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

2025-2026

Introduction:

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

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

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

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

Concepts and terminology:

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

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

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

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

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

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

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

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

Academic Program Description Form

University Name: University of Basrah

Faculty/Institute: College of Engineering

Scientific Department: Department of Civil Engineering

Academic or Professional Program Name: Bachelor of Civil Engineering

Final Certificate Name: Bachelor of Civil Engineering

Academic System: Course System 3rd and 4th stages only

Description Preparation Date: 10 \09 \ 2026

File Completion Date:10 \ 09 \ 2026

Signature:

Head of Department Name: أ.د. هشام طه ياسين
رئيس قسم الهندسة المدنية

Date: 20/9/2026

Signature:

Scientific Associate Name: أ.د. منير عبدالجليل اسماعيل
معاون العميد للشؤون العلمية

Date: 20 Sept. 2026

The file is checked by: Dr. Ali K. Marzook

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date: 20 - 9 - 2026

Signature:

Approval of the Dean

Dr. Mofeed Turky Rashid

20 - 9 - 2026

1. **Program Vision**
The program aims to be one component of these corporations have interest in engineering education in Iraq throughout a distinct program which has known on both the local and international levels. This department provides an educational engineering environment high in quality along with researchers and services that enrich the profession, raise up the community, and provide civil engineers with high efficiency to build and serve their country. The program mainly plans to continuously upgrade and develop the level of scientific curricula, academic training, and engineering services to suit the department's nobility and honorable history.

2. **Program Mission**
The program aims to fulfill the Iraqi community requirements and all the regions of civil engineers by providing high-quality programs in education and scientific research. It aims also to serve the community by providing the best educational opportunities to graduate distinct students capable to follow up on the last scientific developments according to extensive quality standards. It also takes on his responsibility to students support to increase their abilities and enhance their field and technical skills to enable them to enter the work market and make success in it, in addition, to continuing their education and development in their chosen professions, as well as providing an educational creative environment leads the department staff to more and better productivity.

3. **Program Objectives**
The Civil Engineering program is dedicated to preparing and qualifying specialized engineers who can meet the demands of both the public and private labor markets. This is achieved through diversified teaching and learning methods, practical training, and the application of acquired knowledge and skills to solve real-world problems. The program provides distinguished academic curricula, both theoretical and practical, aligned with international standards of academic quality. It promotes scientific research in civil engineering fields, fosters a supportive environment for faculty development in education and research, and strengthens partnerships with governmental institutions, private sectors, and society to contribute to sustainable development

4. Program Accreditation

None

5. Other external influences

None

6. Program Structure

Program Structure	Number of Courses	Credit hours	Percentage	Reviews*
Institution Requirements	5	10	5%	Basic
College Requirements	8	39	19.7%	Basic
Department Requirements	46	149	75.3%	Basic
Summer Training	1			Basic
Other				

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

7. Program Description

Year/Level	Course Code	Course Name	Credit Hours	
			theoretical	practical
Third/1st Semester	CE311-1	Engineering Analysis	2	-
Third/1st Semester	CE312-1	Theory of Structures I	3	-
Third/1st Semester	CE313-1	Soil Mechanics I	2	2
Third/1st Semester	CE314-1	Reinforced Concrete Design I	3	-
Third/1st Semester	CE315-1	Irrigation	2	-
Third/1st Semester	CE316-1	Engineering Management	2	-
Third/1st Semester	CE317-1	Traffic Engineering	2	1
Third/1st Semester	CE318-2	Computer Applications I	-	2
Third/2nd Semester	CE311-2	Numerical Analysis	2	2
Third/2nd Semester	CE312-2	Theory of Structures II	3	-
Third/2nd Semester	CE313-2	Soil Mechanics II	2	2
Third/2nd Semester	CE314-1	Reinforced Concrete Design II	3	-
Third/2nd Semester	CE315-2	Drainage	2	-
Third/2nd Semester	CE316-2	Engineering Economy	2	-
Third/2nd Semester	CE317-2	Transportation Engineering	2	-
Third/2nd Semester	CE318-2	Computer Applications II	-	2

Forth/ 1st Semester	**CE411**	**Prestressed Concrete**	**2**	**-**
Forth/ 1st Semester	**CE412-1**	**Foundation Engineering I**	**3**	**-**
Forth/ 1st Semester	**CE413-1**	**Steel Structures Design I**	**2**	**-**
Forth/ 1st Semester	**CE414**	**Hydraulic Structures**	**3**	**-**
Forth/ 1st Semester	**CE415-1**	**Highway Engineering**	**2**	**1**
Forth/ 1st Semester	**CE416-1**	**Water Supply Engineering**	**2**	**1**
Forth/ 1st Semester	**CE417-1**	**Construction Methods**	**2**	**-**
Forth/ 1st Semester	**CE420-2**	**Engineering Project I**	**-**	**4**
Forth/ 2nd Semester	**CE412-2**	**Foundation Engineering II**	**3**	**-**
Forth/ 2nd Semester	**CE413-2**	**Steel Structures Design II**	**2**	**-**
Forth/ 2nd Semester	**CE418**	**Engineering Hydrology**	**2**	**-**
Forth/ 2nd Semester	**CE415-1**	**Highway Pavement Analysis & Design**	**2**	**2**
Forth/ 2nd Semester	**CE416-2**	**Sanitary Sewage Engineering**	**2**	**2**
Forth/ 2nd Semester	**CE417-2**	**Estimation and Specifications**	**2**	**-**
Forth/ 2nd Semester	**CE419**	**Engineering Ethics**	**2**	**-**
Forth/ 2nd Semester	**CE420-2**	**Engineering project II**	**-**	**4**

8. Expected learning outcomes of the program	
Knowledge	
Knowledge and understanding	1.Studying of the Cartesian coordinates and basics of analytic geometry. 2. Learning group of methods to drawing functions by different manners. 3. Using concept of limits and approximations to illustrate and understanding mathematic differential concepts. 4.Using concept of limit to justify calculus and differentiation
Skills	
Subject-specific Skills	1. An ability to supervise or carry out various civil engineering works. 2. An ability to think and solve problems that arise during the implementation of the work. 3. An ability to write scientific reports and read engineering drawings. 4. An ability to keep pace with developments in engineering materials and methods of implementation
Thinking Skills	1.Attention: Attracting students' attention through questions during the lecture.

	2. Response: Follow up the student's interaction with the material displayed on the screen. 3. Attention: Follow up the interest of the student who interacted the most with the presented material. 4. Forming the direction: meaning that the student is sympathetic to the presentation and may have an opinion about the direction of the presented topic and defend it. 5. Formation of value behavior: meaning that the student reaches the top of the emotional ladder, so that he has a stable level in the lesson and does not become lazy or fidgety.
Ethics	
	1.Develop the student's ability to deal with technical means. 2. Develop the student's ability to deal with the Internet. 3. Develop the student's ability to deal with multiple means. 4. Develop the student's ability to dialogue and discussion.

9. **Teaching and Learning Strategies**
1. Explanation and clarification through lectures. 2. Displaying scientific materials with projectors: data show, smart boards, plasma screens. 3. Self-learning through homework and mini-projects within the lectures. 4. Laboratories. 5. Graduation projects. 6. Scientific visits. 7. Seminars held in the department. 8. Summer training.

10. Evaluation methods
1. Short exams (quizzes). 2. Homework.

3. Quarterly and final exams for theoretical and practical subjects.
4. Small projects within the lesson.
5. Interacting within the lecture.
6. Reports

11.Faculty

Faculty Members

Academic Rank	Specialization		Special Requirements/Skills (if applicable)		Number of the teaching staff	
	General	Special			Staff	Lecturer
Professor	Civil engineering	Water resources			7	
Professor	Civil engineering	Hydraulic Structures			1	
Professor	Civil engineering	Soil and Foundation			1	
Professor	Civil engineering	Soil mechanics			1	
Professor	Civil engineering	Transportation			1	
Professor	Civil engineering	Structures			8	
Professor	Civil engineering	Municipal Engineering			3	
Assistant Professor	Civil engineering	Structures			17	
Assistant Professor	Civil engineering	Water resources			1	
Assistant Professor	Civil engineering	Sanitary engineering			2	
Assistant Professor	Civil engineering	Healthy Buildings			2	
Assistant Professor	Civil engineering	Traffic engineering			1	
Assistant Professor	Civil engineering	Project management			1	
Lecturer	Civil engineering	Project management			1	
Lecturer	Civil engineering	Structures			11	
Lecturer	Civil engineering	Water Resources			8	

Assistant Lecturer	Civil engineering	Water resources			4	
Assistant Lecturer	Civil engineering	Project management			1	
Assistant Lecturer	Civil engineering	Structures			6	

Professional Development
Mentoring new faculty members
Training courses in teaching method Conduct a test of teaching validity
Professional development of faculty members
Attend training courses Workshop Attend Conference

12. Acceptance Criterion

Central admission:

The Civil Engineering Department is subject to the work mechanism of the Ministry of Higher Education and Scientific Research - Central Admission Department, where graduates of the preparatory school (scientific branch) are nominated for admission to the department based on the graduation rates. In addition, students are accepted in the parallel morning study as well as the evening study. Likewise, some of the top ten graduates of technical institutes are accepted, others from the top five percent of professional studies and some distinguished employees of state ministries.

