

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



# **Academic Program and Course Description Guide**

2024

## **Introduction:**

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

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

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

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

## **Concepts and terminology:**

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

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

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

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

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

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

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

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

## Academic Program Description Form

University Name: Diyala

Faculty/Institute: Engineering

Scientific Department: Civil Engineering

Academic or Professional Program Name: BSc in Civil Engineering

Final Certificate Name: BSc in Civil Engineering

Academic System: Courses

Description Preparation Date: 24/4/2024

File Completion Date: 24/4/2024



Signature:

Head of Department Name:

Prof. Dr. Wissam D. Salman

Date: 24/4/2024



Signature:

Scientific Associate Name:

Assist. prof. Dr. Jabbar Q. Jabbar

Date:

The file is checked by: Assist. prof. Dr. Salah N Farhan

Department of Quality Assurance and University Performance

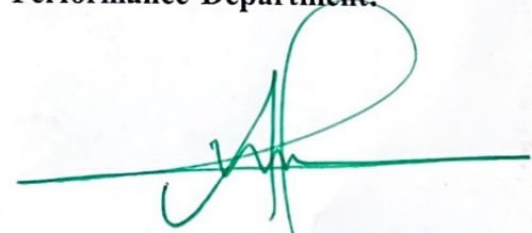
Director of the Quality Assurance and University Performance Department:

Date:

Signature:







Approval of the Dean

Prof. Dr. Anees A. Khadom

25, April 2024

## 1. Program Vision

- 1- The department seeks to continuously develop curricula in line with modern scientific developments in the field of civil engineering, in addition to completing all scientific requirements in the department.
- 2- The department strives to improve the teaching staff by sending members of the department for postgraduate studies inside and outside the country and creating appropriate conditions for scientific research in order to obtain the required academic degrees.
- 3- The department aspires to develop the postgraduate studies program by introducing doctoral studies in various civil engineering specializations to support the department in particular and other government departments in general with specialized scientific cadres.
- 4- The department aspires to involve the largest possible number of teaching staff in engineering consulting through the engineering consulting office and the scientific office in the college to gain scientific experience and to provide service to various state institutions.

## 2. Program Mission

The department is constantly developing curricula to keep pace with modern scientific developments in the field of civil engineering in its various specializations. The department seeks to build advanced scientific laboratories by equipping modern laboratory equipment that contributes significantly to the field of postgraduate studies and scientific research, in addition to seeking to participate in conducting laboratory tests required by engineering projects at the governorate level as a whole.

## 3. Program Objectives

The educational objectives of the Bachelor of Civil Engineering program are to produce graduates (within a few years of graduation):

1. Prepare specialized engineers capable of meeting the needs of society in all sectors and all branches.
2. Work on developing the cognitive capabilities and technological skills necessary to prepare professional leaders in the field of civil engineering.
3. Build and develop programs that serve the field of continuing education and sustainable development of engineering capabilities through the development of advanced consulting and research capabilities.
4. Vertical expansion through the development of higher academic programs and the activation of productive research programs.
5. Work on achieving international accreditation for accredited academic programs

#### 4. Program Accreditation

Not at the moment

#### 5. Other external influences

No

#### 6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
University Requirements	—	—	—	
College Requirements	4	7	10%	
Department Requirements	31	72	90%	
Summer Training				Graduation Requirements
Other				

#### 7. Program Description

Year/Level	Course Code	Course Name	Credit Hours		
			Theoretical	Practical	Discussion
3 <sup>rd</sup> Year- 1 <sup>st</sup> Semester	CE301	Engineering Analysis	2	-	1
	CE303	Theory of Structure-I	3	-	1
	CE305	Soil Mechanic-I	2	2	1
	CE307	Reinforced Concrete - I	3	-	1

	CE309	Highway engineering-I	2	-	1
	CE311	Hydrology	2	-	1
	CE313	Structural Drawing-I	1	2	-
	CE315	Construction management	2	-	1
3 <sup>rd</sup> Year-2 <sup>nd</sup> Semester	CE302	Numerical Methods	2	-	1
	CE304	Theory of Structure-II	3	-	1
	CE306	Soil Mechanic-II	2	2	1
	CE308	Reinforced Concrete - II	3	-	1
	CE310	Highway engineering-II	2	2	1
	CE312	Hydraulic Structure	3	-	1
	CE314	Structural Drawing-II	1	2	-
	E301	Engineering Economy	2	-	-
4 <sup>th</sup> Year-1 <sup>st</sup> Semester	CE401	Reinforced concrete design -I	3	-	1
	CE403	Foundation engineering-I	3	-	1
	CE405	Steel structures design-I	2	-	1
	CE407	Traffic engineering	2	-	1
	CE409	Water Supply Engineering	2	-	1
	CE411	Methods of Construction	2	-	1
	CE413	Water Resources Engineering-I	2	-	1
	E401	Eng. Grad. Project-I	-	4	-
	E403	Engineering Professional Ethics	1	-	-
4 <sup>th</sup> Year-2 <sup>nd</sup> Semester	CE402	Reinforced concrete design -II	3	-	1
	CE404	Foundation engineering-II	3	-	1
	CE406	Steel structures design-II	2	-	1
	CE408	Transportation Engineering	2	-	1
	CE410	Sanitary and Environmental Engineering	3	2	-
	CE412	Estimation and Specifications	2	-	1
	CE414	Water Resources Engineering-II	2	-	1
	E402	Eng. Grad. Project-II	-	4	-



