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

2024

Introduction:

The educational program is a well-planned set of courses that include procedures and experiences arranged in the form of an academic syllabus. Its main goal is to improve and build graduates' skills so they are ready for the job market. The program is reviewed and evaluated every year through internal or external audit procedures and programs like the External Examiner Program.

The academic program description is a short summary of the main features of the program and its courses. It shows what skills students are working to develop based on the program's goals. This description is very important because it is the main part of getting the program accredited, and it is written by the teaching staff together under the supervision of scientific committees in the scientific departments.

This guide, in its second version, includes a description of the academic program after updating the subjects and paragraphs of the previous guide in light of the updates and developments of the educational system in Iraq, which included the description of the academic program in its traditional form (annual, quarterly), as well as the adoption of the academic program description circulated according to the letter of the Department of Studies T 3/2906 on 3/5/2023 regarding the programs that adopt the Bologna Process as the basis for their work.

In this regard, we can only emphasize the importance of writing an academic programs and course description to ensure the proper functioning of the educational process.

Concepts and terminology:

Academic Program Description: The academic program description provides a brief summary of its vision, mission and objectives, including an accurate description of the targeted learning outcomes according to specific learning strategies.

Course Description: Provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the students to achieve, proving whether they have made the most of the available learning opportunities. It is derived from the program description.

Program Vision: An ambitious picture for the future of the academic program to be sophisticated, inspiring, stimulating, realistic and applicable.

Program Mission: Briefly outlines the objectives and activities necessary to achieve them and defines the program's development paths and directions.

Program Objectives: They are statements that describe what the academic program intends to achieve within a specific period of time and are measurable and observable.

Curriculum Structure: All courses / subjects included in the academic program according to the approved learning system (quarterly, annual, Bologna Process) whether it is a requirement (ministry, university, college and scientific department) with the number of credit hours.

Learning Outcomes: A compatible set of knowledge, skills and values acquired by students after the successful completion of the academic program and must determine the learning outcomes of each course in a way that achieves the objectives of the program.

Teaching and learning strategies: They are the strategies used by the faculty members to develop students' teaching and learning, and they are plans that are followed to reach the learning goals. They describe all classroom and extra-curricular activities to achieve the learning outcomes of the program.

Academic Program Description Form

University Name: University of Anbar

Faculty/Institute: College of Engineering

Scientific Department: Civil department

Academic or Professional Program Name: Department of Civil Engineering

Final Certificate Name: Bachelor of Civil Engineering

Academic System: semester

Description Preparation Date: 17/10/2022

File Completion Date: 17/10/2022

Signature:

Head of Department Name:

Ass. Prof. Dr. Ahmed Tareq Noaman

Date: 17/10/2022

Signature: M. A. Ahmed

Scientific Associate Name:

Ass. Prof. Dr. Mohammed Abed Ahmed

Date: 17/10/2022

The file is checked by: H. K. D

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date: 17/10/2022

Signature:

Approval of the Dean

1. Program Vision

1 – Raising the educational level of students with engineering specialization.

2 – Prepare professional cadres prepared for engineering work.

3 – Developing students' ability to analyze, develop, and conclude.

2. Program Mission

The overarching goal of civil engineering is to improve the quality of life through designing and developing safe, efficient, and sustainable infrastructure, which is:

1–Project Design. 2–Construction Supervision. 3–Structural Analysis.

4–Engineering Consulting. 5–Research and Development. 6–Infrastructure Management. 7–Compliance with Laws and Regulations.

3. Program Objectives

1– The ability to use the programs, devices and tools necessary for engineering work in the correct ways.

2 – Increasing the capabilities required for production within the specified specifications.

3 – Optimal utilization of the timings required to implement programs.

4. Program Accreditation

N/A

5. Other external influences

N/A

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	English Language I	2		Basic
	Arabic language	2		Basic
	Human Rights	1		Basic
	Democracy	1		Basic
	English Language II	2		Basic
	English Language III	2		Basic
	English Language IV	2		Basic
	Management and Leadership skills	2		Basic
College Requirements	Calculus I	3		Basic
	Calculus II	3		Basic
	Physics	4		Basic
	Chemistry	4		Basic
	Fundamentals of Electrical Engineering	3		Basic
	Computer science	3		Basic
	Engineering Drawing	3		Basic
	Engineering Mechanics (Statics)	3		Basic
	Calculus III	3		Basic
	Calculus IV	3		Basic
	Engineering Statistics	3		Basic
	Engineering Numerical Methods	3		Basic
	Final Year Project I	3		Basic
	Final Year Project II	3		Basic

Department Requirements	Applied Physics	3		Basic
	Construction Materials	3		Basic
	Concrete Properties	4		Basic
	Building Contraction	3		Basic
	Engineering Geology	3		Basic
	Fluid Mechanics	3		Basic
	Dynamics	3		Basic
	Strength of Materials I	3		Basic
	Strength of Materials II	3		Basic
	Engineering Surveying I	3		Basic
	Engineering Surveying II	3		Basic
	Structure I	3		Basic
	Structure II	3		Basic
	Reinforced Concrete Design I	3		Basic
	Reinforced Concrete Design II	3		Basic
	Construction Management	3		Basic
	Engineering Economy	3		Basic
	Soil Mechanics I	3		Basic
	Soil Mechanics II	3		Basic
	Hydrology	3		Basic
	Traffic Engineering	3		Basic
	Hydraulic Structures	3		Basic
	Foundation Engineering I	3		Basic

	Highway Engineering	**3**		Optional
	Sanitary and Environmental Engineering	**4**		Optional
	Method of construction and Estimation	**3**		Basic
	Steel Structure	**3**		Basic
	Computer Application in civil Engineering (CE Elective I)	**2**		Optional
	CE Elective II	**2**		Optional
	CE Elective III	**2**		Basic
	CE Elective IV	**2**		Basic
Summer Training				
Other				

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

7. Program Description

Year/Level	Course Code	Course Name	Credit Hours		
			theoretical	Tutorial	practical
First Year Semester I	CE1201	Calculus I	3	1	-
	CE1203	Physics	3	-	2
	CE1204	Chemistry	3	-	2
	CE1205	Fundamentals of Electrical Engineering	2	1	2
	CE1206	Computer Science	2	1	2
	CE1101	English Language I	2	-	-
	CE1103	Human Rights	1	-	-
Total Hours and Units			**16**	**3**	**8**
First Year Semester II	CE1202	Calculus II	3	1	-
	CE1301	Applied Physics	3	-	-
	CE 1208	Engineering Mechanics (Static)	3	1	-
	CE1302	Construction Materials	2	1	2
	CE 1207	Engineering Drawing	2	2	2
	CE1102	Arabic Language	2	-	-
	CE1104	Democracy	1	-	-
Total Hours and Units			**17**	**4**	**4**
Second Year Semester I	CE2201	Calculus III	3	1	-
	CE2308	Engineering Surveying I	2	1	2

	CE2306	Strength of Materials I	3	1	-
	CE2301	Concrete Properties	3	1	2
	CE2305	Dynamics	3	1	-
	CE2101	English Language II	2	-	-
Total Hours and Units			**16**	**5**	**4**
Second Year Semester II	CE2202	Calculus IV	3	1	-
	CE2309	Engineering Surveying II	2	1	2
	CE2307	Strength of Materials II	2	1	2
	CE2302	Building Construction	2	1	2
	CE2303	Engineering Geology	3	-	-
	CE2304	Fluid Mechanics	2	1	2
Total Hours and Units			**14**	**5**	**8**
Third Year Semester I	CE3301	Structure I	3	1	-
	CE3303	Reinforced concrete I	3	1	-
	CE3305	Construction Management	3	-	-
	CE3307	Soil Mechanics I	2	1	2
	CE3309	Hydrology	3	1	-
	CE3201	Engineering Statistics	3	-	-
	CE3101	English Language III	2	-	-
Total Hours and Units			**19**	**4**	**2**
Third Year Semester II	CE3302	Structure II	3	1	-
	CE3304	Reinforced concrete II	3	1	-
	CE3306	Engineering economy	3	-	-
	CE3308	Soil Mechanics II	2	1	2
	CE3202	Engineering Numerical methods	2	1	2
	CE3310	Traffic Engineering	3	1	-
Total Hours and Units			**16**	**5**	**4**
Fourth Year Semester I	CE4301	Hydraulic Structures	3	-	-
	CE 4302	Foundation Engineering I	3	1	-
	CE4303	Highway Engineering	2	2	2
	CE4307	Computer Applications in Civil Engineering (Course Elective I)	1	-	2
	CE 4310	Course Elective II	2	1	-
	CE4201	Final Year Project I	2	1	2
	CE4101	English Language IV	2	-	-
Total Hours and Units			**15**	**5**	**6**
Fourth Year Semester II	CE4304	Sanitary and Environmental Engineering	3	1	2
	CE4305	Methods of Construction and Estimation	3	1	-
	CE4306	Steel Structures	3	1	-
	CE4309	Course Elective III	2	2	-
	CE4317	Course Elective IV	2	2	-
	CE4202	Final Year Project II	2	1	2
	CE4102	Management and Leadership Skills	2	-	-
Total Hours and Units			**17**	**8**	**4**

8.Expected learning outcomes of the program

Knowledge	
Learning Outcomes 1	1- Full knowledge of the scientific aspects within the specialty. 2- Complete preparation for conclusion, analysis and development. 3- The correct preparation to confront problems and how to solve

	them. 4- Raising the level of knowledge in order to develop the capabilities necessary to follow up on scientific innovations.
Skills	
Learning Outcomes 2	Possibility of using programs and devices for engineering works.
Learning Outcomes 3	Optimal exploitation of the timing required to implement programs.
Ethics	
Learning Outcomes 4	Maintaining the basic infrastructure for implementing scientific programs.
Learning Outcomes 5	Paying attention to everything possible through which the necessary qualifications for development are raised.

9.Teaching and Learning Strategies

1-Activities and exercises in the classroom.

2-Guiding students to some scientific sources that contain exercises and examples.

10.Evaluation methods

1-Monthly tests. 2-Daily surprise tests. 3-Practical testing in laboratories.

4-Monthly reports.

11.Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
professor	Civil Engineering	Construction / Structural Engineering			3	

professor	Civil Engineering	Concrete Design and Technology / Building Materials			2	
professor	Civil Engineering	Highway and Transportation/ Urban Planning			3	
professor	Civil Engineering	Geotechnique			2	
professor	Civil Engineering	Environment/Water Resources			1	
Teacher	Civil Engineering	Construction / Structural Engineering			9	
Assistant Professor	Civil Engineering	Concrete Design and Technology/Building Materials			2	
Teacher	Civil Engineering	Concrete Design and Technology/Building Materials			2	
Assistant teacher	Civil Engineering	Civil Engineering			2	
professor	Civil Engineering	Highway and Transportation			5	
Teacher	Civil Engineering	Highway and Transportation			3	
Teacher	Civil Engineering	Project Management			1	
Teacher	Civil Engineering	Geotechnique			2	
Teacher	Civil Engineering	Environment			1	
The total					38	

12.Professional Development

Mentoring new faculty members

- Providing Basic Information: A guide containing the policies and procedures of the institution and the department is provided.
- Orientation Sessions: Orientation sessions are held to introduce the culture of the institution and the department.
- Personal Guidance: A mentor is assigned to each new member to help them adapt to the new environment.
- Practical Training: Training programmes are offered to develop the essential skills needed for the job.
- Monitoring and Evaluation: New members are monitored and their progress is evaluated, with continuous support provided as needed.

Professional development of faculty members

1. Providing laboratory equipment to develop engineering ideas.
2. Providing specialized scientific resources.
3. Providing specialized software and personal computers.
4. Conducting workshops and scientific seminars to develop new teaching staff.

13.Acceptance Criterion

- Students are accepted based on their grades in the sixth preparatory grade.
- The criteria for distributing students in the department are either according to the student's preference or according to the grade they obtained in the sixth preparatory grade.
- The top students channel for technical institutes and vocational education.
- The department's admission plan according to the capacity.

14.The most important sources of information about the program

- Textbooks.
- Supplementary academic resources available in the college library and reputable websites.
- Lectures, whether in print or electronic format, prepared by the course instructor.
- Videos related to the subject, specified by the course instructor.

15.Program Development Plan

- **Assessing the Current Situation:**
  - **Collecting Data:** Gather feedback from students, faculty members, and any previous evaluations of the programme.
  - **Performance Analysis:** Identify the strengths and weaknesses of the current programme.
- **Setting Objectives:**
  - **Educational Goals:** Identify areas for programme improvement (such as increasing success rates, enhancing students' understanding of the material, and boosting engagement).
  - **Professional Goals:** Determine the skills and knowledge that students need to acquire.
- **Reviewing Content:**
  - **Updating Study Materials:** Ensure that books, websites, and other resources are up-to-date and relevant.
  - **Diversifying Resources:** Add new resources if necessary to cover topics more comprehensively.
- **Designing Educational Experiences:**
  - **Curriculum Development:** Prepare a detailed plan for each study unit, including educational goals, content, activities, and assessments.
  - **Enriching the Learning Experience:** Incorporate interactive activities such as discussions, group work, and practical projects.
- **Training Teachers:**
  - **Offering Workshops:** Organise training sessions for faculty members on modern teaching methods and the use of technology.
  - **Encouraging Collaboration:** Establish working groups to share experiences and best practices.
- **Educational Technology:**
  - **Using E-learning Platforms:** Integrate e-learning platforms to facilitate access to content and provide an interactive learning environment.
  - **Employing Technological Tools:** Use technological tools to enhance learning, such as educational videos, simulations, and online quizzes.
- **Continuous Evaluation and Improvement:**
  - **Regular Evaluation:** Assess the effectiveness of changes periodically through student surveys and evaluation results.

- **Continuous Improvement:** Continue to adjust and enhance the programme based on feedback and evaluations.

- **Engaging Students:**
  - **Activating Student Participation:** Involve students in the programme development process by collecting their feedback and suggestions.
  - **Encouraging Flipped Classrooms:** Have students review content at home and discuss and apply it in class.

- **Planning a Timeline:**
  - **Clear Schedule:** Establish a timeline for each step of the development process and ensure everyone adheres to the deadlines.

Program Skills Outline															
				Required program Learning outcomes											
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
First Year	CE1201	Calculus I	Basic	*					*				*		
	CE1203	Physics	Basic	*				*					*		
	CE1204	Chemistry	Basic		*				*			*			
	CE1205	Fundamentals of Electrical Engineering	Basic		*				*			*			
	CE1206	Computer Science	Basic	*					*			*			
	CE1101	English Language I	Basic		*				*			*			
	CE1103	Human Rights	Basic		*				*			*			
	CE1202	Calculus II	Basic		*				*			*			
	CE1301	Applied Physics	Basic		*			*				*			
	CE 1208	Engineering Mechanics (Static)	Basic		*			*				*			

	CE1302	Construction Materials	Basic	*					*				*		
	CE 1207	Engineering Drawing	Basic	*				*					*		
	CE1102	Arabic Language	Basic		*				*			*			
	CE1104	Democracy	Basic		*				*			*			
Second Year	CE2201	Calculus III	Basic	*					*			*			
	CE2308	Engineering Surveying I	Basic		*				*			*			
	CE2306	Strength of Materials I	Basic		*				*			*			
	CE2301	Concrete Properties	Basic		*				*			*			
	CE2305	Dynamics	Basic		*			*				*			
	CE2101	English Language II	Basic		*			*				*			
	CE2202	Calculus IV	Basic	*					*				*		
	CE2309	Engineering Surveying II	Basic	*				*					*		
	CE2307	Strength of Materials II	Basic		*				*			*			

	CE2302	Building Construction	Basic	*					*				*		
	CE2303	Engineering Geology	Basic	*				*					*		
	CE2304	Fluid Mechanics	Basic		*				*			*			
Third Year	CE3301	Structure I	Basic		*				*			*			
	CE3303	Reinforced concrete I	Basic	*					*			*			
	CE3305	Construction Management	Basic		*				*			*			
	CE3307	Soil Mechanics I	Basic		*				*			*			
	CE3309	Hydrology	Basic		*				*			*			
	CE3201	Engineering Statistics	Basic		*			*				*			
	CE3101	English Language III	Basic		*			*				*			
	CE3302	Structure II	Basic	*					*				*		
	CE3304	Reinforced concrete II	Basic	*				*					*		
	CE3306	Engineering economy	Basic		*				*			*			

	CE3308	Soil Mechanics II	Basic	*					*				*		
	CE3202	Engineering Numerical methods	Basic	*				*					*		
	CE3310	Traffic Engineering	Basic		*				*			*			
Fourth Year	CE4301	Hydraulic Structures	Basic		*				*			*			
	CE 4302	Foundation Engineering I	Basic	*					*			*			
	CE4303	Highway Engineering	Optional		*				*			*			
	CE4307	Computer Applications in Civil Engineering (Course Elective I)	Optional		*				*			*			
	CE 4310	Course Elective II	Optional		*				*			*			
	CE4201	Final Year Project I	Basic		*			*				*			
	CE4304	English Language IV	Basic		*			*				*			
	CE4305	Sanitary and Environmental Engineering	Optional	*					*				*		

	CE4306	Methods of Construction and Estimation	Basic	*					*				*			
	CE4309	Steel Structures	Basic	*				*					*			
	CE4317	Course Elective III	Basic		*				*			*				
	CE4202	Course Elective IV	Basic		*				*			*				
	CE4102	Final Year Project II	Basic	*					*			*				
	CE4304	Management and Leadership Skills	Basic		*				*			*				

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

Course Description Form

1. Course Name:	
Arabic	
2. Course Code:	
UOA001	
3. Semester / Year:	
First semester	
4. Description Preparation Date:	
2024/6/20	
5. Available Attendance Forms:	
My presence	
6. Number of Credit Hours (Total) / Number of Units (Total)	
Hours: 20 hours, units: 10	
7. Course administrator's name (mention all, if more than one name)	
Name: M. Omar Abdel Moneim Khalil Email: omar.khalil@uoanbar.edu.iq	
8. Course Objectives	
Course Objectives	• Teaching students writing skills at the level of spelling, grammar, and morphology. • As well as teaching students how to analyze a literary text by referring to important literary texts.
9. Teaching and Learning Strategies	
Strategy	1- Using modern means to present the scientific and theoretical aspect, such as data display devices, to attract attention and attract students so that the idea reaches the student better. 2- Assigning students to extracurricular tasks that require them to practice skills and self-explanations in experimental ways. 3- Interrogating students through discussion circles by asking intellectual questions such as: (how, why, when, where, which) for specific topics. 4- Using the method of brainstorming and mental feeding with the aim of activating the accumulated experiences of students by linking what was taken from the academic subjects in the pre-university stages and linking them to the new subjects. 5- Providing students with practical skills by linking their studies to practical reality.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
First	٢	١	The hamza at the beginning of speech punctuation marks	Lectures	Written exam, assignments, and homework
second	٢	١	Number and number rules Ruling on distinguishing numbers	Lectures	Written exam, assignments, and homework
Third	٢	١	Counterpoint and counterpoint	Lectures	Written exam, assignments, and homework
fourth	٢	١	Alliteration and puns	Lectures	Written exam, assignments, and homework
Fifth	٢	١	The problem, the truth, and the metaphor	Lectures	Written exam, assignments, and homework
Sixth	٢	١	The Arabic dictionary literature	Lectures	Written exam, assignments, and homework
seventh	٢	١	Literary genres	Lectures	Written exam, assignments, and homework

eighth	٢	١	Abo Altaieb Almotanabi	Lectures	Written exam, assignments, and homework
Ninth	٢	١	Ka'b bin Zuhair	Lectures	Written exam, assignments, and homework
Tenth	٢	١	Abu Baqa Al-Randi And Hassan bin Thabit	Lectures	Written exam, assignments, and homework

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

Written exams: 30
Reports: 5
Homework: 10
Cobs: 5
Final exam: 50

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Arabic language book for non-specialists written by Dr. Rashid Al-Obaidi and others
Main references (sources)	Al-Nahw Al-Wafi by Abbas Hassan
Recommended books and references (scientific journals, reports…)	The book of clear dictations written by Ali Al-Jarim and Ahmed Amin
Electronic References, Websites	

Course Description Form

1. Course Name:
Calculus 1
2. Course Code:
ENG003
3. Semester / Year:
1st Semester 2023/2024
4. Description Preparation Date:
22 June 2024
5. Available Attendance Forms:
In Class
6. Number of Credit Hours (Total) / Number of Units (Total)
6 Credit Hours / 60 Hours (lectures)
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Atheer Faisal Al-Anbaki Email: atheer.alanbaki@uoanbar.edu.iq Name: Dr. Salam Rafea Armoosh Email: salam.armoosh@uoanbar.edu.iq
8. Course Objectives

Course Objectives	1. To develop mathematical skill so that students are able to sketch the graph of various functions and evaluate Limits by using different techniques including L'Hopital's rule 2. Apply mathematical methods and principals in solving various derivative problems from Engineering fields, involving applications of derivatives. 3. Demonstrate algebraic facility with algebraic topics including linear, quadratic, exponential, logarithmic, and trigonometric functions, 4. Compute derivative and anti-derivative of algebraic, trigonometric, inverse trigonometric, exponential, logarithmic, and apply them to solve problems in a wide range of engineering applications.