13. The most important sources of information about the program

1. The websites of Iraqi and foreign universities.
2. Scientific libraries.
3. Workshops held by the Ministry of Higher Education in addition to the Ministry's standards.
4. The American Academic Accreditation Program (ABET).

14. Program Development Plan

-**Based on Course Assessments and Fourth year students survey, add** new chapters, topics, or scientific experiments that fit the department's objectives.

-Provide the student with self-learning skills through the nature of vocabulary, study curricula and approved teaching methods.

-Encouraging students to work as teams within practical projects that reflect the life reality of the community and its problems.
-Encouraging students to enter and participate in competitions, seminars and conferences that develop and develop their research ability and self-confidence for self-learning.
- Improve curriculums by adding more items like teamwork, leadership and modern technology.

Program Skills Outline																
				Required program Learning outcomes												
Year/Level	Course Code	Course Name	Basic or optional	Knowledge				Skills				Ethics			
				A1	A2	A3	A4	B1	B2	B3	B4	C1	C2	C3	C4
Third Year//1st Semester	CE311-1	Engineering Analysis	Basic	√	√	√	√	√	√	√	√	√	√	√	√
	CE312-1	Theory of Structures I	Basic	√	√	√	√	√	√		√	√	√	√	√
	CE313-1	Soil Mechanics I	Basic	√	√	√	√	√	√		√	√	√	√	√
	CE314-1	Reinforced Concrete Design I	Basic	√	√	√	√	√	√		√	√	√	√	√
	CE315-1	Irrigation	Basic	√	√	√	√	√	√	√		√	√	√	√
	CE316-1	Engineering Management	Basic	√	√	√		√	√			√	√	√	√
	CE317-1	Traffic Engineering	Basic	√	√	√	√	√	√		√	√	√	√	√
	CE318-2	Computer Applications I	Basic	√	√	√	√	√	√	√	√	√	√	√	√
	CE311-2	Numerical Analysis	Basic	√	√	√	√	√	√	√	√	√	√	√	√
Third Year/2nd Semester	CE312-2	Theory of Structures II	Basic	√	√	√	√	√	√		√	√	√	√	√
	CE313-2	Soil Mechanics II	Basic	√	√	√	√	√	√	√	√	√	√	√	√
	CE314-1	Reinforced Concrete Design	Basic	√	√	√		√	√		√	√	√	√	√
	CE315-2	Drainage	Basic	√	√	√	√	√	√	√		√	√	√	√
	CE316-2	Engineering Economy	Basic	√	√	√	√	√	√			√	√	√	√
	CE317-2	Transportation Engineering	Basic	√	√	√		√	√		√	√	√	√	√
	CE318-2	Computer Applications II	Basic	√				√				√	√	√	√
	CE411	Prestressed Concrete	Basic	√	√	√	√	√	√	√	√	√	√	√	√
	CE412-1	Foundation Engineering I	Basic	√	√	√	√	√	√		√	√	√	√	√
	CE413-1	Steel Structures Design I	Basic	√	√	√		√	√	√	√	√	√	√	√

Fourth Year//1st Semester	CE414	Hydraulic Structures	Basic	√				√				√	√	√	√
	CE415-1	Highway Engineering	Basic	√	√	√	√	√	√		√	√	√	√	√
	CE416-1	Water Supply Engineering	Basic	√	√	√	√	√	√		√	√	√	√	√
	CE417-1	Construction Methods	Basic	√	√	√	√	√	√		√	√	√	√	√
	CE420-2	Engineering Project I	Basic												
	CE412-2	Foundation Engineering II	Basic	√	√	√	√	√	√	√	√	√	√	√	√
Fourth Year/ 2nd Semest	CE413-2	Steel Structures Design II	Basic	√	√	√		√	√		√	√	√	√	√
	CE418	Engineering Hydrology	Basic	√	√	√	√	√	√	√	√	√	√	√	√
	CE415-1	Highway Pavement Analysis	Basic	√	√	√	√	√	√		√	√	√	√	√
	CE416-2	Sanitary Sewage Engineering	Basic	√	√	√		√	√			√	√	√	√
	CE417-2	Estimation and Specifications	Basic	√	√	√	√	√	√	√	√	√	√	√	√
	CE419	Engineering Ethics	Basic	√	√	√		√	√			√	√	√	√
	CE420-2	Engineering project II	Basic												

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

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

Introducing advanced mathematical solutions that face the student when studying various engineering topics and engineering analysis methods. It includes the definition of ordinary differential equations of the first and higher order, partial differential equations, how to solve them, their various geometric applications, and the definition of Fourier series and its applications.

1. Teaching Institution	University of Basrah
2. University Department/Centre	Civil Engineering Department
3. Course title/code	Engineering Analysis
4. Modes of Attendance offered	Class attendance or online
5. Semester/Year	1st semester / 3rd year
6. Number of hours tuition (total)	60 hrs
7. Date of production/revision of this specification	2024
8. Aims of the Course	
Recognize the following vocabulary: 1- Ordinary differential equations of the first degree. 2- Engineering applications of first-order differential equations. 3- The set of simultaneous ordinary differential equations. 4- Ordinary differential equations of the second degree and higher with fixed and variable coefficients. 5- Fourier series.	

6- Partial differential equations.

9· Learning Outcomes, Teaching, Learning and Assessment Method
A- Knowledge and Understanding A1- Preparing applied engineers in the field of civil engineering who are distinguished by a high level of knowledge and analytical creativity in line with the internationally approved standards in quality assurance and academic accreditation for the corresponding engineering programs, while adhering to the ethics of the engineering profession. A2- Enabling knowledge and understanding of practical applications in numerical ways and in accordance with the objectives of the course. A3- The ability to identify different numerical methods. A4- The ability to build a mathematical model to represent various engineering processes.
B. Subject-specific skills B1 - The ability to analyze and discuss. B2 - Brainstorming by encouraging students to produce a large number of ideas about an issue or problem that is raised during the lecture. B3 - Cooperative learning by working collectively. B4 - Competitive learning by creating an atmosphere of competition between peers.
Teaching and Learning Methods
• Readings, self-learning, panel discussions. • Exercises and activities in the lecture. • Homework. • Directing students to some websites to benefit and develop their capabilities. • Conducting seminars to explain and analyze a specific issue and find solutions to it
Assessment methods
• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.

C. Thinking Skills C1- Attention: Arousing the students' attention by implementing one of the applied programs on the display screen in the hall. C2- Response: Follow up the student's interaction with the material displayed on the screen. C3- Attention: Follow up on the interest of the student who interacted more with the presented material, by increasing this interaction by requesting other programs and applications to display. C4 - Forming the direction: meaning that the student is sympathetic to the presentation and may have an opinion about the direction of the presented topic and defend it. C 5- Formation of value behavior: meaning that the student reaches the top of the emotional ladder, so that he has a stable level in the lesson and does not become lazy or fidgety.
Teaching and Learning Methods
• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.
Assessment methods
• Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture. • Sudden exams during the theoretical and practical lecture. • Quarterly exams for the theoretical and practical side. • Final exams for the theoretical and practical side.
D. General and Transferable Skills (other skills relevant to employability and personal development) D1- Develop the student’s ability to perform the duties and deliver them on time D2 - Logical and programmatic thinking to find programmatic solutions to various problems D3 - developing the student's ability to dialogue and debate

D4 - Develop the student's ability to deal with modern technology, especially the Internet

10. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	4	Knowing the types and classifications of equations Ordinary differential and types of solutions	Introduction to differential equations	Theoretical	Questions, discussion and quiz
2	4	Knowing equations with separable variables and homogeneous equations	First order ordinary differential equations-1	Theoretical	Questions, discussion and quiz
3	4	Knowing exact equations	First order ordinary differential equations-2	Theoretical	Questions, discussion and quiz
4	4	Knowing linear equations and Bernoulli equations	First order ordinary differential equations-3	Theoretical	Questions, discussion and quiz
5	4	Orthogonal trajectories and suspended cables application	Applications on 1st order ordinary differential equations-1	Theoretical	Questions, discussion and quiz
6	4	Flow through orifices, moving bodies and general applications	Applications on 1st order ordinary differential equations-2	Theoretical	Questions, discussion and quiz

7	4	Knowing homogeneous linear equations with constant coefficients	Second and higher order linear ordinary differential equations-1	Theoretical	Questions, discussion and quiz
8	4	Knowing linear nonhomogeneous equations with constant coefficients	Second and higher order linear ordinary differential equations-2	Theoretical	Questions, discussion and quiz
9	4	Knowing linear equations with variable coefficients	Second and higher order linear ordinary differential equations-3	Theoretical	Questions, discussion and quiz
10	4	Deflection of beams and buckling of columns applications	Applications on 2nd and higher order ordinary differential equations-1	Theoretical	Questions, discussion and quiz
11	4	Deflection of beam-columns application	Applications on 2nd and higher order ordinary differential equations-2	Theoretical	Questions, discussion and quiz
12	4	Vibration application	Applications on 2nd and higher order ordinary differential equations-3	Theoretical	Questions, discussion and quiz
13	4	Knowing the Fourier series	Fourier series	Theoretical	Questions, discussion and quiz
14	4	Knowing the types and solutions of partial differential equations	Partial differential equations	Theoretical	Questions, discussion and quiz

15	4	Learn and solve matrices and determinants in different ways	Matrices and determinants	Theoretical	Questions, discussion and quiz

11. Infrastructure	
1- Required reading: · Books · COURSE MATERIALS · OTHER	
2. Key references (sources)	ERWIN KREYSZIG, ADVANCED ENGINEERING MATHEMATICS, NINTH EDITION, JOHN WILEY & SONS, INC., 2006.
A- Recommended books and references (scientific journals, reports ,....	
B- Electronic references, websites	Reputable websites. Libraries sites in some international universities.

