

**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

2024–2025

Annual

Introduction:

The educational program is considered a coordinating and organizing package of academic courses that encompasses procedures and experiences arranged in the form of an academic syllabuses. The main goal of these syllabuses is to improve and build graduates' skills to make them ready for the job market. The program is annually reviewed and evaluated through internal or external audit procedures and programs like the External Examiner Program.

The academic program description offers a brief summary of the main features of the program and its courses. The program indicates the skills offered to students that are developed based on the goals of the academic program. This description represents a cornerstone of the requirements of program accreditation, so it is written by the teaching staff under the supervision of scientific committees of the scientific departments.

This second version of the guide, includes a description of the academic program after updating the subjects and terminologies of the previous guide to respond to the updates and developments of the educational system in Iraq that includes 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 of that the student is expected to achieve, demonstrating whether he or she has widely benefited from 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 progressive, inspiring, stimulating, realistic and applicable.

Program Mission: Briefly outlines the goals and activities necessary to achieve it and determines the program's development paths and directions.

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

Curriculum Structure: All courses/ subjects included in the academic program developed according to the approved learning system (quarterly, annual, Bologna Process) whether it is required by (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 the learning outcomes of each course must be determined in a way that achieves the objectives of the program.

Teaching and learning strategies: They are the strategies adopted by the faculty members to develop students' teaching and learning. 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: **Al-Furat Al-Awsat Technical University**

Faculty/Institute: **Technical Engineering College / Najaf**

Scientific Department: **Bachelor of in building and construction Technical Engineering**

Academic or Professional Program Name:

Bachelor of in building and construction Technical Engineering

Final Certificate Name: **Bachelor of in building and construction Technical Engineering**

Academic System: **Academic year 2024-2025**

Description Preparation Date: **8/06/2025**

File Completion Date: **10/06/2025**

Signature:



Head of Department Name:

Date: 2025/6/17

Signature:



Scientific Associate Name:

Prof. Dr. Assad A. Abass

Date: 2025/6/17

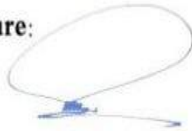
The file is checked by:

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date: 2025/6/17

Signature:




Approval of the Dean



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



University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Building & Construction engineering Technologies
Name lecturer: Israa Rahman
Scientific title: lecturer
Academic qualification: Doctorate
Work location: Building & Construction engineering Technologies

Course Description Form 2023/2024

1- Course Name	Environmental engineering
2- Course Code	
3- Semester / Year	2024/2023
4- Description Preparation Date:	2024/4/1
5- Available Attendance Forms:	Lectures in the presence of students (Online if necessary) and Lab.
6- Number of study hours (total)/number of units (total)	9 unit /30 week
7- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	Dr. Israa Rahman Ghanim Email:esraarahman6@gmail.com

8. Expected learning outcomes of the program		
Knowledge and understanding		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√

A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization .	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on examinations in the fields of civil engineering and all sectors	√
D2	The ability to design mechanically using the latest 3D design and simulation programs, which is a process to meet the required needs within the field of specialization in a realistic framework that imposes environmental, economic, social, political and health restrictions.....	√
D3	The ability to adapt to similar specializations (Water resources engineering, environmental engineering, architecture, renewable energies,)	√
D4	The ability to adapt to similar specializations (communications engineering, refrigeration and air conditioning engineering, mechanical engineering, renewable energies,)	√

9. Teaching and Learning Strategies

Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.
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10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).

a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.

√

b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

11. Objectives of the educational program: Due to the rapid scientific and technological progress in the field of concrete technology, the Building Technology Engineering Department is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, and they are becoming clear.			
A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of the specialty of environmental engineering and keeping pace with rapid scientific development through direct contact with decision-makers for construction engineering in all parts of the world and direct contact with colleges and institutes specialized in environmental and sustainability engineering .	√
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts through field visits to construction and building projects for water and wastewater treatment plants.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with Iraqi and international airport administrations and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√

	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	✓
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	✓
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	✓
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	✓
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	✓
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	✓
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	✓

12. Course structure									
Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method
1	3	Knowledge and understanding	√	Introduction	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters
2	3	Knowledge and understanding	√	Environmental measurements	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters

4-3	6	Knowledge and understanding	√	Material & energy balance	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
6-5	6	Knowledge and understanding	√	Environmental Chemistry	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
8-7	6	Knowledge and understanding	√	Eco system	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to	

								survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters
9-10	6	Knowledge and understanding	√	Environmental risks	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters
11	3	Knowledge and understanding	√	Water Quality	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions

		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
12-13-14-15	12	Knowledge and understanding	√	Water Supply	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
16	3	Knowledge and understanding	√	Water Distribution system	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing	√	Oral exams	√	Interviews or questionnaires to	

					research papers and discussing them collectively				survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
18-17	6	Knowledge and understanding	√	Water Intake structure , pumping station for water and wastewater	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
-20-19 22-21	12	Knowledge and understanding	√	Water Treatment	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	

					discussing them collectively					
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
24-23	6	Knowledge and understanding	√	Wastewater treatment	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
26-25	6	Knowledge and understanding	√	Wastewater Disposal system design	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	

		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
27-28	3	Knowledge and understanding	√	Air resources energy	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
29	3	Knowledge and understanding	√	Solid waste management	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	

		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
30	3	Knowledge and understanding	√	Green Engineering	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
Course structure (practical)										
Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method	
1	3	Knowledge and understanding	√	Temperature test , Taste and odor test	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	

					discussing them collectively					
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
2	3	Knowledge and understanding	√	Color test	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
4-3	3	Knowledge and understanding	√	Determination of : Total solids (T.S.), Volatile Solid (V. S.) , Non- Volatile solid , Suspended solids (S.S.) ,	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	

		thinking skills	√	dissolved Solids (D.S.) and settle-able solids	Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
6-5	3	Knowledge and understanding	√	Electrical Conductivity (E.C.) test and pH Value test	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
8-7	3	Knowledge and understanding	√	Hardness test and Sulphate test	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	

		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
9-10	3	Knowledge and understanding	√	Chloride test and residual Chlorine test	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
11	3	Knowledge and understanding	√	Dissolved Oxygen test and Organic Matter test	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	

		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
12-13-14-15	3	Knowledge and understanding	√	Biochemical oxygen Demand test (BOD), Chemical Oxygen Demand (COD), Oil and grease Test, Phosphate test	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
16	3	Knowledge and understanding	√	Phenols test	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	