9. Teaching and Learning Strategies

Strategy	Lectures

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	٤	1	Functions	Lectures	Exams Quizzes
2	٤	1	Functions	Lectures	Exams Quizzes
3	٤	1	Limits	Lectures	Exams Quizzes
4	٤	2	Differentiation rules	Lectures	Exams Quizzes
5	٤	2	The Chain Rule, Implicit Differentiation	Lectures	Exams Quizzes Homework assignments
6	٤	2	Applications of Differentiation	Lectures	Exams Quizzes
7	٤	3	Exponential and logarithmic functions.	Lectures	Exams Quizzes
8	٤	3	Trigonometric functions and their derivatives	Lectures	Exams Quizzes
9	٤	3	Hyperbolic functions and their derivatives	Lectures	Exams Quizzes
10	٤	2, 3	Advanced Applications of differentiation	Lectures	Exams Quizzes Homework assignments
11	٤	2, 3	Advanced Applications of differentiation	Lectures	Exams Quizzes
12	٤	4	Derivative and anti-derivative functions	Lectures	Exams Quizzes
13	٤	4	Derivative and anti-derivative functions	Lectures	Exams Quizzes
14	٤	4	Derivative and anti-derivative functions	Lectures	Exams Quizzes
15	٤	١, 2, 3, 4	Review	Lectures	Exams Quizzes

Course Evaluation

Assessment Tool(s)**	Date	Weight (%)
Semester activities: These include, Homeworks, Quizzes	At the end of each major topic	**15%**
Mid semester exam **or** Progress Exams	According to department schedule	**25%**
Lab reports		**0%**
Final Exam	Week-16	**60%**
Total		**100%**

11. Learning and Teaching Resources

Required textbooks (curricu books, if any)	Calculus, Early Transcendental by James Stewart, 9th Edition, 2020, Cengage Learning.
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:

Calculus 2

2. Course Code:

ENG004

3. Semester / Year:

Second Semester/2023-2024

4. Description Preparation Date:

20/6/2024

5. Available Attendance Forms:

Classroom

6. Number of Credit Hours (Total) / Number of Units (Total):

60 hours/3

7. Course administrator's name (mention all, if more than one name)

Name: Jalil Eyada Kwad
Email: j.j.kwad@uoanbar.edu.iq
Name: Salam Rafea
Email: salam.armoosh@uoanbar.edu.iq

8. Course Objectives

Course Objectives	1. Introduce to the students the fundamental theorem of calculus. 2. Develop the ability to solve integration by definition. 3. Introduce integration techniques and solve various integration problems. 4. Apply the acquired knowledge to find areas, volumes, and arc length.

9. Teaching and Learning Strategies

Strategy	Lectures supported by modes developing material covered in lectures. These modes include theoretical lectures and problem-solving tutorials.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
one	4	Evaluate of defin indefinite a improper integrals using differ integration techniques	Principles of Integratic		H, Q,E

two	4	Evaluate of defin indefinite a improper integrals using differ integration techniques	Integral Methods		H, Q,E
Three	4	Evaluate of defin indefinite a improper integrals using differ integration techniques	Integration Technique Integration by Parts		H, Q,E
Four	4	Evaluate of defin indefinite a improper integrals using differ integration techniques	Integration Technique Trigonometric Integra		H, Q,E
Five	4	Evaluate of defin indefinite a improper integrals using differ integration techniques	Integration Technique Partial Fractions		H, Q,E
Six	4	Evaluate of defin indefinite a improper integrals using differ integration techniques	Integration Technique Partial Fractions		H, Q,E
Seven	4	To determine length, surface a and volume by us the applications integration techniques.	Applications of Integr - Infinite Integral Are Applications of Integr - Arc Length, Surf area		H, Q,E
Eight		All above	Mid-term Exam		E
Nine	4	To determine length, surface a and volume by us the applications integration techniques	Applications of Integr – Volumes (Disk, Wash ,Shell)		H, Q,E
Ten	4	Define pc coordinate grap and solve rela	Polar Coordinates Common Pc Coordinate Graphs.		H, Q,E

		problems includ area, arc length a volume			
Eleven	4	Define pc coordinate gra and solve rela problems includ area, arc length a volume	Polar Coordinates Tangents with Pc Coordinates, Cur defined by paramet equations.		H, Q,E
Twelve	4	Define pc coordinate gra and solve rela problems includ area, arc length a volume	Polar Coordinates Tangents with Pc Coordinates, Cur defined by paramet equations.		H, Q,E
Thirteen	4	Identify properties sequences and th limits with identify standard converg operations of pov series'	Sequences and Series.		H, Q,E
Fourteen	4	Identify properties sequences and th limits with identify standard converg operations of pov series'	Sequences and Series.		H, Q,E
Fifteen		Identify properties sequences and th limits with identify standard converg operations of pov series'	Sequences and Series.		H, Q,E

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	• Stewart, J., Clegg, D. K., & Watson, (2020). Calculus: early transcendent

	Cengage Learning.
Main references (sources)	
Recommended books and references (scientific journals, reports…)	• Thomas, G. B., Haas, J., Heil, C., & Weir, M. (2018). Thomas' Calculus. Pearson Education Limited. • Kreyszig, E., Stroud, K. and Stephenson, G., 2008. Advanced engineering mathematics. Integration, 9(4).T
Electronic References, Websites	https://www.uoanbar.edu.iq/Bank-Section.php

Course Description Form

1. Course Name:
Computer science 1
2. Course Code:
UOA007
3. Semester / Year:
First
4. Description Preparation Date:
23rd June 2024
5. Available Attendance Forms:
Full time, In person
6. Number of Credit Hours (Total) / Number of Units (Total)
45 hours
7. Course administrator's name (mention all, if more than one name)
Name: Ahmed Hilal Farhan (Asst. Prof., PhD) Email: ahmed.farhan_ce@uoanbar.edu.iq
8. Course Objectives
Course Objectives Introducing students to the computer components, operating system, mastering Windows operating system, computer risks and safety. In addition, students will be intruded during this course to Microsoft Word and PowerPoint which is useful during study and after graduation.
9. Teaching and Learning Strategies

Strategy	1. Giving lectures about different topics and encouraging students to participate through discussion. 2. Conducting Examines and quizzes to evaluate students' understanding. 3. Help students to use computer lab to practice what was learn.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1	3		General induction about computer and different computer generations	Lectures lab	NA
Week 2	3		internal and external components of computers	Lectures lab	Exams
Week 3	3		Operating systems	Lectures	Exams

			and different commands	lab	Lab
Week 4	3		Operating systems and different commands	Lectures lab	Exams Lab
Week 5	3		Computer safety and possible risks	Lectures lab	Exams Lab
Week 6	3		Progress Exam 1		
Week 7	3		Learning different commands for typing, editing Word files through Tabs and menus	Lectures lab	Exams Lab
Week 8	3		Learning different commands for typing, editing Word files through Tabs and menus	Lectures lab	Exams Lab
Week 9	3		Learning different commands for editing Word files through Tabs and menus	Lectures lab	Exams Lab
Week 10	3		Learning different commands for inserting objects , shapes and clip art through Tabs and menus	Lectures lab	Exams Lab
Week 11	3		Learning different commands for inserting tables and controlling their properties in Word files through Tabs and menus	Lectures lab	Exams Lab
Week 12	3		Progress Exam 2		
Week 13	3		Sharing files, editing and inserting pictures	Lectures lab	Exams Lab
Week 14	3		Constructing PowerPoint presentation	Lectures lab	Exams Lab
Week 15	3		Constructing PowerPoint presentation	Lectures lab	Exams lab

11. Course Evaluation

- Quizzes 25%
- Mid-term exam 15%
- Lab 10%
- Final Exam ..... 50%.

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	**اساسيات الحاسوب وتطبيقاته المكتبية، الجزء الاول والثاني** **تأليف أ.م.د. زياد محمد عبود وأخرون ، ٢٠١٥.**
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Webites	

Course Description Form

1. Course Name:

Construction Material

2. Course Code:

CIV001

3. Semester / Year:

1st semester/ 2023-2024

4. Description Preparation Date:

٢٠٢٤/٦/٢٧

5. Available Attendance Forms:

In class – In laboratory

6. Number of Credit Hours (Total) / Number of Units (Total)

7 Cr.Hrs / 30Hrs (lec.)+ 15Hrs(Tutorial) + 30Hrs (Lab)

7. Course administrator's name (mention all, if more than one name)

Name:1- Asst. Prof. Mohammad H. Mohana **2- lecturer Alhareth muthanna Abd**
Email: mhm1961mhm@uoanbar.edu.iq **Alharethmuthanna88@uoanbar.edu.i**

8. Course Objectives

Course Objectives	**understand compositions, engineering behaviors, and design methods of various civil engineering materials, including steel; Wood, soil, aggregate, Portland cement concrete, and asphalt cement concrete…**

9. Teaching and Learning Strategies

Strategy	**Lectures - Tutorial - Lab.**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	5	1	Introduction and Engineering materials	Lectures, Tutorial, Lab.	**Written Exams Quizzes Homework assignments**
2	5	1	Introduction a Engineering materials	Lectures, Tutorial, Lab	**Written Exams Quizzes Homework assignments**
3	5	3	Brick, Production bricks, Testing of br Specification of bricks	Lectures, Tutorial, Lab	**Written Exams Quizzes Homework assignments**

4	5	3	Brick, Production bricks, Testing of br Specification of bricks	Lectures, Tutorial, Lab	**Written Exams Quizzes Homework assignments**
5	5	3	Binding materi Gypsum, Lime	Lectures, Tutorial, Lab	**Written Exams Quizzes Homework assignments**
6	5	3	Cement, Production cement, Types of ceme Testing of cement,	Lectures, Tutorial, Lab	**Written Exams Quizzes Homework assignments**
7	5	3	Cement, Production cement, Types of ceme Testing of cement,	Lectures, Tutorial, Lab	**Written Exams Quizzes Homework assignments**
8	5	2	Insulating material,	Lectures, Tutorial, Lab	**Written Exams Quizzes Homework assignments**
9	5	2	Insulating material	Lectures, Tutorial, Lab	**Written Exams Quizzes Homework assignments**
10	5	3	Tiles	Lectures, Tutorial, Lab	**Written Exams Quizzes Homework assignments**
11	5	3	Metals (steel)	Lectures, Tutorial, Lab	**Written Exams Quizzes Homework assignments**
12	5	3	Building stone,	Lectures, Tutorial, Lab	**Written Exams Quizzes Homework assignments**
13	5	3	Concrete block	Lectures, Tutorial, Lab	**Written Exams Quizzes Homework assignments**
14	5	3	Water , New build materials	Lectures, Tutorial, Lab	**Written Exams Quizzes Homework assignments**
15	5	3	Water , New build materials	Lectures, Tutorial, Lab	**Written Exams Quizzes Homework assignments**

11. Course Evaluation

Assessment Tool(s)	**Date**	**Weight (%)**
Semester activities. These include quizzes, homework, and classroom interactions	Week 1 to week-15	15%
Two progress exams	Week-4 and week-11	25%
Lab work (reports and Field Work)	Week 1 to week-15	10%
Final Exam	Week-15	50%
Total		**100%**

12. Learning and Teaching Resources	
Required textbooks (curricular books, if any)	Building Materials by Asst. P Mohammad H. Mohana
Main references (sources)	Kenneth N. Deruche1, George P Krofiatis, and Samer Ezeldin, Materials for Civil and Highv Engineers, Prentice Hall, 4th ed.. 1988
Recommended books and references (scientific journals, reports…)	Laboratory Manual, Compiled by Instructor
Electronic References, Websites	---

Course Description Form

1. Course Name:
Engineering Drawing
2. Course Code:
CIV007
3. Semester / Year:
2nd / 2023-2024
4. Description Preparation Date:
1/10/2023
5. Available Attendance Forms:
Attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
6
7. Course administrator's name (mention all, if more than one name)
Name: Wasan Mahdi Mahmood Email: eng.wasan2015@uoanbar.edu.iq

8. Course Objectives	
Course Objectives	1. Recognize the value of engineering graphics as a language of communication. 2. Infer the nature of engineering graphics, the relationships between 2D and 3D environments. 3. Comprehend and deduce orthographic projections of an object. 4. Visualize wide variety of objects and drawing the missing views. 5. Comprehend and deduce section views. 6. Produce two and three dimensional drawings utilizing CAD software.

9. Teaching and Learning Strategies	
Strategy	By the end of successful completion of this course, the student will be able to: 1. Recognize the value of engineering graphics as a language of communication. 2. Infer the nature of engineering graphics, the relationships between 2D and 3D environments. 3. Visualize, comprehend, and deduce wide variety of objects, drawing the missing views/section views, and orthographic projections of an object. 4. Produce two and three dimensional drawings utilizing CAD software.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	1 & 2	Introduction: graphi language, standards instruments, letters…etc	Traditional method	Q , E , H
2	3	1 & 2	Basics for interpretir drawings, line types, types of drawings and sketches	Traditional method	Q , E , H
3	3	1 & 2	Rules for using calipers to draw circ	Traditional method	Q , E , H
4	3	1 & 2	Engineering process and their applicatior for drawing geometr shapes	Traditional method	Q , E , H
5	3	1 & 2	Applications on the computer using the AutoCAD program	Drawing using AutoCAD	Q , E , H
6	3	2 & 3	Orthographic views. Deducing front, top, and side views from pictorial	Traditional method	Q , E , H
7	3	1 & 2 & 3 & 4	Dimensioning and Drawing Scale	Traditional method	Q , E , H
8	3	2 & 3	Applications on the computer using the AutoCAD program	Drawing using AutoCAD	Q , E , H
9	3	2 & 3	Sectional views: full and half sections	Traditional method	Q , E , H
10	3	2 & 3	Applications on the computer using the AutoCAD program	Drawing using AutoCAD	Q , E , H
11	3	2 & 3	Applications on the computer using the AutoCAD program	Drawing using AutoCAD	Q , E , H
12	3	2 & 3	Drawing a missed view from given two views	Traditional method	Q , E , H
13	3	2 & 3	Applications on the computer using the AutoCAD program	Drawing using AutoCAD	Q , E , H
14	3	3 & 4	Pictorial sketching: isometric and obliqu	Traditional method	Q , E , H

15	3	3 & 4	**Applications on the computer using the AutoCAD program**	**Drawing using AutoCAD**	Q , E , H

11. Course Evaluation

Semester activities. These include quizzes, classroom interactions 13%
Lab work 20%
Mid semester exam 10%
CAD Exam 7%
Final Exam 50%

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Engineering drawing, Abdul Rasul Khafaf 1988
Main references (sources)	Interpreting Engineering Drawings, Jensen, C.H. and Helsel, G.D., 7th ed., Thomson Delmar Learning, 2007
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	https://www.uoanbar.edu.iq/Bank-Section.php

Course Description Form

1. Course Name: Engineering Geology

2. Course Code: **CIV002**

3. Semester / Year: **2nd semester/ 2023-2024**

4. Description Preparation Date: **12-June-2024**

5. Available Attendance Forms: **In class**

6. Number of Credit Hours (Total) / Number of Units (Total)

3 Cr.Hrs / 30Hrs (lec.)+ 15Hrs(Tutorial) + 30Hrs (Lab)

7. Course administrator's name (mention all, if more than one name)

Name: Dr. Junied A. Baker
Email: junied.bakr@uoanbar.edu.iq

8. Course Objectives

Course Objectives	1) To introduce basic geology and the principles of site investigation to civil engineering students. 2) Students should develop an appreciation of geologic processes and their influence civil engineering works. 3) Acquire knowledge of the most important rocks and minerals and be able to identify them. 4) Interpret geological maps with an emphasis on making construction decisions. **5**) Demonstrate an understanding of the relationship between the built environment and its geological substrate and the possible impacts of natural earth hazards on engineered structures

9. Teaching and Learning Strategies

Strategy	Lectures Tutorial Lab.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	1	Introduction and Overview	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
2	3	1	Minerals properties	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
3	3	1	Minerals properties	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
4	3	1	Igneous Rock	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
5	3	1	urface Processes and Sedimenta Rocks	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
6	3	2	urface Processes and Sedimenta Rocks	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
7	3	2	Metamorphic rocks	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
8	3	2	Engineering Properties of Rock	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
9	3	3	Structural Geology	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
10	3	3	Structural Geology	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
11	3	3	Structural Geology	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
12	3	3	Topographic and Geologic map	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
13	3	3	Topographic and Geologic map	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
14	3	3	Ground-water Geology	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
15	3	4	Ground-water Geology	Lectures, Tutorial,	Written Exams Quizzes Homework assignments

Course Evaluation

Assessment Tool(s)**	Date	Weight (%)

Semester activities: These include, Homeworks, Quizzes	At the end of each major topic	**25%**
Mid semester exam **or** Progress Exams	According to department schedule	**10%**
Lab reports	Report per each experiment	**6%**
Classwork	Report	**4%**
Homework	Report	**5%**
Final Exam	Week-16	**50%**
Total		**100%**

11. Learning and Teaching Resources

Required textbooks (curricu books, if any)	Blyth, F.G.H. and de Freitas, M. H. A. (1984). A Geology for Engineers.7th Edition.
Main references (sources)	
Recommended books and references (scientific journals, reports…)	Waltham, T. (2003). Foundations of Engineering Geology. 2nd Edition. Bell, F. G. (2007). Engineering Geology. 2nd Edition. Lisle, R. J. (2004). Geological Structures and Maps-A practical Guide. 3rd Edition
Electronic References, Websites	

Course Description Form

1. Course Name:
English 1
2. Course Code:
CE1101
3. Semester / Year:
First semester
4. Description Preparation Date:
25-6-2024
5. Available Attendance Forms:
yes
6. Number of Credit Hours (Total) / Number of Units (Total)
2
7. Course administrator's name (mention all, if more than one name)
Name: Dr.Hamid Ahmed Awad Email: hamid.awad@uoanabr.edu.iq
8. Course Objectives

Course Objectives	1.Read and understand basic expressions, short and simple texts. 2. Integrate the use of the four language skills i.e. Reading, Listening, Speaking, Writing. 3. Demonstrate limited control of essential grammatical structures. 4. Recognize and use properly ancient and modern dictionaries to look up words and meanings.

9. Teaching and Learning Strategies

Strategy	Text book

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	1	Unit 1	Text b.	HW
2	2	1	Unit 2	Text b.	QUIZ
3	2	1	Unit 3	Text b.	HW
4	2	2	Unit 4	Text b.	Quiz
5	2	2	Unit 5	Text b.	QUIZ
6	2	2	Unit 6	Text b.	QUIZ
7	2	2	Unit 7	Text b.	HW
8	2	3	Unit 8	Text b.	M. Exam
9	2	3	Unit 9	Text b.	HW
10	2	3	Unit 10	Text b.	QUIZ
11	2	4	Unit 11	Text b.	HW
12	2	4	Unit 12	Text b.	M. Exam
13	2	4	Unit 13	Text b.	QUIZ
14	2	4	Unit 14	Text b.	M. Exam
15	2		Review	Text b.	Report

11. Course Evaluation

Monthly exam 10%, Quiz 15%, Homework 15%, Report 10%, Final Exam 50%

12. Learning and Teaching Resources

Required textbooks (curricular books any)	Headway Beginner
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description

1. Course Name
Fundamentals of Electrical Engineering
2. Course Code
ELEC101
3. Semester / Year
Second / 2024
4. Date of Preparation
10-6-2024
5. Available Attendance Modes
In-class
6. Total Study Hours / Total Units
45 hours (Theory) + 15 hours (Practical) + 15 hours (Laboratory) / 3 units
7. Course Coordinator(s)
- Name : Dr. Ali Amer Ahmed
Email : ali.amer@uoanbar.edu.iq
8. Course Objectives
1. Understanding the theoretical and practical foundations of electrical engineering.
2. Learning about electrical circuits and how to analyze them.
3. Gaining knowledge about electrical components such as resistors, capacitors, and inductors.
4. Understanding and applying Kirchhoff's laws, Norton, Node, Mesh, and Delta-Star in electrical circuits.
5. Conducting laboratory experiments to determine the electrical characteristics of various components.
9. Teaching and Learning Strategies
- Lectures
- Practical Applications
- Laboratory Sessions

10. Course Structure

1. **Course Structure**

Week	Hours	Expected Learning Outcomes	Unit or Topic Name	Teaching Method	Assessment Method
1	3	Understanding the basics of electrical engineering	Introduction to Electrical Engineering	Lectures, Practical, Laboratory	Written exams, quizzes, homework
2	3	Learning about basic electrical components	Basic Electrical Components	Lectures, Practical, Laboratory	Written exams, quizzes, homework
3	3	Applying Ohm's Law and circuit analysis	Ohm's Law	Lectures, Practical	Written exams, quizzes, homework
4	3	Analyzing series and parallel circuits	Series and Parallel Circuits	Lectures, Practical, Laboratory	Written exams, quizzes, homework
5	3	Circuit analysis using Kirchhoff's laws	Circuit Analysis Using Kirchhoff's Laws	Lectures, Practical, Laboratory	Written exams, quizzes, homework
6	3	Circuit analysis using Node laws	Circuit Analysis Using Node Laws	Lectures, Practical, Laboratory	Written exams, quizzes, homework
7	3	Circuit analysis using Mesh laws	Circuit Analysis Using Mesh Laws	Lectures, Practical, Laboratory	Written exams, quizzes, homework
8	3	Solved problems and examples	Solved Problems and Examples	Lectures, Practical	Written exams, quizzes, homework
9	3	Circuit analysis using Norton's laws	Circuit Analysis Using Norton's Laws	Lectures, Practical	Written exams, quizzes, homework
10	3	Solved problems and examples	Solved Problems and Examples	Lectures, Practical	Written exams, quizzes, homework
11	3	Circuit analysis using Thevenin's laws	Circuit Analysis Using Thevenin's Laws	Lectures, Practical	Written exams, quizzes, homework
12	3	Solved problems and examples	Solved Problems and Examples	Lectures, Practical	Written exams, quizzes, homework
13	3	Circuit analysis using Delta-Star	Circuit Analysis Using Delta-Star	Lectures, Practical	Written exams, quizzes,

		transformation			homework
14	3	Solved problems and examples	Solved Problems and Examples	Lectures, Practical	Written exams, quizzes, homework
15	3	Practical applications in electrical engineering	Practical Applications in Electrical Engineering	Lectures, Practical, Laboratory	Written exams, quizzes, homework

11. Course Assessment

- Written Exams: 30%
- Homework: 5%
- Quizzes: 5%
- Laboratory Reports: 10%
- Final Exam: 50%

12. Learning and Teaching Resources

- Required Textbooks (if any)
  - Fundamentals of Electrical Engineering, Leonard S. Bobrow, 2nd ed., 2011
- Main References (Sources)
- Recommended Books and References (Journals, Reports, etc.)