12. Course development plan
Follow the vocabulary of similar courses in prestigious international universities

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

The model description provides a brief description of the main features of the course and the scientific outputs that the model student is expected to achieve if he takes advantage of the learning opportunities available for the course. It should be compared with the description of the program.

1. Teaching Institution	University of Basrah
2. University Department/Centre	Civil Engineering Department
3. Course title/code	Theory of structures 1
4. Modes of Attendance offered	Class attendance or online
5. Semester/Year	1st semester / 3rd year
6. Number of hours tuition (total)	60 hrs
7. Date of production/revision of this specification	2024
8. Aims of the Course	
• The course aims to present the basic methods of analyzing statically defined structures as an introduction to the analysis of undefined structures and structural design decisions.	

9· Learning Outcomes, Teaching, Learning and Assessment Method

A- Knowledge and Understanding A1- Classification of facilities and a review of the concept of equilibrium of facilities under the influence of forces. A2- Analyzing the internal forces and moments generated in lintels and flat structures under the influence of systems of forces and moments. Analysis of forces in the dentate members. A3- Drawing influence diagrams for the lintels and struts and calculating the maximum values of internal reactions as a result of moving loads. A4- Learn approximate methods of analysis of existing structures and trusses. Apply the engineering methods used in calculating the slopes and deviations of the statically defined beams.
B. Subject-specific skills B1 - Apply quantitative and numerical methods for the purpose of solving structural engineering problems. B2 - Use basic knowledge to research new technologies. B3 - Derive and evaluate the information needed to apply engineering analysis methods to unfamiliar problems.
Teaching and Learning Methods
• Scientific and research skills are developed through teaching and learning activities. Analysis and problem solving skills are further developed by means of a set of problems prepared by the lecturers in small study groups and all work submitted is evaluated and responded to.
Assessment methods
• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
C. Thinking Skills C1- Attention: Arousing the students' attention by implementing one of the applied programs on the display screen in the hall. C2- Response: Follow up the student's interaction with the material displayed on the screen. C3- Attention: Follow up on the interest of the student who interacted more with the presented material, by increasing this interaction by requesting other programs and applications to display.

C4 - Forming the direction: meaning that the student is sympathetic to the presentation and may have an opinion about the direction of the presented topic and defend it. C 5- Formation of value behavior: meaning that the student reaches the top of the emotional ladder, so that he has a stable level in the lesson and does not become lazy or fidgety.
Teaching and Learning Methods
• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.

Assessment methods
• Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture. • Sudden exams during the theoretical and practical lecture. • Quarterly exams for the theoretical and practical side. • Final exams for the theoretical and practical side.
D. General and Transferable Skills (other skills relevant to employability and personal development) D1- Develop the student’s ability to perform the duties and deliver them on time D2 - Logical and programmatic thinking to find programmatic solutions to various problems D3 - developing the student's ability to dialogue and debate D4 - Develop the student's ability to deal with modern technology, especially the Internet

10. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method

1	4	Classification of structures and review of eqilibrium	Introduction	Lecture	Written exam
2	4	Review of bending moment and shear force diagrams in beams	Internal loading developed in structural members	Lecture	Written exam
3	4	Bending moment and shear force diagrams in frames	Internal loading developed in structural members	Lecture	Written exam
4	4	Bending moment and shear force diagrams in frames	Internal loading developed in structural members	Lecture	Written exam
5	4	Review of truss analysis	Analysis of statically determinate trusses	Lecture	Written exam
6	4	Introduction to concept of influence lines	Influence lines for statically determinate structures	Lecture	Written exam
7	4	Applications on influence lines for beams	Influence lines for statically determinate structures	Lecture	Written exam
8	4	Applications on influence lines for trusses	Influence lines for statically	Lecture	Written exam

			determinate structures		
9	4	Applications on influence lines for trusses	Influence lines for statically determinate structures	Lecture	Written exam
10	4	Determination of maximum reaction for series of moving loads	Influence lines for statically determinate structures	Lecture	Written exam
11	4	Approximate method for truss analysis	Approximate methods of analysis of structures	Lecture	Written exam
12	4	Portal method	Approximate methods of analysis of structures	Lecture	Written exam
13	4	Double-integration method	Deflections	Lecture	Written exam
14	4	Singularity function method	Deflections	Lecture	Written exam
15	4	Moment-area method	Deflections	Lecture	Written exam

11. Infrastructure	
1- Required reading: · Books · COURSE MATERIALS · OTHER	1. Elementary Theory of Structures, Yan-Yu Hseih, Prentice Hall. 2. Structural Analysis, R.C. Hibbeler, Prentice Hall.
2. Key references (sources)	

A- Recommended books and references (scientific journals, reports ,....	Steelwork design guide to BS 5950-1
B- Electronic references, websites	Reputable websites. Libraries sites in some international universities.

12. Course development plan

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

The model description provides a brief description of the main features of the course and the scientific outputs that the model student is expected to achieve if the student takes advantage of the learning opportunities available for the course.

1. Teaching Institution	University of Basrah
2. University Department/Centre	Civil Engineering Department
3. Course title/code	Soil Mechanics II
4. Modes of Attendance offered	Class attendance or online
5. Semester/Year	2nd semester / 3rd year
6. Number of hours tuition (total)	45 hrs theoretical + 30 hrs practical
7. Date of production/revision of this specification	2024
8. Aims of the Course	
• The course aims to calculate the stresses generated in the soil and the long-term settlement resulting from these stresses. Also, evaluating the resistance of soil to shear stresses as well as normal and lateral loads.	

9· Learning Outcomes, Teaching, Learning and Assessment Method

A- Knowledge and Understanding A1- Identifying the types of stresses in saturated soils. A2- Studying the consolidation settlement of soils. A3- Identify the methods used to find the shear strength of soils. A4- Identifying the methods used for calculating the lateral earth pressure.
B. Subject-specific skills B1 - Learning how to calculate stresses generated in the soil. B2 - Studying the consolidation theory and methods used to calculate long-term settlement. B3 - Derivation of equations used to find soil shear strength. B4 - Derivation of equations used to assess the lateral earth pressure on the retaining structures.
Teaching and Learning Methods
• Scientific and research skills are developed through teaching and learning activities. Analysis and problem solving skills are further developed by means of a set of problems prepared by the lecturers in small study groups and all work submitted is evaluated and responded to. All lectures have been presented electronically and uploaded on social media platforms to be accessible to students when needed.
Assessment methods
• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
C. Thinking Skills C1- Attention: Arousing the students' attention by implementing one of the applied programs on the display screen in the hall. C2- Response: Follow up the student's interaction with the material displayed on the screen. C3- Attention: Follow up on the interest of the student who interacted more with the presented material, by increasing this interaction by requesting other programs and applications to display. C4 - Forming the direction: meaning that the student is sympathetic to the presentation and may have an opinion about the direction of the presented topic and defend it.

C 5- Formation of value behavior: meaning that the student reaches the top of the emotional ladder, so that he has a stable level in the lesson and does not become lazy or fidgety.
Teaching and Learning Methods
• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.

Assessment methods
• Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture. • Sudden exams during the theoretical and practical lecture. • Quarterly exams for the theoretical and practical side. • Final exams for the theoretical and practical side.
D. General and Transferable Skills (other skills relevant to employability and personal development) D1- Develop the student's ability to perform the duties and deliver them on time D2 - Logical and programmatic thinking to find programmatic solutions to various problems D3 - developing the student's ability to dialogue and debate D4 - Develop the student's ability to deal with modern technology, especially the Internet

10. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	3	Introduction soil formation	Basic Characteristics of Soils	Lecture	Written exam
2	3	Derivation of Weight-	Weight-Volume Relationships	Lecture	Written exam

		Volume Relationships			
3	3	Application of Weight-Volume Relationships	Weight-Volume Relationships	Lecture	Written exam
4	3	Introduction to Plasticity and Structure of Soil	Plasticity and Structure of Soil	Lecture	Written exam
5	3	Methods used to find Plasticity characteristics of soil	Plasticity and Structure of Soil	Lecture	Written exam
6	3	Methods used for the mechanical analysis of soil	Classification of Soil	Lecture	Written exam
7	3	Application to the modified soil classification system	Classification of Soil	Lecture	Written exam
8	3	General principles of Compaction	Soil Compaction	Lecture	Written exam
9	3	Determination of field unit weight and equipments used for compaction	Soil Compaction	Lecture	Written exam
10	3	Hydraulic conductivity	Permeability	Lecture	Written exam
11	3	Methods used to determine Hydraulic conductivity	Permeability	Lecture	Written exam
12	3	Flow of water in soil	Permeability	Lecture	Written exam
13	3	Flow nets	Seepage	Lecture	Written exam
14	3	Application of Flow nets	Seepage	Lecture	Written exam
15	3	Seepage through an Earth Dam	Seepage	Lecture	Written exam

11. Infrastructure	
1- Required reading: · Books · COURSE MATERIALS · OTHER	- Principles of Geotechnical Engineering (By: Braja M. Das, 7th Ed.)
2. Key references (sources)	
A- Recommended books and references (scientific journals, reports ,....	-Soil Mechanics (By: R.F. Craig, 4th Ed. or higher) -Soil Mechanics (By: T.W. Lambe and R.V. Whitman)
B- Electronic references, websites	Reputable websites. Libraries sites in some international universities.