		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
18-17	3	Knowledge and understanding	√	Nitrogen Compound determination test : Nitrate (NO₃), Nitrite (NO₂)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
-20-19 22-21	3	Knowledge and understanding	√	Heavy Metals Tests (Atomic Absorption Method)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	

		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
24-23	6	Knowledge and understanding	√	Continue Heavy Metals Tests (Atomic Absorption Method)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
26-25	6	Knowledge and understanding	√	Jar Test	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	

		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
27-28	6	Knowledge and understanding	√	Radiation (α , γ and β)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
29	3	Knowledge and understanding	√	Alkalinity	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	

		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
30	3	Knowledge and understanding	√	Noise Measurement	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

13. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.						
First semester/theoretical	First semester/practical	Second/theoretical semester	Second/practical semester	Work of the year/activities and absences	Final/practical exam	Final/theoretical exam
%10	%10	%10	%10	%10	%10	40%

14. Learning and teaching resources	
Davis M. I. and S. J. Masten “ Principles of environmental engineering and science “ Mcgraw – Hill companies Inc. , USA , 2004.	Required textbooks (methodology, if any)
Swamee P. K. and A. K. Sharma “ Design of water supply pipe network” Wiley interscience , A. John Wiley & sons Inc. Publication , 2008.	Main references (sources)
Mihelcic J. R. and J. B. Zimmorman “ Environmental engineering fundamentals, Sustainability , Design”, john Willey & sons, USA , 2010.	Recommended supporting books and references (scientific journals, reports....)
Academia, Google Scholar	Electronic references, Internet sites



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



University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Building & Construction Eng.Technologies
Name lecturer: mohameed husain
Scientific title: Assistant Lecturer
Academic qualification: Master
Work location: Building & Construction Eng.Technologies

Course Description Form 2023/2024

8- Course Name	Foundation Engineering Technology
9- Course Code	
10- Semester / Year	2024/2023
11- Description Preparation Date:	2024/6/1
12- Available Attendance Forms:	Lectures in the presence of students and online if necessary
13- Number of study hours (total)/number of units (total)	30 week / 6 units
14- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	Mohammed hussin

10. Expected learning outcomes of the program

Knowledge and understanding

A1	Ability to apply knowledge in mathematics, science, and engineering.	√
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A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on examinations in the fields of civil engineering and all sectors	√
D4	The ability to adapt to similar specializations (Water resources engineering, environmental engineering, architecture, renewable energies,)	√

11. Teaching and Learning Strategies

Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.
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10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√

c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

15. Objectives of the educational program: Due to the rapid scientific and technological progress in the field of Foundation Engineering Technology, the Building Technology Engineering Department is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, and they are becoming clear.			
A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of the specialty of Foundation Engineering Technology and keeping pace with rapid scientific development through direct contact with decision-makers for construction engineering in all parts of the world and direct contact with colleges and institutes specialized in construction engineering .	√
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts with field visits , seminars , and training in projects and companies in the building and construction sector.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with the administrations of Iraqi companies, state and international departments, and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√

	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

16. Course structure

Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method	
1-2-3-4-5	20	Knowledge and understanding	√	Soil investigation : Collecting samples , No. of holes , Depth of bore holes , Laboratory tests , . Report writing	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
-8-7-6-10-9-11	24	Knowledge and understanding	√	Bearing capacity theories , Factors affecting bearing capacity , Settlement calculations .	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

12-13-14-15	16	Knowledge and understanding	√	Design of shallow foundations .	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
-17-16 -19-18 20	20	Knowledge and understanding	√	Deep foundations ,Types of piles , Method of execution, Bearing capacity of single pile , Bearing capacity of pile group , Design of piles , Design of piles cap , .. Settlement of piles	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

21	4	Knowledge and understanding	√	Lateral earth pressure	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
23-22	8	Knowledge and understanding	√	Design of concrete retaining walls .	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

25-24	8	Knowledge and understanding	√	.Design of sheet piles	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

27-26	8	Knowledge and understanding	√	Slope stability ,Types & factors affecting slope stability, Methods of analysis . for clays & sand	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
28	4	Knowledge and understanding	√	Soil improvement , Soil improvement by compaction & additives .	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
29-30	8	Knowledge and understanding	√	Introduction to soil reinforcement .	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	

		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

17. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.

quizzes	homework	class activities	mid-exam	Final/theoretical exam
20 %	10%	10%	10%	50%

18. Learning and teaching resources	
Principles of Foundation Engineering , Fifth Edition , By Braja-M. Dass , California University 2006 .	Required textbooks
1-Foundation Analysis & Design / Bowles 2-Foundation Engineering / Peck , Hunson & Tharnborm	Main references (sources)
Google Scholar	Recommended supporting books and references (scientific journals, reports....)
You Tube, Electronic websites	Electronic references, Internet sites



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



University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Building & Construction Eng.Technologies
Name lecturer: rusul abed al hadi
Scientific title: Assistant Lecturer
Academic qualification: Master
Work location: Building & Construction Eng.Technologies

Course Description Form 2023/2024

15-	Course Name	Construction Drawing
16-	Course Code	
17-	Year	2024/2023
18-	Description Preparation Date:	2024/6/1
19-	Available Attendance Forms:	Lectures in the presence of students and online if necessary
20-	Number of study hours (total)/number of units (total)	30 week / 2 units
21-	Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	rusul abed al hadi

12. Expected learning outcomes of the program

Knowledge and understanding

A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√

A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	✓
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	✓
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	✓
B2	Ability to design and conduct experiments as well as analyze and interpret data.	✓
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	✓
B4	Ability to identify and formulate engineering problems in the field of specialization	✓
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization	✓
C2	Recognizing the need and ability to engage in lifelong learning.	✓
C3	Knowledge of contemporary issues in the field of specialization	✓
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	✓
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on examinations in the fields of civil engineering and all sectors	✓
D4	The ability to adapt to similar specializations (Water resources engineering, environmental engineering, architecture, renewable energies,)	✓

13. Teaching and Learning Strategies

Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.
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10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).		
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.		✓
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.		✓
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.		