## 8. Expected learning outcomes of the program

### Knowledge

1. The ability to identify, formulate and solve engineering problems in civil engineering by applying the principles of engineering, science and mathematics.
2. The ability to produce engineering designs that meet the required needs within certain constraints by applying the processes of analysis, synthesis and design
3. The ability to create and implement appropriate measurements and tests with quality assurance, analysis and interpretation of the results and the ability to make engineering judgments on them to reach conclusions.

### Skills

- 1- The ability to realize the need to continue self-development of professional knowledge and how to find, evaluate, collect and apply it correctly.
- 2- The ability to work effectively within work teams, set goals, plan activities, meet deadlines and manage risks and uncertainty.

### Ethics

- 1- The ability to communicate effectively verbally with a group of people and in writing with different levels of knowledge and for different purposes.
- 2- The ability to recognize ethical and professional responsibilities in engineering issues and make sound judgments that take into account the consequences arising from them in the financial, environmental, societal and global fields.

## 9. Teaching and Learning Strategies

- Providing students with the basics and additional topics related to previous educational outcomes and skills to solve practical problems.
- Solving a group of practical examples by the academic staff.
- Students participate during the lecture in solving some practical problems.
- The department's scientific laboratories are monitored by the academic staff.

## 10. Evaluation methods

- Daily exams with practical and scientific questions.
- Participation marks for difficult competition questions among students.
- Assigning grades to homework assignments and reports assigned to them.
- Monthly exams for the curriculum in addition to the final exam.

<b>11. Faculty</b>						
<b>Faculty Members</b>						
<b>Academic Rank</b>	<b>Specialization</b>		<b>Special Requirements/Skills (if applicable)</b>		<b>Number of the teaching</b>	
	<b>General</b>	<b>Special</b>			<b>Staff</b>	<b>Lecturer</b>
<b>Prof.</b>	Civil Eng.	Structure			4	
<b>Asst. Prof.</b>	Civil Eng.	Structure			4	
<b>LECT.</b>	Civil Eng.	Structure			1	
<b>Asst. LECT.</b>	Civil Eng.	Structure			4	
<b>Prof.</b>	Civil Eng.	Soil and foundation mechanics			2	
<b>Asst. Prof.</b>	Civil Eng.	Soil and foundation mechanics			1	
<b>Asst. LECT.</b>	Civil Eng.	Soil and foundation mechanics			3	
<b>Prof.</b>	Civil Eng.	Water resources			1	
<b>Asst. Prof.</b>	Civil Eng.	Water resources			1	
<b>LECT.</b>	Civil Eng.	Water resources			1	
<b>Asst. LECT.</b>	Civil Eng.	Water resources			1	
<b>Prof.</b>	Civil Eng.	Project Management			1	
<b>LECT.</b>	Civil Eng.	Project Management			1	
<b>Asst. Prof.</b>	Civil Eng.	Geomatics			1	
<b>LECT.</b>	Civil Eng.	Building Materials			1	

## **Professional Development**

### **Mentoring new faculty members**

Faculty members are instructed to hold regular meetings and review questionnaires received from students with the Scientific Committee.

### **Professional development of faculty members**

The teaching staff undergoes development through training, workshops, and seminars. Progress is evaluated by subject performance.

## **12. Acceptance Criterion**

According to the rules and regulations of Ministry of Higher Education and Scientific Research.

## **13. The most important sources of information about the program**

- ✓ College website.
- ✓ The department's website and contact the department by email.

## **14. Program Development Plan**

- The courses are updated annually to keep up with developments in computer science
- The laboratories are also updated under academic curricula.
- Additionally, postgraduate programs are now being offered.