1. Electric Circuits, James W. Nilsson & Susan Riedel, 10th Ed.
2. Introduction to Electric Circuits, Richard C. Dorf & James A. Svoboda, 8th Ed.
3. Electrical Engineering: Principles and Applications , Allan R. Hambley, 6th ed.

- Electronic References, Websites

Course Description Form

1. Course Name: General Chemistry

2. Course Code: ENG 002

3. Semester / Year: **1st semester/ 2023-2024**

4. Description Preparation Date: **12-June-2024**

5. Available Attendance Forms: **In class**

6. Number of Credit Hours (Total) / Number of Units (Total)

3 Cr.Hrs / 45Hrs (lec.) + 30Hrs (Lab)

7. Course administrator's name (mention all, if more than one name)

Name: Dr. Abbas Hasan Faris
Email: abbashasan@uoanbar.edu.iq

8. Course Objectives

Course Objectives	1. Scientific reasoning and quantitative analysis. Our majors will be able to apply chemical concepts to solve qualitative and quantitative problems. 2. Laboratory practice and safety. To learn the ways in which new scientific knowledge is created, our majors will experience how chemists interpret chemical and physical phenomena through experimental investigation. They will develop and apply the appropriate lab skills and instrumentation to solve chemical problems

9. Teaching and Learning Strategies

Strategy	Lectures Lab.

10. Course Structure

Week	Hours	Required Learning	Unit or subject name	Learning method	Evaluation method

		Outcomes			
1	**3**	**1**	MEASUREMENTS IN CHEMISTRY	Lectures, Lab.	**Written Exams Quizzes Homework assignments**
2	**3**	**1**	roblem Solving in Chemistry Dimensional Analysis	Lectures, Lab.	**Written Exams Quizzes Homework assignments**
3	**3**	**1**	Atoms, Molecules and Ions	Lectures, Lab.	**Written Exams Quizzes Homework assignments**
4	**3**	**1**	lass Relationships in Chemic Reactions	Lectures, Lab.	**Written Exams Quizzes Homework assignments**
5	**3**	**1**	eactions in Aqueous Solutio	Lectures, Lab.	**Written Exams Quizzes Homework assignments**
6	**3**	**2**	Gasses	Lectures, Lab.	**Written Exams Quizzes Homework assignments**
7	**3**	**2**	Thermochemistry	Lectures, Lab.	**Written Exams Quizzes Homework assignments**
8	**3**	**2**	Quantum Theory and the Electronic Structur of Ato	Lectures, Lab.	**Written Exams Quizzes Homework assignments**
9	**3**	**3**	Chemical Bonding	Lectures, Lab.	**Written Exams Quizzes Homework assignments**
10	**3**	**3**	Electrochemistry	Lectures, Lab.	**Written Exams Quizzes Homework assignments**
11	**3**	**3**	olumetric Methods of Analy	Lectures, Lab.	**Written Exams Quizzes Homework assignments**
12	**3**	**3**	Titrations Based on Acid-Bas Reactions	Lectures, Lab.	**Written Exams Quizzes Homework assignments**
13	**3**	**3**	trations Based on Precipitati Reactions	Lectures, Lab.	**Written Exams Quizzes Homework assignments**
14	**3**	**3**	Titrations Based on Complexation Reactions	Lectures, Lab.	**Written Exams Quizzes Homework assignments**
15	**3**	**4**	**Titrations Based on Redox reactions**	Lectures, Lab.	**Written Exams Quizzes Homework assignments**

Course Evaluation

Assessment Tool(s)**	Date	Weight (%)
Semester activities: These include, Homeworks, Quizzes	At the end of each major topic	**15%**

Mid semester exam **or** Progress Exams	According to department schedule	**25%**
Lab reports	Report per each experiment	**10%**
Final Exam	Week-16	**50%**
Total		**100%**

11. Learning and Teaching Resources

Required textbooks (curricu books, if any)	Introductory Chemistry Essentials, Nivaldo J. Tro
Main references (sources)	
Recommended books and references (scientific journals, reports…)	Chemistry. Steven S. Zumdahl, Susan A. Zumdahl, Donald J. DeCoste
Electronic References, Websites	

Course Description Form

1. Course Name:
Physics
2. Course Code:
ENG001
3. Semester / Year:
First Semester\2023-2024
4. Description Preparation Date:
2024\6\13
5. Available Attendance Forms:
Attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
75\5
7. Course administrator's name (mention all, if more than one name)
Name: Dr.Yousif Khalaf Yousif and Lec. Defaf N. Email: yousif.kh69@uoanbar.edu.iq
8. Course Objectives

Course Objectives	• Introduce to the students, the concepts, principles, methods and major findings of classical Physics. •Perform basic analyses to study Newtonian mechanics, and motion diagrams , with topics include: Physics and measurement. •Familiarize the student with understanding Vectors, kinematics and dynamics of motion and work and energy.

9. Teaching and Learning Strategies	
Strategy	**Learning Strategies:** 1. Active Learning: Students are encouraged to participate in class discussions, problem-solving sessions, and laboratory experiments to actively engage with the subject matter. 2. Concept Mapping: Students create visual diagrams that connect key concepts and ideas to help them understand the relationships between different topics. 3. Problem-Based Learning: Students work on real-world problems that require them to apply physics concepts and principles to find solutions. 4. Collaborative Learning: Students work in groups to solve problems, share ideas, and learn from each other. 5. Inquiry-Based Learning: Students ask questions, investigate phenomena, and draw conclusions based on their own observations and data. **Teaching Strategies:**

	1. Lecture: The teacher presents information through lectures, demonstrations, or multimedia presentations. 2. Socratic Method: The teacher asks questions to guide students towards discovering the answers themselves. 3. Flipped Classroom: Students watch videos or read materials before class so that they can use class time for discussions and problem-solving activities. 4. Peer Instruction: The teacher poses a question or problem and students discuss it with their peers before coming up with a solution together. 5. Project-Based Learning: Students work on long-term projects that require them to apply physics concepts and skills to real-world problems. Overall, effective learning and teaching strategies in physics involve active engagement with the subject matter through hands-on activities, collaboration with peers, critical thinking skills development, and application of knowledge to real-world situations

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1	5	1	Physics and Measurement	1,2,3,4,5	**Q, H.W**
Week 2	5	1	Dimensional Analysis	1,2,3,4,5	**Q, H.W**
Week 3	5	2	Motion in One Direction	1,2,3,4,5	**Q, H.W**
Week 4	5	2	Position, Velocity Speed and Acceleration	1,2,3,4,5	**Q, H.W**
Week 5	5	3	One-Dimensional Motion with Constant Acceleration	1,2,3,4,5	**Q, H.W**
Week 6	5	3	Vectors	1,2,3,4,5	**Q, H.W**
Week 7	5	3	Component of Vectors and Unit Vectors	1,2,3,4,5	**Q, H.W**
Week 8	5	4	The Position, Velocity and Acceleration Vector	1,2,3,4,5	**Q, H.W**
Week 9	5	4	Relative Velocity and Relative Acceleration	1,2,3,4,5	**Q, H.W**
Week	5	5	The Laws of Motion	1,2,3,4,5	**Q, H.W**

10					
Week 11	5	5	Circular Motion and Other Applications of Newton's Law	1,2,3,4,5	**Q, H.W**
Week 12	5	5	Temperature	1,2,3,4,5	**Q, H.W**
Week 13	5	5	Energy and Energy Transfer	1,2,3,4,5	**Q, H.W**
Week 14	5	5	Work Done by Constant Force	1,2,3,4,5	**Q, H.W**
Week 15	5	5	The Scalar Product of Two Vectors	1,2,3,4,5	**Q, H.W**

11.Course Evaluation

	Time/Number	**Weight (Marks)**
Quizzes	5	25%(25)
Assignments H.W	2	5% (5)
Activities	1	4%(4)
Projects / Lab.	١	6% (6)
Report		
Midterm Exam	10 hr	10% (10)
Final Exam	3hr	50% (50)
		100% (100 Marks)

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	R.D. Knight, Physics for Scientists and Engineers, 2nd ed., Pearson 2008
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Statics
2. Course Code:
ENG006
3. Semester / Year:
Second Semester\2023-2024
4. Description Preparation Date:
2024\6\13
5. Available Attendance Forms:
Attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
60\6
7. Course administrator's name (mention all, if more than one name)
Name: Dr.Yousif Khalaf Yousif and Lec. Mr.Al-Harith Muthanna Email: yousif.kh69@uoanbar.edu.iq

8. Course Objectives	
Course Objectives	Fundamental concepts and principles of mechanics, vectors, and force vectors and resultant. Free body diagram of forces and equilibrium of particles and rigid bodies in two and three .dimensions Moment of a force about a point and about an axis. Equilibrium of rigid body and Analysis of trusses and frames.

9. Teaching and Learning Strategies	
Strategy	1. Active Learning: Encourage students to actively participate in the learning process by engaging .them in problem-solving activities, group discussions, and hands-on experiments ٢. Concept Mapping: Use concept maps to help students visualize the relationships between different .concepts and ideas in engineering mechanics statics ٣. Real-World Examples: Use real-world examples to help students understand the practical .applications of engineering mechanics statics concepts ٤. Multimedia Resources: Use multimedia resources such as videos, animations, and simulations to .enhance student understanding of complex concepts

	٥. Peer Teaching: Encourage peer teaching by assigning group projects or activities that require students to teach each other. ٦. Practice Problems: Provide students with ample opportunities to practice solving problems related to engineering mechanics statics. ٧. Feedback and Assessment: Provide timely feedback and assessment on student performance to help them identify areas where they need improvement. ٨. Scaffolded Learning: Break down complex concepts into smaller, more manageable parts and provide scaffolding support as needed. ٩. Differentiated Instruction: Tailor instruction to meet the diverse needs of students by providing differentiated instruction based on their learning styles, abilities, and interests. ١٠. ection and Metacognition: Encourage students to reflect on their learning experiences develop metacognitive skills that will help them become more effective learners in the future

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1	4	1	Definition of vectors in 2D and 3D, Physical examples	1,2,3,4,5	**Q, H.W**
Week 2	4	1	Scalar and vector products, Analytical methods and graphical interpretation.	1,2,3,4,5	**Q, H.W**
Week 3	4	2	Definition of moments and couples, Couples in 2D and 3D systems	1,2,3,4,5	**Q, H.W**
Week 4	4	3	Force systems with couples.	1,2,3,4,5	**Q, H.W**
Week 5	4	3	Resultant and equivalence of 2D force system	1,2,3,4,5	**Q, H.W**
Week 6	4	3	Resultant and equivalence of 3D force system	1,2,3,4,5	**Q, H.W**
Week 7	4	3	Systems with couples Analytical solutions.	1,2,3,4,5	**Q, H.W**
Week 8	4	4	Concept of free body diagram (FBD(	1,2,3,4,5	**Q, H.W**
Week 9	4	4	Equations of equilibrium in	1,2,3,4,5	**Q, H.W**

			٢D and 3D space		
Week 10	4	5	Equilibrium of rigid bodies	1,2,3,4,5	**Q, H.W**
Week 11	4	5	Equilibrium of frames	1,2,3,4,5	**Q, H.W**
Week 12	4	5	Equilibrium of trusses	1,2,3,4,5	**Q, H.W**
Week 13	4	6	Coefficients of friction،	1,2,3,4,5	**Q, H.W**
Week 14	4	6	Friction law،	1,2,3,4,5	**Q, H.W**
Week 15	4	6	solving systems with friction.	1,2,3,4,5	**Q, H.W**

11.Course Evaluation

	Time/Number	Weight (Marks)
Quizzes	5	25%(25)
Assignments H.W	2-3	6% (6)
Activities	2-3	5%(5)
Projects / Lab.		
Report	1	4%(4)
Midterm Exam	10 hr	10% (10)
Final Exam	3hr	50% (50)
		100% (100 Marks)

12.Learning and Teaching Resources

Required textbooks (curricular books, if any)	
Main references (sources)	R.C. Hibbeler, Engineering Mechan Statics, Prentice Hall, 12th ed., 2010
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name: Calculus **-4**

2. Course Code: **CIV017**

3. Semester / Year: 2nd **semester/ 2023-2024**

4. Description Preparation Date: **12-June-2024**

5. Available Attendance Forms: **In class**

6. Number of Credit Hours (Total) / Number of Units (Total)

3 Cr.Hrs / 120 Hrs (lec.)

7. Course administrator's name (mention all, if more than one name)

Name: Dr. jamal A, Khalaf
Email: jamal.khalaf@uoanbar.edu.iq
Name: Dr. Mohammed Raji
Email: Ahmed.anis@uoanbar.edu.iq

8. Course Objectives

Course Objectives	• Determine the solution of linear and nonlinear first order differential equations using various techniques and Solve applied problems using first order differential equation models • Solve non-homogeneous second order differential equations using the method of undetermined coefficients and the method of variation of parameters and Apply second order differential equations to solve vibration models based on real life problems • Use Fourier series solutions and some Applications. • Use Laplace transforms to solve differential equations and initial value problems.

9. Teaching and Learning Strategies

Strategy	Lectures Tutorial

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	1	ermine the solution of linear and nonlinear order differential equations using vario techniques	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
2	3	1	ermine the solution of linear and nonlinear order differential equations using vario techniques	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
3	3	1	Solve applied problems using first order differential equation models	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
4	3	1	Solve applied problems using first order differential equation models	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
5	3	1	Solve applied problems using first order differential equation models	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
6	3	2	ve non-homogeneous second order differe equations using the method of undeterm coefficients and the method of variation parameters	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
7	3	2	ve non-homogeneous second order differe equations using the method of undeterm coefficients and the method of variation parameters	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
8	3	2	Apply second order differential	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
9	3	3	Apply second order differential	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
10	3	3	Use Fourier series solutions and some Applications.	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
11	3	3	Use Fourier series solutions and some Applications.	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
12	3	3	Use Fourier series solutions and some Applications.	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
13	3	3	Use Laplace transforms to solve differential equations and initial value problems.	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
14	3	3	Use Laplace transforms to solve differential equations and initial value problems.	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
15	3	4	Use Laplace transforms to solve differential equations and initial value problems.	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments

Course Evaluation

Assessment Tool(s)**	Date	Weight (%)
Semester activities: These include, Homeworks, Quizzes	At the end of each major topic	**10%**
Mid semester exam **or** Progress Exams	According to department schedule	**30%**
Final Exam	Week-16	**60%**
Total		**100%**

11. Learning and Teaching Resources

Required textbooks (curricu books, if any)	Fundamentals of Differential Equations bound with IDE CD (5th Edition) by Nagle, Saff and Snider
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:

Calculus-3

2. Course Code:

CE2201

3. Semester / Year:

1st Semester/2023-2024

4. Description Preparation Date:

20/6/2024

5. Available Attendance Forms:

Classroom

6. Number of Credit Hours (Total) / Number of Units (Total):

45 hours/3

7. Course administrator's name (mention all, if more than one name)

Name: Jalil Eyada Kwad
Email: j.j.kwad@uoanbar.edu.iq

8. Course Objectives

Course Objectives	• Recognize the 3-space in different types of coordinates systems • Do operations on vectors • Identify the basic properties of the real-valued functions of several variables. • Maxima and minima of functions of two variables. Lagrange multipliers

9. Teaching and Learning Strategies

Strategy	Lectures supported by modes developing material covered in lectures. These modes include theoretical lectures and problem-solving tutorials.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
one	4	Recognize the 3-sp in different types coordinates syste	Rectangular Coordin systems in 3-spa Vectors		H, Q,E

		and Do operations vectors			
two	4	operations on vecto	Dot product, projections. Cr product		H, Q,E
Three	4	Identify the ba properties of the re valued functions several variables.	Parametric equations a line. Planes in 3-spac		H, Q,E
Four	4	operations on vecto	Introduction to vect valued functio Calculus of vector-valu functions		H, Q,E
Five	4	operations on vecto	Change of paramete Arc Length. U Tangent, Normal a Binormal vectors		H, Q,E
Six	4	operations on vecto	Curvature		H, Q,E
Seven	4	Recognize the 3-sp in different types coordinates syste and Do operations vectors Identify basic properties the real-valu functions of seve variables.	Quadric Surfac Functions of two or m variables		H, Q,E
Eight			First-month Exam		E
Nine	4	Recognize the 3-sp in different types coordinates syste and Do operations vectors Identify basic properties the real-valu functions of seve variables.	Limits and continu Partial derivatives		H, Q,E
Ten	4	Recognize the 3-sp in different types coordinates syste and Do operations vectors Identify basic properties the real-valu functions of seve variables.	Differentiability, Lo Linearity. The Chain ru		H, Q,E
Eleven	4	operations on vect and Identify the ba properties of the re valued functions	Directional derivati and gradients. Tang planes and norr vectors		H, Q,E

		several variables.			
Twelve	4	Maxima and mini of functions of t variables. Lagra multipliers	Maxima and minima functions of t variables. Lagra multipliers		H, Q,E
Thirteen	4	Evaluate multi integrals in differ types of coordina systems	Double integrals. Dou integrals over r rectangular regions		H, Q,E
Fourteen	4	Evaluate multi integrals in differ types of coordina systems	Double integrals in pc coordinates. Tri integrals		H, Q,E
Fifteen			Second-month Exam		E

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	• Calculus, 8th edition (2007) by Howard Anton, (John Wiley & Sons, Inc, New York).
Main references (sources)	
Recommended books and references (scientific journals, reports…)	• Calculus, by H. Anton, I. Bivens, and S. Davis, 8th Edition, 2002, Wiley
Electronic References, Websites	

Course Description Form

1. Course Name: **construction building**

Course Code: **CE 3315**

2. Semester / Year: **2st semester/ 2023-2024**

3. Description Preparation Date: **23-June-2024**

4. Available Attendance Forms: **In class**

5. Number of Credit Hours (Total) / Number of Units (Total)

3 Cr.Hrs / 30Hrs (lec.)+ 15Hrs(Tutorial) + 30Hrs (Lab)

6. Course administrator's name (mention all, if more than one name)

Name: Ass.st Prof. Dr. Yousif A. Mansoor
Email: yousif.mansoor@uoanbar.edu.iq
Name: Thamar Yousif Ahmed
Email:

7. Course Objectives

Course Objectives	**1.** understand the origin, formation, parameters and basic fundamental of construction **2.** understand skills of construction **3.** understand the effective of different construction methods in items of building 4. understand the principles of construction and drawing **5.** reading the plane sheet **6. developed the student ability to read and draw the plane of building**

8. Teaching and Learning Strategies

Strategy	Lectures Tutorial Lab.

9. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	2	ntroduction to building construction includ stages of construction and buildings ty	Lectures, Tutorial, Lab.	**Written Exams Quizzes Homework assignments**
2	3	5	Earthwork: excavations and earth filling	Lectures, Tutorial, Lab.	**Written Exams Quizzes Homework assignments**
3	2	4	Footing and foundation	Lectures, Tutorial,	**Written Exams Quizzes Homework assignments**
4	3	1	Piles: uses and types	Lectures, Tutorial, Lab.	**Written Exams Quizzes Homework assignments**
5	3	1	Concrete works: mixing, transport, pumpin compaction, finishing and curing	Lectures, Tutorial, Lab.	**Written Exams Quizzes Homework assignments**
6	3	2	Brickwork	Lectures, Tutorial, Lab.	**Written Exams Quizzes Homework assignments**
7	3	2	**Mid-term Exam**	Lectures, Tutorial, Lab.	**Written Exams Quizzes Homework assignments**
8	3	2	Walls: types and function	Lectures, Tutorial,	**Written Exams Quizzes Homework assignments**
9	3	3	Floors and roofs	Lectures, Tutorial,	**Written Exams Quizzes Homework assignments**
10	3	3	Arches, lintels and sills	Lectures, Tutorial,	**Written Exams Quizzes Homework assignments**
11	3	2	Damp proofing	Lectures, Tutorial,	**Written Exams Quizzes Homework assignments**
12	3	3	Doors and windows	Lectures, Tutorial,	**Written Exams Quizzes Homework assignments**
13	3	3	Joints in buildings	Lectures, Tutorial,	**Written Exams Quizzes Homework assignments**
14	3	3	Structural drawing	Lectures, Tutorial,	**Written Exams Quizzes Homework assignments**
15	3	4	**Final Exam**	Lectures, Tutorial, Lab.	**Written Exams Quizzes Homework assignments**

Course Evaluation

Assessment Tool(s)**	Date	Weight (%)

Semester activities: These include, Homeworks, Quizzes reports	At the end of each major topic	**15%**
Mid semester exam **or** Progress Exams	According to department schedule	**25%**
Lab reports	Exams and reports and homework	**10%**
Final Exam	Week-16	**50%**
Total		**100%**

10. Learning and Teaching Resources

Required textbooks (curricu books, if any)	
Main references (sources)	R. Chudley 'building construction handbook, 7th edition, 2008
Recommended books and references (scientific journals, reports…)	B.C. Punmaia 'Building construction' reprinted 2005
Electronic References, Websites	

Course Description Form

1. Course Name: Crimes of the Baath Party regime in Iraq

2. Course Code: **UOA005**

3. Semester / Year: **2st semester/ 2023-2024**

4. Description Preparation Date: **25 -June-2024**

5. Available Attendance Forms: **In class**

6. Number of Credit Hours (Total) / Number of Units (Total)

3 Cr.Hrs / 30Hrs

7. Course administrator's name (mention all, if more than one name)

Name: M.D. Majid Hadi Talal
Email: mqaessy@uoanbar.edu.iq

8. Course Objectives

Course Objectives	**Identifying and learning about the crimes committed by the defunct and dissolved Baath Party against the Iraqi people and their various components, and to establish awareness among students to reject all forms of injustice and tyranny of these regimes and to demand all civil and political rights.**

9. Teaching and Learning Strategies

Strategy	Giving lectures and using the method of discussion and dialogue

10. Course Structure					
Week	**Hours**	**Required Learning Outcomes**	**Unit or subject name**	**Learning method**	**Evaluation method**
1	**3**	**1**	aath crimes according to the Irac Criminal Court law	Lectures	Written Exams Quizzes Homework assignments
2	**3**	**1**	The concept of crimes and their types	Lectures	Written Exams Quizzes Homework assignments
3	**3**	**1**	efinition of crime in language an terminology	Lectures	Written Exams Quizzes Homework assignments
4	**3**	**1**	Crime departments	Lectures	Written Exams Quizzes Homework assignments
5	**3**	**1**	Types of international crimes	Lectures	Written Exams Quizzes Homework assignments
6	**3**	**2**	Decisions issued by the criminal court	Lectures	Written Exams Quizzes Homework assignments
7	**3**	**2**	ychological and social crimes ar the most prominent violations c the Baath Party	Lectures	Written Exams Quizzes Homework assignments
8	**3**	**2**	Psychological crimes	Lectures	Written Exams Quizzes Homework assignments
9	**3**	**3**	sychological crimes Mechanisms	Lectures	Written Exams Quizzes Homework assignments
10	**3**	**3**	Psychological effects of crimes	Lectures	Written Exams Quizzes Homework assignments
11	**3**	**3**	Social crimes	Lectures	Written Exams Quizzes Homework assignments
12	**3**	**3**	The Baath position on religion	Lectures	Written Exams Quizzes Homework assignments
13	**3**	**3**	Iraqi Criminal Court	Lectures	Written Exams Quizzes Homework assignments
14	**3**	**3**	olating Iraqi laws	Lectures	Written Exams Quizzes Homework assignments

15	**3**	**4**	Subject exam	Lectures	Written Exams Quizzes Homework assignments

Course Evaluation

Assessment Tool(s)**	Date	Weight (%)
Semester activities: These include, Homeworks, Quizzes	At the end of each major topic	**15%**
Mid semester exam **or** Progress Exams	According to department schedule	**25%**
Final Exam	Week-16	**60%**
Total		**100%**

11. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Crimes of the Baath Party regime in Iraq
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Dynamics
2. Course Code:
CIV006
3. Semester / Year:
1st Semester 2023/2024
4. Description Preparation Date:
22 June 2024
5. Available Attendance Forms:
In Class
6. Number of Credit Hours (Total) / Number of Units (Total)
3 Credit Hours / 60 Hours (lectures)
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Atheer Faisal Al-Anbaki Email: atheer.alanbaki@uoanbar.edu.iq Name: Dr. Shaho Mahmoud Hama Email: shaho_m83@uoanbar.edu.iq
8. Course Objectives

Course Objectives	1. Use rectangular, normal-tangential, and polar coordinate systems to describe the motion (kinematics) of a particle, system of particles, and rigid bodies. 2. Use Newton's Second Law, Work-Energy, and Impulse-Momentum principles to determine the kinetics of particles, systems of particles, and rigid bodies. 3. Understand and solve introductory vibration problems. 4. In applying the above principles, continue to develop a systematic, orderly procedure for solving engineering problems and design mechanical device using their knowledge in Dynamics.

9. Teaching and Learning Strategies

Strategy	Lectures

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	٤	1	Kinematics of a Particle: Continuous and Erratic Rectilinear Kinematics	Lectures	Exams Quizzes
2	٤	1	Kinematics of a Particle: General Curvilinear Motion + Motion of a Projectile	Lectures	Exams Quizzes
3	٤	1	Kinematics of a Particle: Absolute Dependent Motion Analysis of Two Particles + Relative-Motion of Two Particles Using Translating Axes	Lectures	Exams Quizzes
4	٤	2	Planar Kinematics of a Rigid Body: Translation and Rotation about a Fixed Axis	Lectures	Exams Quizzes
5	٤	2	Planar Kinematics of a Rigid Body: Absolute Motion Analysis	Lectures	Exams Quizzes Homework assignments
6	٤	2	Planar Kinematics of a Rigid Body: Relative-Motion Analysis: Velocity and Acceleration	Lectures	Exams Quizzes
7	٤	2	Kinetics of a Particle: Newton's Second Law of Motion and The Equation of Motion (Rectangular Coordinates)	Lectures	Exams Quizzes
8	٤	2	Kinetics of a Particle: Equations of Motion (Normal and Tangential Coordinates)	Lectures	Exams Quizzes
9	٤	3	Kinetics of a Particle: The Work of a Force and Principle of Work and Energy	Lectures	Exams Quizzes
10	٤	3	Kinetics of a Particle: Power and Efficiency + Conservative Forces and Potential Energy	Lectures	Exams Quizzes Homework assignments
11	٤	3	Kinetics of a Particle: Conservation of Energy	Lectures	Exams Quizzes
12	٤	4	Kinetics of a Particle: Principle of Linear Impulse and Momentum	Lectures	Exams Quizzes
13	٤	4	Kinetics of a Particle: Conservation of Linear Momentum for a System of Particles	Lectures	Exams Quizzes

14	٤	**4**	**Kinetics of a Particle: Impact**	Lectures	**Exams Quizzes**
15	٤	**١, 2, 3, 4**	**Review**	Lectures	**Exams Quizzes**

Course Evaluation

Assessment Tool(s)**	Date	Weight (%)
Semester activities: These include, Homeworks, Quizzes	At the end of each major topic	**15%**
Mid semester exam **or** Progress Exams	According to department schedule	**25%**
Lab reports		**0%**
Final Exam	Week-16	**60%**
Total		**100%**

11. Learning and Teaching Resources

Required textbooks (curricu books, if any)	R.C. Hibbeler, Engineering Mechanics: Dynamics, Pearson, 14th ed., 2016.
Main references (sources)	
Recommended books and references (scientific journals, reports…)	J. L. Meriam and L. G. Kraige, Engineering Mechanics: Dynamics, 6th ed., 2006.
Electronic References, Websites	

Course Description Form

1. Course Name:
Engineering Surveying-I
2. Course Code:
CIV003
3. Semester / Year:
1st Semester/ Second Stage/ 2023-2024
4. Description Preparation Date:
2024-06-21
5. Available Attendance Forms:
In class
6. Number of Credit Hours (Total) / Number of Units (Total)
3 credit hours
7. Course administrator's name (mention all, if more than one name)
Name: **Dr. Hameed Aswad Mohammed and Dr. Maher Shakir Mahmood** Email: hameedaswad@ uoanbar.edu.iq Email: maher.mahmood@uoanbar.edu.iq

8. Course Objectives	
Course Objectives	• Learn the basics of surveying and field measurement. • Train on different types of engineering measurement and surveying equipment. • Apply engineering surveying principles and ideas to a wide range of engineering problems, projects, and various engineering constructions

9. Teaching and Learning Strategies	
Strategy	1. Lectures 2. Assignments 3. Discussions

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1.	6	3. Students will learn to use equipment similar in type and quality to those professional surveyors use in their businesses; 4. Exhibit an understanding of the role of engineering surveyors in the civil and	Basic Principle of Surveying	Lecture, Tutorial and Lab	Exam, and assignments

		environmental engineering profession.			
2.	6	3. Students will learn to use equipment similar in type and quality to those professional surveyors use in their businesses; 4. Exhibit an understanding of the role of engineering surveyors in the civil and environmental engineering profession.	Basic Principle of Surveying	Lecture, Tutorial and Lab	Exam, and assignments
3.	6	1. Develop an ability to solve surveying problems utilizing fundamental principles of Science and Engineering; 2. Expose students to the latest computational and measurement tools. This will be done as individuals and as members of student field survey teams; 3. Students will learn to use equipment similar in type and quality to those professional surveyors use in their businesses; 4. Exhibit an understanding of the role of engineering surveyors in the civil and environmental engineering profession.	Distance Measurements Using Tape	Lecture, Tutorial and Lab	Exam, and assignments
4.	6	1. Develop an ability to solve surveying problems utilizing fundamental principles of Science and Engineering; 2. Expose students to the latest computational and measurement tools. This will be done as individuals and as members of student field survey teams; 3. Students will learn to use equipment similar in type and quality to those professional surveyors use in their businesses; 4. Exhibit an understanding of the role of engineering surveyors in the civil and environmental engineering profession.	Distance Measurements Using Tape	Lecture, Tutorial and Lab	Exam, and assignments
5.	6	1. Develop an ability to solve surveying problems utilizing fundamental principles of Science and Engineering; 2. Expose students to the latest computational and measurement tools. This will be done as individuals and as members of student field	Leveling—Theory and Methods	Lecture, Tutorial and Lab	Exam, and assignments

		survey teams; 3. Students will learn to use equipment similar in type and quality to those professional surveyors use in their businesses; 4. Exhibit an understanding of the role of engineering surveyors in the civil and environmental engineering profession.			
6.	6	1. Develop an ability to solve surveying problems utilizing fundamental principles of Science and Engineering; 2. Expose students to the latest computational and measurement tools. This will be done as individuals and as members of student field survey teams; 3. Students will learn to use equipment similar in type and quality to those professional surveyors use in their businesses; 4. Exhibit an understanding of the role of engineering surveyors in the civil and environmental engineering profession.	Leveling—Theory and Methods	Lecture, Tutorial and Lab	Exam, and assignments
7.	6	1. Develop an ability to solve surveying problems utilizing fundamental principles of Science and Engineering; 2. Expose students to the latest computational and measurement tools. This will be done as individuals and as members of student field survey teams; 3. Students will learn to use equipment similar in type and quality to those professional surveyors use in their businesses; 4. Exhibit an understanding of the role of engineering surveyors in the civil and environmental engineering profession.	Distance Measurements Using Trigonometric & EDM	Lecture, Tutorial and Lab	Exam, and assignments
8.	6		Mid-term Exam		Exam, and assignments
9.	6	1. Develop an ability to solve surveying problems utilizing fundamental principles of Science and Engineering; 2. Expose students to the latest computational and measurement tools. This will be done as individuals and as	Distance Measurements Using Trigonometric & EDM	Lecture, Tutorial and Lab	Exam, and assignments

		members of student field survey teams; 3. Students will learn to use equipment similar in type and quality to those professional surveyors use in their businesses; 4. Exhibit an understanding of the role of engineering surveyors in the civil and environmental engineering profession.			
10.	6	1. Develop an ability to solve surveying problems utilizing fundamental principles of Science and Engineering; 2. Expose students to the latest computational and measurement tools. This will be done as individuals and as members of student field survey teams; 3. Students will learn to use equipment similar in type and quality to those professional surveyors use in their businesses; 4. Exhibit an understanding of the role of engineering surveyors in the civil and environmental engineering profession.	Angles, Azimuth, and Bearing	Lecture, Tutorial and Lab	Exam, and assignments
11.	6	1. Develop an ability to solve surveying problems utilizing fundamental principles of Science and Engineering; 2. Expose students to the latest computational and measurement tools. This will be done as individuals and as members of student field survey teams; 3. Students will learn to use equipment similar in type and quality to those professional surveyors use in their businesses; 4. Exhibit an understanding of the role of engineering surveyors in the civil and environmental engineering profession.	Angles, Azimuth, and Bearing	Lecture, Tutorial and Lab	Exam, and assignments
12.	6	1. Develop an ability to solve surveying problems utilizing fundamental principles of Science and Engineering; 2. Expose students to the latest computational and measurement tools. This will be done as individuals and as members of student field	Angles, Azimuth, and Bearing	Lecture, Tutorial and Lab	Exam, and assignments

		survey teams; 3. Students will learn to use equipment similar in type and quality to those professional surveyors use in their businesses; 4. Exhibit an understanding of the role of engineering surveyors in the civil and environmental engineering profession.			
13.	6	1. Develop an ability to solve surveying problems utilizing fundamental principles of Science and Engineering; 2. Expose students to the latest computational and measurement tools. This will be done as individuals and as members of student field survey teams; 3. Students will learn to use equipment similar in type and quality to those professional surveyors use in their businesses; 4. Exhibit an understanding of the role of engineering surveyors in the civil and environmental engineering profession.	Traversing	Lecture, Tutorial and Lab	Exam, and assignments
14.	6	1. Develop an ability to solve surveying problems utilizing fundamental principles of Science and Engineering; 2. Expose students to the latest computational and measurement tools. This will be done as individuals and as members of student field survey teams; 3. Students will learn to use equipment similar in type and quality to those professional surveyors use in their businesses; 4. Exhibit an understanding of the role of engineering surveyors in the civil and environmental engineering profession.	Traversing	Lecture, Tutorial and Lab	Exam, and assignments
15.	6	1. Develop an ability to solve surveying problems utilizing fundamental principles of Science and Engineering; 2. Expose students to the latest computational and measurement tools. This will be done as individuals and as members of student field survey teams;	Traversing	Lecture, Tutorial and Lab	Exam, and assignments

		3. Students will learn to use equipment similar in type and quality to those professional surveyors use in their businesses; 4. Exhibit an understanding of the role of engineering surveyors in the civil and environmental engineering profession.			

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	• Charles D. Ghilani, Paul R. Wolf, Elementary Surveying, Prentice Hall, 12th ed., 2008. • Chandra, A. M. Surveying Problem Solution with Theory and Objective Type Questions. New Age International, 2005
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Engineering Surveying-I
2. Course Code:
CIV003
3. Semester / Year:
1st Semester/ Second Stage/ 2023-2024
4. Description Preparation Date:
2024-06-21
5. Available Attendance Forms:
In class
6. Number of Credit Hours (Total) / Number of Units (Total)
3 credit hours
7. Course administrator's name (mention all, if more than one name)
Name: **Dr. Hameed Aswad Mohammed and Dr. Maher Shakir Mahmood** Email: hameedaswad@ uoanbar.edu.iq Email: maher.mahmood@uoanbar.edu.iq

8. Course Objectives	
Course Objectives	• Learn the basics of surveying and field measurement. • Train on different types of engineering measurement and surveying equipment. • Apply engineering surveying principles and ideas to a wide range of engineering problems, projects, and various engineering constructions

9. Teaching and Learning Strategies	
Strategy	1. Lectures 2. Assignments 3. Discussions

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1.	6	3. Students will learn to use equipment similar in type and quality to those professional surveyors use in their businesses; 4. Exhibit an understanding of the role of engineering surveyors in the civil and	Basic Principle of Surveying	Lecture, Tutorial and Lab	Exam, and assignments

		environmental engineering profession.			
2.	6	3. Students will learn to use equipment similar in type and quality to those professional surveyors use in their businesses; 4. Exhibit an understanding of the role of engineering surveyors in the civil and environmental engineering profession.	Basic Principle of Surveying	Lecture, Tutorial and Lab	Exam, and assignments
3.	6	1. Develop an ability to solve surveying problems utilizing fundamental principles of Science and Engineering; 2. Expose students to the latest computational and measurement tools. This will be done as individuals and as members of student field survey teams; 3. Students will learn to use equipment similar in type and quality to those professional surveyors use in their businesses; 4. Exhibit an understanding of the role of engineering surveyors in the civil and environmental engineering profession.	Distance Measurements Using Tape	Lecture, Tutorial and Lab	Exam, and assignments
4.	6	1. Develop an ability to solve surveying problems utilizing fundamental principles of Science and Engineering; 2. Expose students to the latest computational and measurement tools. This will be done as individuals and as members of student field survey teams; 3. Students will learn to use equipment similar in type and quality to those professional surveyors use in their businesses; 4. Exhibit an understanding of the role of engineering surveyors in the civil and environmental engineering profession.	Distance Measurements Using Tape	Lecture, Tutorial and Lab	Exam, and assignments
5.	6	1. Develop an ability to solve surveying problems utilizing fundamental principles of Science and Engineering; 2. Expose students to the latest computational and measurement tools. This will be done as individuals and as members of student field	Leveling—Theory and Methods	Lecture, Tutorial and Lab	Exam, and assignments

		survey teams; 3. Students will learn to use equipment similar in type and quality to those professional surveyors use in their businesses; 4. Exhibit an understanding of the role of engineering surveyors in the civil and environmental engineering profession.			
6.	6	1. Develop an ability to solve surveying problems utilizing fundamental principles of Science and Engineering; 2. Expose students to the latest computational and measurement tools. This will be done as individuals and as members of student field survey teams; 3. Students will learn to use equipment similar in type and quality to those professional surveyors use in their businesses; 4. Exhibit an understanding of the role of engineering surveyors in the civil and environmental engineering profession.	Leveling—Theory and Methods	Lecture, Tutorial and Lab	Exam, and assignments
7.	6	1. Develop an ability to solve surveying problems utilizing fundamental principles of Science and Engineering; 2. Expose students to the latest computational and measurement tools. This will be done as individuals and as members of student field survey teams; 3. Students will learn to use equipment similar in type and quality to those professional surveyors use in their businesses; 4. Exhibit an understanding of the role of engineering surveyors in the civil and environmental engineering profession.	Distance Measurements Using Trigonometric & EDM	Lecture, Tutorial and Lab	Exam, and assignments
8.	6		Mid-term Exam		Exam, and assignments
9.	6	1. Develop an ability to solve surveying problems utilizing fundamental principles of Science and Engineering; 2. Expose students to the latest computational and measurement tools. This will be done as individuals and as	Distance Measurements Using Trigonometric & EDM	Lecture, Tutorial and Lab	Exam, and assignments

		members of student field survey teams; 3. Students will learn to use equipment similar in type and quality to those professional surveyors use in their businesses; 4. Exhibit an understanding of the role of engineering surveyors in the civil and environmental engineering profession.			
10.	6	1. Develop an ability to solve surveying problems utilizing fundamental principles of Science and Engineering; 2. Expose students to the latest computational and measurement tools. This will be done as individuals and as members of student field survey teams; 3. Students will learn to use equipment similar in type and quality to those professional surveyors use in their businesses; 4. Exhibit an understanding of the role of engineering surveyors in the civil and environmental engineering profession.	Angles, Azimuth, and Bearing	Lecture, Tutorial and Lab	Exam, and assignments
11.	6	1. Develop an ability to solve surveying problems utilizing fundamental principles of Science and Engineering; 2. Expose students to the latest computational and measurement tools. This will be done as individuals and as members of student field survey teams; 3. Students will learn to use equipment similar in type and quality to those professional surveyors use in their businesses; 4. Exhibit an understanding of the role of engineering surveyors in the civil and environmental engineering profession.	Angles, Azimuth, and Bearing	Lecture, Tutorial and Lab	Exam, and assignments
12.	6	1. Develop an ability to solve surveying problems utilizing fundamental principles of Science and Engineering; 2. Expose students to the latest computational and measurement tools. This will be done as individuals and as members of student field	Angles, Azimuth, and Bearing	Lecture, Tutorial and Lab	Exam, and assignments

		survey teams; 3. Students will learn to use equipment similar in type and quality to those professional surveyors use in their businesses; 4. Exhibit an understanding of the role of engineering surveyors in the civil and environmental engineering profession.			
13.	6	1. Develop an ability to solve surveying problems utilizing fundamental principles of Science and Engineering; 2. Expose students to the latest computational and measurement tools. This will be done as individuals and as members of student field survey teams; 3. Students will learn to use equipment similar in type and quality to those professional surveyors use in their businesses; 4. Exhibit an understanding of the role of engineering surveyors in the civil and environmental engineering profession.	Traversing	Lecture, Tutorial and Lab	Exam, and assignments
14.	6	1. Develop an ability to solve surveying problems utilizing fundamental principles of Science and Engineering; 2. Expose students to the latest computational and measurement tools. This will be done as individuals and as members of student field survey teams; 3. Students will learn to use equipment similar in type and quality to those professional surveyors use in their businesses; 4. Exhibit an understanding of the role of engineering surveyors in the civil and environmental engineering profession.	Traversing	Lecture, Tutorial and Lab	Exam, and assignments
15.	6	1. Develop an ability to solve surveying problems utilizing fundamental principles of Science and Engineering; 2. Expose students to the latest computational and measurement tools. This will be done as individuals and as members of student field survey teams;	Traversing	Lecture, Tutorial and Lab	Exam, and assignments

		3. Students will learn to use equipment similar in type and quality to those professional surveyors use in their businesses; 4. Exhibit an understanding of the role of engineering surveyors in the civil and environmental engineering profession.			