12. Course development plan

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

The model description provides the basic description of the main features of the course and the scientific outputs that the model student is expected to achieve if the student takes advantage of the learning opportunities available for the course. It should be compared with the description of the program.

1. Teaching Institution	University of Basrah
2. University Department/Centre	Civil Engineering Department
3. Course title/code	Reinforced concrete Design I
4. Modes of Attendance offered	Class attendance or online
5. Semester/Year	1nd semester / 3rd year
6. Number of hours tuition (total)	75 hrs
7. Date of production/revision of this specification	2024
8. Aims of the Course	
• The course aims to present the basic methods of analysis and design of reinforced concrete structure including the an introduction to the materials which produce the concrete and the materials tests in laboratory	

9· Learning Outcomes, Teaching, Learning and Assessment Method

A- Knowledge and Understanding A1- Application of the analysis method of reinforced concrete structures including rectangular beam, T beams and special shape beams structural A2- Application of analysis and design the beams for shear. A3- Analysis and design of one-way slab using ACI coefficient method in analysis
B. Subject-specific skills B1 - Apply quantitative and numerical methods for the purpose of solving problems B2 - Use basic knowledge to research new technologies. B3 - Derive and evaluate the information needed to apply engineering analysis methods to unfamiliar problems.
Teaching and Learning Methods
• Scientific and research skills are developed through teaching and learning activities. Analysis and Design problems solving skills are further developed by means of a set of problems prepared by the lecturers in small study groups and all work submitted is evaluated and responded to.
Assessment methods
• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
C. Thinking Skills C1- Attention: Arousing the students' attention by implementing one of the applied programs on the display screen in the hall. C2- Response: Follow up the student's interaction with the material displayed on the screen. C3- Attention: Follow up on the interest of the student who interacted more with the presented material, by increasing this interaction by requesting other programs and applications to display. C4 - Forming the direction: meaning that the student is sympathetic to the presentation and may have an opinion about the direction of the presented topic and defend it.

C 5- Formation of value behavior: meaning that the student reaches the top of the emotional ladder, so that he has a stable level in the lesson and does not become lazy or fidgety.
Teaching and Learning Methods
• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.

Assessment methods
• Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture. • Sudden exams during the theoretical and practical lecture. • Quarterly exams for the theoretical and practical side. • Final exams for the theoretical and practical side.
D. General and Transferable Skills (other skills relevant to employability and personal development) D1- Develop the student's ability to perform the duties and deliver them on time D2 - Logical and programmatic thinking to find programmatic solutions to various problems D3 - developing the student's ability to dialogue and debate D4 - Develop the student's ability to deal with modern technology, especially the Internet

10. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	5	Mixing, Placing, Compacting and Curing of concrete	Introduction	Lecture	Written exam

2	5	Concrete Behavior in Compression and Tension. And Quality Control	Introduction	Lecture	Written exam
3	5	Reinforcing Steel for Concrete. And	Introduction	Lecture	Written exam
4	5	Design Codes and Specifications. Loads and Safety Provisions.	Introduction	Lecture	Written exam
5	5	Behavior of R.C beam under loading and working stress method:	Working Stress Method	Lecture	Written exam
6	5	Introduction to Working Stress Method. And applications of the Working Stress Method.	Working Stress Method	Lecture	Written exam
7	5	Introduction and Behavior of Reinforced Concrete Beam under Bending.	Flexural Beam Analysis And Design	Lecture	Written exam
8	5	Design of Tension Reinforced Rectangular Beams.	Flexural Beam Analysis And Design	Lecture	Written exam
9	5	Practical Consideration in the Design of Beams.	Flexural Beam Analysis And Design	Lecture	Written exam
10	5	Rectangular Sections With Tension and Compression Reinforcement.	Flexural Beam Analysis And Design	Lecture	Written exam
11	5	Flexural Analysis and Design of T-beams.	Flexural Analysis and Design of T-beams.	Lecture	Written exam
12	5	Shear and Diagonal Tension in Beams.	Shear and Diagonal Tension in Beams.	Lecture	Written exam

13	5	Shear Strength of Concrete without Reinforcement. And Reinforced Concrete Beams With Web Reinforcements.	Shear and Diagonal Tension in Beams.	Lecture	Written exam
14	5	Types of Slabs. And Analysis and Design of One-Way Slab.	Design and Analysis of Slabs.	Lecture	Written exam
15	5	Temperature and Shrinkage Reinforcement.	Design and Analysis of Slabs.	Lecture	Written exam

11. Infrastructure	
1- Required reading: · Books · COURSE MATERIALS · OTHER	
2. Key references (sources)	
A- Recommended books and references (scientific journals, reports ,….	1- Structural Concrete Theory and Design , By Nadim Hasson, Akthem Aktham Al manseer , 6th Edition 2015 2- Reinforced concrete design , 7th Edition 2007 By Chu Kai Wang, Charles G salmon and Joe A Pincheire 3- Design of Reinforced concrete Structures , 2nd Edition 2008 By Mohammed Tharwat Ghonein, Vol. 3 4- Design of concrete Structure , 14th Edition 2010 By Arthur H. Nilson , Daved Derwin and Charles W . Dolan 5- Reinforced concrete design , 6th Edition 2009 By Edward G. Nawy 6- ACI Code 318- 2019
B- Electronic references, websites	

12. Course development plan

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

The course provides the possibility of designing different irrigation systems and providing accurate details about the plant's need for water consumption, the method of infiltration and how to calculate it, in addition to calculating the consistency coefficient of irrigation, efficiency and adequacy, as well as designs for land grading, concepts of surface irrigation and methods of surface irrigation design, as well as designs for modern methods such as sprinkler and drip.

1. Teaching Institution	University of Basrah
2. University Department/Centre	Civil Engineering Department
3. Course title/code	Irrigation Engineering
4. Modes of Attendance offered	Class attendance or online
5. Semester/Year	1st semester / 3rd year
6. Number of hours tuition (total)	45 hrs
7. Date of production/revision of this specification	2024
8. Aims of the Course	

9· Learning Outcomes, Teaching, Learning and Assessment Method
A- Knowledge and Understanding A1- Clarify the basic concepts of irrigation engineering systems and their applications in agricultural fields.

A2- Gaining the ability to address water wastage problems through the design of irrigation systems. A3- Acquisition of basic skills in the management of irrigation systems. A4- Gaining experience in designing the irrigation system and its suitability according to the different surrounding conditions. Gaining experience in knowing the difference between the old and modern irrigation system. Optimum management of the irrigation system.
B. Subject-specific skills B1 - The ability to design irrigation systems in their various ways. B2 - The ability to think about addressing the problems of water wastage and find ways to reduce it. B3 - Writing scientific reports and reading charts and tables.
Teaching and Learning Methods
• Readings, self-learning, panel discussions. • Exercises and activities in the lecture. • Homework. • Directing students to some websites to benefit and develop their capabilities. • Conducting seminars to explain and analyze a specific issue and find solutions to it
Assessment methods
• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
C. Thinking Skills C1- Attention: Arousing the students' attention by implementing one of the applied programs on the display screen in the hall. C2- Response: Follow up the student's interaction with the material displayed on the screen. C3- Attention: Follow up on the interest of the student who interacted more with the presented material, by increasing this interaction by requesting other programs and applications to display. C4 - Forming the direction: meaning that the student is sympathetic to the presentation and may have an opinion about the direction of the presented topic and defend it.