Program Skills Outline															
				Required program Learning outcomes											
Year/ Level	Course Code	CourseName	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
3 <sup>rd</sup> Year- 1 <sup>st</sup> Semester	CE301	Engineering Analysis	Basic	√											
	CE303	Theory of Structure-I	Basic	√											
	CE305	Soil Mechanic-I	Basic	√											
	CE307	Reinforced Concrete - I	Basic	√	√										
	CE309	Highway engineering-I	Basic										√		
	CE311	Hydrology	Basic									√			
	CE313	Structural Drawing-I	Basic						√						
	CE315	Construction management	Basic					√							
3 <sup>rd</sup> Year-2 <sup>nd</sup> Semester	CE302	Numerical Methods	Basic			√									
	CE304	Theory of Structure- II	Basic		√										
	CE306	Soil Mechanic-II	Basic	√	√										
	CE308	Reinforced Concrete - II	Basic		√										
	CE310	Highway engineering-II	Basic	√	√										
	CE312	Hydraulic Structure	Basic		√										
	CE314	Structural Drawing-II	Basic			√									
	E301	Engineering Economy	Basic					√							
4 <sup>th</sup> Year-1 <sup>st</sup>	CE401	Reinforced concrete design –I	Basic						√						

Semester	CE403	Foundation engineering-I	Basic									√			
	CE405	Steel structures design-I	Basic									√			
	CE407	Traffic engineering	Basic	√											
	CE409	Water Supply Engineering	Basic	√											
	CE411	Methods of Construction	Basic	√											
	CE413	Water Resources Engineering-I	Basic		√										
	E401	Eng. Grad. Project-I	Basic			√									
	E403	Engineering Professional Ethics	Basic					√							
4 <sup>th</sup> Year-2 <sup>nd</sup> Semester	CE402	Reinforced concrete design –II	Basic					√							
	CE404	Foundation engineering-II	Basic						√				√		
	CE406	Steel structures design-II	Basic										√		
	CE408	Transportation Engineering	Basic									√			
	CE410	Sanitary and Environmental Engineering	Basic									√			
	CE412	Estimation and Specifications	Basic	√	√										
	CE414	Water Resources Engineering-II	Basic		√	√									
	E402	Eng. Grad. Project-II	Basic							√				√	

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

## Course Description

1. Course Name:	
<b>Design of reinforced concrete structures I</b>	
2. Course Code:	
<b>CE401</b>	
3. Semester / Year: 1 <sup>st</sup> Semester –	
<b>1st Semester – 4th Year</b>	
4. Description Preparation Date:	
<b>24/4/2024</b>	
5. Available Attendance Forms:	
<b>Class Lectures</b>	
6. Number of Credit Hours (Total) / Number of Units (Total)	
<b>45/3</b>	
7. Course administrator's name (mention all, if more than one name)	
<b>Name: <i>Khattab S. Abdul-Razzaq</i></b>	
8. Course Objectives	
<b>Course Objectives</b>	<ul style="list-style-type: none"> <li>• Enabling the student to design and analyze reinforced concrete structures.</li> </ul>
9. Teaching and Learning Strategies	
<b>Strategy</b>	<ul style="list-style-type: none"> <li>• The weekly lectures included providing students with the basics and topics related to the pre-skills learning outcomes to solve practical problems through presentation, lecture or conducting experiments.</li> <li>• Solving a set of practical and applied examples by faculty members.</li> <li>• Through discussion, students participate in solving some practical problems.</li> <li>• Asking the student to visit the library and the Internet to obtain additional knowledge about the study materials.</li> <li>• Delivering a seminar to the student in front of his fellow students to boost his self-confidence</li> </ul>

10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1 to Week 4	12	Analysis and design	DDM	Lectures Notes	Daily exams + monthly exams
Week 5 to Week 8	12	Analysis and design	DDM	Lectures Notes	Daily exams + monthly exams
Week 9 to Week 12	12	Analysis and design	YL	Lectures Notes	Daily exams + monthly exams
Week 13 to Week 15	9	Analysis and design	YL	Lectures Notes	Submit a complete project

11. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exam, report ... etc	
12. Learning and Teaching Resources	
Books Required reading:	<b>ACI 318-19, American Concrete Institute, Committee 318, 2019</b>
Main references (sources)	
Recommended books and references (scientific journals, reports...).	
Electronic references, Internet sites...	Any other materials available on the Internet.

## Course Description

1. Course Name:	
<b>Design of reinforced concrete structures I</b>	
2. Course Code:	
<b>CE402</b>	
3. Semester / Year: 1 <sup>st</sup> Semester –	
<b>2nd Semester – 4th Year</b>	
4. Description Preparation Date:	
<b>24/4/2024</b>	
5. Available Attendance Forms:	
<b>Class Lectures</b>	
6. Number of Credit Hours (Total) / Number of Units (Total)	
<b>45/3</b>	
7. Course administrator's name (mention all, if more than one name)	
<b>Name: <i>Khattab S. Abdul-Razzaq</i></b>	
8. Course Objectives	
<b>Course Objectives</b>	<ul style="list-style-type: none"> <li>• Enabling the student to design and analyze reinforced concrete structures.</li> </ul>
9. Teaching and Learning Strategies	
<b>Strategy</b>	<ul style="list-style-type: none"> <li>• The weekly lectures included providing students with the basics and topics related to the pre-skills learning outcomes to solve practical problems through presentation, lecture or conducting experiments.</li> <li>• Solving a set of practical and applied examples by faculty members.</li> <li>• Through discussion, students participate in solving some practical problems.</li> <li>• Asking the student to visit the library and the Internet to obtain additional knowledge about the study materials.</li> <li>• Delivering a seminar to the student in front of his fellow students to boost his self-confidence</li> </ul>



