lighting, ventilation, and functional relationships between spaces. 3. **Develop students' ability to integrate structural systems with the functional and architectural requirements of buildings.** 4. **Develop students' skills in creating innovative design solutions** that address user needs, technological developments, and sustainability requirements. 5. **Develop students' ability to analyze case studies** and use them to develop design ideas and solutions. 6. **Enhance students' critical and creative thinking skills and perseverance** in developing architectural and structural design concepts

9. Teaching and Learning Strategies	
Strategy	The module adopts an **interactive and creative learning approach** through lectures, discussions, examples and case study analysis, and the use of **brainstorming and open-ended, in-depth questions** to stimulate students' creative thinking. It focuses on developing students' ability to generate and discuss architectural and structural solutions and to integrate functional, architectural, and structural requirements in building design.

10. Course structures					
Week	Hours	Required Learning Outcomes	Unit or Subject Name	Learning Method	Evaluation method
1	2	1	Introduction and definition of the topic	Attendance	Assignments, quizzes, and exams
2	2	1	Architectural design and its importance		
3	2	1	The formation system in architecture		
4	2	1	Organized relationships in the formation of architecture		
5	2	1	Design principles		
6	2	1	The concept of uniqueness in architecture		
7	2	1	Architectural design determinants		
8	2	1	Scale and proportion		
9	2	1	Midterm exam		
10	2	1	The golden ratio		
11	2	1	Mass and space		
12	2	1	Islamic architecture		
13	2	1	Analyze examples and discuss reports		
14	2	1	Discussing real-life examples in civil engineering		
15	2	1	Review		

11. Course Evaluation and Grade Breakdown	
The grade out of 100 is distributed according to the tasks assigned to the student, such as daily preparation, daily oral, monthly, and written exams, reports, etc. Attendance and Participation: 5 marks Quizzes: 10 marks Homework: 5 marks Report and Project: Mid-Term Exam: 20 marks Final Exam: 50 marks	
12. Learning and Teaching Resources	
Prescribed textbooks (syllabus books, if available)	1- Joseph De Chiara, "Time-Saver Standards for Building Types." 2- Ernst Neufert ,"Neufert Architects' Data"
Main references (sources)	3- Architecture: Form, Space, and Order" by Francis D.K. Ching 4- "أساسيات العمارة" – تأليف: محمد حسين حمدان
Recommended supporting books and references (scientific journals, reports...)	
Electronic references, websites	
Curriculum or course description update rate	5%

Course Instructor
Shahd Nazim Sheet

Head of Department
Assist. Prof. Dr. Baraa J. Mahmood