C 5- Formation of value behavior: meaning that the student reaches the top of the emotional ladder, so that he has a stable level in the lesson and does not become lazy or fidgety.
Teaching and Learning Methods
• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.
Assessment methods
• Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture. • Sudden exams during the theoretical and practical lecture. • Quarterly exams for the theoretical and practical side. • Final exams for the theoretical and practical side.
D. General and Transferable Skills (other skills relevant to employability and personal development) D1- Develop the student's ability to perform the duties and deliver them on time D2 - Logical and programmatic thinking to find programmatic solutions to various problems D3 - developing the student's ability to dialogue and debate D4 - Develop the student's ability to deal with modern technology, especially the Internet

10. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	3	Irrigation, benefits of irrigation,	Introduction	theoretical	questions and discussion

		irrigation networks			
2	3	Types of irrigation methods, evaluating irrigation water sources	Introduction	theoretical	questions and discussion
3	3	Calculation of the volume of water in the soil, methods of calculating water consumption	Introduction	theoretical	questions and discussion
4	3	Efficiency, adequacy and uniformity of irrigation	Introduction	theoretical	questions and discussion
5	3	Methods of Land grading design	Land grading design	theoretical	questions and discussion
6	3	Surface irrigation process mechanism, water balance concept	surface irrigation	theoretical	questions and discussion
7	3	Design assumptions, design flow rate, border length and width	Border irrigation		
8	3	Furrow intake characteristics, Two-point method	Furrow irrigation	theoretical	questions and discussion

9	3	Design Equations, Design limitations	Basin irrigation	theoretical	questions and discussion
10	3	Layout of stationary system, the effect of wind direction	Sprinkler irrigation	theoretical	questions and discussion
11	3	Fundamentals of flow hydraulics	Sprinkler irrigation	theoretical	questions and discussion
12	3	Flow in multi-outlet pipes	Sprinkler irrigation	theoretical	questions and discussion
13	3	Design of sprinkler system	Sprinkler irrigation	theoretical	questions and discussion
14	3	Benefits of drip irrigation, the basic components of the drip system	Drip irrigation	theoretical	questions and discussion
15	3	Design of drip system	Trickle irrigation	theoretical	questions and discussion

11. Infrastructure	
1- Required reading: · Books · COURSE MATERIALS · OTHER	Field Irrigation Systems Engineering
2. Key references (sources)	

A- Recommended books and references (scientific journals, reports ,....	
B- Electronic references, websites	Reputable websites. Libraries sites in some international universities.

12. Course development plan

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

The model description provides a brief description of the main features of the course and the scientific outputs that the model student is expected to achieve if the student takes advantage of the learning opportunities available for the course. It should be compared with the description of the program.

1. Teaching Institution	University of Basrah
2. University Department/Centre	Civil Engineering Department
3. Course title/code	Engineering Management
4. Modes of Attendance offered	Class attendance or online
5. Semester/Year	1st semester / 3rd year
6. Number of hours tuition (total)	30 hrs
7. Date of production/revision of this specification	2024
8. Aims of the Course	
• The course aims to present the fundamentals of project management with special focus on planning stage. This is to pave the way for student to learn more aspect about project management in the second semester.	

9· Learning Outcomes, Teaching, Learning and Assessment Method

A- Knowledge and Understanding A1- Introduction to project management, the need for project management in the construction industry, Organizational influences and Project life Cycle, Project management processes and Integration Management. A2- Scope, time and cost management. A3- Resource and Quality Management
B. Subject-specific skills B1 - Plan Schedule Management, Define and sequence Activities, Estimate Activity Resources and Duration and Level resources B2 – Application of key project planning and scheduling techniques including CPM, PERT and LOB.
Teaching and Learning Methods
• Scientific and research skills are developed through teaching and learning activities. Analysis and problem-solving skills are further developed by means of a set of problems prepared by the lecturers in small study groups and all work submitted is evaluated and responded to.
Assessment methods
• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
C. Thinking Skills C1- Attention: Arousing the students' attention by implementing one of the applied programs on the display screen in the hall. C2- Response: Follow up the student's interaction with the material displayed on the screen. C3- Attention: Follow up on the interest of the student who interacted more with the presented material, by increasing this interaction by requesting other programs and applications to display. C4 - Forming the direction: meaning that the student is sympathetic to the presentation and may have an opinion about the direction of the presented topic and defend it.

C 5- Formation of value behavior: meaning that the student reaches the top of the emotional ladder, so that he has a stable level in the lesson and does not become lazy or fidgety.
Teaching and Learning Methods
• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.

Assessment methods
• Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture. • Sudden exams during the theoretical and practical lecture. • Quarterly exams for the theoretical and practical side. • Final exams for the theoretical and practical side.
D. General and Transferable Skills (other skills relevant to employability and personal development) D1- Develop the student's ability to perform the duties and deliver them on time D2 - Logical and programmatic thinking to find programmatic solutions to various problems D3 - developing the student's ability to dialogue and debate D4 - Develop the student's ability to deal with modern technology, especially the Internet

10. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2	Introduction to project management	Introduction to project management	Lecture	Written exam

2	2	Project scope management	Collect requirement, Define Scope, Create WBS, Validate Scope and Control Scope	Lecture	Written exam
3	2	Project Time management	Define and sequence Activities,	Lecture	Written exam
4	2	Project Time management	Estimate Activity Resources and Duration	Lecture	Written exam
5	2	Project Time management	Bar Chart Method	Lecture	Written exam
6	2	Project Time management	AOA Method	Lecture	Written exam
7	2	Project Time management	AON Methods	Lecture	Written exam
8	2	Project Time management	CPM Calculation	Lecture	Written exam
9	2	Project Time management	PERT Method	Lecture	Written exam
10	2	Project Time management	LOB method	Lecture	Written exam
11	2	Project Time management	LOB method	Lecture	Written exam
12	2	Resource Management	Resource Smoothing Method	Lecture	Written exam
13	2	Resource Management	Resource Levelling Method	Lecture	Written exam
14	2	Project Quality Management	Plan Quality, Perform Quality Assurance and Control Quality	Lecture	Written exam

15	2	Communication Management	Plan, Manage and Control Communications	Lecture	Written exam

11. Infrastructure	
1- Required reading: · Books · COURSE MATERIALS · OTHER	1. A Guide to the project management body of knowledge – PMI. 2. إدارة المشاريع الإنشائية والعلاقات المهنية: احسان العطار
2. Key references (sources)	
A- Recommended books and references (scientific journals, reports ,....	1. Project Management, A Systems Approach to Planning, Scheduling, and Controlling, 10th edition, KERZNER 2. Principles of Construction management By: Roy Piltcher 3. Construction Planning, Programming and Control by Brian Cooke 4. Operations Management Creating Value Along the Supply Chain Russell - Chapter 9: Project management
B- Electronic references, websites	Reputable websites. Such as PMI.org or apm.org.uk Libraries sites in some international universities.

12. Course development plan

TEMPLATEFORCOURSESPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

Traffic Engineering is that phase of engineering which deals with the planning, geometric design and traffic operations of roads, streets, and highways, their networks, terminals, abutting lands and relationships with other modes of transportation for the achievement of safe, efficient, and convenient movement of persons and goods.

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1. Teaching Institution	University of Basrah
2. University Department/Centre	Civil Engineering Department
3. Course title/code	Traffic engineering
4. Modes of Attendance offered	Class attendance or online
5. Semester/Year	1nd semester / 3rd year
6. Number of hours tuition (total)	60 hrs
7. Date of production/revision of this specification	2024
8. Aims of the Course	
• The course aims to present the basic methods of study the traffic stream **parameters** such as speed ,volume ,density ,act .also study relationship among parameters	

9· Learning Outcomes, Teaching, Learning and Assessment Method
A- Knowledge ,Understanding,teaching A1- Traffic Counting methods A2- speed counting methods. A3- roadway design

A4- traffic control design and accident analyses. .
B. Subject-specific skills B1 - Apply quantitative and numerical methods for the purpose of solving traffic engineering problems. B2 - Use basic knowledge to research new technologies. B3 - Derive and evaluate the information needed to apply engineering analysis methods to unfamiliar problems.
Teaching and Learning Methods
• Scientific and research skills are developed through teaching and learning activities. Analysis and problem solving skills are further developed by means of a set of problems prepared by the lecturers in small study groups and all work submitted is evaluated and responded to.
Assessment methods
• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
C. Thinking Skills C1- Attention: Arousing the students' attention by implementing one of the applied programs on the display screen in the hall. C2- Response: Follow up the student's interaction with the material displayed on the screen. C3- Attention: Follow up on the interest of the student who interacted more with the presented material, by increasing this interaction by requesting other programs and applications to display. C4 - Forming the direction: meaning that the student is sympathetic to the presentation and may have an opinion about the direction of the presented topic and defend it. C 5- Formation of value behavior: meaning that the student reaches the top of the emotional ladder, so that he has a stable level in the lesson and does not become lazy or fidgety.
Teaching and Learning Methods

- The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject.
- The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum.
- The method of laboratory display using special devices for measuring the different properties of the substance under experiment.