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	• Charles D. Ghilani, Paul R. Wolf, Elementary Surveying, Prentice Hall, 12th ed., 2008. • Chandra, A. M. Surveying Problem Solution with Theory and Objective Type Questions. New Age International, 2005
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name: **English Language-II**

2. Course Code: (**CE3104**)

3. Semester / Year: **1st semester/ 2023-2024**

4. Description Preparation Date: **12-June-2024**

5. Available Attendance Forms: **In class**

6. Number of Credit Hours (Total) / Number of Units (Total)

3 Cr.Hrs / 30Hrs (lec.)

7. Course administrator's name (mention all, if more than one name)

Name:. Dr. Maher Zuhair Mohammed Al-RAwi
Email: maher.zuhair@uoanbar.edu.iq

8. Course Objectives

Course Objectives	a. Enabling students to reach academic oral and written communication at the required level for the university. b. Expand academic and engineering vocabulary through reading. c. Enhance critical thinking skills.

9. Teaching and Learning Strategies

Strategy	1. Lectures 2. Working papers 3. Online Studies 4. Group Discussions

10. Course Structure

Week	Hours	Required learning	outcomes Name of unit/course or subject	Teaching method	Evaluation method
	3	Unit-1: Getting to know yo	١ـ٧	Theoretical	Discussion, quick exam, problem solving, homework
	3	Unit-1: Workbook	١ـ٧	Theoretical	Discussion, quick exam, problem solving, homework
	3	Unit-2: Whatever makes yo happy	١ـ٧	Theoretical	Discussion, quick exam, problem solving, homework
	3	Unit-2: Workbook	١ـ٧	Theoretical	Discussion, quick exam, problem solving, homework
	3	Unit-3: What's in the news	١ـ٧	Theoretical	Discussion, quick exam, problem solving, homework
	3	Unit-3: Workbook	١ـ٧	Theoretical	Discussion, quick exam, problem solving, homework
	3	Unit-4: Eat, drink, and be merry!	١ـ٧	Theoretical	Discussion, quick exam, problem solving, homework
	3	Unit-4: Workbook	١ـ٧	Theoretical	Discussion, quick exam, problem solving, homework
	3	Unit-5: Looking forward	١ـ٧	Theoretical	Discussion, quick exam, problem solving, homework
	3	Unit-5: Workbook	١ـ٧	Theoretical	Discussion, quick exam, problem solving, homework
	3	Unit-6: The way I see it	١ـ٧	Theoretical	Discussion, quick exam, problem solving, homework
	3	Unit-6: Workbook	١ـ٧	Theoretical	Discussion, quick exam, problem solving, homework
	3	Unit-7: Living history	١ـ٧	Theoretical	Discussion, quick exam, problem solving, homework
	3	Unit-7: Workbook	١ـ٧	Theoretical	Discussion, quick exam, problem solving, homework
	3	Review	١ـ٧	Theoretical	Discussion, quick exam, problem solving, homework
	3	Final exam			

Course Evaluation

11. Learning and Teaching Resources

Required textbooks (curricular boo if any)	**New Headway - Pre-Intermediate**
Main references (sources)	Non
Recommended books and references (scientific journals, reports…)	Non
Electronic References, Websites	

Course Description Form

1. Course Name: **Fluid Mechanics**
2. Course Code: **CIV010**
3. Semester / Year: **2nd semester/ 2023-2024**
4. Description Preparation Date: **12-June-2024**
5. Available Attendance Forms: **In class**
6. Number of Credit Hours (Total) / Number of Units (Total)
3 Cr.Hrs / 30Hrs (lec.)+ 15Hrs(Tutorial) + 30Hrs (Lab)
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Ahmed Rahomi Rajab Email: ahmed.rahomi2@uoanbar.edu.iq
8. Course Objectives

Course Objectives	**1) Describe the International System of Units, convert units, and explain the basic properties of liquids.** **2) Fluids at rest, pressure gauges and hydrostatic forces.** **3) Derivation, description and application of Bernoulli's equation and momentum equation.** **4) Understanding fluid movement, fluid flow, and influential parameters.** **5) Determine the coefficient of friction, frictional losses, and energy losses in the pipe, apply Moody's diagram and determine secondary losses.**

9. Teaching and Learning Strategies	
Strategy	Lectures Tutorial Lab.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	1	Introduction in Fluid Mechanics	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
2	3	1	Dimensions and Units systems	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
3	3	2	The fundamental properties of fluids	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
4	3	2	Fluids in Statics	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
5	3	2	Derive a relationship among different parameters related to Fluid, Flow, and geometric properties by Dimensional Analysis.	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
6	3		**Progress Exam 1**	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
7	3	2	Pressure measurements and Manometers	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
8	3	2	Hydrostatic forces on flat surfaces	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
9	3	3	hydrostatic forces on curved surfaces	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
10	3	3	Fluid Kinematics	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
11	3		**Progress Exam 2**	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
12	3	4	State the applications of Momentum equation.	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
13	3	5	Define friction and friction factor, pipe head loss, apply the Moody Diagram and determine minor losses.	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
14	3	5	Solve problems involving pipe networks and pumps	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
15	3	4	Describe the open channels and types of flow.	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments

Course Evaluation

Assessment Tool(s)**	Date	Weight (%)
Semester activities: These include, Homeworks, Quizzes	At the end of each major topic	**16%**
Progress Exams (1 & 2)	According to department schedule	**24%**
Lab reports	Report per each experiment	**10%**
Final Exam	Week-16	**50%**
Total		**100%**

11. Learning and Teaching Resources

Required textbooks (curricu books, if any)	ميكانيك الموائع – د. نعمة عمارة
Main references (sources)	
Recommended books and references (scientific journals, reports…)	Fluid Mechanics by Streeter
Electronic References, Websites	

Course Description Form

1. Course Name: Properties of Concrete
2. Course Code: CIV005
3. Semester / Year: First/Second
4. Description Preparation Date: 22/06/2024
5. Available Attendance Forms: Course (In class)
6. Number of Credit Hours (Total) / Number of Units (Total)
90 hrs.
7. Course administrator's name (mention all, if more than one name)
Name: Assistant Prof. Dr. Mahmoud Khashaa Mohammed Email: mahmoud.mohammed@uoanbar.edu.iq Name: Lecturer Dr. Ahmed Anees Ahmed Email: ahmed.anees@uoanbar.edu.iq
8. Course Objectives

Course Objectives	**The main aim of this course is to enable the student to identify the basic and fundamental, theoretical and experimental, principles of concrete science with high quality of knowledge.** **By the end of successful completion of this course, the student will be able to:** **1. Deeply understand the fundamentals properties concrete and its raw materials.** **2. Introduce or propose critical thoughts in how to develop the characterizations of the concrete and its raw materials based on point number 1.** **3. Prepare and conduct most of the important tests the concrete and its raw materials. (This is from theoreti background and Concrete Lab. works)** **4. Deal with the problems of the concrete and its ra materials. This includes the concrete problems in fresh a**

	hardening stages. **5. Develop different research skills in the course topics at BSc level.** **6. Introduce critical thoughts in how to develop/in new types of concrete or cement.**

9. Teaching and Learning Strategies

Strategy	• **Lectures** • **Lab.** • **Homework** • **Quizzes** • **Coursework (report +Oral Presentation + Poster)**

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	٢	1-6	Introduction and general backgrounds	lectures	Written exam, Quizze Homework
2	4	1-6	Cement, production and types	Lectures	Written exam, Quizze Homework
3	٨	1-6	Cement, chemical and physical properties	Lectures, Lab.	Written exam, Quizze Homework
4	١٠	1-6	Aggregate of concrete, classification and mechanical properties	Lectures, Lab.	Written exam, Quizze Homework
5	١٠	1-6	Aggregate of concrete, physical properties and sieve analysis	Lectures, Lab.	Written exam, Quizze Homework
6	٦	1-6	Water in concrete works and mixing of concrete	Lectures, Lab.	Written exam, Quizze Homework
7	4	1-6	Admixtures of concrete	lectures	Written exam, Quizze Homework
8	4	1-6	Mid-term Exam		Written exam
9	١٠	1-6	Properties of fresh concrete	Lectures, Lab.	Written exam, Quizze Homework
10	4	1-6	Design of concrete mixes	lectures	Written exam, Quizze Homework
11	٨	1-6	Strength of concrete	Lectures, Lab.	Written exam, Quizze Homework
12	٦	1-6	Elasticity of concrete	Lectures, Lab.	Written exam, Quizze Homework
13	4	1-6	Volume changes in concrete (swelling and shrinkage)	Lectures, Lab.	Written exam, Quizze Homework
14	4	1-6	Durability of Concrete and Special types of concrete	lectures	Written exam, Quizze Homework
15	٦	1-6	Coursework Project presentations/Exams	Project exam	Report +Oral Presentation + Poster

11. Course Evaluation

Term Tests	Laboratory	Quizzes	Project	Final Exam
25%	10 %	5 %	10%	50%

12. Learning and Teaching Resources	
Required textbooks (curricular books any)	Lecture notes: Dr Mahmoud Kh. Mohammed
Main references (sources)	1- English: • Neville, A. M. 2011. Properties of Concrete, London, Pear Education Limited. or any Edition. • Mehta, P. K. & Monteiro, P. J. M. 2006. Concr Microstructure, properties and materials, McGraw-Hill. 2-Arabic: • Concrete Technology (كتاب تكنولوجيا الخرسانة) , Dr Hana A and Dr Muyed Noori Lecture notes: 1- Dr Mahmoud Kh. Mohamm
Recommended books and references (scientific journals, reports...)	• Concrete Technology (كتاب تكنولوجيا الخرسانة) , Dr Hana A and Dr Muyed Noori
Electronic References, Websites	

Course Description Form

1. Course Name: Strength of material-**I**

2. Course Code: **CIV004**

3. Semester / Year: **1st semester/ 2023-2024**

4. Description Preparation Date: **12-June-2024**

5. Available Attendance Forms: **In class**

6. Number of Credit Hours (Total) / Number of Units (Total)

3 Cr.Hrs / 30Hrs (lec.)+ 15Hrs(Tutorial)

7. Course administrator's name (mention all, if more than one name)

Name: Lec.Dr.Dhafer Khalefa Jadaan
Email: dhafer.jadaan@uoanbar.edu.iq
Name: Lec. Shamil Kamil
Email: shamil.kamil@uoanbar.edu.iq

8. Course Objectives

Course Objectives	**The goals of this course are to enable students to:** **Learn the basics mechanics of materials and internal loading.** **Study stresses and strains of materials.** **Apply these concepts to design and analyze structural members like beams and columns.**

9. Teaching and Learning Strategies

Strategy	Lectures Tutorial

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	1	Shear and moment diagrams	Lectures, Tutorial.	Written Exams Quizzes Homework assignment
2	3	1	Shear and moment diagrams	Lectures, Tutorial.	Written Exams Quizzes

					Homework assignment
3	**3**	**1**	**Simple stress**	Lectures, Tutorial,	**Written Exams Quizzes Homework assignment**
4	**3**	**1**	**Simple stress**	Lectures, Tutorial.	**Written Exams Quizzes Homework assignment**
5	**3**	**1**	**Simple stress**	Lectures, Tutorial.	**Written Exams Quizzes Homework assignment**
6	**3**	**2**	**Simple strain**	Lectures, Tutorial.	**Written Exams Quizzes Homework assignment**
7	**3**	**2**	**Simple strain**	Lectures, Tutorial.	**Written Exams Quizzes Homework assignment**
8	**3**	**2**	**Simple strain**	Lectures, Tutorial,	**Written Exams Quizzes Homework assignment**
9	**3**	**3**	Thermal stresses	Lectures, Tutorial,	**Written Exams Quizzes Homework assignment**
10	**3**	**3**	Thermal stresses	Lectures, Tutorial,	**Written Exams Quizzes Homework assignment**
11	**3**	**3**	Indetrminate axially loaded bars	Lectures, Tutorial,	**Written Exams Quizzes Homework assignment**
12	**3**	**3**	Indetrminate axially loaded bars	Lectures, Tutorial,	**Written Exams Quizzes Homework assignment**
13	**3**	**3**	Indetrminate axially loaded bars	Lectures, Tutorial,	**Written Exams Quizzes Homework assignment**
14	**3**	**3**	**Deflection of beams**	Lectures, Tutorial,	**Written Exams Quizzes Homework assignment**
15	**3**	**4**	**Deflection of beams**	Lectures, Tutorial,.	**Written Exams Quizzes Homework assignment**

Course Evaluation

Assessment Tool(s)**	Date	Weight (%)
Semester activities: These include, Homeworks, Quizzes	At the end of each major topic	**15%**
Mid semester exam **or** Progress Exams	According to department schedule	**25%**
Lab reports		
Final Exam	Week-16	**60%**
Total		**100%**

11. Learning and Teaching Resources	
Required textbooks (curricu books, if any)	R.C. Hibbeler, Mechanics of Materials, Prentice Hall, 7th ed., 2007.
Main references (sources)	
Recommended books and references (scientific journals, reports…)	1. Strength of Matrials, Stringer, 8th Ed.
Electronic References, Websites	

Course Description Form

1. Course Name: Strength of material-**II**

2. Course Code: **CIV008**

3. Semester / Year: 2nd **semester/ 2023-2024**

4. Description Preparation Date: **12-June-2024**

5. Available Attendance Forms: **In class**

6. Number of Credit Hours (Total) / Number of Units (Total)

3 Cr.Hrs / 30Hrs (lec.)+ 15Hrs(Tutorial) +30 Cr.Hrs(Lab)

7. Course administrator's name (mention all, if more than one name)

Name: Lec.DrDhafer Khalefa Jadaan
Email: dhafer.jadaan@uoanbar.edu.iq
Name: Lec. Shamil Kamil
Email: shamil.kamil@uoanbar.edu.iq

8. Course Objectives

Course Objectives	**The goals of this course are to enable students to:** **Learn the basics mechanics of materials and internal loading.** **Study stresses and strains of materials.** **Apply these concepts to design and analyze structural members like beams and columns.**

9. Teaching and Learning Strategies

Strategy	Lectures Tutorial

10. Course Structure

Week	Hours	Required Learning	Unit or subject name	Learning method	Evaluation method

		Outcomes			
1	**3**	**1**	**Shear and moment diagrams**	Lectures, Tutorial, Lab.	**Written Exams Quizzes Homework assignment**
2	**3**	**1**	**Shear and moment diagrams**	Lectures, Tutorial, Lab.	**Written Exams Quizzes Homework assignment**
3	**3**	**1**	**Flexural stresses**	Lectures, Tutorial,	**Written Exams Quizzes Homework assignment**
4	**3**	**1**	**Flexural stresses**	Lectures, Tutorial, Lab.	**Written Exams Quizzes Homework assignment**
5	**3**	**1**	**Flexural stresses**	Lectures, Tutorial, Lab.	**Written Exams Quizzes Homework assignment**
6	**3**	**2**	**Transverse stresses**	Lectures, Tutorial, Lab.	**Written Exams Quizzes Homework assignment**
7	**3**	**2**	Transverse stresses	Lectures, Tutorial, Lab.	**Written Exams Quizzes Homework assignment**
8	**3**	**2**	Transverse stresses	Lectures, Tutorial,	**Written Exams Quizzes Homework assignment**
9	**3**	**3**	tress and strain transformatio	Lectures, Tutorial,	**Written Exams Quizzes Homework assignment**
10	**3**	**3**	tress and strain transformatio	Lectures, Tutorial,	**Written Exams Quizzes Homework assignment**
11	**3**	**3**	tress and strain transformatio	Lectures, Tutorial,	**Written Exams Quizzes Homework assignment**
12	**3**	**3**	**Column buckling**	Lectures, Tutorial,	**Written Exams Quizzes Homework assignment**
13	**3**	**3**	**Column buckling**	Lectures, Tutorial,	**Written Exams Quizzes Homework assignment**
14	**3**	**3**	**Solved problems and examples**	Lectures, Tutorial,	**Written Exams Quizzes Homework assignment**
15	**3**	**4**	**Solved problems and examples**	Lectures, Tutorial, Lab.	**Written Exams Quizzes Homework assignment**

Course Evaluation

Assessment Tool(s)**	Date	Weight (%)
Semester activities: These include, Homeworks, Quizzes	At the end of each major topic	**15%**

Mid semester exam **or** Progress Exams	According to department schedule	**25%**
Lab reports	Report per each experiment	**10%**
Final Exam	Week-16	**50%**
Total		**100%**

11. Learning and Teaching Resources

Required textbooks (curricu books, if any)	R.C. Hibbeler, Mechanics of Materials, Prentice Hall, 7th ed., 2007.
Main references (sources)	
Recommended books and references (scientific journals, reports…)	1. Strength of Matrials, Stringer, 8th Ed.
Electronic References, Websites	

Course Description Form

1. Course Name:
Engineering Hydrology
2. Course Code:
CE3309
3. Semester / Year:
1st 2023–2024
4. Description Preparation Date:
24/06/2024
5. Available Attendance Forms:
In class attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
Four hours per week. 60 hours
7. Course administrator's name (mention all, if more than one name)
Name: Basheer Khalil Al-Hadeethi & Mohammed Freh Email: Ba81sheer@uoanbar.edu.iq
8. Course Objectives

Course Objectives	By the end of successful completion of this course, the student will be able to: • Recognize hydrologic cycle, precipitation, streamflow measurements, return periods, aquifer and groundwater, design floods, and their relationships to • engineering designs. • Understand the basics of statistical theories, the history of normal distribution, and their applications in frequency analysis for hydraulic designs. • learn the water infiltration and evaporation theory and their effects on estimating available water and flood analysis. • understand theories of unit hydrograph and applications on flood forecasts including peak discharge and time of peak occurrence. • learn theories of flood routing including reservoir and channel routing in flood forecasting

9. Teaching and Learning Strategies	
Strategy	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 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	1	Application of Hydrology in Engineering & Hydrologic cycle	Lecture	Written exam Quizzes Homework
2	4	1	Hydrologic cycle, return periods and water balance	Lecture	Written exam Quizzes Homework
3	4	1	Precipitation, types of precipitation and stream flow measurements	Lecture	Written exam Quizzes Homework
4	4	2	Estimation of missed data, checking data consistency & Rainfall frequency analysis	Lecture	Written exam Quizzes Homework
5	4	2	Theory of frequency analysis for design storms and design floods.	Lecture	Written exam Quizzes Homework
6	4	3	Measurement of evaporation and estimation of potential evaporation	Lecture	Written exam Quizzes Homework
7	4	3	Losses from precipitation, Evaporation, Factors affecting Evaporation, Measurement and estimation of Evaporation process	Lecture	Written exam Quizzes Homework
8	4	-----	Mid-Exam	Lecture	Written exam Quizzes Homework
9	4	4	Losses from precipitation, Evaporation, Factors affecting Evaporation, Measurement and estimation of Evaporation process	Lecture	Written exam Quizzes Homework
10	4	4	Infiltration, Factors affecting infiltration, Measurement and estimation of infiltration process	Lecture	Written exam Quizzes Homework
11	4	5	Infiltration, Factors affecting infiltration, Measurement and estimation of infiltration process	Lecture	Written exam Quizzes Homework
12	4	5	Runoff, Classes of Runoff, Rainfall-Runoff Correlation, Estimating Runoff Volume, Estimation of Flood Peak Discharge	Lecture	Written exam Quizzes Homework
13	4	2	Runoff, Classes of Runoff, Rainfall-Runoff Correlation, Estimating Runoff Volume, Estimation of Flood Peak Discharge	Lecture	Written exam Quizzes Homework
14	4	2	Hydrographs, Introduction and Unit Hydrographs	Lecture	Written exam Quizzes Homework
15	4	2	Hydrographs, Introduction and Unit Hydrographs	Lecture	Written exam Quizzes Homework

11. Course Evaluation

Quizzes and report 10%+ Monthly exam 30%+ Final exam 60%

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	

Main references (sources)	
Recommended books and references (scientific journals, reports…)	• Warren vissman, Introduction to hydrology, 5th ed, 2003. • Ven Te Chow, Applied hydrology. • Em. Wilson, Engineering hydrology
Electronic References, Websites	

Course Description Form

1. Course Name: – **Engineering statistics**

Course Code: CE2210

2. Semester / Year: **١st semester/ 2023-2024**

3. Description Preparation Date: **23-June-2024**

4. Available Attendance Forms: **In class**

5. Number of Credit Hours (Total) / Number of Units (Total)

3 Cr.Hrs / 30Hrs (lec.)+ 15Hrs(Tutorial)

6. Course administrator's name (mention all, if more than one name)

Name: Ass.st Prof. Dr. Yousif A. Mansoor
Email: yousif.mansoor@uoanbar.edu.iq

7. Course Objectives

Course Objectives	**1.** understand the origin, formation, parameters and basic fundamental of **statistics** **2.** understand skills of reading data **3.** understand the effective of different analysis methods in data 4. understand the principles of modeling **5.** how to evaluate the model

8. Teaching and Learning Strategies

Strategy	Lectures

9. Course Structure

Week	Hours	Required Learning	Unit or subject name	Learning method	Evaluation method