d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

19. Objectives of the educational program: Due to the rapid scientific and technological progress in the field of Construction Drawing , the Building Technology Engineering Department is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, and they are becoming clear.			
A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of the specialty of Construction Drawing and keeping pace with rapid scientific development through direct contact with decision-makers for construction engineering in all parts of the world and direct contact with colleges and institutes specialized in construction engineering .	√
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts with field visits , seminars , and training in projects and companies in the building and construction sector.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with the administrations of Iraqi companies, state and international departments, and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√

	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

20. Course structure

Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method	
1	3	Knowledge and understanding	√	Introduction to define the civil drawing & all application in engineering & industrial fields between the engineer . & worker	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
2	3	Knowledge and understanding	√	Concrete drawing & how to take the longitudinal & cross sections in multistory buildings . Show details of roofs , beams , columns , stairs , footing .	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

3-4-5	9	Knowledge and understanding	√	Reinforced concrete footings , Wall footing , Isolated , Combined , Strap , Continuous , Raft foundations .	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
6	3	Knowledge and understanding	√	Reinforced concrete columns and cross .sections	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

7-8	9	Knowledge and understanding	√	Shear walls and staircase, type of staircase, reinforcement details	The direct method is .through lectures	√	Written tests	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√ Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation	external assessmeters	
-10-9 11	9	Knowledge and understanding	√	Reinforced concrete beams : Simple beam , simple beam with cantilever , fixed beam , Continuous beam , Girder, type of reinforcement cut-of and bent-up method.	The direct method is .through lectures	√	Written tests	√ Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√ Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√ Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation	external assessmeters	
-13-12 15-14	12	Knowledge and understanding	√	Reinforced concrete slabs (Types of slabs) :	The direct method is .through lectures	√	Written tests	√ Interviews or questionnaires to survey graduates' opinions	

		Subject-specific skills	√	One way slabs , Two way slabs , Flat slabs , Ribbed & hollow – block slabs with all reinforcement details.	The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
16	3	Knowledge and understanding	√	Building joints , Types of joints , Expansion joints , Construction . joints	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

17	3	Knowledge and understanding	√	Introduction to define the steel drawing, steel column base plat connection	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
18	3	Knowledge and understanding	√	Beam – column connections (Riveted , Welded , Bolts)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
19-20	6	Knowledge and understanding	√	Architectural details : Floors & roofs types , Their materials , Finishing methods ,	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	

		Subject-specific skills	√	Doors & windows , Types of doors & windows according to their uses .	The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
21-22	6	Knowledge and understanding	√	Architectural details : Floors & roofs types , Their materials , Finishing methods , Doors & windows , Types of doors & windows according to . their uses	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

23	3	Knowledge and understanding	√	Elevators	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
24-25-26-27	12	Knowledge and understanding	√	Municipal engineering drawing :Water distribution systems : Internal water networks for building (cold & hot) , Water treatment station , Sewage network systems for building .	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
28-29-30	9	Knowledge and understanding	√	Irrigation works drawing : Regulators , Pipes , Box culverts ,	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	

		Subject-specific skills	√	Siphon , Weirs , . . Bridges	The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

21. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.

quizzes	homework	class activities	mid-exam	Final/theoretical exam
20 %	10%	10%	10%	50%

22. Learning and teaching resources	
1-Manual of Standard Practice for Detailing Reinforced Concrete Structures (ACI 315-747) . 2- Reinforced Concrete Designer's Handbook / Reynolds , C.E. & Steedman . J.C. 3- Foundation Analysis & Design / Bowles J.E. 4- A Manual of Engineering Drawing for Students & Drafts / French . T.E. 5-Structural Details in Concrete / M.Y.H. Bangash 6-Irrigation Principles & Practices / Israelsen . 7-The design of prestressed concrete bridges / ROBERT BENIM 8-Detailing for steel construction, second edition, AISC.	Required textbooks
الكود المصري لتصميم المنشآت الكونكرتية رقم 203 / دليل التفاصيل الانشائي-9	Main references (sources)
Google Scholar	Recommended supporting books and references (scientific journals, reports....)
You Tube, Electronic websites	Electronic references, Internet sites



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



University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Building & Construction Eng.Technologies
Name lecturer: atheer hilal
Scientific title: Lecturer
Academic qualification: Doctorate
Work location: Building & Construction Eng.Technologies

Course Description Form 2023/2024

1- Course Name	Design of Steel Structures
2- Course Code	
3- Year	2024/2023
4- Description Preparation Date:	2024/6/1
5- Available Attendance Forms:	Lectures in the presence of students and online if necessary
6- Number of study hours (total)/number of units (total)	30 week / 5 units
7- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	Atheer hilal

14. Expected learning outcomes of the program		
Knowledge and understanding		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on examinations in the fields of civil engineering and all sectors	√
D4	The ability to adapt to similar specializations (Water resources engineering, environmental engineering, architecture, renewable energies,)	√

15. Teaching and Learning Strategies	
Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.

10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√

b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

23. Objectives of the educational program: Due to the rapid scientific and technological progress in the field of Design of Steel Structures, the Building Technology Engineering Department is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, and they are becoming clear.			
A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of the specialty of Design of Steel Structures and keeping pace with rapid scientific development through direct contact with decision-makers for construction engineering in all parts of the world and direct contact with colleges and institutes specialized in construction engineering .	√
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts with field visits , seminars , and training in projects and companies in the building and construction sector.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with the administrations of Iraqi companies, state and international departments, and international training companies.	√

	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

24. Course structure										
Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method	
1-2	6	Knowledge and understanding	√	Introduction: classification of steel structures Structural steel: scope of use, properties and behavior, merits and demerits, shapes of rolled sections; Loads and load combinations; design approaches and . philosophies	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
4-3	6	Knowledge and understanding	√	Tension members: Types, sections and shapes, net & effective net area, design of tension members according to AISC ASD ; examples & problems.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

7-6-5	9	Knowledge and understanding	√	Compression members: introduction, Euler's formula for buckling, allowable compressive stresses according to AISC ASD; Design of compression members: using ASD equations, using allowable stress & allowable load tables, design of laced columns and other built-up sections, column splices examples & problems.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
10-9-8	9	Knowledge and understanding	√	Beam-columns: introduction, stresses in beam-columns, effective length of columns, design of beam-columns according to AISC ASD, method of determination initial trial section, method of equivalent load, examples & ..problems	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