Assessment methods
• Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture. • Sudden exams during the theoretical and practical lecture. • Quarterly exams for the theoretical and practical side. • Final exams for the theoretical and practical side.
D. General and Transferable Skills (other skills relevant to employability and personal development) D1- Develop the student's ability to perform the duties and deliver them on time D2 - Logical and programmatic thinking to find programmatic solutions to various problems D3 - developing the student's ability to dialogue and debate D4 - Develop the student's ability to deal with modern technology, especially the Internet

10. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	4	Introduction t	Introduction of Traffic engineering	Lecture	Written exam
2	4	The methods of volume counting	Volume subdues	Lecture	Written exam
3	4	The methods of speed counting	Speed studies	Lecture	Written exam
4	4	The method of capacity	Relation ship among speed,	Lecture	Written exam

		design of the roadway	volume and density		
5	4	Introduction to intersections types	intersections	Lecture	Written exam
6	4	Introduction to intersection traffic control	Traffic control methods	Lecture	Written exam
7	4	Introduction to intersection traffic control	Sign and marking	Lecture	Written exam
8	4	The method of determine delay in traffic signalized	traffic signalized analysis	Lecture	Written exam
9	4	The method of traffic signalized design	traffic signalized design - Webster metod	Lecture	Written exam
10	4	Determine the Sight distance	Stoping Sight distance	Lecture	Written exam
11	4	Determine the Sight distance	Passing Sight distance	Lecture	Written exam
12	4	Curves design	Horizontal curve design	Lecture	Written exam
13	4	Curves design	Vertical curve design	Lecture	Written exam
14	4	The method of parking design	Parking study	Lecture	Written exam
15	4	Analysis of accident	Accident study	Lecture	Written exam

11. Infrastructure	
1- Required reading: · Books · COURSE MATERIALS · OTHER	1. principles of the traffic engineering ,dr.lamia A.Ahmed 2. text book lab , traffic engineering ,dr.lamia A.Ahmed
2.Key references (sources)	

A-Recommended books and references (scientific journals, reports ,....	High way capacity manual
B- Electronic references, websites	Reputable websites. Libraries sites in some international universities.

12. Course development plan
The development plan can be summarized by the small projects in the roadway networks for each student

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

The model description provides a brief description of the main features of the course and the scientific outputs that the model student is expected to achieve if the student takes advantage of the learning opportunities available for the course. It should be compared with the description of the program.

1. Teaching Institution	University of Basrah
2. University Department/Centre	Civil Engineering Department
3. Course title/code	Computer Applications
4. Modes of Attendance offered	Class attendance or online
5. Semester/Year	1st semester / 3rd year
6. Number of hours tuition (total)	30 hrs
7. Date of production/revision of this specification	2024
8. Aims of the Course	
• The course aims to provide the student with the skills to use the available engineering software them in the analysis and design of engineering projects	

9· Learning Outcomes, Teaching, Learning and Assessment Method
A- Knowledge and Understanding A1- Learn about engineering programs and their types

A2- Knowing the sources of obtaining the programs A3- Knowing the basics of engineering programs
B. Subject-specific skills B1 - Learn to choose the right program B2 - Knowing how to provide the information required to be fed to the program B3 - Knowing how to open the program and enter information B4- Learn to perform analysis and get results

Teaching and Learning Methods
• Scientific and research skills are developed through teaching and learning activities. Analysis and problem solving skills are further developed by means of a set of problems prepared by the lecturers in small study groups and all work submitted is evaluated and responded to.
Assessment methods
• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
C. Thinking Skills C1- Attention: Arousing the students' attention by implementing one of the applied programs on the display screen in the hall. C2- Response: Follow up the student's interaction with the material displayed on the screen. C3- Attention: Follow up on the interest of the student who interacted more with the presented material, by increasing this interaction by requesting other programs and applications to display. C4 - Forming the direction: meaning that the student is sympathetic to the presentation and may have an opinion about the direction of the presented topic and defend it. C 5- Formation of value behavior: meaning that the student reaches the top of the emotional ladder, so that he has a stable level in the lesson and does not become lazy or fidgety.
Teaching and Learning Methods

- The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject.
- The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum.
- The method of laboratory display using special devices for measuring the different properties of the substance under experiment.

Assessment methods
• Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture. • Sudden exams during the theoretical and practical lecture. • Quarterly exams for the theoretical and practical side. • Final exams for the theoretical and practical side.
D. General and Transferable Skills (other skills relevant to employability and personal development) D1- Develop the student's ability to perform the duties and deliver them on time D2 - Logical and programmatic thinking to find programmatic solutions to various problems D3 - developing the student's ability to dialogue and debate D4 - Develop the student's ability to deal with modern technology, especially the Internet

10. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2	Learn about engineering programs	Introduction	Practical Lecture	Practical exam
2	2	EPANET basics	EPANET software	Practical Lecture	Practical exam
3	2	Learn to draw the components	Data entry	Practical Lecture	Practical exam

		of the water network			
4	2	Specifying the levels of nodes, tanks and pipe diameters	Network component properties	Practical Lecture	Practical exam
5	2	Enter pump information	Pumps information	Practical Lecture	Practical exam
6	2	Perform network analysis	Water Network Analysis	Practical Lecture	Practical exam
7	2	How to view the results	Display results	Practical Lecture	Practical exam
8	2	How to enter input information that changes over time	Time Pattern	Practical Lecture	Practical exam
9	2	How to conduct the analysis and present the results	Analysis and review of results	Practical Lecture	Practical exam
10	2	Definition of MS-Project	Introduction to MS-Project	Practical Lecture	Practical exam
11	2	Learn to divide the project into sub-activities	Work Breakdown Structure	Practical Lecture	Practical exam
12	2	Learn to enter the names of the activity and the time for each one	Activities and duration	Practical Lecture	Practical exam
13	2	Learn how to connect activities with time relationships	Relationships between activities	Practical Lecture	Practical exam

14	2	Using the critical path method	Critical Path Method	Practical Lecture	Practical exam
15	2	Learn to enter and organize resources	Resources	Practical Lecture	Practical exam

11. Infrastructure	
1- Required reading: · Books · COURSE MATERIALS · OTHER	1. Manual of EPANET 2. Manual of MS-PROJECT
2. Key references (sources)	
A- Recommended books and references (scientific journals, reports ,....	
B- Electronic references, websites	Reputable websites. Libraries sites in some international universities.

12. Course development plan

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

Introducing the advanced mathematical solutions that the student faces when studying various engineering topics and numerical analysis methods. It includes solving algebraic equations by numerical and Taylor series, how to perform derivation and integration by numerical methods, solving differential equations by numerical methods, and finding the mathematical model for a set of points, interpolation and extrapolation.

1. Teaching Institution	Basrah University
2. University Department/Centre	Civil Engineering Department
3. Course title/code	Numerical Analysis
4. Modes of Attendance offered	Class attendance or online
5. Semester/Year	2nd semester / 3rd year
6. Number of hours tuition (total)	60 hrs
7. Date of production/revision of this specification	2024
8. Aims of the Course	
Recognize the following vocabulary: 1- Numerical solution to algebraic equations. 2- Taylor series. 3- Derivation and integration by numerical methods. 4- Numerical solution to differential equations. 5- Finding the mathematical model for a set of points. 6- interpolation and extrapolation.	

9· Learning Outcomes, Teaching, Learning and Assessment Method
A- Knowledge and Understanding A1- Preparing applied engineers in the field of civil engineering who are distinguished by a high level of knowledge and analytical creativity in line with the internationally approved standards in quality assurance and academic accreditation for the corresponding engineering programs, while adhering to the ethics of the engineering profession. A2- Enabling knowledge and understanding of practical applications in numerical ways and in accordance with the objectives of the course. A3- The ability to identify different numerical methods. A4- The ability to build a mathematical model to represent various engineering processes.
B. Subject-specific skills B1 - The ability to analyze and discuss. B2 - Brainstorming by encouraging students to produce a large number of ideas about an issue or problem that is raised during the lecture. B3 - Cooperative learning by working collectively. B4 - Competitive learning by creating an atmosphere of competition between peers.
Teaching and Learning Methods
• Readings, self-learning, panel discussions. • Exercises and activities in the lecture. • Homework. • Directing students to some websites to benefit and develop their capabilities. • Conducting seminars to explain and analyze a specific issue and find solutions to it
Assessment methods
• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
C. Thinking Skills C1- Attention: Arousing the students' attention by implementing one of the applied programs on the display screen in the hall.