10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1 to Week 4	12	Analysis and design	Shear in Slabs	Lectures Notes	Daily exams + monthly exams
Week 5 to Week 8	12	Analysis and design	Shear in Slabs	Lectures Notes	Daily exams + monthly exams
Week 9 to Week 12	12	Analysis and design	Prestressing	Lectures Notes	Daily exams + monthly exams
Week 13 to Week 15	9	Analysis and design	Prestressing	Lectures Notes	Submit a complete project

11. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exam, report ... etc	
12. Learning and Teaching Resources	
Books Required reading:	<b>ACI 318-19, American Concrete Institute, Committee 318, 2019</b>
Main references (sources)	
Recommended books and references (scientific journals, reports...).	
Electronic references, Internet sites...	Any other materials available on the Internet.

## Course Description

1. Course Name:	
<b>Design of Steel Structures I</b>	
2. Course Code:	
<b>CE405</b>	
3. Semester / Year: 1 <sup>st</sup> Semester –	
<b>1st Semester – 4th Year</b>	
4. Description Preparation Date:	
<b>24/4/2024</b>	
5. Available Attendance Forms:	
<b>Class Lectures</b>	
6. Number of Credit Hours (Total) / Number of Units (Total)	
<b>45/3</b>	
7. Course administrator's name (mention all, if more than one name)	
<b>Name: <i>Mohammed Sh. Mahmood</i></b>	
8. Course Objectives	
<b>Course Objectives</b>	<ul style="list-style-type: none"> <li>• Enabling the student to design and analyze steel structures with all their details and enabling the student to adopt engineering programs in designing and analyzing steel structures.</li> </ul>
9. Teaching and Learning Strategies	
<b>Strategy</b>	<ul style="list-style-type: none"> <li>• The weekly lectures included providing students with the basics and topics related to the pre-skills learning outcomes to solve practical problems through presentation, lecture or conducting experiments.</li> <li>• Solving a set of practical and applied examples by faculty members.</li> <li>• Through discussion, students participate in solving some practical problems.</li> <li>• Asking the student to visit the library and the Internet to obtain additional knowledge about the study materials.</li> <li>• Delivering a seminar to the student in front of his fellow students to boost his self-confidence</li> </ul>

10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1 to Week 3	9	Skill and knowledge	Introduction	Lectures Notes	Daily exams + monthly exams
Week 4 to Week 8	15	Skill and knowledge	Design of Tension Members	Lectures Notes	Daily exams + monthly exams
Week 9 to Week 13	15	Skill and knowledge	Design of Compression Members	Lectures Notes	Daily exams + monthly exams
Week 14 to Week 15	6	Skill and knowledge	Project	Lectures Notes	Submit a complete project

11. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exam, report ... etc	
12. Learning and Teaching Resources	
Books Required reading:	1- Ibrahim, A., Mahmood, M., Mansor, A., and Abdulmahdi, I., Structural steel design according to LRFD. 2012, Diyala / Iraq: University of Diyala. 2- Salmon, C., Johnson, J., and Malhas, F., Steel Structures Design and Behavior. 5th ed. 2009, New Jersey, USA: Pearson Education, Inc.
Main references (sources)	1- AISC. 2017. Steel Construction Manual. 15th edition. USA, American Institute of Steel Construction. 2- AISC. 2016. Specification for Structural Steel Buildings. USA, American Institute of Steel Construction.
Recommended books and references (scientific journals, reports...).	All the reputable scientific journals related to the broad concept of steel structures.
Electronic references, Internet sites...	Any other materials available on the Internet.

## Course Description

1. Course Name:	
<b>Design of Steel Structures I</b>	
2. Course Code:	
<b>CE406</b>	
3. Semester / Year: 1 <sup>st</sup> Semester –	
<b>2nd Semester – 4th Year</b>	
4. Description Preparation Date:	
<b>24/4/2024</b>	
5. Available Attendance Forms:	
<b>Class Lectures</b>	
6. Number of Credit Hours (Total) / Number of Units (Total)	
<b>45/3</b>	
7. Course administrator's name (mention all, if more than one name)	
<b>Name: <i>Mohammed Sh. Mahmood</i></b>	
8. Course Objectives	
<b>Course Objectives</b>	<ul style="list-style-type: none"> <li>• Enabling the student to design and analyze steel structures with all their details and enabling the student to adopt engineering programs in designing and analyzing steel structures.</li> </ul>
9. Teaching and Learning Strategies	
<b>Strategy</b>	<ul style="list-style-type: none"> <li>• The weekly lectures included providing students with the basics and topics related to the pre-skills learning outcomes to solve practical problems through presentation, lecture or conducting experiments.</li> <li>• Solving a set of practical and applied examples by faculty members.</li> <li>• Through discussion, students participate in solving some practical problems.</li> <li>• Asking the student to visit the library and the Internet to obtain additional knowledge about the study materials.</li> <li>• Delivering a seminar to the student in front of his fellow students to boost his self-confidence</li> </ul>