-12-11 -14-13 15	15	Knowledge and understanding	√	Beams: types & sections; review of beam theory, local buckling considerations, lateral torsional buckling considerations; allowable bending stresses & shear stresses according to AISC ASD, local web yielding, deflection limitations according to AISC ASD, design of gantry girders, design of beams using tables & charts; examples & ...problems	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
17-16	6	Knowledge and understanding	√	Design of column base plates: base plates of axially loaded columns; design of base plates under axial load and moment (cases of eccentricity).	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
18-19	6	Knowledge and understanding	√	Simple connections: modes of failure,	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to	

				bearing type connections, friction (or slip critical) type connections, ASD design requirements for bolted, riveted & welded connections; problems.					survey graduates' opinions	
		Subject-specific skills	√			√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
-21-20 22	9	Knowledge and understanding	√	Framed connections (welded and bolted): Classification of framing systems according to AISC; Design of different types of beam-to-beam and beam-to-.column connections	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

-24-23 25	9	Knowledge and understanding	√	Design of trusses: Types; Load Calculation; roofing sheets, sag rods, purlins, design of tension & compression truss ..members	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
27-26	6	Knowledge and understanding	√	Introduction to the design of plate girders: dimensioning flanges and webs, intermediate stiffeners, bearing stiffeners.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
-29-28 30	9	Knowledge and understanding	√	Introduction to computer-based programs for the structural design and	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	

		Subject-specific skills	√	analysis; comparative review of educational and professional software packages.	The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

25. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.				
quizzes	homework	class activities	mid-exam	Final/theoretical exam
20 %	10%	10%	10%	50%

26. Learning and teaching resources	
1.Applied Structural Steel Design, L. Spiegel & G.E. Limbrunner, 4th ed., Prentice Hall, 2002. 2.Manual of steel construction, 13th ed., American Institute of Steel Construction, 2005. 3.Structural Steel Designer’s Handbook, R. L. Brockenbrough, F. S. Merritt, 3rd ed., McGraw-Hill, 1994.	Required textbooks
Building Design and Construction Handbook ; Frederick S. Merritt (Deceased) Jonathan T. Ricketts, Sixth Edition, McGRAW-HILL.	Main references (sources)
Google Scholar	Recommended supporting books and references (scientific journals, reports....)
You Tube, Electronic websites	Electronic references, Internet sites



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



University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Building & Construction Technology
Engineering
Scientific title: Assistant Lecturer
Academic qualification: Master
Work location: Building & Construction Technologies
engineering

Course Description Form 2023/2024

8- Course Name	Computer Applications (3)
9- Course Code	
10- Year	2023-2024
11- Description Preparation Date:	29/6/2024
12- Available Attendance Forms:	Lectures in the presence of students (Online if necessary)
13- Number of study hours (total)/number of units (total)	30 week / 4 unit
14- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	Hawraa Khalid Hannon

16. Expected learning outcomes of the program

Knowledge and understanding

A1	The student must learn the structural analysis & design for all structures types using the most recent methods including programs such as (STAAD. pro, CONCAD, SAFE, CSI Bridge, Prokon, Epanet and AutoCAD land development desktop).	√
Subject-specific skills		
B1	Able to find out internal forces in structural members.	√
B2	can make the shear force ,axial force and bending moments diagrams for beams, frames.	√
B3	make the analysis for trusses and frames.	√
B5	Ready to design concrete and steel members .	
B6	Has the ability to recognize the correct execution of structural members during construction	
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Teaching students the analysis and design of structural elements, trusses, and frames using several computer programs	√

17. Teaching and Learning Strategies

Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments that are interesting to the students.
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10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).		
1- The student will be able to use the various commands of the (STAAD pro) and deal with the graphical interfaces of it		√
2- The student will be able to enter various data for any structure and extract results using staad pro		√
3-The student will be able to analyze and design different structures using STAAD Pro		

4- The student will be able to use the (SAFE) to analyze and design slabs	
5- The student will be able to use (CSI bridge)	√
6- The student will be able to use (EPANT)	√

27. Objectives of the educational program: Given the rapid scientific and technological progress in the field of aircraft technology, the Department of Aviation Technology Engineering is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, which are becoming clear.

A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of the specialty of civil engineering techniques and keeping pace with rapid scientific development through direct contact with decision-makers for civil engineering in all parts of the world and direct contact with specialized colleges and institutes..	√
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts through field visits to local project implementation sites, seminars, and maintenance workshops.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings	√
	D2	Continuous review and evaluation of the activities of students and faculty members	√
	D3	Encouraging student initiatives and achievements in various academic, artistic and religious fields with faculty members	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

12. Course structure

Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method	
1	3	Knowledge and understanding	√	Introduction - General description of the STAAD. pro structural program , Starting the Programs , Creating a new Structure .	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
2	3	Knowledge and understanding	√	Creating the Model (Beam, Column, Slab or plate, wall or surface and solid) using Graphical Interface .	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

3-6	12	Knowledge and understanding	√	Menus bar (file, edit, view, tools, select, geometry)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
7-10	12	Knowledge and understanding	√	Application examples of structural engineering in STAAD. pro program (analysis and design of concrete beam, column, slab, shear walls and multi-story building subjected to floor load, wind load, earthquake load temperature load and pre-stress load)	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
11-13	9	Knowledge and understanding	√	Analysis and design of foundation (isolated,	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to	

				strip raft and pile footing using STAAD.pro and STAAD.foundation programs)				survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters
14	3	Knowledge and understanding	√	Analysis and design of steel structure	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters
15	3	Knowledge and understanding	√	Various applications in civil engineering using structural programs such as :	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions

		Subject-specific skills	√	1. Concad program for analysis and design of concrete beams.	The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
16-17	6	Knowledge and understanding	√	2. SAFE program for analysis and design of slabs.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
18-20	9	Knowledge and understanding	√	4. CSI Bridge for analysis and design of various types of bridges	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and	√	Oral exams	√	Interviews or questionnaires to	

					discussing them collectively				survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
21	3	Knowledge and understanding	√	. Prokon program.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
22-24	9	Knowledge and understanding	√	5. Epanet program for water supply network system	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	

					discussing them collectively					
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
25-28	12	Knowledge and understanding	√	6. AutoCAD land development desktop for roads design	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
29-30	6	Knowledge and understanding	√	Mini project .	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and	√	Oral exams	√	Interviews or questionnaires to	

					discussing them collectively				survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√		Completion files and performance assistant	Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√		Projects and observation	external assessmeters	

11. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.						
First semester/theoretical	First semester/practical	Second/theoretical semester	Second/practical semester	Work of the year/activities and absences	Final/practical exam	Final/theoretical exam
10	10	10	10	10	10	40

13. Learning and teaching resources	
STAAD. pro 2006 Getting Started & Examples Manual / esearch Engineer . 2. Structural Analysis / R.C. Hibbeler . 3. نظرية الانشاءات / د. عبدالفتاح ديوان و أحمد فهمي 4. تصميم المنشآت الخرسانية والمنشآت مسبقة الجهد / د. علاء محمود حسين النجمي	Required Texts
You tube	Websites

University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Building & Construction Eng.Technologies
Name lecturer: zaid nori
Scientific title: Lecturer
Academic qualification: Doctorate
Work location: Building & Construction Eng.Technologies

Course Description Form 2023/2024

1- Course Name	Estimation, Specifications and Contracts
2- Course Code	
3- Year	2024/2023
4- Description Preparation Date:	2024/6/1
5- Available Attendance Forms:	Lectures in the presence of students and online if necessary
6- Number of study hours (total)/number of units (total)	30 week / 6 units
7- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	Dr. zaid nori

18. Expected learning outcomes of the program		
Knowledge and understanding		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on examinations in the fields of civil engineering and all sectors	√
D4	The ability to adapt to similar specializations (Water resources engineering, environmental engineering, architecture, renewable energies,)	√

19. Teaching and Learning Strategies	
Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.

10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

28. Objectives of the educational program: Due to the rapid scientific and technological progress in the field of Estimation, Specifications and Contracts, the Building Technology Engineering Department is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, and they are becoming clear.			
A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of the specialty of Estimation, Specifications and Contracts and keeping pace with rapid scientific development through direct contact with decision-makers for construction engineering in all parts of the world and direct contact with colleges and institutes specialized in construction engineering .	√
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts with field visits , seminars , and training in projects and companies in the building and construction sector.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√

C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	✓
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with the administrations of Iraqi companies, state and international departments, and international training companies.	✓
	D2	Continuous review and evaluation of student and faculty activities	✓
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	✓
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	✓
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	✓
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	✓
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	✓
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	✓
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	✓

29. Course structure										
Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method	
1-2	8	Knowledge and understanding	√	Introduction: engineering projects & estimation, definition of estimation, benefits of estimation, factors affecting cost estimation, types of estimation, practical examples on approximate estimation	The direct method is through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
3	4	Knowledge and understanding	√	General rules in quantitative survey: Principles in selecting units of measurement for items, various units and modes of measurement for different items of works, details of quantities measuring.	The direct method is through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

4	4	Knowledge and understanding	√	rate analysis, factors affecting the cost of materials and labour, Plants and equipment -hour costs based on total costs and Outputs, Overhead charges, rates for various items of construction of civil engineering works, problems and examples on rate analysis	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
6-5	8	Knowledge and understanding	√	Methods of working quantities for various items of works, Measurement and abstract sheets and recording, excavation and fill works for wall footings, estimation of walls and other items of buildings up to D. P. C. level, methods used to calculate the length of various works: method of strips and center lines method, examples and .problems	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

8-7	8	Knowledge and understanding	√	Earthworks for various engineering projects: irrigation channels, roadway embankments, methods used for calculating earthwork quantities and volumes, Mass diagrams, calculations of excavation volumes due to cut works (grid leveling method and triangular method), examples and ..problems	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
9	4	Knowledge and understanding	√	Estimation of masonry works, basic units and materials used, Estimation of walls construction, damp proofing used, brick works, block works, stone works, examples and problems.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
11-10	8	Knowledge and understanding	√	Estimation of concrete works, primary materials used, mixing of	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	

		Subject-specific skills	√	concrete materials, types of concrete mixers, calculating quantities of concrete materials, examples and problems	The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
13-12	8	Knowledge and understanding	√	Estimation of concrete works quantities for spread . footings	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

14	4	Knowledge and understanding	√	Estimation of concrete works quantities for lintels, beams, roofs, .columns and stairs	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
15	4	Knowledge and understanding	√	Estimation of form works quantities for lintels, beams, roofs, tie beams, columns and arches	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
17-16	8	Knowledge and understanding	√	Reinforcement calculations for beams, roofs,	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	

		Subject-specific skills	√	columns and footings, specifications	The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
19-18	8	Knowledge and understanding	√	Finishing works: types, estimation of outside and inside finishing works, plastering, painting, brick and stone coating, glass works, .specifications	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

20	4	Knowledge and understanding	√	Estimation of tiles works: tiles, mosaic, ceramic, porcelain, ... etc, specifications	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
21	4	Knowledge and understanding	√	Estimation of sanitary, sewage, plumbing and electrical works.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
22	4	Knowledge and understanding	√	Estimation of materials used in flexible and rigid pavements,	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	

		Subject-specific skills	√	estimation of curbstones used in curbs	The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
23	4	Knowledge and understanding	√	Estimation of materials used in industrial sheds and steel buildings, columns and base plates, beams and bearing plates, connections, floors ..and roofs	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

24	4	Knowledge and understanding	√	Machines and equipment used in executing various works, Cost of owning and operating construction machines; depreciation, investment and operational costs. Profits, payment and ..indirect project costs	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
26-25	8	Knowledge and understanding	√	Technical specifications: definition, scope, resources and types of specifications, role of specifications in engineering project quality and estimated cost, technical specifications for various works..	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
4	4	Knowledge and understanding	√	rate analysis, factors affecting the cost of materials and labour, Plants and equipment	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	

		Subject-specific skills	√	-hour costs based on total costs and Outputs, Overhead charges, rates for various items of construction of civil engineering works, problems and	The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of	√	Completion files and performance	√	Interviews or questionnaires to survey student	
27	4	Knowledge and understanding	√	Computer-aided estimation, Using spread sheet applications and other software packages in ..estimation	The direct method is through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

28	4	Knowledge and understanding	√	Valuation: Principles, purpose and function of valuation, Factors affecting the valuation of properties, Valuer ...and his duties	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

30-29	8	Knowledge and understanding	√	Contracts: definition, types of contracts, Identification of rules, standards, related to the contracts of civil engineering works and related items, general and special conditions for civil ...engineering works	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

30. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.

quizzes	homework	class activities	mid-exam	Final/theoretical exam
20 %	10%	10%	10%	50%