		Outcomes			
1	**3**	**2**	*Introduction*	Lectures, Tutorial,	**Written Exams Quizzes Homework assignment**
2	**3**	**5**	*, Data Summary and Presentation*	Lectures, Tutorial,	**Written Exams Quizzes Homework assignment**
3	**2**	**4**	*Tendency measurement .*	Lectures, Tutorial,	**Written Exams Quizzes Homework assignment**
4	**3**	**1**	Application of tendency measurement	Lectures, Tutorial.	**Written Exams Quizzes Homework assignment**
5	**3**	**1**	*Probability: Addition rule, conditional probability, multiplication rule and Ba Theorem*	Lectures, Tutorial,	**Written Exams Quizzes Homework assignment**
6	**3**	**2**	*Discrete random variables. Probability mass function. Mean and variance of discrete random variables*	Lectures, Tutorial,.	**Written Exams Quizzes Homework assignment**
7	**3**	**2**	*Probability Distribution functions: Uniform, Binomial, Geometric and Negative Binomial, Hyper-geometric and Poisso Distribution.*	Lectures, Tutorial,	**Written Exams Quizzes Homework assignment**
8	**3**	**2**	Mid-term Exam	Lectures, Tutorial,	**Written Exams Quizzes Homework assignment**
9	**3**	**3**	*Normal Distribution. Approximation to Binomial and Poisson Distribution. Exponential distribution. Other continuou distributions.*	Lectures, Tutorial,	**Written Exams Quizzes Homework assignment**
10	**3**	**3**	*Joint probability function. Multiple discrete and continuous random variab*	Lectures, Tutorial,	**Written Exams Quizzes Homework assignment**
11	**3**	**2**	*arameter estimation. Propert of estimators. Method of Moments*	Lectures, Tutorial,	**Written Exams Quizzes Homework assignment**
12	**3**	**3**	Correlation	Lectures, Tutorial,	**Written Exams Quizzes Homework assignment**
13	**3**	**3**	*Interval estimation. Inference on the mean of a population: variance known or unknown. Inference on the variance of*	Lectures, Tutorial,	**Written Exams Quizzes Homework assignment**

			normal population		
14	**3**	**3**	*ypothesis testing about the m and Proportion: Small an Large Sample*	Lectures, Tutorial,	**Written Exams Quizzes Homework assignment**
15	**3**	**4**	*Hypothesis testing: Two Populations*	Lectures, Tutorial,.	**Written Exams Quizzes Homework assignment**

Course Evaluation

Assessment Tool(s)**	Date	Weight (%)
Semester activities: These include, Homeworks, Quizzes reports	At the end of each major topic	**15%**
Mid semester exam **or** Progress Exams	According to department schedule	**25%**
Final Exam	Week-16	**40%**
Total		**100%**

10. Learning and Teaching Resources

Required textbooks (curricu books, if any)	
Main references (sources)	1. William Mendenhall and Terry Sincich, Statistics for Engineering and the Sciences, Prentice Hall, 2. . Elementary Statistics: A Step by Step Approach, by Allan G. Bluman, 6th edition
Recommended books and references (scientific journals, reports…)	1. Probability, Statistics, and Decision for Civil Engineering, by Jack R. Benjamin and C. Allin Cornell
Electronic References, Websites	

Course Description Form

1. Course Name: **English Language-3**
2. Course Code: **CIV014**
3. Semester / Year: **1st semester/ 2023-2024**
4. Description Preparation Date: **12-June-2024**
5. Available Attendance Forms: **In class**
6. Number of Credit Hours (Total) / Number of Units (Total)
3 Cr.Hrs / 60Hrs (lec.)
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Sadoon Mushrif Abdallah Email: sadoon.m.abdullah_@uoanbar.edu.iq
8. Course Objectives

Course Objectives	1. To enable the students to achieve academic oral and written communication to the standard required at university level. 2. The course integrates all the language skills with emphasis on writing, and it stimulates students' imagination, and promotes personal expression. 3. Students, in this course, are trained to apply critical thinking skills to a wide range of challenging subjects from diverse scientific topics. 4. Course activities include writing various types of academic essays, acquiring advanced academic vocabulary, and getting involved in group discussions and debates. 5. In addition, the course also includes other skills to consolidate the main skills, such as further readings in civil engineering.

9. Teaching and Learning Strategies

Strategy	Lectures Activities and homework Tests/Quizzes

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	1	enses, Questions forms, Vocabula Writing	Lectures, Tutorial	Written Exams Quizzes Homework assignments
2	2	1	Present simple, present continuou	Lectures, Tutorial	Written Exams Quizzes Homework assignments
3	2	1	Past simple, past continuous	Lectures, Tutorial	Written Exams Quizzes Homework assignments
4	2	1	Count ant noncount nouns	Lectures, Tutorial	Written Exams Quizzes Homework assignments
5	2	1	Verb patterns	Lectures, Tutorial	Written Exams Quizzes Homework assignments
6	2	2	Comparative and superlatives	Lectures, Tutorial	Written Exams Quizzes Homework assignments
7	2	2	Present perfect	Lectures, Tutorial	Written Exams Quizzes Homework assignments
8	2	2	Active and passive	Lectures, Tutorial	Written Exams Quizzes Homework assignments
9	2	3	Conditional verbs	Lectures, Tutorial	Written Exams Quizzes Homework assignments
10	2	3	prepositions	Lectures, Tutorial	Written Exams Quizzes Homework assignments
11	2	3	punctuation marks	Lectures, Tutorial	Written Exams Quizzes Homework assignments
12	2	3	Modal verbs	Lectures, Tutorial	Written Exams Quizzes Homework assignments
13	2	3	Auxiliary verbs	Lectures, Tutorial	Written Exams Quizzes Homework assignments
14	2	3	Reading skills	Lectures, Tutorial	Written Exams Quizzes Homework assignments
15	2	4	Listening skills	Lectures, Tutorial	Written Exams Quizzes Homework assignments

Course Evaluation

Assessment Tool(s)**	Date	Weight (%)

Semester activities: These include, Homeworks, Quizzes	At the end of each major topic	**10%**
Mid semester exams **or** Progress Exams	According to department schedule	**30%**
Final Exam	Week-16	**60%**
Total		**100%**

11. Learning and Teaching Resources

Required textbooks (curricu books, if any)	1. John & Liz Soars, "New Headway Plus– Beginner Student's Book", 10th ed 2014 2. John & Liz Soars, "New Headway Plus– Pre–Intermediate Workbook with Key".
Main references (sources)	
Recommended books and references (scientific journals, reports…)	1. John & Liz Soars "New Headway – English Course", OXFORD University Press, United Kingdom, 2000.
Electronic References, Websites	

Course Description Form

1. Course Name:
Numerical methods
2. Course Code:
CE3202
3. Semester / Year:
Second
4. Description Preparation Date:
23rd June 2024
5. Available Attendance Forms:
Full time, In person
6. Number of Credit Hours (Total) / Number of Units (Total)
45 hours
7. Course administrator's name (mention all, if more than one name)
Name: Ahmed Hilal Farhan (Asst. Prof., PhD), Jalil E. Kwad (Lecurer, PhD.) Email: ahmed.farhan_ce@uoanbar.edu.iq, Jalil.Kwad@uoanbar,edu.iq
8. Course Objectives
Course Objectives 1. The student is familiar with the mathematical background of different numerical methods. 2. Understand different numerical methods for solving algebraic equations and for estimating roots of nonlinear equations. 3. Study formulating relationship between discrete data through curve fitting 4. Understand different numerical methods for differentiation and integration and for solving ODEs and PDEs 5. Create MATLAB functions to solve numerical geometry problems and use the built-in functions
9. Teaching and Learning Strategies

Strategy	1. Giving lectures about different topics and encouraging students to participate discussion about application of these numerical methods in field of civil engineering. 2. Giving assignments at the end of each chapter to help students to practice what was learn through each chapter. 3. Conducting Examines and quizzes to evaluate students' understanding. 4. Help students to use MATLAB software to solve different numerical methods in computerized way.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1	3	Be aware of the mathematical background for the different numerical methods introduced in the course.	General Introduction about course and computer lab.	lectures	NA
Week 2	3	Understand the different numerical methods to solve the algebraic equations and to solve system of linear and nonlinear equations.	General definition of the types of numerical error, Roots of equations	Lectures lab	Exams
Week 3	3	Understand the different numerical methods to solve the algebraic equations and to solve system of linear and nonlinear equations.	Roots of equations	Lectures lab	Exams HW
Week 4	3	Understand the different numerical methods to solve the algebraic equations and to solve system of linear and nonlinear equations.	Solving system of linear equations	Lectures lab	Exams HW
Week 5	3	Understand the different numerical methods to solve the algebraic equations and to solve system of linear and nonlinear equations.	Solving system of linear equations	Lectures lab	Exams HW
Week 6	3		Progress Exam 1		
Week 7	3	Understand the different numerical methods for interpolation and curve fitting	Curve Fitting, Polynomial Interpolation	Lectures lab	Exams HW
Week 8	3	Understand the different numerical methods for interpolation and curve fitting	Curve Fitting, Polynomial Interpolation	Lectures lab	Exams HW
Week 9	3	Understand the different numerical methods for differentiation, integration and solving set of ordinary differential equations.	Numerical differentiation	Lectures lab	Exams HW
Week 10	3	Understand the different numerical methods for	Numerical differentiation	Lectures lab	Exams HW

		differentiation, integration and solving set of ordinary differential equations.			
Week 11	3	Understand the different numerical methods for differentiation, integration and solving set of ordinary differential equations.	Numerical integration	Lectures lab	Exams HW
Week 12	3		Progress Exam 2		
Week 13	3	Understand the different numerical methods for differentiation, integration and solving set of ordinary differential equations.	Ordinary differential equations	Lectures lab	Exams HW
Week 14	3	Understand the different numerical methods for differentiation, integration and solving set of ordinary differential equations.	Ordinary differential equations	Lectures lab	Exams HW
Week 15	3	Understand the different numerical methods for differentiation, integration and solving set of ordinary differential equations.	Partial differential equations	Lectures lab	Exams HW

11. Course Evaluation

- Quizzes 5%
- Progress exam 1 ..... 15%
- Progress exam 1 ..... 15%
- Lab 10%
- HW ..... 5%.
- Final Exam ..... 50%.

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Numerical Methods for Engineers, 6th edition 2010, S. C. Chapra and R. P Canale, McGraw-Hill,
Main references (sources)	
Recommended books and references (scientific journals, reports…)	K. Atkinson: An Introduction to Numerical Analysis, Wiley, (2nd ed.), 1989
Electronic References, Webites	

Course Description Form

1. Course Name: reinforced concrete**-1**
2. Course Code: **CIV018**
3. Semester / Year: 2nd **semester/ 2023-2024**
4. Description Preparation Date: **12-June-2024**
5. Available Attendance Forms: **In class**
6. Number of Credit Hours (Total) / Number of Units (Total)
3 Cr.Hrs / 120 Hrs (lec.)
7. Course administrator's name (mention all, if more than one name)
Name: Dr. jamal A, Khalaf Email: jamal.khalaf@uoanbar.edu.iq Name: Dr. Dhafer K Jadaan Email Dhafer.jadaan@uoanbar.edu.iq
8. Course Objectives

Course Objectives	**1.** Introduced Material properties, Flexural theories, Un-cracked section. **2.** Analysis and design using working stress method, **3.** Analysis and design using ultimate strength, Design and analysis of Singly Rectangular, doubly, T- section, irregular section beams, Shear analysis and design, Continuous beams, **4.** Analysis and design of One way slab, **5.** Bond, anchorage, development length, Cracked and deflection.

9. Teaching and Learning Strategies

Strategy	Lectures Tutorial

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	1	Introduction and revision, materials and properties c concrete and reinforcing ba ACI safety code provision	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
2	3	1	Introduction and revision, materials and properties c concrete and reinforcing ba ACI safety code provisions.hort Concrete Colu	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
3	3	1	Analysis and design of singl reinforced concrete beam	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
4	3	1	Analysis and design of singl reinforced concrete beam	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
5	3	1	Analysis and Design of doub reinforced concrete beam	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
6	3	2	Analysis and Design of doub reinforced concrete beam	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
7	3	2	Analysis and design of T and reinforced concrete beam	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
8	3	2	nalysis and design of beams shear and diagonal tensio	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
9	3	3	nalysis and design of beams shear and diagonal tensio	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
10	3	3	Analysis and Design of continuous beam for flexu using ACI coefficients method.	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
11	3	3	Design of singly reinforced irregular concrete beams	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
12	3	3	Analysis and design of Reinforced Concrete soli one-way slabs.	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
13	3	3	Analysis and design of Reinforced Concrete soli one-way slabs.	Lectures, Tutorial,	Written Exams Quizzes Homework assignments

14	**3**	**3**	rviceability requirements of members	Lectures, Tutorial,	**Written Exams Quizzes Homework assignments**
15	**3**	**4**	Comprehensive Exam	Lectures, Tutorial, Lab.	**Written Exams Quizzes Homework assignments**

Course Evaluation

Assessment Tool(s)**	Date	Weight (%)
Semester activities: These include, Homeworks, Quizzes	At the end of each major topic	**10%**
Mid semester exam **or** Progress Exams	According to department schedule	**30%**
Final Exam	Week-16	**60%**
Total		**100%**

11. Learning and Teaching Resources

Required textbooks (curricu books, if any)	Arthur H. Nilson, David Darwin, Charles W. Dolan, Design of Concrete Structures, McGraw-Hill,14th ed., 2014.
Main references (sources)	Structural Concrete- Theory and Design", Hasson, M. N. and Al-Manseer. 5th Edition, John Wiley $ Sons, Inc. 2012
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name: reinforced concrete**-2**

2. Course Code: **CIV016**

3. Semester / Year: 2nd **semester/ 2023-2024**

4. Description Preparation Date: **12-June-2024**

5. Available Attendance Forms: **In class**

6. Number of Credit Hours (Total) / Number of Units (Total)

3 Cr.Hrs / 120 Hrs (lec.)

7. Course administrator's name (mention all, if more than one name)

Name: Dr. jamal A, Khalaf
Email: jamal.khalaf@uoanbar.edu.iq
Name: Dr. Ahmed Anis Ahmed
Email: Ahmed.anis@uoanbar.edu.iq

8. Course Objectives

Course Objectives	**1.** understand analysis and design of short column and two direction slabs **2.** analysis and design of short coluns **3.** analysis and design of two-way slabs

9. Teaching and Learning Strategies

Strategy	Lectures Tutorial

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	1	ort Reinforced Concrete Compress Members	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
2	3	1	Short Concrete Columns	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
3	3	1	Design of Spiral Reinforcement.	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
4	3	1	inforced Concrete Columns (Unia Bending Design)	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
5	3	1	Reinforced Concrete Columns (interaction diagrams)S	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
6	3	2	einforced Concrete Columns (Biax Bending)	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
7	3	2	einforced Concrete Columns (Biax Bending)	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
8	3	2	Mid-term Exam	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
9	3	3	Design of TWO-WAY SLABS	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
10	3	3	earn the analysis and design of Tw way slabs.	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
11	3	3	ateral Moment Distribution by DD development length	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
12	3	3	earn the analysis and design of Tw way slabs.	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
13	3	3	ateral Moment Distribution by DD development length	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
14	3	3	earn the analysis and design of Tw way slabs.	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
15	3	4	Comprehensive Exam	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments

Course Evaluation

Assessment Tool(s)**	Date	Weight (%)

Semester activities: These include, Homeworks, Quizzes	At the end of each major topic	**10%**
Mid semester exam **or** Progress Exams	According to department schedule	**30%**
Final Exam	Week-16	**60%**
Total		**100%**

11. Learning and Teaching Resources

Required textbooks (curricu books, if any)	Design of R.C.Structures) by Nilson
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name: **Soil Mechanics-I**
2. Course Code: **CIV014**
3. Semester / Year: **1st semester/ 2023-2024**
4. Description Preparation Date: **12-June-2024**
5. Available Attendance Forms: **In class**
6. Number of Credit Hours (Total) / Number of Units (Total)
3 Cr.Hrs / 30Hrs (lec.)+ 15Hrs(Tutorial) + 30Hrs (Lab)
7. Course administrator's name (mention all, if more than one name)
Name: Prof. Dr. Khalid R. Mahmood Aljanabi Email: kr_aljanabi@uoanbar.edu.iq Name: Dr. Junied A. Baker Email: junied.bakr@uoanbar.edu.iq

8. Course Objectives

Course Objectives	**1.** understand the origin, formation, parameters and basic fundamental behavior of soils and have the knowledge of soil classification and be able to classify the soil using Unified Soil Classification System **2.** understand soil permeability and seepage theory and be able to analyze a seepage problem by flow net **3.** understand the effective stress concept and be able to calculate effective stress in non-seepage and seepage problems and be able to calculate the vertical stress in soils caused by various types of loading 4. understand the principles of soil compaction and the factors affecting soil compaction **5.** do the experiments and determine the Engineering and index properties of soils applied in field problems

9. Teaching and Learning Strategies

Strategy	Lectures Tutorial Lab.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	1	Soil origin and Grain Size	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
2	3	1	Weight-volume relationships	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
3	3	1	Solved problems and examples	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
4	3	1	Plasticity and soil structure	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
5	3	1	engineering Soil classification	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
6	3	2	Permeability and Seepage	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
7	3	2	Permeability and Seepage	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
8	3	2	Solved problems and examples	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
9	3	3	Effective stresses	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
10	3	3	Solved problems and examples	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
11	3	3	Mohr's circles	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
12	3	3	Solved problems and examples	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
13	3	3	Stresses on the soil mass	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
14	3	3	Solved problems and examples	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
15	3	4	Soil Compaction	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments

Course Evaluation

Assessment Tool(s)**	Date	Weight (%)
Semester activities: These include, Homeworks, Quizzes	At the end of each major topic	**15%**
Mid semester exam **or** Progress Exams	According to department schedule	**25%**
Lab reports	Report per each experiment	**10%**
Final Exam	Week-16	**50%**
Total		**100%**

11. Learning and Teaching Resources

Required textbooks (curricu books, if any)	Fundamentals of Geotechnical Engineering, Braja M. Das, 3rd ed., 2008
Main references (sources)	
Recommended books and references (scientific journals, reports…)	1. Principles of geotechnical engineering, Braja M. Das, 8th Ed. 2. Soil mechanics, R.F. Craig, 8th Ed. Soil mechanics laboratory manual, Braja M. Das, 6th ed.,
Electronic References, Websites	

Course Description Form

1. Course Name: **Soil Mechanics-2**

2. Course Code: **CIV0**

3. Semester / Year: **٢nd semester/ 2023-2024**

4. Description Preparation Date: **12-June-2024**

5. Available Attendance Forms: **In class**

6. Number of Credit Hours (Total) / Number of Units (Total)

3 Cr.Hrs / 30Hrs (lec.)+ 15Hrs(Tutorial) + 30Hrs (Lab)

7. Course administrator's name (mention all, if more than one name)

Name: Asst. Prof. Dr. Muayad A. Al-Sharrad
Email: muayad.alsharrad@uoanbar.edu.iq

8. Course Objectives

Course Objectives	1. Apply one-dimensional consolidation theory to calculate settlement and pore pressure as a function of time during consolidation. 2. Apply the principles of shear strength of soils to various laboratory tests. 3. Perform experimental work and determine the compressibility and shear strength properties of soils applied in field problems.

9. Teaching and Learning Strategies

Strategy	Lectures Tutorial Lab.

10. Course Structure

Week	Hours	Required Learning	Unit or subject name	Learning method	Evaluation method

		Outcomes			
1	**3**	**1**	Introduction	Lectures, Lab.	**Written Exams Quizzes Homework assignment**
2	**3**	**1,3**	One-dimensional consolidation theory	Lectures, Tutorial, Lab	**Written Exams Quizzes Homework assignment**
3	**3**	**1,3**	Calculation of settlement from one dimensional primary and secondary consolidation	Lectures, Tutorial, , Lab	**Written Exams Quizzes Homework assignment**
4	**3**	**1,3**	Calculation of settlement from one dimensional primary and secondary consolidation	Lectures, Tutorial, Lab	**Written Exams Quizzes Homework assignment**
5	**3**	**1**	Problems on consolidation	Lectures, Tutorial	**Written Exams Quizzes Homework assignment**
6	**3**	**1,3**	Time rate of consolidation	Lectures, Tutorial, Lab	**Written Exams Quizzes Homework assignment**
7	**3**	**2**	Problems on time rate of consolidation	Lectures, Tutorial	**Written Exams Quizzes Homework assignment**
8	**3**	**1**	First monthly exam		**Written Exams**
9	**3**	**2,3**	Shear strength of soil and Mohr-Coulomb failure criteria	Lectures, Tutorial, lab	**Written Exams Quizzes Homework assignment**
10	**3**	**2,3**	Determination of shear strength parameters from direct shear test triaxial compression test	Lectures, Tutorial, lab	**Written Exams Quizzes Homework assignment**
11	**3**	**2,3**	Determination of shear strength parameters from direct shear test triaxial compression test	Lectures, Tutorial	**Written Exams Quizzes Homework assignment**
12	**3**	**3**	Pore water pressure parameters	Lectures, Tutorial	**Written Exams Quizzes Homework assignment**
13	**3**	**3**	Problems on shear strength	Lectures, Tutorial	**Written Exams Quizzes Homework assignment**
14	**3**	**3**	Problems on shear strength	Lectures, Tutorial	**Written Exams Quizzes Homework assignment**
15	**3**	**3**	Second monthly exam		**Written Exams**

Course Evaluation

Assessment Tool(s)**	Date	Weight (%)
Semester activities: These include, Homeworks, Quizzes	At the end of each major topic	**15%**
Mid semester exam **or** Progress Exams	According to department	**25%**

	schedule	
Lab reports	Report per each experiment	**10%**
Final Exam	Week-16	**50%**
Total		**100%**

11. Learning and Teaching Resources

Required textbooks (curricu books, if any)	Braja M. Das, Fundamentals of Geotechnical Engineering, 3th ed., 2007
Main references (sources)	
Recommended books and references (scientific journals, reports…)	Knappett J., Craig R.F., Craig Soil Mechanics, 9th ed. Ishibashi, I., Hazarika, H. Soil Mechanics Fundamentals, 2010.
Electronic References, Websites	

Course Description Form

1. Course Name:
Structures 2
2. Course Code:
CIV016
3. Semester / Year:
2nd Semester 2023/2024
4. Description Preparation Date:
22 June 2024
5. Available Attendance Forms:
In Class
6. Number of Credit Hours (Total) / Number of Units (Total)
3 Credit Hours / 60 Hours (lectures)
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Atheer Faisal Al-Anbaki Email: atheer.alanbaki@uoanbar.edu.iq Name: Dr. Shaho Mahmoud Hama Email: shaho_m83@uoanbar.edu.iq
8. Course Objectives

Course Objectives	1. use the consistent deformations method (a force method) to analyze statically indeterminate linearly elastic structures. 2. use the slope-deflections equations (a displacement method) to analyze statically indeterminate linearly elastic structures. 3. use the moment distribution method (a displacement method) to analyze statically indeterminate linearly elastic structures.