10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1 to Week 3	9	Skill and knowledge	Design of flexural members.	Lectures Notes	Daily exams + monthly exams
Week 4 to Week 13	30	Skill and knowledge	Design of connections.	Lectures Notes	Daily exams + monthly exams
Week 14 to Week 15	6	Skill and knowledge	Computer Applications.	Lectures Notes	Submit a complete project

11. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exam, report ... etc	
12. Learning and Teaching Resources	
Books Required reading:	3- Ibrahim, A., Mahmood, M., Mansor, A., and Abdulmahdi, I., Structural steel design according to LRFD. 2012, Diyala / Iraq: University of Diyala. 4- Salmon, C., Johnson, J., and Malhas, F., Steel Structures Design and Behavior. 5th ed. 2009, New Jersey, USA: Pearson Education, Inc.
Main references (sources)	3- AISC. 2017. Steel Construction Manual. 15th edition. USA, American Institute of Steel Construction. 4- AISC. 2016. Specification for Structural Steel Buildings. USA, American Institute of Steel Construction.
Recommended books and references (scientific journals, reports...).	All the reputable scientific journals related to the broad concept of steel structures.
Electronic references, Internet sites...	Any other materials available on the Internet.

## Course Description

1. Course Name:	
<b>Engineering Professional Ethics</b>	
2. Course Code:	
<b>E401</b>	
3. Semester / Year:	
<b>1st Semester – 4th Year</b>	
4. Description Preparation Date:	
<b>24/4/2024</b>	
5. Available Attendance Forms:	
<b>Class Lectures</b>	
6. Number of Credit Hours (Total) / Number of Units (Total)	
<b>45/3</b>	
7. Course administrator's name (mention all, if more than one name)	
<b>Name: <i>Sultan Noori Al-karawi</i></b>	
8. Course Objectives	
<b>Course Objectives</b>	<ul style="list-style-type: none"> <li>• Enable the student to identify ethical and professional responsibilities and develop engineering skills, solve engineering ethics problems.</li> </ul>
9. Teaching and Learning Strategies	
<b>Strategy</b>	<ul style="list-style-type: none"> <li>• The weekly lectures included providing students with the basics and topics related to the pre-skills learning outcomes to solve practical problems through presentation, lecture or conducting experiments.</li> <li>• Solving a set of practical and applied examples by faculty members.</li> <li>• Through discussion, students participate in solving some practical problems.</li> <li>• Asking the student to visit the library and the Internet to obtain additional knowledge about the study materials.</li> </ul>

10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1 to Week 2	6	Analysis and Design	Definition of engineering ethics	Lectures Notes	Daily exams + monthly exams
Week 3 to Week 4	6	Analysis and Design	General concept of professional ethics	Lectures Notes	Daily exams + monthly exams
Week 5 to Week 6	6	Analysis and Design	General components of professional ethics	Lectures Notes	Daily exams + monthly exams
Week 7 to Week 8	6	Analysis and Design	Engineering regulations and laws	Lectures Notes	Daily exams + monthly exams
Week 9 to Week 10	6	Analysis and Design	Engineering ethics	Lectures Notes	Daily exams + monthly exams
Week 11 to Week 12	6	Analysis and Design	Engineering disasters	Lectures Notes	Daily exams + monthly exams
Week 13 to Week 14	6	Analysis and Design	ABET Code	Lectures Notes	Daily exams + monthly exams
Week 15	3	Analysis and Design	NSPE Code	Lectures Notes	Daily exams + monthly exams

11. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exam, report ... etc	
12. Learning and Teaching Resources	
Books Required reading:	<b>Water Supply and Sewerage E.W.Steel</b>
Main references (sources)	
Recommended books and references (scientific journals, reports...).	
Electronic references, Internet sites...	<b>Any other materials available on the Internet.</b>

## Course Description

1. Course Name:	
<b>Foundation Engineering I</b>	
2. Course Code:	
<b>CE403</b>	
3. Semester / Year: 1 <sup>st</sup> Semester –	
<b>1st Semester – 4th Year</b>	
4. Description Preparation Date:	
<b>24/4/2024</b>	
5. Available Attendance Forms:	
<b>Class Lectures</b>	
6. Number of Credit Hours (Total) / Number of Units (Total)	
<b>60/3</b>	
7. Course administrator's name (mention all, if more than one name)	
<b>Name: <i>Hassan Obaid Abbas</i></b>	
8. Course Objectives	
<b>Course Objectives</b>	<ul style="list-style-type: none"> <li>• The student learns how to conduct site investigations and find soil bearing capacity and foundation settlement.</li> </ul>
9. Teaching and Learning Strategies	
<b>Strategy</b>	<ul style="list-style-type: none"> <li>• The weekly lectures included providing students with the basics and topics related to the pre-skills learning outcomes to solve practical problems through presentation, lecture or conducting experiments.</li> <li>• Solving a set of practical and applied examples by faculty members.</li> <li>• Through discussion, students participate in solving some practical problems.</li> <li>• Asking the student to visit the library and the Internet to obtain additional knowledge about the study materials.</li> <li>• Delivering a seminar to the student in front of his fellow students to boost his self-confidence</li> </ul>