31. Learning and teaching resources	
1. تخمين ومواصفات الأعمال الإنشائية، المهندس غانم عبد الرحمن بكر. 2. التخمين والمواصفات، مدحت فضيل فتح الله. 3. شروط المقاولات لأعمال الهندسة المدنية بقسميها الأول والثاني، وزارة التخطيط والتعاون الإنمائي، 2005. 4. المواصفات الفنية العامة، المكتب الاستشاري في معهد التكنولوجيا/بغداد، طبعة أولى.	Required textbooks
5. Construction, Planning & Technology, Rajiv Gupta, 1984. 6. Construction, Planning Equipment & Methods, R.L. Peurifoy et al, 7th ed., 2006. 7. General technical conditions and specifications, book -1 / 2, specification of materials workmanship of civil engineering works, 2nd ed., 2002. 8. Building construction handbook, R. Chudley and R. Greeno, 5th ed., Elsevier Butterworth-Heinemann, 2004. 9. Practical Standard Methods of Measurement Cost Estimating in the Design Stage, Hong-Kong, 2001,. 10. The civil engineering handbook / edited by W.F. Chen and J.Y. Richard Liew, 2nd ed., by CRC press LLC, Ch. 1, Construction, 2003.	Main references (sources)
Google Scholar	Recommended supporting books and references (scientific journals, reports....)
You Tube, Electronic websites	Electronic references, Internet sites



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



University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Building & Construction Technologies
engineering
Scientific title: Assistant Lecturer
Academic qualification: Master
Work location: Building & Construction Technologies
engineering

Course Description Form 2023/2024

8- Course Name	Analysis and Design of Reinforced Concrete Structures (2)
9- Course Code	
10- Year	5/3
11- Description Preparation Date:	29/6/2024
12- Available Attendance Forms:	Lectures in the presence of students (Online if necessary)
13- Number of study hours (total)/number of units (total)	30 week / 5 unit
14- Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	م . محمد قاسم رحيم الايمل: mohammed.shaaban@atu.edu.iq

20. Expected learning outcomes of the program

Knowledge and understanding

A1	Ability to define all types of structures and their stability.	√
A2	define the methods of determination of the structure deformation under the load.	√
A3	study the methods of analysis and internal forces determination of determinate and indeterminate structures .	√
A4	study the methods used for analysis of structural elements due to moving loads using the influence lines.	
A5	learn the methods of structural analysis and the theories used, application of different methods of structural analysis and the methods of presenting the actual structure, connection between the theoretical analysis and the actual engineering structures..	

Subject-specific skills

B1	Able to find out internal forces in structural members.	√
B2	can make the shear force ,axial force and bending moments diagrams for beams, frames.	√
B3	make the approximate analysis for trusses and frames.	√
B4	study and know how to find rotation (slopes) and deflection in different structural members and frames.	√
B5	Ready to design concrete and steel members .	
B6	Has the ability to recognize the correct execution of structural members during construction	

thinking skills

C1	The ability to communicate effectively with those concerned with the field of specialization	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√

Generic and transferable skills (other skills related to employability and personal development)

D1	teaching the students types of loads applied on different structural members .	√
D2	teaching the students types of structural members and types of supports.	√

D3	Showing the students through an examples the members in buildings and their behavior .	√
D4	Demonstrates knowledge of the philosophies of transferring loads through structural members.	√
D5	Demonstrates knowledge of the stability of members .	
D6	teaching the students the determinacy and indeterminacy of different structural members (i.e, beams frames ...etc.).	
D7	Teaching students how to find out deflection and slopes of beams frames through the following methods:	
D8	Double integration method, energy methods , slope–deflection method ,moment area method , unit –load method , moment distribution method and so on .	
D9	showing the students ready softwares to make confidence to them through comparison with what they were studied.	

21. Teaching and Learning Strategies

Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by showing the students how the construction members exposed to external loads .This can be done by films or videos or by the ready structural software.
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10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√

k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.

32. Objectives Students will build on their knowledge of reinforced concrete design to understand the behavior of reinforced concrete and to design practical reinforced concrete components.

A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of the specialty of civil engineering techniques and keeping pace with rapid scientific development through direct contact with decision-makers for civil engineering in all parts of the world and direct contact with specialized colleges and institutes..	✓
	A2	Continuous evaluation and development of curricula.	✓
	A3	Linking student projects and research to community needs.	✓
	A4	Expanding students' concepts through field visits to local project implementation sites, seminars, and maintenance workshops.	✓
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern programming technologies	✓
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	✓
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings	✓
	D2	Continuous review and evaluation of the activities of students and faculty members	✓
	D3	Encouraging student initiatives and achievements in various academic, artistic and religious fields with faculty members	✓
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	✓
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	✓
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	✓
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	✓
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	✓
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	✓

15- Course structure

Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method	
-3-2-1 -6-5-4 8-7	24	Knowledge and understanding	√	Analysis and design of slabs: Types of slabs, Design of one way slabs, Temperature and shrinkage reinforcement, Behavior of two-way edge supported slabs, Two-way column supported slabs, Direct design method for column supported slabs, Depth limitation of the ACI code, Equivalent frame method, Shear design in flat plates and flat slabs, Openings in slabs.	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
-10-9 12-11	12	Knowledge and understanding	√		The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to	

				Slender columns: Concentrically loaded columns, Compression plus bending, ACI criteria for non sway frames versus sway frames, ACI moment magnifier method for non sway frames, ACI moment magnifier method for sway frames, Second-order analysis for slenderness effects.					survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
13-14-15	9	Knowledge and understanding	√	Strut and tie models: Strut and tie methodology, ACI provisions for strut and tie	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	

		thinking skills	√	models, Applications.	Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
16-17-18	9	Knowledge and understanding	√	Design of reinforcement at joints: Beam-Column joints, Strut and tie model for joint behavior, Beam to girder joint.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
19-20	6	Knowledge and understanding	√	Concrete building :systems Floor and roof systems, Panel, curtain and bearing walls, shear walls, ACI code provisions for .shear wall design	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	

		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
21-22	6	Knowledge and understanding	√	:Seismic design Structural response, Seismic loading criteria, ACI special provisions for seismic .design	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
24-23	6	Knowledge and understanding	√	:Prestressed Concrete Principles of prestressed concrete, Methods of prestressing, prestressing steel, concrete for prestressed .construction	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	