C2- Response: Follow up the student's interaction with the material displayed on the screen. C3- Attention: Follow up on the interest of the student who interacted more with the presented material, by increasing this interaction by requesting other programs and applications to display. C4 - Forming the direction: meaning that the student is sympathetic to the presentation and may have an opinion about the direction of the presented topic and defend it. C 5- Formation of value behavior: meaning that the student reaches the top of the emotional ladder, so that he has a stable level in the lesson and does not become lazy or fidgety.
Teaching and Learning Methods
• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.
Assessment methods
• Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture. • Sudden exams during the theoretical and practical lecture. • Quarterly exams for the theoretical and practical side. • Final exams for the theoretical and practical side.
D. General and Transferable Skills (other skills relevant to employability and personal development) D1- Develop the student’s ability to perform the duties and deliver them on time D2 - Logical and programmatic thinking to find programmatic solutions to various problems D3 - developing the student's ability to dialogue and debate D4 - Develop the student's ability to deal with modern technology, especially the Internet

10. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	6	Knowing what numerical methods and approximate solution are and how to calculate error in approximate solution	Introduction to numerical methods	Theoretical & Practical	Questions, discussion and quiz
2	6	Application of the bisection, fixed-point, Newton-Raphson, and modified Newton method in solving algebraic equations	Numerical solution of algebraic equations	Theoretical & Practical	Questions, discussion and quiz
3	6	Solving a set of simultaneous algebraic equations by numerical methods	Numerical solution to a set of algebraic equations	Theoretical & Practical	Questions, discussion and quiz
4	6	Application of Taylor series to approximation of functions	Taylor series	Theoretical & Practical	Questions, discussion and quiz
5	6	Derivation of different functions by numerical methods	Numerical differentiation	Theoretical & Practical	Questions, discussion and quiz
6	6	Performing the integration of different functions in numerical methods	Numerical Integration	Theoretical & Practical	Questions, discussion and quiz
7	6	Application of Euler's, Runge-Kutta and finite	Numerical solution of ordinary	Theoretical & Practical	Questions, discussion and quiz

		differences method in solving ODEs	differential equations (ODEs)		
8	6	Application of the finite difference method in solving PDEs	Numerical solution of partial differential equations (PDEs)	Theoretical & Practical	Questions, discussion and quiz
9	6	Finding a suitable curve for a set of points	Curve fitting	Theoretical & Practical	Questions, discussion and quiz
10	6	Performing interpolation and extrapolation in approximation of functions	Interpolation and extrapolation	Theoretical & Practical	Questions, discussion and quiz

11. Infrastructure	
1- Required reading: · Books · COURSE MATERIALS · OTHER	
2. Key references (sources)	ERWIN KREYSZIG, ADVANCED ENGINEERING MATHEMATICS, NINTH EDITION, JOHN WILEY & SONS, INC., 2006.
A- Recommended books and references (scientific journals, reports ,....	
B- Electronic references, websites	Reputable websites. Libraries sites in some international universities.

12. Course development plan
Follow the vocabulary of similar courses in prestigious international universities

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

The model description provides a brief description of the main features of the course and the scientific outputs that the model student is expected to achieve if the student takes advantage of the learning opportunities available for the course. It should be compared with the description of the program.

1. Teaching Institution	University of Basrah
2. University Department/Centre	Civil Engineering Department
3. Course title/code	Theory of structures 2
4. Modes of Attendance offered	Class attendance or online
5. Semester/Year	2nd semester / 3rd year
6. Number of hours tuition (total)	60 hrs
7. Date of production/revision of this specification	2024
8. Aims of the Course	
The course aims to elaborate on the principles introduced in Theory of Structures-1. It deals with the analysis of statically indeterminate structures through imposing the conditions of geometry of the deformed structure upon statics. The methods include force methods such as consistent deformations and displacement methods such as slope-deflection, and moment-distribution.	

9· Learning Outcomes, Teaching, Learning and Assessment Method
A- Knowledge and Understanding A-1 Understand the concept of Force Methods of analysis. Understand the Method of Consistent Deformations and its application to indeterminate beams. A-2 Understand the concept of Displacement Methods of analysis. Understand the Slope-Deflection method and its application to indeterminate beams and frames. Understand the moment-distribution method and its application to indeterminate beams and frames. A-3 Understand the concept of Strain Energy. A-4 Understand Castigliano's theorems and their application to indeterminate beams and frames.
B. Subject-specific skills B-1 Ability to analyze statically indeterminate structures and evaluate their external reaction components. B-2 Ability to draw shear force and bending moment diagrams for statically indeterminate structures. B-3 Ability to evaluate deflections at points on indeterminate structures.
Teaching and Learning Methods
1. Explanation and clarification through lectures. 2. The method of displaying scientific materials with projectors: data show, smart boards, plasma screens. 3. Self-learning through homework and mini-projects within the lectures.
Assessment methods
• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
C. Thinking Skills C1- Attention: Arousing the students' attention by implementing one of the applied programs on the display screen in the hall. C2- Response: Follow up the student's interaction with the material displayed on the screen.

C3- Attention: Follow up on the interest of the student who interacted more with the presented material, by increasing this interaction by requesting other programs and applications to display. C4 - Forming the direction: meaning that the student is sympathetic to the presentation and may have an opinion about the direction of the presented topic and defend it. C 5- Formation of value behavior: meaning that the student reaches the top of the emotional ladder, so that he has a stable level in the lesson and does not become lazy or fidgety.
Teaching and Learning Methods
• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.

Assessment methods
• Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture. • Sudden exams during the theoretical and practical lecture. • Quarterly exams for the theoretical and practical side. • Final exams for the theoretical and practical side.
D. General and Transferable Skills (other skills relevant to employability and personal development) D1- Develop the student’s ability to perform the duties and deliver them on time D2 - Logical and programmatic thinking to find programmatic solutions to various problems D3 - developing the student's ability to dialogue and debate D4 - Develop the student's ability to deal with modern technology, especially the Internet

10. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	4	Introduction to force methods	Force Methods	1. Explanation and clarification through lectures. 2. The method of displaying scientific materials with projectors: data show, smart boards, plasma screens. 3. Self-learning through homework and mini-projects within the lectures.	• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
2	4	Introduction to method of consistent deformations	Method of Consistent Deformations	1. Explanation and clarification through lectures. 2. The method of displaying scientific materials with projectors: data show, smart boards, plasma screens. 3. Self-learning through homework and mini-projects within the lectures.	• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.

3	4	Applications to indeterminate beams	Method of Consistent Deformations	1. Explanation and clarification through lectures. 2. The method of displaying scientific materials with projectors: data show, smart boards, plasma screens. 3. Self-learning through homework and mini-projects within the lectures.	• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
4	4	Applications to indeterminate beams	Method of Consistent Deformations	1. Explanation and clarification through lectures. 2. The method of displaying scientific materials with projectors: data show, smart boards, plasma screens. 3. Self-learning through homework and mini-projects within the lectures.	• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.

5	4	Introduction to displacement methods and derivation of slope-deflection method	Displacement Methods: Slope-Deflection	1. Explanation and clarification through lectures. 2. The method of displaying scientific materials with projectors: data show, smart boards, plasma screens. 3. Self-learning through homework and mini-projects within the lectures.	• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
6	4	Application of slope-deflection method to beams and non-sway frames	Displacement Methods: Slope-Deflection	1. Explanation and clarification through lectures. 2. The method of displaying scientific materials with projectors: data show, smart boards, plasma screens. 3. Self-learning through homework and mini-projects within the lectures.	• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
7	4	Introduction to concepts of stiffness and carry-over	Displacement Methods: Moment Distribution	1. Explanation and clarification through lectures. 2. The method of displaying scientific materials with projectors: data show, smart boards, plasma screens. 3. Self-learning through	• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.

				homework and mini-projects within the lectures.	
8	4	Modified stiffness and application to beams	Displacement Methods: Moment Distribution	1. Explanation and clarification through lectures. 2. The method of displaying scientific materials with projectors: data show, smart boards, plasma screens. 3. Self-learning through homework and mini-projects within the lectures.	• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
9	4	Application with support settlement	Displacement Methods: Moment Distribution	1. Explanation and clarification through lectures. 2. The method of displaying scientific materials with projectors: data show, smart boards, plasma screens. 3. Self-learning through homework and mini-projects within the lectures.	• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.

10	4	Application to non-sway frames	Displacement Methods: Moment Distribution	1. Explanation and clarification through lectures. 2. The method of displaying scientific materials with projectors: data show, smart boards, plasma screens. 3. Self-learning through homework and mini-projects within the lectures.	• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
11	4	Application to non-sway frames	Displacement Methods: Moment Distribution	1. Explanation and clarification through lectures. 2. The method of displaying scientific materials with projectors: data show, smart boards, plasma screens. 3. Self-learning through homework and mini-projects within the lectures.	• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
12	4	Introduction to strain energy in elastic structures	Energy Methods	1. Explanation and clarification through lectures. 2. The method of displaying scientific materials with projectors: data show, smart boards, plasma screens. 3. Self-learning through	• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.

				homework and mini-projects within the lectures.	
13	4	Derivation and application of Castigliano's theorem	Energy Methods	1. Explanation and clarification through lectures. 2. The method of displaying scientific materials with projectors: data show, smart boards, plasma screens. 3. Self-learning through homework and mini-projects within the lectures.	• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
14	4	Derivation and application of Castigliano's theorem	Energy Methods	1. Explanation and clarification through lectures. 2. The method of displaying scientific materials with projectors: data show, smart boards, plasma screens. 3. Self-learning through homework and mini-projects within the lectures.	• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
15	4	Analysis of indeterminate beams and	Energy Methods	1. Explanation and clarification through lectures.	• Interacting within the lecture.

		frames using energy methods		2. The method of displaying scientific materials with projectors: data show, smart boards, plasma screens. 3. Self-learning through homework and mini-projects within the lectures.	• Homework and reports. • Short exams (quizzes). • Semester and final exams.

11. Infrastructure	
1- Required reading: · Books · COURSE MATERIALS · OTHER	1. Elementary Theory of Structures Yan-Yu Hseih, Prentice Hall. 2.Structural Analysis Nabeel Abdulrazzaq Jassim, Meyyada Yahya Mohammed, Univ. of Basrah.
2. Key references (sources)	
A- Recommended books and references (scientific journals, reports ,....	
B- Electronic references, websites	Reputable websites. Libraries sites in some international universities.