10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1	4	Skill and knowledge	Introduction	Lectures Notes	Daily exams + monthly exams
Week 2	4	Skill and knowledge	Site investigations	Lectures Notes	Daily exams + monthly exams
Week 3	4	Skill and knowledge	Determining the number and depth of probes	Lectures Notes	Daily exams + monthly exams
Week 4	4	Skill and knowledge	Excavation methods	Lectures Notes	Daily exams + monthly exams
Week 5	4	Skill and knowledge	Field investigations	Lectures Notes	Daily exams + monthly exams
Week 6	4	Skill and knowledge	Introduction to soil bearing capacity	Lectures Notes	Daily exams + monthly exams
Week 7	4	Skill and knowledge	Soil bearing capacity using the Terzaki method	Lectures Notes	Daily exams + monthly exams
Week 8	4	Skill and knowledge	Soil bearing capacity using the Meyerhof, Wiesig and Hansen method	Lectures Notes	Daily exams + monthly exams
Week 9	4	Skill and knowledge	Soil bearing capacity for foundations loaded eccentrically or with inclined loads	Lectures Notes	Daily exams + monthly exams
Week 10	4	Skill and knowledge	Soil bearing capacity for foundations located on a slope or above a slope	Lectures Notes	Daily exams + monthly exams
Week 11	4	Skill and knowledge	Bearing capacity of rocks	Lectures Notes	Daily exams + monthly exams
Week 12	4	Skill and knowledge	Soil bearing capacity by field investigations	Lectures Notes	Daily exams + monthly exams
Week 13	4	Skill and knowledge	Slump and its types	Lectures Notes	Daily exams + monthly exams
Week 14	4	Skill and knowledge	Methods for finding primary settlement	Lectures Notes	Daily exams + monthly exams
Week 15	4	Skill and knowledge	Primary and secondary settlement	Lectures Notes	Daily exams + monthly exams

<b>11. Course Evaluation</b>	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exam, report ... etc	
<b>12. Learning and Teaching Resources</b>	
Books Required reading:	<b>FOUNDATION ANALYSIS AND DESIGN By : Joseph E. Bowles, RE., S.E., 5<sup>th</sup> Edition, 1996, published by McGraw-Hill.</b>
Main references (sources)	<b>Principle of Foundation by Das</b>
Recommended books and references (scientific journals, reports...).	
Electronic references, Internet sites...	Any other materials available on the Internet.

## Course Description

1. Course Name:	
<b>Foundation Engineering II</b>	
2. Course Code:	
<b>CE404</b>	
3. Semester / Year: 1 <sup>st</sup> Semester –	
<b>2nd Semester – 4th Year</b>	
4. Description Preparation Date:	
<b>24/4/2024</b>	
5. Available Attendance Forms:	
<b>Class Lectures</b>	
6. Number of Credit Hours (Total) / Number of Units (Total)	
<b>60/3</b>	
7. Course administrator's name (mention all, if more than one name)	
<b>Name: <i>Hassan Obaid Abbas</i></b>	
8. Course Objectives	
<b>Course Objectives</b>	<ul style="list-style-type: none"> <li>• The student learns how to design single and combined foundations and pile foundations.</li> </ul>
9. Teaching and Learning Strategies	
<b>Strategy</b>	<ul style="list-style-type: none"> <li>• The weekly lectures included providing students with the basics and topics related to the pre-skills learning outcomes to solve practical problems through presentation, lecture or conducting experiments.</li> <li>• Solving a set of practical and applied examples by faculty members.</li> <li>• Through discussion, students participate in solving some practical problems.</li> <li>• Asking the student to visit the library and the Internet to obtain additional knowledge about the study materials.</li> <li>• Delivering a seminar to the student in front of his fellow students to boost his self-confidence</li> </ul>