		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
26-25	6	Knowledge and understanding	√	Prestressed Concrete: Elastic flexural analysis, Flexural strength, Flexural design based on concrete stress limits.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
28-27	6	Knowledge and understanding	√	:Prestressed concrete Shape selection, Tendon profiles. Loss .of prestress	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	

		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
29-30	6	Knowledge and understanding	√	:Prestressed concrete Shear, diagonal tension and web .reinforcement	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

Quizzes	Assignment	classwork	Mid Exam	Quizzes	Final exam
10	10	10	10	10	50

16- Learning and teaching resources	
1. ACI 318-11: Building Code Requirements for Structural Concrete and Commentary 2. "Design of Concrete Structures" by A.H. Nilson, D. Darwin, C.W. Dolan, 14th Ed., McGraw-Hill.	Required Texts
3. K. Wight and J. G. MacGregor, Reinforced Concrete: Mechanics and Design, 5th Edition, Person/Prentice Hall, 2009. 4. E. G. Nawy, Reinforced Concrete: A Fundamental Approach, 6th Edition, Prentice Hall, 2009. 5. C.K. Wang, C.G. Salmon and J. A. Pincheira, Reinforced Concrete Design, 7th Edition, John Wiley & Sons, 2007. 6. J.C. McCormac and R. H. Brown, Design of Reinforced Concrete, 8th Edition, John Wiley & Sons, 2009. 7. M. N. Hassoun, A. Al-Manaseer, Structural Concrete: Theory and Design, 3rd Edition, Addison-Wesley, 2005. G.F. Limbrunner and	Recommended Texts
Academia, Google Scholar	Websites



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



University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Building & Construction Eng.Technologies
Name lecturer: Hamza katiaa
Scientific title: Lecturer
Academic qualification: Doctorate
Work location: Building & Construction Eng.Technologies

Course Description Form 2023/2024

17-	Course Name
	ISO
18-	Course Code
19-	Semester / Year
	2024/2023
20-	Description Preparation Date:
	2024/6/1
21-	Available Attendance Forms:
	Lectures in the presence of students and online if necessary
22-	Number of study hours (total)/number of units (total)
	30 week / 4 units
23-	Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)
	Name: Dr. Hamza katiaa

22. Expected learning outcomes of the program		
Knowledge and understanding		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√

A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	✓
A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	✓
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	✓
B2	Ability to design and conduct experiments as well as analyze and interpret data.	✓
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	✓
B4	Ability to identify and formulate engineering problems in the field of specialization	✓
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization	✓
C2	Recognizing the need and ability to engage in lifelong learning.	✓
C3	Knowledge of contemporary issues in the field of specialization	✓
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	✓
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on examinations in the fields of civil engineering and all sectors	✓
D4	The ability to adapt to similar specializations (Water resources engineering, environmental engineering, architecture, renewable energies,)	✓

23. Teaching and Learning Strategies

Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.
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10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	✓
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	✓
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	
d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	

e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

33. Objectives of the educational program: Due to the rapid scientific and technological progress in the field of ISO, the Building Technology Engineering Department is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, and they are becoming clear.			
A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of the specialty of ISO and keeping pace with rapid scientific development through direct contact with decision-makers for construction engineering in all parts of the world and direct contact with colleges and institutes specialized in construction engineering .	√
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts with field visits , seminars , and training in projects and companies in the building and construction sector.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with the administrations of Iraqi companies, state and international departments, and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√
	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√

	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	✓
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	✓
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	✓
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	✓
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	✓

34. Course structure

Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method	
1	2	Knowledge and understanding	√	Quality definition , Standards , Factors .affecting quality	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
2	2	Knowledge and understanding	√	Quality determinate , Methods for determining quality.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

3	2	Knowledge and understanding	√	Total quality control , Definition , Historical , Elements.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
4	2	Knowledge and understanding	√	Systems used in total quality control & .management	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

5-6-7-8	8	Knowledge and understanding	√	Application of total quality control , Properties , Stages & Advantages of applications , Examples (total quality control in .industry of concrete) .	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
10-9	4	Knowledge and understanding	√	Quality control of material used in production , Specification , Right decision , Example.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
11-12-13	6	Knowledge and understanding	√	Quality control , Methods , Statistical method , Examples.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	

		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
14-15	4	Knowledge and understanding	√	Quality control ..charts	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

16	2	Knowledge and understanding	√	..Quality control cost	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
-18-17 20-19	8	Knowledge and understanding	√	Specification , specification & standardization fundamentals , Properties , Importance , Tolerance, Examples.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
21-22	4	Knowledge and understanding	√	Rings of improving quality.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	

		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
23	2	Knowledge and understanding	√	International organization for standardization ISO , Definition , .Introduction , Using	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

24	2	Knowledge and understanding	√	Advantages of applications of ISO ..9000	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
25	2	Knowledge and understanding	√	ISO 9000 & total quality control management..	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
26-27	4	Knowledge and understanding	√	ISO 9000 family.	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	

		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	
28	2	Knowledge and understanding	√	Civil engineering & .. ISO	The direct method is .through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

29-30	4	Knowledge and understanding	√	ISO 14000 environmental management system ..	The direct method is through lectures	√	Written tests	√	Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of specialization	√	Completion files and performance assistant	√	Interviews or questionnaires to survey student opinions.	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

35. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.

quizzes	homework	class activities	mid-exam	Final/theoretical exam
20 %	10%	10%	10%	50%

36. Learning and teaching resources

1- ISO 9000 / Rolhery 2- طارق الشباكي الجودة في المنظمات الحديثة / مأمون الداركة - د. روجي الشريف / دليل ضبط الجودة في صناعة الخرسانة -3 والبيئة الجودة أنظمة ادارة ISO 9000 , ISO 14000 / أ. د محمد عبدالوهاب العزاوي-4	Required textbooks
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Applying ISO 9000 Quality Management Systems / Arora S.C.	Main references (sources)
Google Scholar	Recommended supporting books and references (scientific journals, reports....)
You Tube, Electronic websites	Electronic references, Internet sites



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



University: Al-Furat Al-Awsat Technical University
College: Engineering Technical College/ NAJAF
Department: Building & Construction Eng. Technologies
Name lecturer:
Scientific title:
Academic qualification:
Work location: Building & Construction Eng. Technologies