9. Teaching and Learning Strategies	
Strategy	Lectures

10. Course Structure

Week	Hours	Required	Unit or subject name	Learning	Evaluation

		Learning Outcomes		method	method
1	4	1	Deflections by virtual work method: Trusses	Lectures	Exams Quizzes
2	4	1	Deflections by virtual work method: Beams	Lectures	Exams Quizzes
3	4	1	Deflections by virtual work method: Frames	Lectures	Exams Quizzes
4	4	1	Analysis of statically indeterminate structures by the force method: Trusses	Lectures	Exams Quizzes
5	4	1	Analysis of statically indeterminate structures by the force method: Beams	Lectures	Exams Quizzes Homework assignments
6	4	1	Analysis of statically indeterminate structures by the force method: Frames	Lectures	Exams Quizzes
7	4	2	Analysis of statically indeterminate structures by the slope deflection method: Beams	Lectures	Exams Quizzes
8	4	2	Analysis of statically indeterminate structures by the slope deflection method: Beams	Lectures	Exams Quizzes
9	4	2	Analysis of statically indeterminate structures by the slope deflection method: Braced frames	Lectures	Exams Quizzes
10	4	2	Analysis of statically indeterminate structures by the slope deflection method: Frames with sidesway	Lectures	Exams Quizzes Homework assignments
11	4	2	Analysis of statically indeterminate structures by the slope deflection method: Frames with sidesway	Lectures	Exams Quizzes
12	4	3	Analysis of statically indeterminate structures by the moment distribution method: Introduction	Lectures	Exams Quizzes
13	4	3	Analysis of statically indeterminate structures by the moment distribution method: Beams	Lectures	Exams Quizzes
14	4	3	Analysis of statically indeterminate structures by the moment distribution method: Braced frames	Lectures	Exams Quizzes
15	4	1, 2, 3	Review	Lectures	Exams Quizzes

Course Evaluation

Assessment Tool(s)**	Date	Weight (%)
Semester activities: These include, Homeworks, Quizzes	At the end of each major topic	**15%**
Mid semester exam **or** Progress Exams	According to department schedule	**25%**
Lab reports		**0%**
Final Exam	Week-16	**60%**
Total		**100%**

11. Learning and Teaching Resources

Required textbooks (curricu books, if any)	R. C. Hibbeler, "STRUCTURAL ANALYSIS", Tenth Edition in Si Units. Published by Pearson Education, Inc. or its affiliates, 2020.
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Structures I
2. Course Code:
CE3301
3. Semester / Year:
First Semester / 2023
4. Description Preparation Date:
20th of June 2024
5. Available Attendance Forms:
Physical attendance only
6. Number of Credit Hours (Total) / Number of Units (Total)
3
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Nahidh H. Kurdi Email: nahidh.kurdi@uoanbar.edu.iq Name: Dr. Shaho Mahmoud Hama Email: shaho_m83@uoanbar.edu.iq
8. Course Objectives

Course Objectives	• Learning the basics notions of internal stresses in statically determinate structures, including shears, moments and axial forces. • Studying those stresses in different statically determinate structures including beams, frames and trusses. • Applying these concepts to influence line and deflections analysis of those statically determinate structures.

9. Teaching and Learning Strategies	
Strategy	Direct lecturing by the instructor, doing homework, and classroom interaction.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1,2	8	Understand the concept of axial force, shear force, and bending	Introduction to basic concepts and review	Lecturing and homework	Exam, homework, and quizzes.

		moment in the context of statically determinate structures, e.g. beams, frames and trusses.			
3,4,5	12	Analyzing statically determinate beams and frames for internal forces.	Analysis of statically determinate beams and frames	Lecturing and homework	Exam, homework, and quizzes.
6,7,8	12	Analyzing statically determinate trusses for internal forces.	Analysis of statically determinate trusses	Lecturing and homework	Exam, homework, and quizzes.
9,10,11,12	16	Understand the concept of an influence line and construct influence lines for various structural functions of statically determinate structures.	Influence lines of statically determinate structures	Lecturing and homework	Exam, homework, and quizzes.
13,14,15	12	Analyzing statically determinate structures for deflections and rotations using geometrical and energy methods.	Deflections of statically determinate structures	Lecturing and homework	Exam, homework, and quizzes.

11. Course Evaluation

Semester activities. These include quizzes, homework, and classroom interactions 10%
Mid semester exam 20%
Progress exam 10%
Final Exam 60%

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	R.C. Hibbeler, Structural Analysis, Prentice Hall, 8th ed., 2007.
Main references (sources)	
Recommended books and references (scientific journals, reports…)	Kenneth M. Leet, Chia-Ming Uang, Anne Gilbert, Fundamentals of Structural Analy McGraw-Hill, 4th ed., 2011.
Electronic References, Websites	NA

Course Description Form

1. Course Name: **Traffic Engineering**
2. Course Code: **CIV019**
3. Semester / Year: **Second /2023-2024**
4. Description Preparation Date: **20/6/2024**
5. Available Attendance Forms: **In class /weekly**
6. Number of Credit Hours (Total) / Number of Units (Total): **3**
7. Course administrator's name (mention all, if more than one name)
Name: **Asst. Prof. Hameed Aswad Mohammed** Email: **hameedaswad@uoanbar.edu.iq**
8. Course Objectives

Course Objectives	1. Describe the character, elements and impacts of human factors and vehicle characteristics on traffic operations and safety; 2. Conduct and analyze the results of volume, speed, and delay studies to assess the performance of transportation infrastructure; 3. Design and analysis different traffic facilities. 4. Conduct a full traffic impact study resulting in the assessment and design of on and off-site mitigation; and 5. Communicate effectively the results of transportation engineering analysis in written and verbal forms.

9. Teaching and Learning Strategies

Strategy	1. Lecture notes 2. Data show 3. Homework and project (online and in class)

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Understanding the fundamental principles of traffic engineering	Syllabus & Introduction to Traffic Engineering	Theoretical	Homework, quizzes, exams
2	4	An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	Principles of Traffic Engineering	Theoretical	Homework, quizzes, exams
3	4	An ability to acquire and apply new knowledge as needed, using appropriate learning strategies	Traffic Stream Parameters	Theoretical	Homework, quizzes, exams
4	4	An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	Macroscopic Parameters	Theoretical	Homework, quizzes, exams
5	4	An ability to acquire and apply new knowledge as needed, using appropriate learning strategies	Road Users Characteristics and Sight Distance	Theoretical	Homework, quizzes, exams
6	4	An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use	Primary Elements of Traffic Flow	Theoretical	Homework, quizzes, exams

		engineering judgment to draw conclusions			
7	4	An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	Relationship Between Basic Traffic Variables	Theoretical	Homework, quizzes, exams
8			**Midterm Exam**		
9	4	An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	Traffic Flow Theory	Theoretical	Homework, quizzes, exams
10	4	An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	Speed Studies	Theoretical	Homework, quizzes, exams
11	4	An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	Capacity and Level-of Service for Highway Segments	Theoretical	Homework, quizzes, exams
12	4	An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	Traffic Signal	Theoretical	Homework, quizzes, exams
13	4	An ability to identify, formulate,	Road Intersections	Theoretical	Homework, quizzes,

		and solve complex engineering problems by applying principles of engineering, science, and mathematics			exams
14	4	An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	Traffic Signs and Road Markings	Theoretical	Homework, quizzes, exams
15			**Final Exam**		

11. Course Evaluation

1. Homework 5%
2. Quizzes 5%
3. Active Class Participation 5%
4. Attendance 5%
5. Midterm Exams 20%
6. Final Exam 60%

12. Learning and Teaching Resources

Main references (sources)	1. Highway Capacity Manual (HCM), Transportation Research Board (TRB), Washington D.C., 2010. 2. Manual on Uniform Traffic Control Devices, FHWA, U.S. Department of Transportation, Washington, D.C., 2009. 3. Walter H. Kraft, Wolfgang S. Homburger, & James L. Pline, Traffic Engineering Handbook, Sixth Edition, Institute of Transportation Engineers (ITE), Washington, D.C., 2010. 4. Bastian J. Schroeder, Christopher M. Cunningham, Daniel J. Findley, Joseph E. Hummer, & Robert S. Foyle, Manual of Traffic Engineering Studies. Second

	Edition, Institute of Transportation Engineers (ITE), Washington, D.C., 1994. 5. Nicholas J. Garber and Lester A. Hoel, Traffic and Highway Engineering, Fifth Edition, Cengage Learning, Toronto, ON, 2015.
Recommended books and references (scientific journals, reports…)	1. Roger P. Roess, Elena S. Prassas, & William R. McShane, Traffic Engineering, Fourth Edition, Pearson Higher Education, Inc., Upper Saddle River, NJ, 2011 2. Thomas R. Currin, Introduction to Traffic Engineering a Manual for Data Collection and Analysis, Second Edition, Cengage Learning, Stamford, CT, 2013.

Course Description Form

1. Course Name:
Design of Prestressed Concrete Structures
2. Course Code:
CE4310
3. Semester / Year:
Second Semester / 2024
4. Description Preparation Date:
28th of June 2024
5. Available Attendance Forms:
Physical attendance only
6. Number of Credit Hours (Total) / Number of Units (Total)
2
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Mohammed Raji Mohammed Email: moh.raji@uoanbar.edu.iq Name: Dr. Nahidh H. Kurdi Email: nahidh.kurdi@uoanbar.edu.iq
8. Course Objectives

Course Objectives	After successfully completing this course, the student will be able to: 1. Calculate prestress losses 2. Design prestressed concrete beams to resist flexure 3. Analyze flexural forces in prestressed concrete beams 4. Design prestressed concrete beams to resist shear 5. Calculate camber and deflection 6. Investigate the bond of prestressing strands

9. Teaching and Learning Strategies	
Strategy	Direct lecturing by the instructor, doing homework, and classroom interaction.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Grasping preliminary	Introduction to Prestressed Concrete	Lecturing and	Exam, homework,

		concepts of prestressing		homework	and quizzes.
2	4	Learning how to calculate prestressing forces for different tendon profiles	Methods of Prestressing. Forces Imposed by Prestressing (Straight, Draped and Kinked Tendon Profiles). Load Balancing. Introductory Examples. Design Requirements: Strength and Serviceability. Material Properties.	Lecturing and homework	Exam, homework, and quizzes.
3	4	Exploring effects of prestressing on shear strength	Design for Serviceability. Design for Shear. Effect of prestress on Shear	Lecturing and homework	Exam, homework, and quizzes.
4	4	Determining serviceability limits in accord with prestressing	Stress limits. Serviceability criteria. Determination of prestress and eccentricity. Cable profiles	Lecturing and homework	Exam, homework, and quizzes.
5	4	Learning how to do different aspects of cracked-section analyses.	Cracked section analysis. Effect of cracking at service loads. Short-term cracked section analysis.	Lecturing and homework	Exam, homework, and quizzes.
6	4	Learning how to calculate prestress losses.	Losses	Lecturing and homework	Exam, homework, and quizzes.
7	4	Estimating the effects of nonprestressing steel	Limit State Design. Rectangular Stress Block. Ultimate Moment Capacity. Effect of Non-Prestressed Steel	Lecturing and homework	Exam, homework, and quizzes.
8	4		Mid-Exam	Lecturing and homework	Exam, homework, and quizzes.
9	4	Exploring prestressed design in indeterminate beams	Indeterminate prestressed concrete design	Lecturing and homework	Exam, homework, and quizzes.
10	4	Effects on shear and flexure	Design for Shear. Effect of prestress on Shear. Flexure-Shear	Lecturing and homework	Exam, homework, and quizzes.
11	4	Grasping differences	Design of Post-	Lecturing	Exam,

		in design between pretensioned and posttensioned members	Tensioned Members and Pretensioned Members	and homework	homework, and quizzes.
12	4	Learning to calculate deflections and estimate crack widths	Deflection and crack control	Lecturing and homework	Exam, homework, and quizzes.
13	4	Special emphasis on axially loaded members	Prestressed compression and tension members	Lecturing and homework	Exam, homework, and quizzes.
14	4	Grasping peculiarities of the design of two-way slabs	Two-way prestressed concrete floor systems	Lecturing and homework	Exam, homework, and quizzes.
15	4	Grasping issues surrounding transfer strength	Transfer Strength: Limit State Design	Lecturing and homework	Exam, homework, and quizzes.

11.

Semester activities. These include quizzes, homework, and classroom interactions 10%
Mid semester exam 20%
Progress exam 10%
Final Exam 60%

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Prestressed Concrete- A Fundamental Approach, Edward Nawy, Prentice Hall International, Fifth edition 2006.
Main references (sources)	
Recommended books and references (scientific journals, reports…)	Gilbert and Mickleborough, The Design Prestressed Concrete, Unwin Hyman, Lond 1990.
Electronic References, Websites	NA

Course Description Form

1. Course Name:
English 4
2. Course Code:
CE4101
3. Semester / Year:
First semester
4. Description Preparation Date:
25-6-2024
5. Available Attendance Forms:
yes
6. Number of Credit Hours (Total) / Number of Units (Total)
2
7. Course administrator's name (mention all, if more than one name)
Name: Dr.Hamid Ahmed Awad Email: hamid.awad@uoanabr.edu.iq
8. Course Objectives

Course Objectives	1. *Develop academic essay writing proficiency* 2. *Promote reading skills* 3. *Expand academic vocabulary through reading* 4. *Promote speaking ability through group discussions and debates* 5. *Promote critical thinking skills*

9. Teaching and Learning Strategies

Strategy	Text book

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	2	1	Unit 1	Text b.	HW
2	2	1	Unit 2	Text b.	QUIZ
3	2	1	Unit 3	Text b.	HW
4	2	2	Unit 4	Text b.	Quiz
5	2	2	Unit 5	Text b.	QUIZ
6	2	2	Unit 6	Text b.	QUIZ
7	2	3	Unit 7	Text b.	HW
8	2	3	Unit 8	Text b.	M. Exam
9	2	3	Unit 9	Text b.	HW
10	2	4	Unit 10	Text b.	QUIZ
11	2	4	Unit 11	Text b.	HW
12	2	4	Unit 12	Text b.	M. Exam
13	2	5	Unit 13	Text b.	QUIZ
14	2	5	Unit 14	Text b.	M. Exam
15	2	5	Unit 15	Text b.	Report

11. Course Evaluation

Monthly exam 10%, Quiz 10%, Homework 10%, Report 10%, Final Exam 60%

12. Learning and Teaching Resources

Required textbooks (curricular books any)	Headway Upper intermediate
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Foundation Engineering I
2. Course Code:
CE4325
3. Semester / Year: First semester
4. Description Preparation Date:
23/6/2024
5. Available Attendance Forms:
Theory and electronic
6. Number of Credit Hours (Total) / Number of Units (Total)
60 hours
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Ahmed Hazim Abdulkareem and Maher Zhaer Email: ahmed1973ed@uoanar.edu.iq
8. Course Objectives

Course Objectives	**-Provide students with a basic understanding of the basic steps involved in a site investigation.** **-Develop an understanding of the behavior of foundations of engineering structures and gain knowledge of design methods that can be applied to practical geotechnical problems** **-Introducing the student to the procedures used to estimate the bearing capacity and settlement of shallow and deep foundations** **-Perform basic analyzes to solve foundation problems with specified procedures and soil properties, and understand its limitations**

9. Teaching and Learning Strategies

Strategy	-Factors affecting the planning of subsurface investigations -Analyze the results of on-site tests and convert measurements and their associated uncertainties into relevant design criteria; -Analysis of the bearing capacity of shallow foundations. -Evaluating the immediate, consolidated and secondary settlement shallow institutions. -Synthesize design concepts of allowable stress, appropriate safety factors, safety margin, and reliability; -Analysis of individual piles, groups and drilled columns for axial capacity; -Evaluating immediate settlements and consolidating de foundations

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	Introduction	Introduction	Theory	homework
2-4	12	Site investigation	Site investigation	Theory	Quiz
5-7	12	Bearing capacity foundation	Bearing capacity foundation	Theory	Quiz
8-9	8	Settlement of foundation	Settlement of foundation	Theory	Homework + Quiz
10-13	16	Design of foundation	Design of foundation	Theory	Homework + Quiz
14-15	8	Slope stability	Slope stability	Theory	Homework + Quiz

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1-Braja M. Das, Principles of

	Foundation engineering, 8th ed.
Main references (sources)	-Donald P. Coduto, Foundation Design Principles and Practices, 2nd ed. -3Joseph E. Bowles, Foundation Analysis and Design, 5th ed.
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name:
Foundation Engineering II
2. Course Code:
CIV029
3. Semester / Year:
Second semester
4. Description Preparation Date:
23/6/2024
5. Available Attendance Forms:
Theory and electronic
6. Number of Credit Hours (Total) / Number of Units (Total)
60 hours
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Ahmed Hazim Abdulkareem and Maher Zhaer Email: ahmed1973ed@uoanar.edu.iq

8. Course Objectives	
Course Objectives	**-Provide students with a basic understanding of the pile foundation** **-Develop an understanding of the behavior of group pile structures and gain knowledge of design methods that can be applied to practical geotechnical problems** **-Introducing the student to the procedures used to estimate the lateral earth pressure** **-Perform basic analyzes to solve retaining wall and sheet piles walls problems with specified procedures and soil properties, and understand its limitations**

9. Teaching and Learning Strategies	
Strategy	-Factors affecting the planning of subsurface investigations

	-Analyze the results of on-site tests and convert measurements and their associated uncertainties into relevant design criteria; -Analysis of the pile and group foundations. -Evaluating the lateral earth pressure. -Synthesize design concepts of retaining wall and sheet pile walls

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1-6	24	Pile foundation and group pile	Pile foundation and group pile	Theory	Homework and Quiz
7-10	16	Lateral Earth pressure	Lateral Earth pressure	Theory	Quiz
11-13	12	Retaining walls	Retaining walls	Theory	Quiz + homework
14-15	8	Sheet pile walls	Sheet pile walls	Theory	Homework + Quiz

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	1-Braja M. Das, Principles of Foundation engineering, 8th ed.
Main references (sources)	-Donald P. Coduto, Foundation Design Principles and Practices, 2nd ed. -3Joseph E. Bowles, Foundation Analysis and Design, 5th ed.
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name: Highway Engineering
2. Course Code: CE 4327
3. Semester / Year: **1st semester/ 2023-2024**
4. Description Preparation Date: **24-June-2024**
5. Available Attendance Forms: **In class**
6. Number of Credit Hours (Total) / Number of Units (Total)
3 Cr.Hrs / 60Hrs (lec.)+ 30Hrs (Lab)
7. Course administrator's name (mention all, if more than one name)
Name: Asst. Prof. Dr. Duraid Muayed Abd Email: Duraid.abd@uoanbar.edu.iq
8. Course Objectives

Course Objectives	**1.** It educates the students on the various components of Highway Engineering. 2. It exposes the students to highway planning, engineering surveys for highway alignment, 3. Design of Geometric Elements of Highways (Horizontal and Vertical curves) 4. The students further learn the desirable properties of highway materials and various practices adopted for construction. 5. It enables the students to develop skill on evaluation of the pavements and to decide appropriate types of maintenance. 6. Know asphalt concrete mix production in asphalt plants and constructing of flexible pavement layers in the site. 7. Know the various pavement distress, causes, failure and required action.