10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1	4	Skill and knowledge	Introduction to shallow foundations	Lectures Notes	Daily exams + monthly exams
Week 2	4	Skill and knowledge	Design of single foundation	Lectures Notes	Daily exams + monthly exams
Week 3	4	Skill and knowledge	Design of combined foundations	Lectures Notes	Daily exams + monthly exams
Week 4	4	Skill and knowledge	Finding the lateral pressure of soil	Lectures Notes	Daily exams + monthly exams
Week 5	4	Skill and knowledge	Rankin's theorem with solved applications	Lectures Notes	Daily exams + monthly exams
Week 6	4	Skill and knowledge	Coulomb's theorem with solved applications	Lectures Notes	Daily exams + monthly exams
Week 7	4	Skill and knowledge	Analysis of retaining walls	Lectures Notes	Daily exams + monthly exams
Week 8	4	Skill and knowledge	Types of retaining walls and how to find their inductiveness	Lectures Notes	Daily exams + monthly exams
Week 9	4	Skill and knowledge	Panel curtains and their types	Lectures Notes	Daily exams + monthly exams
Week 10	4	Skill and knowledge	Solved applications on panel curtains	Lectures Notes	Daily exams + monthly exams
Week 11	4	Skill and knowledge	Analysis of unlimited slopes	Lectures Notes	Daily exams + monthly exams
Week 12	4	Skill and knowledge	Analysis of limited slopes	Lectures Notes	Daily exams + monthly exams
Week 13	4	Skill and knowledge	Introduction to piles and their types	Lectures Notes	Daily exams + monthly exams
Week 14	4	Skill and knowledge	Finding the bearing capacity of a single pile	Lectures Notes	Daily exams + monthly exams
Week 15	4	Skill and knowledge	Pile group	Lectures Notes	Daily exams + monthly exams

## 11. Course Evaluation

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

## 12. Learning and Teaching Resources

Books Required reading:	<b>FOUNDATION ANALYSIS AND DESIGN By : Joseph E. Bowles, RE., S.E., 5<sup>th</sup> Edition, 1996, published by McGraw-Hill.</b>
Main references (sources)	<b>Principle of Foundation by Das</b>
Recommended books and references (scientific journals, reports...).	
Electronic references, Internet sites...	Any other materials available on the Internet.

## Course Description

1. Course Name:	
<b>Water Resources Engineering I</b>	
2. Course Code:	
<b>CE413</b>	
3. Semester / Year: 1 <sup>st</sup> Semester –	
<b>1st Semester – 4th Year</b>	
4. Description Preparation Date:	
<b>24/4/2024</b>	
5. Available Attendance Forms:	
<b>Class Lectures</b>	
6. Number of Credit Hours (Total) / Number of Units (Total)	
<b>45/3</b>	
7. Course administrator's name (mention all, if more than one name)	
<b>Name: <i>Saad Shauket Sammen</i></b>	
8. Course Objectives	
<b>Course Objectives</b>	<ul style="list-style-type: none"> <li>• Introducing the student to the types of water resources within the country and how to exploit and manage them.</li> </ul>
9. Teaching and Learning Strategies	
<b>Strategy</b>	<ul style="list-style-type: none"> <li>• The weekly lectures included providing students with the basics and topics related to the pre-skills learning outcomes to solve practical problems through presentation, lecture or conducting experiments.</li> <li>• Solving a set of practical and applied examples by faculty members.</li> <li>• Through discussion, students participate in solving some practical problems.</li> <li>• Asking the student to visit the library and the Internet to obtain additional knowledge about the study materials.</li> <li>• Delivering a seminar to the student in front of his fellow students to boost his self-confidence</li> </ul>

10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1 to Week 4	12	Skills and Knowledge	Water Resources in Iraq	Lectures Notes	Daily exams + monthly exams
Week 5 to Week 8	12	Skills and Knowledge	Surface Water Hydrology	Lectures Notes	Daily exams + monthly exams
Week 9 to Week 12	12	Skills and Knowledge	Surface Water Hydrology	Lectures Notes	Daily exams + monthly exams
Week 13 to Week 15	9	Skills and Knowledge	Groundwater Hydrology	Lectures Notes	Submit a complete project

11. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exam, report ... etc	
12. Learning and Teaching Resources	
Books Required reading:	<b>Engineering hydrology (Subramanya)</b>
Main references (sources)	<b>Irrigation Engineering (S.K.Sharma)</b> <b>Open channel Hydraulics (Ven Te Chow)</b> <b>Water Resources Management (Louis Theodore)</b>
Recommended books and references (scientific journals, reports...).	
Electronic references, Internet sites...	<b>Any other materials available on the Internet.</b>

## Course Description

1. Course Name:	
<b>Water Resources Engineering II</b>	
2. Course Code:	
<b>CE414</b>	
3. Semester / Year: 1 <sup>st</sup> Semester –	
<b>2nd Semester – 4th Year</b>	
4. Description Preparation Date:	
<b>24/4/2024</b>	
5. Available Attendance Forms:	
<b>Class Lectures</b>	
6. Number of Credit Hours (Total) / Number of Units (Total)	
<b>45/3</b>	
7. Course administrator's name (mention all, if more than one name)	
<b>Name: <i>Saad Shauket Sammen</i></b>	
8. Course Objectives	
<b>Course Objectives</b>	<ul style="list-style-type: none"> <li>• Introducing the student to the types of water resources within the country and how to exploit and manage them.</li> </ul>
9. Teaching and Learning Strategies	