Course Description Form 2023/2024

24-	Course Name	The project
25-	Course Code	
26-	Semester / Year	2024/2023
27-	Description Preparation Date:	2024/6/1
28-	Available Attendance Forms:	Lectures in the presence of students and online if necessary
29-	Number of study hours (total)/number of units (total)	8 week / 4 units
30-	Name of the course administrator (if there is more than one teaching staff, all of their names will be mentioned)	

24. Expected learning outcomes of the program		
Knowledge and understanding		
A1	Ability to apply knowledge in mathematics, science, and engineering.	√
A2	Understand the professional and ethical responsibilities of the field of specialization.	√
A3	Ability to evaluate course outcomes with faculty, industry and professional practitioners, as well as employers and graduate students to improve them	√

A4	Teaching leadership skills and the value of quality commitment, ethical behavior and respect for others	√
Subject-specific skills		
B1	Ability to work and integrate into multidisciplinary teams	√
B2	Ability to design and conduct experiments as well as analyze and interpret data.	√
B3	The ability to use modern techniques, engineering skills and tools to practice engineering.	√
B4	Ability to identify and formulate engineering problems in the field of specialization	√
thinking skills		
C1	The ability to communicate effectively with those concerned with the field of specialization	√
C2	Recognizing the need and ability to engage in lifelong learning.	√
C3	Knowledge of contemporary issues in the field of specialization	√
C4	The broad learning necessary to understand the impact of engineering solutions on global economic, environmental and social problems	√
Generic and transferable skills (other skills related to employability and personal development)		
D1	Ability to manage and work on examinations in the fields of civil engineering and all sectors	√
D4	The ability to adapt to similar specializations (Water resources engineering, environmental engineering, architecture, renewable energies,)	√

25. Teaching and Learning Strategies

Strategies	Encourage students' participation in solving exercises, while improving and expanding their critical thinking skills. This will be accomplished through interactive classroom and tutorial programs and by looking at types of simple experiments that include some sampling activities of interest to students.
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10- Outcomes of the bachelor's program in technical engineering according to the guidelines of the National Council for Programmatic Accreditation for Technical Engineering Education, the Academic Accreditation for Engineering and Technology (ABET), and the International Engineering Alliance (IEA).	
a - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
b - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
c- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

d- Designs systems, components, or processes for large-scale engineering problems that fit the objectives of the educational program.	
e- Works effectively as a member or leader in a specialized engineering team.	√
f- Identifies, analyzes and solves large-scale engineering problems.	√
g - Identify and utilize appropriate technical literature as well as apply written documents, oral communications, and graphics in both technical and non-technical environments.	√
h- Participates in self-directed continuing professional development.	√
i - Selects and applies modern knowledge, techniques, skills and devices in large-scale engineering activities.	√
j - Selects and applies knowledge of mathematics, engineering, technology, and other sciences to solve engineering problems that require the application of applied principles, procedures, or methodologies.	√
k- Conducts the required tests, experiments, and measurements, analyzes and interprets their results, and applies experimental results to improve engineering processes.	

37. Objectives of the educational program: Due to the rapid scientific and technological progress in the field of Systematic Training , the Building Technology Engineering Department is working to achieve clear strategic objectives that will help it achieve a prominent position within the academic communities, and they are becoming clear.			
A- Maintaining and improving the quality of the curriculum	A1	Introducing scientifically and internationally updated study materials in the study of the specialty of Systematic Training and keeping pace with rapid scientific development through direct contact with decision-makers for construction engineering in all parts of the world and direct contact with colleges and institutes specialized in construction engineering .	√
	A2	Continuous evaluation and development of curricula.	√
	A3	Linking student projects and research to community needs.	√
	A4	Expanding students' concepts with field visits , seminars , and training in projects and companies in the building and construction sector.	√
B - Modernizing and opening laboratories by providing them with the latest technical equipment and equipment in the field of specialization and managing them with skilled technicians.	B1	Students use the latest modern laboratory and programming technologies	√
C- Providing the best university environment for faculty and students	C1	Providing air-conditioned classrooms equipped with the latest display devices, providing offices for teachers, green spaces, a club, and a library.	√
D- Maintaining the technical development of faculty members	D1	Encouraging participation and effective scientific visits in conferences and technical meetings, especially with the administrations of Iraqi companies, state and international departments, and international training companies.	√
	D2	Continuous review and evaluation of student and faculty activities	√

	D3	Continuous review and evaluation of student and faculty activities Encouraging students' initiatives and achievements in various academic, artistic and religious fields with the teaching staff	√
E- Knowledge production	E1	Conducting distinguished theoretical and applied research for students with the faculty	√
	E2	Encouraging scientific publishing and stimulating the collective work of research groups from different disciplines	√
	E3	Striving to increase sources of funding for practical and theoretical research for students and faculty through publishing in local and international engineering journals	√
F- Initiatives	F1	Initiatives to reduce administrative routine and facilitate work procedures through educational guidance and developing the relationship between students and teachers.	√
G- Activating and strengthening ties with public government agencies and the private sector	G1	Organizing conferences, seminars and educational courses	√
	G2	Encouraging consulting work and providing services at the professional level in all engineering specializations (technology incubator)	√

38. Course structure										
Week	Hours	Required learning outcomes		Name of the unit or topic	Learning method		Direct assessment method		Indirect assessment method	
1-8		Knowledge and understanding	√	Practical training in building & construction engineering (site . work)	The direct method is .through lectures	√	Written tests		Interviews or questionnaires to survey graduates' opinions	
		Subject-specific skills	√		The subjective method is through preparing research papers and discussing them collectively	√	Oral exams	√	Interviews or questionnaires to survey employers' opinions	
		thinking skills	√		Scientific seminars on the most important research carried out in the field of .specialization	√	Completion files and performance assistant		Interviews or questionnaires to survey student .opinions	
		Generic and transferable skills (other skills related to employability and personal development)	√		An interactive method by dividing students into small groups	√	Projects and observation		external assessmeters	

39. Course evaluation: Distributing the grade out of 100 according to the tasks assigned to the student, such as daily preparation, daily, oral, monthly, and written exams, reports, etc.				
quizzes	homework	class activities	mid-exam	Final/theoretical exam
20 %	10%	10%	10%	50%
40. Learning and teaching resources				
				Required textbooks
				Main references (sources)
Google Scholar				Recommended supporting books and references (scientific journals, reports....)

You Tube, Electronic websites	Electronic references, Internet sites
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