9. Teaching and Learning Strategies	
Strategy	Lectures Tutorial Lab.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	4	1,2	Highway location	Lectures, Lab	Written Exams Quizzes Homework assignments
2	4	1,2	sign speed, factors affecting desi highway types, cross section elements	Lectures, Tutorial, Lab	Written Exams Quizzes Homework assignments
3	4	1.2	Sight distances and horizontal alignment design	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
4	4	1,2	Horizontal alignment design	Lectures, Tutorial,.	Written Exams Quizzes Homework assignments
5	4	1,2	Horizontal alignment design	Lectures, Tutorial,.	Written Exams Quizzes Homework assignments
6	4	1,2	Vertical alignment design	Lectures, Tutorial,.	Written Exams Quizzes Homework assignments
7	4	1,2	Intersections and interchanges	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
8	4	1,2	Highway construction, Pavemen materials (including aggrega combination	Lectures, Tutorial, Lab	Written Exams Quizzes Homework assignments
9	4	1,2	Pavement design – General	Lectures, Tutorial, Lab	Written Exams Quizzes Homework assignments
10	4	1,2	avement design – flexible paveme	Lectures, Tutorial, Lab	Written Exams Quizzes Homework assignments
11	4	1,2	Pavement design- rigid pavemen	Lectures, Tutorial, Lab	Written Exams Quizzes Homework assignments
12	4	1,2	Pavement distress and Maintenance	Lectures, Tutorial, Lab	Written Exams Quizzes Homework assignments
13	4	1,2	Selected topics	Lectures, Tutorial,	Written Exams Quizzes Homework assignments

Course Evaluation

Assessment Tool(s)**	Date	Weight (%)
Semester activities: These include, Homeworks, Quizzes	At the end of each major topic	**15%**
Mid semester exam **or** Progress Exams	According to department	**25%**

	schedule	
Lab reports	Report per each experiment	**10%**
Final Exam	Week-16	**50%**
Total		**100%**

11. Learning and Teaching Resources

Required textbooks (curricu books, if any)	Textbook – Garber, N. J. and L. A. Hoel (2009). Traffic and highway Engineering, Cengage
Main references (sources)	
Recommended books and references (scientific journals, reports…)	
Electronic References, Websites	

Course Description Form

1. Course Name: Highway Materials

2. Course Code: ***CE 4345***

3. Semester / Year: 2nd / 2024

4. Description Preparation Date: 20/6/2024

5. Available Attendance Forms: Class and lab.

6. Number of Credit Hours (Total) / Number of Units (Total) 3

7. Course administrator's name (mention all, if more than one name)

Name: Prof. Dr. Talal H. Fadhil
Email: talalmudadi1@uoanbar.edu

8. Course Objectives

Course Objectives	• **Understand the practical concepts of highway materials and their interaction with the engineering properties of each highway structure layer.** • **Apply the knowledge of highway layer materials and how they are tested and constructed. Also, students can use the standard test method and specification to build the road embankments and hot mix asphalt courses and also able to do mix design of HMA according to Marshall and Superpave mix design methods.**

9. Teaching and Learning Strategies

Strategy	• Student's class attendance and receiving lectures using the data show. • Discussing and analyzing study topics and class discussions.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3		1-Introduction	In the class	Exams, H.W, & quizzes
2	3		2-Types of highway material		
3	3		3-Soil classifications		
4	3		4-Unbonded material types and their engineering properties.		
5	3		5- Standard tests of unbonded materia		
6	3		6- Bonded materials (Hydraulically) a their engineering properties		
7	3		7- Asphalt cement sources, and production		
8	3		8-Standard tests of asphalt cement.		
9	3		9- Aggregate properties and important tests		
10	3		10-Blending of aggregate fractions by using graphical and mathematical methods		
11	3		11- Asphalt concrete mix (methods of mix design)		
12	3		12-Type of asphalt plants (asphalt concrete mix production)		
13	3		13-Flexible pavement construction an maintenance		

11. Course Evaluation

Monthly written exams 30%
Homework 4%
Quizzes 4%
Daily attendance 2%
Final exam 60%

12. Learning and Teaching Resources

Required textbooks (curricular books, if an	Highway Engineering Pavements, Materials and Control of Quality ،By: Athanassios Nikolaides ،٢٠١٥, by Taylor & Francis Group, LLC
Main references (sources)	1- The Superpave Mix Design Manual for New Construction and Overlays. 2- BACKGROUND of SUPERPAVE ASPHALT MIXTURE DESIGN A ANALYSIS.
Recommended books and references	Course supplements will be used to present extra informat not covered in the textbook.

(scientific journals, reports…)	
Electronic References, Websites	https://pavementinteractive.org/reference-desk/design/mix-design/superpave-mix-design/

Course Description Form

1. Course Name: **Hydraulic Structure**

2. Course Code: **CE 4342**

3. Semester / Year: **1st semester/ 2023-2024**

4. Description Preparation Date: **12-June-2024**

5. Available Attendance Forms: **In class**

6. Number of Credit Hours (Total) / Number of Units (Total)

٢ Cr.Hrs / 30Hrs (lec.)+ 15Hrs(Tutorial)

7. Course administrator's name (mention all, if more than one name)

Name: Dr. Atheer Saleem Almawla
Email: eng.atheer84@uoanbar.edu.iq

8. Course Objectives

Course Objectives	1. use the knowledge and skills studied previously, especially, on fluid mechanics, hydraulics and hydrology into this course. 2. to recognize the different types of hydraulic structures, to understand its purpose and function and to select the most appropriate structure and location for a specific problem. 3. to design, to analyze and to proof that the hydraulic structure is save and economical. 4. to broaden skills in team work, communication and planning through small projects.

9. Teaching and Learning Strategies

Strategy	Lectures Tutorial

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	3	1	Fundamentals Classification and Select definitions	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
2	3	1	Seepage under hydraulic structures	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
3	3	1	Open channel flow	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
4	3	1	Hydraulic Design Regulators	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
5	3	1	Design of pipes and Box Culverts	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
6	3	2	Specific Energy	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
7	3	2	Design of Spillway	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
8	3	2	Energy Dissipat Structures	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
9	3	3	Flow-Measuring Structu	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
10	3	3	Design of Dams	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
11	3	3	Critical Depth flow	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
12	3	3	Hydraulic Design of Underflow Gates	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
13	3	3	Foundations of Dams and their Treatment	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
14	3	3	Hydraulic jump	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
15	3	4	the Stilling Basin	Lectures, Tutorial,	Written Exams Quizzes Homework assignments

Course Evaluation

Assessment Tool(s)**	Date	Weight (%)
Semester activities: These include, Homeworks, Quizzes	At the end of each major topic	**20%**
Mid semester exam **or** Progress Exams	According to department schedule	**20%**
Final Exam	Week-16	**60%**
Total		**100%**

11. Learning and Teaching Resources

Required textbooks (curricu books, if any)	Hydraulic Structures by Novak. 4th Edition 2007
Main references (sources)	
Recommended books and references (scientific journals, reports…)	Hydraulic Structures by C S James, Springer Nature Switzerland AG ,2020
Electronic References, Websites	

Course Description Form

1. Course Name: Management and Leadership Skills

2. Course Code: ENG012

3. Semester / Year: Second Semester

4. Description Preparation Date: 15-June-2024

5. Available Attendance Forms:

6. Number of Credit Hours (Total) / Number of Units (Total): 2 hrs. by weekly

7. Course administrator's name (mention all, if more than one name)

Name: Prof. Ayad Sleibi Mustafa
Email: ayad_eng2001@uoanbar.edu.iq

8. Course Objectives

Course Objectives	1- Explain the basic concepts of leadership. 2- Add value to their sphere of influence 3-Give and receive feedback, actively listen, provide supportive communication, and coach a counsel their team members.

9- Teaching and Learning Strategies

Strategy	Lectures ,Seminars ,Case Studies

10. Course Structure

Week	Hours	ILOs	Unit/Module orTopic Title	Teaching Method	Assessment Method
1	2	**Introduction to leadership**		Lectures Seminars Case Studies	Written Examinations Quizzes Homework Assignments Reports

2	2	**Leadership and management styles**		Lectures Seminars Case Studies	Written Examinations Quizzes Assignments Reports
3	2	**Effective team leadership applications**		Lectures Seminars Case Studies	Written Examinations Quizzes Homework Assignments Reports
4	2	Communication Types		Lectures Seminars Case Studies	Written Examinations Quizzes Homework Assignments Reports
5-6	4	Leadership characteristics and types		Lectures Seminars Case Studies	Written Examinations Quizzes Homework Assignments Reports
7-8	4	**Ethical Issues in Engineering Practice**		Lectures Seminars Case Studies	Written Examinations Quizzes Assignments Reports
9-10	4	**Environmental Ethical Issues in Engineering Practice**		Lectures Seminars Case Studies	Written Examinations Quizzes Homework Assignments Reports
11-12	4	Sustainable design and Safety and risk in design		Lectures Seminars Case Studies	Written Examinations Quizzes Assignments Reports
13-15	4	Case studies in the civil Eng. of leadership skills - Denver International Airport (DIA) -Space shuttle Challenger accident: -The Failure of the Teton Dam		Lectures Seminars Case Studies	Case study for engineering problems

11-Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

Term Tests	Quizzes	Reports	Final Exam
20%	10%	10%	60%

12-Learning and Teaching Resources

Required textbooks (curricular books, if any)	Benator, Barry and Thumann, Albert "**Project Management and Leadership Skills for Engineering and Construction Projects**." 2003, The Fairmont Press, Inc., USA
Main references (sources)	Fleddermann, C. B. (2012). **Engineering Eth** Upper Saddle River, NJ: Prentice Hall
Recommended books and references (scientific journals, reports…)	**اخلاقيات ممارسة المهنة الهندسية- نقابة المهندسين العراقية،٢٠٠٧**
Electronic References, Websites	

Course Description Form

1. Course Name: **Sanitary and Environmental Engineering**

2. Course Code: **CIV026**

3. Semester / Year: **1st semester/ 2023-2024**

4. Description Preparation Date: **16-June-2024**

5. Available Attendance Forms: **In class**

6. Number of Credit Hours (Total) / Number of Units (Total)

4 Cr.Hrs / 45Hrs (lec.)+ 15Hrs(Tutorial) + 30Hrs (Lab)

7. Course administrator's name (mention all, if more than one name)

Name: Dr. Ahmed Rahomi Rajab
Email: ahmed.rahomi2@uoanbar.edu.iq

8. Course Objectives

Course Objectives	1. To study the various sources and characteristics of water. 2. To qualify water demand and population forecasting. 3. To study the types and sources of water pollution. 4. To understand the properties and the design criteria of the conventional water treatment plant (WTP).

9. Teaching and Learning Strategies

Strategy	Lectures Tutorial Lab.

10. Course Structure

Week	Hours	Required Learning	Unit or subject name	Learning method	Evaluation method

		Outcomes			
1	**4**	**1**	Introduction - water resources	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
2	**4**	**2**	Water demand and Population forecasting.	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
3	**4**	**3**	Water pollution	Lectures, Tutorial, Lab	Written Exams Quizzes Homework assignments
4	**4**	**4**	Introduction to WTP	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
5	**4**	**4**	Water-intakes design criteria	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
6			**Progress Exam 1**	-------	Written Exams Quizzes Homework assignments
7	**4**	**4**	Pumping station	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
8	**4**	**4**	Flash-mixer units design	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments
9	**4**	**4**	flocculation units design	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
10	**4**	**4**	flocculation units design	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
11			**Progress Exam 2**	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
12	**4**	**4**	Sedimentation tank design	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
13	**4**	**4**	Filtration unit design	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
14	**4**	**4**	Filtration unit design	Lectures, Tutorial,	Written Exams Quizzes Homework assignments
15	**4**	**4**	Disinfection and storage tank design	Lectures, Tutorial, Lab.	Written Exams Quizzes Homework assignments

Course Evaluation

Assessment Tool(s)**	Date	Weight (%)

Semester activities: These include, Homeworks, Quizzes	At the end of each major topic	**16%**
Progress Exams (1 & 2)	According to department schedule	**24%**
Lab reports	Report per each experiment	**10%**
Final Exam	Week-16	**50%**
Total		**100%**

11. Learning and Teaching Resources

Required textbooks (curricu books, if any)	• Warren Viessman Jr., Mark J. Hammer, Elizabeth M. Perez, Paul A. Chadik, Water Supply & Pollution Control, Prentice Hall, 8th ed., 2009.
Main references (sources)	
Recommended books and references (scientific journals, reports…)	• Water and wastewater engineering, by Davis, 2010, Mc. Graw-Hill
Electronic References, Websites	

Course Description Form

1. Course Name:
Steel Structures I
2. Course Code:
CIV023
3. Semester / Year:
First / 2023-2024
4. Description Preparation Date:
20/6/2024
5. Available Attendance Forms:
Class attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
60 hours/
7. Course administrator's name (mention all, if more than one name)
Name: Sheelan Mahmoud Hama Email: drsheelan@uoanbar.edu.iq
8. Course Objectives

Course Objectives	• Introduce to the students, the principal types of steel structures • Provide the students with a basic understanding of the essential steps involved in the design of steel structures. • Develop an understanding of the behavior of steel structures under different types of loading • Perform basic analyses to solve problems relate steel structures with the given procedures, understand their limitations.

9. Teaching and Learning Strategies	
Strategy	Steel structures courses require effective learning and teaching strategies to ensure stud develop a strong understanding of complex concepts and their practical applications. range of strategies that can enhance the learning experience for students in steel struct courses. These strategies include lecture-based teaching, practical applications, probl solving assignments, group work and discussions, technology integration, field trips site visits, guest speakers, assessments and feedback, continuous learning, and encourag self-directed learning. By incorporating these strategies, educators can create an engag and comprehensive learning environment that equips students with the knowledge, sk and critical thinking abilities necessary for success in the field of steel structures design analysis.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1	4	Identify various loading conditions that are important in structural design and determine/select the critical loading.	Introduction: General, Advantages and disadvantages of steel structures, Materials, Type of Structural Steel Sections, Cross-Sections of Some of the more Commonly Used Hot-Rolled Shapes, Loads, Philosophies of Design, and Building Codes.	Lectures	daily preparation, daily oral, monthly, or written exams, reports
Week 2	4	Identify various loading conditions that are important in structural design and determine/select the critical loading.	Specifications, Loads, and Methods of Design: Specifications and Building Codes, Loads, Load and Resistance Factor Design (LRFD) and Allowable, Strength Computation of Loads for LRFD Combined Loads with LRFD Expressions, Computing Combined , Two Methods of Obtaining an Acceptable Level of Safety, Discussion of Sizes of Load Factors and Safety Factors.	Lectures	daily preparation, daily oral, monthly, or written exams, reports
Week 3	4	To perform the appropriate structural analysis based on the loading determined above and design the overall structure, determining the required member sizes capable of supporting the loads.	Analysis of Tension Mem : Introduction, Nom Strengths of Ten Members , Net Areas ,Ef of Staggered Holes , Effec Net Areas ,	Lectures	daily preparat daily oral, mont or written exa reports
Week 4	4	They will have to apply the knowledge they acquired in the prerequisite courses such as determining maximum moments and forces and finding the strength of each member.	Connecting Elements Tension Members, Bl Shear .	Lectures	daily preparat daily oral, mont or written exa reports
Week 5	4	Be knowledgeable with the national, regional, and local codes and engineering standards and be familiar with the professional practice and requirements of	Selection of Sections,	Lectures	daily preparat daily oral, mont or written exa reports

		structural engineers.			
Week 6	4		Built-Up Tension Members.	Lectures	daily preparation, daily oral, monthly, or written exams, reports
Week 7	4		Compression members: General, Residual Stresses, Sections Used for Columns, Development of Column Formulas, *	Lectures	daily preparation, daily oral, monthly, or written exams, reports
Week 8	4		The Euler Formula, End Restraint and Effective Lengths of Columns,	Lectures	daily preparation, daily oral, monthly, or written exams, reports
Week 9	4		Stiffened and Unstiffened Elements,	Lectures	daily preparation, daily oral, monthly, or written exams, reports
Week 10	4		Long, Short, and Intermediate Columns, Column Formulas,	Lectures	daily preparation, daily oral, monthly, or written exams, reports
Week 11	4		Maximum Slenderness Ratios, example problems.	Lectures	daily preparation, daily oral, monthly, or written exams, reports
Week 12	4		Design of Axially Loaded Compression Members: Introduction, AISC Design Tables	Lectures	daily preparation, daily oral, monthly, or written exams, reports
Week 13	4		Frames Meeting Alignment Chart Assumptions	Lectures	daily preparation, daily oral, monthly, or written exams, reports
Week 14	4		Frames not Meeting Alignment Chart Assumptions as to Joint Rotations	Lectures	daily preparation, daily oral, monthly, or written exams, reports
Week 15	4		Stiffness-Reduction Factors, Columns Leaning on Each Other for In-Plane Design	Lectures	daily preparation, daily oral, monthly, or written exams,

					reports

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	• (15th) AISC - Steel Construction Manual 15th Edition-AISC (2017)
Main references (sources)	• McCormac, Jack C.-Structural steel design-(2018)
Recommended books and references (scientific journals, reports…)	• William T. Segui. Steel Design, 6th ed, 2018
Electronic References, Websites	

Course Description Form

1. Course Name:
Steel Structures II
2. Course Code:
CIV02٨
3. Semester / Year:
Second/ 2023-2024
4. Description Preparation Date:
20/6/2024
5. Available Attendance Forms:
Class attendance
6. Number of Credit Hours (Total) / Number of Units (Total)
60 hours/
7. Course administrator's name (mention all, if more than one name)
Name: Sheelan Mahmoud Hama Email: drsheelan@uoanbar.edu.iq
8. Course Objectives

Course Objectives	• Introduce to the students, the principal types of steel structures • Provide the students with a basic understanding of the essential steps involved in the design of steel structures. • Develop an understanding of the behavior of steel structures under different types of loading • Perform basic analyses to solve problems relate steel structures with the given procedures, understand their limitations.

9. Teaching and Learning Strategies	
Strategy	Steel structures courses require effective learning and teaching strategies to ensure stud develop a strong understanding of complex concepts and their practical applications. range of strategies that can enhance the learning experience for students in steel struct courses. These strategies include lecture-based teaching, practical applications, probl solving assignments, group work and discussions, technology integration, field trips site visits, guest speakers, assessments and feedback, continuous learning, and encourag self-directed learning. By incorporating these strategies, educators can create an engag and comprehensive learning environment that equips students with the knowledge, sk and critical thinking abilities necessary for success in the field of steel structures design analysis.

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1	4	Identify various loading conditions that are important in structural design and determine/select the critical loading.	Design of Beams for Moments, shear and deflection: Introduction, Plastic behavior (zone1), beam weight estimates, design of beams - zone1 (full plastic moment), lateral supports of beams, inelastic buckling (zone 2). bending coefficients, moment capacities (zone 2).	Lectures	daily preparation, daily oral, monthly, or written exams, reports
Week 2	4	Identify various loading conditions that are important in structural design and determine/select the critical loading.	design of beams – zone 3, elastic buckling (zone 3), AISC beam design charts, noncompact sections. design for shear, deflections,	Lectures	daily preparation, daily oral, monthly, or written exams, reports
Week 3	4	To perform the appropriate structural analysis based on the loading determined above and design the overall structure, determining the required member sizes capable of supporting the loads.	unsymmetrical bending, and design of purlins.	Lectures	daily preparation, daily oral, monthly, or written exams, reports
Week 4	4	They will have to apply the knowledge they acquired in the prerequisite courses such as determining maximum moments and forces and finding the strength of each member.	Design of base plates for concentrically loaded columns, Bending and axial compression, Beam – Columns, first order and second order moments.	Lectures	daily preparat daily oral, mont or written exa reports
Week 5	4	Be knowledgeable with the national, regional, and local codes and engineering standards and be familiar with the professional practice and requirements of structural engineers.	analysis, effective length, approximate second order analysis method, magnification factors, moment modification facto	Lectures	daily preparat daily oral, mont or written exa reports
Week 6	4		design of beam-columns in braced frames, design of beam-columns in unbraced frames, AISC- Part6 Tables, and equivalent axial load	Lectures	daily preparation, daily oral, monthly, or written exams, reports

Week 7	4		Types of bolts, high-strength bolts, snug-tight joints, pretension joints, slip- critical joints, fully pre-tensioning methods, bearing-type connections, slip-resistance connections	Lectures	daily preparation, daily oral, monthly, or written exams, reports
Week 8	4		, shear strength and bearing strength for bearing type connections (load passes through the center of gravity of connection), strength for slip-critical connections(load passes through center of gravity of connection),	Lectures	daily preparation, daily oral, monthly, or written exams, reports
Week 9	4		sizes of bolt holes, load transfer, lap joint, butt joint, failure of bolted joints, and minimum and maximum spacing and edge distances.	Lectures	daily preparation, daily oral, monthly, or written exams, reports
Week 10	4		Bolts subjected to eccentric shear, AISC-Part7 Tables, bearing-type connections subjected to shear and tension,	Lectures	daily preparation, daily oral, monthly, or written exams, reports
Week 11	4		Elastic analysis method, reduced eccentricity method, instantaneous center of rotation method,	Lectures	daily preparation, daily oral, monthly, or written exams, reports
Week 12	4		slip- critical connections subjected to shear and tension.	Lectures	daily preparation, daily oral, monthly, or written exams, reports
Week 13	4		Welding advantages, types of welding, classification of welds, type of weld, type of joints, fillet welds, plug and slot welds, welding symbols, strength of welds,	Lectures	daily preparation, daily oral, monthly, or written exams, reports
Week 14	4		AISC requirements, size and length limitations of fillet welds, design of simple fillet welds, strength of fillet welds loaded transversely, design of welded connections with both longitudinal and transverse fillet welds,	Lectures	daily preparation, daily oral, monthly, or written exams, reports

Week 15	4		design of fillet welds for truss members, the strength of plug and slot welds.	Lectures	daily preparation, daily oral, monthly, or written exams, reports

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	• (15th) AISC - Steel Construction Manual 15th Edition-AISC (2017)
Main references (sources)	• McCormac, Jack C.-Structural steel design-(2018)
Recommended books and references (scientific journals, reports…)	• William T. Segui. Steel Design, 6th ed, 2018
Electronic References, Websites	