<b>Strategy</b>	<ul style="list-style-type: none"> <li>• The weekly lectures included providing students with the basics and topics related to the pre-skills learning outcomes to solve practical problems through presentation, lecture or conducting experiments.</li> <li>• Solving a set of practical and applied examples by faculty members.</li> <li>• Through discussion, students participate in solving some practical problems.</li> <li>• Asking the student to visit the library and the Internet to obtain additional knowledge about the study materials.</li> <li>• Delivering a seminar to the student in front of his fellow students to boost his self-confidence</li> </ul>
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### 10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1 to Week 2	6	Skills and Knowledge	Introduction.	Lectures Notes	Daily exams + monthly exams
Week 3 to Week 4	6	Skills and Knowledge	Methods of irrigation	Lectures Notes	Daily exams + monthly exams
Week 5 to Week 6	6	Skills and Knowledge	Border irrigation	Lectures Notes	Daily exams + monthly exams
Week 7 to Week 8	6	Skills and Knowledge	Furrow irrigation	Lectures Notes	Daily exams + monthly exams
Week 9 to Week 10	6	Skills and Knowledge	Basin Irrigation	Lectures Notes	Daily exams + monthly exams
Week 11 to Week 12	6	Skills and Knowledge	Sprinkler Irrigation	Lectures Notes	Daily exams + monthly exams
Week 13 to Week 14	6	Skills and Knowledge	Drip irrigation	Lectures Notes	Daily exams + monthly exams
Week 15	3	Skills and Knowledge	Networks of irrigation and drainage	Lectures Notes	Submit a complete project

<b>11. Course Evaluation</b>	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exam, report ... etc	
<b>12. Learning and Teaching Resources</b>	
Books Required reading:	<b>Engineering hydrology (Subramanya)</b>
Main references (sources)	<b>Irrigation Engineering (S.K.Sharma)</b> <b>Open channel Hydraulics (Ven Te Chow)</b> <b>Water Resources Management (Louis Theodore)</b>
Recommended books and references (scientific journals, reports...).	
Electronic references, Internet sites...	<b>Any other materials available on the Internet.</b>

## Course Description

1. Course Name:	
<b>Water Supply Engineering</b>	
2. Course Code:	
<b>CE409</b>	
3. Semester / Year: 1 <sup>st</sup> Semester –	
<b>1st Semester – 4th Year</b>	
4. Description Preparation Date:	
<b>24/4/2024</b>	
5. Available Attendance Forms:	
<b>Class Lectures</b>	
6. Number of Credit Hours (Total) / Number of Units (Total)	
<b>45/3</b>	
7. Course administrator's name (mention all, if more than one name)	
<b>Name: <i>Nahida Hameed Hamza</i></b>	
8. Course Objectives	
<b>Course Objectives</b>	<ul style="list-style-type: none"> <li>• Enable the student to successfully apply basic mathematical, scientific and engineering principles in formulating and solving problems in sanitary engineering.</li> </ul>
9. Teaching and Learning Strategies	
<b>Strategy</b>	<ul style="list-style-type: none"> <li>• The weekly lectures included providing students with the basics and topics related to the pre-skills learning outcomes to solve practical problems through presentation, lecture or conducting experiments.</li> <li>• Solving a set of practical and applied examples by faculty members.</li> <li>• Through discussion, students participate in solving some practical problems.</li> <li>• Asking the student to visit the library and the Internet to obtain additional knowledge about the study materials.</li> <li>• Delivering a seminar to the student in front of his fellow students to boost his self-confidence</li> </ul>

10. Course Structure					
Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
Week 1 to Week 2	6	Analysis and Design	Sanitary Engineering and water Consumption	Lectures Notes	Daily exams + monthly exams
Week 3 to Week 4	6	Analysis and Design	Collection works	Lectures Notes	Daily exams + monthly exams
Week 5 to Week 6	6	Analysis and Design	Coagulation and Flocculation	Lectures Notes	Daily exams + monthly exams
Week 7 to Week 8	6	Analysis and Design	sedimentation	Lectures Notes	Daily exams + monthly exams
Week 9 to Week 10	6	Analysis and Design	Filtration	Lectures Notes	Daily exams + monthly exams
Week 11 to Week 12	6	Analysis and Design	Disinfection	Lectures Notes	Daily exams + monthly exams
Week 13 to Week 15	9	Analysis and Design	Distribution works	Lectures Notes	Daily exams + monthly exams

11. Course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exam, report ... etc	
12. Learning and Teaching Resources	
Books Required reading:	<b>Water Supply and Sewerage E.W.Steel</b>
Main references (sources)	
Recommended books and references (scientific journals, reports...).	
Electronic references, Internet sites...	<b>Any other materials available on the Internet.</b>