12. Course development plan

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

The model description provides a brief description of the main features of the course and the scientific outputs that the model student is expected to achieve if the student takes advantage of the learning opportunities available for the course.

1. Teaching Institution	University of Basrah
2. University Department/Centre	Civil Engineering Department
3. Course title/code	Soil Mechanics II
4. Modes of Attendance offered	Class attendance or online
5. Semester/Year	2nd semester / 3rd year
6. Number of hours tuition (total)	45 hrs theoretical + 30 hrs practical
7. Date of production/revision of this specification	2024
8. Aims of the Course	
• The course aims to calculate the stresses generated in the soil and the long-term settlement resulting from these stresses. Also, evaluating the resistance of soil to shear stresses as well as normal and lateral loads.	

9· Learning Outcomes, Teaching, Learning and Assessment Method
A- Knowledge and Understanding A1- Identifying the types of stresses in saturated soils. A2- Studying the consolidation settlement of soils.

A3- Identify the methods used to find the shear strength of soils. A4- Identifying the methods used for calculating the lateral earth pressure.
B. Subject-specific skills B1 - Learning how to calculate stresses generated in the soil. B2 - Studying the consolidation theory and methods used to calculate long-term settlement. B3 - Derivation of equations used to find soil shear strength. B4 - Derivation of equations used to assess the lateral earth pressure on the retaining structures.
Teaching and Learning Methods
• Scientific and research skills are developed through teaching and learning activities. Analysis and problem solving skills are further developed by means of a set of problems prepared by the lecturers in small study groups and all work submitted is evaluated and responded to. All lectures have been presented electronically and uploaded on social media platforms to be accessible to students when needed.
Assessment methods
• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
C. Thinking Skills C1- Attention: Arousing the students' attention by implementing one of the applied programs on the display screen in the hall. C2- Response: Follow up the student's interaction with the material displayed on the screen. C3- Attention: Follow up on the interest of the student who interacted more with the presented material, by increasing this interaction by requesting other programs and applications to display. C4 - Forming the direction: meaning that the student is sympathetic to the presentation and may have an opinion about the direction of the presented topic and defend it. C 5- Formation of value behavior: meaning that the student reaches the top of the emotional ladder, so that he has a stable level in the lesson and does not become lazy or fidgety.

Teaching and Learning Methods
• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.

Assessment methods
• Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture. • Sudden exams during the theoretical and practical lecture. • Quarterly exams for the theoretical and practical side. • Final exams for the theoretical and practical side.
D. General and Transferable Skills (other skills relevant to employability and personal development) D1- Develop the student's ability to perform the duties and deliver them on time D2 - Logical and programmatic thinking to find programmatic solutions to various problems D3 - developing the student's ability to dialogue and debate D4 - Develop the student's ability to deal with modern technology, especially the Internet

10. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	3	Knowledge of different types of soil stresses	In Situ Stresses	Lecture	Written exam
2	3	Fundamentals of Consolidation	Compressibility of Soil-Consolidation Settlement	Lecture	Written exam
3	3	Determination of Consolidation Characteristics	Compressibility of Soil-Consolidation Settlement	Lecture	Written exam

		by Laboratory Consolidation Test			
4	3	Application to Laboratory Consolidation Test Results	Compressibility of Soil-Consolidation Settlement	Lecture	Written exam
5	3	Application to calculate primary and secondary consolidation	Compressibility of Soil-Consolidation Settlement	Lecture	Written exam
6	3	Determination of time rate of consolidation	Compressibility of Soil-Consolidation Settlement	Lecture	Written exam
7	3	How to accelerate consolidation settlement	Compressibility of Soil-Consolidation Settlement	Lecture	Written exam
8	3	Introduction to shear strength of soil	Shear Strength of Soil	Lecture	Written exam
9	3	Derivation of Mohr-Coulomb Failure Criterion	Shear Strength of Soil	Lecture	Written exam
10	3	Determination of shear strength parameters from laboratory tests	Shear Strength of Soil	Lecture	Written exam
11	3	Application of finding shear strength parameters from laboratory tests	Shear Strength of Soil	Lecture	Written exam
12	3	Application of finding shear strength parameters from laboratory tests	Shear Strength of Soil	Lecture	Written exam
13	3	Introduction to lateral earth pressure	Lateral Earth Pressure	Lecture	Written exam
14	3	Derivation of Rankine's Theory of active and passive pressure	Lateral Earth Pressure	Lecture	Written exam
15	3	Application of Rankine's Theory of active and passive pressure	Lateral Earth Pressure	Lecture	Written exam

11. Infrastructure	
1- Required reading: · Books · COURSE MATERIALS · OTHER	- Principles of Geotechnical Engineering (By: Braja M. Das, 7th Ed.)
2. Key references (sources)	
A- Recommended books and references (scientific journals, reports ,....	-Soil Mechanics (By: R.F. Craig, 4th Ed. or higher) -Soil Mechanics (By: T.W. Lambe and R.V. Whitman)
B- Electronic references, websites	Reputable websites. Libraries sites in some international universities.

12. Course development plan

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

The model description provides a brief description of the main features of the course and the scientific outputs that the model student is expected to achieve if the student takes advantage of the learning opportunities available for the course. It should be compared with the description of the program.

1. Teaching Institution	University of Basrah
2. University Department/Centre	Civil Engineering Department
3. Course title/code	Reinforced concrete Design II
4. Modes of Attendance offered	Class attendance or online
5. Semester/Year	2nd semester / 3rd year
6. Number of hours tuition (total)	75 hrs
7. Date of production/revision of this specification	2024
8. Aims of the Course	
• The course aims to present the essential method of analysis and design reinforced concrete two way slabs.	

9· Learning Outcomes, Teaching, Learning and Assessment Method
A- Knowledge and Understanding A1- Application Examples and problem of analysis and design of two-way slab system using ACI coefficient method.

A2- analysis and design of short column. A3- Examples and application for using design chart and table in analsyis and Design of column A4- .application on understanding and calculation the development length of steel bars
B. Subject-specific skills B1 - Apply quantitative and numerical methods for the purpose of solving engineering problems. B2 - Use basic knowledge to research new technologies.
Teaching and Learning Methods
• Scientific and research skills are developed through teaching and learning activities. Analysis and problem solving skills are further developed by means of a set of problems prepared by the lecturers in small study groups and all work submitted is evaluated and responded to.
Assessment methods
• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
C. Thinking Skills C1- Attention: Arousing the students' attention by implementing one of the applied programs on the display screen in the hall. C2- Response: Follow up the student's interaction with the material displayed on the screen. C3- Attention: Follow up on the interest of the student who interacted more with the presented material, by increasing this interaction by requesting other programs and applications to display. C4 - Forming the direction: meaning that the student is sympathetic to the presentation and may have an opinion about the direction of the presented topic and defend it. C 5- Formation of value behavior: meaning that the student reaches the top of the emotional ladder, so that he has a stable level in the lesson and does not become lazy or fidgety.
Teaching and Learning Methods

- The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject.
- The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum.
- The method of laboratory display using special devices for measuring the different properties of the substance under experiment.

Assessment methods
• Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture. • Sudden exams during the theoretical and practical lecture. • Quarterly exams for the theoretical and practical side. • Final exams for the theoretical and practical side.
D. General and Transferable Skills (other skills relevant to employability and personal development) D1- Develop the student's ability to perform the duties and deliver them on time D2 - Logical and programmatic thinking to find programmatic solutions to various problems D3 - developing the student's ability to dialogue and debate D4 - Develop the student's ability to deal with modern technology, especially the Internet

10. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	5	Slabs type	Introduction	Lecture	Written exam
2	5	Two way slab behavior under load	Two way slabs	Lecture	Written exam
3	5	Load slab transfer to adjacent beams	Two way slab	Lecture	Written exam
4	5	Two way slab analysis using ACI code method	Two way slab Analysis	Lecture	Written exam

5	5	Reinforced two way slabs system design	Two way slab Design	Lecture	Written exam
6	5	Application Examples on design and analysis of Two way slab	Practical Examples	Lecture	Written exam
7	5	Introduction	Columns	Lecture	Written exam
8	5	Column under concentrated axial load	Analysis of column	Lecture	Written exam
9	5	Column under concentrated axial load	application Examples	Lecture	Written exam
10	5	Column under uniaxial load	Analysis and design of column	Lecture	Written exam
11	5	Column under uniaxial load	application Examples	Lecture	Written exam
12	5	Column under biaxial loads	Analysis and design of column	Lecture	Written exam
13	5	Column under biaxial loads	application Examples	Lecture	Written exam
14	5	Introduction	Development length	Lecture	Written exam
15	5	Application examples	Development length	Lecture	Written exam

11. Infrastructure	
1- Required reading: · Books · COURSE MATERIALS · OTHER	
2. Key references (sources)	- Structural Concrete Theory and Design , By Nadim Hasson, Akthem Aktham Al manseer , 6th Edition 2015 2- Reinforced concrete design , 7th Edition 2007 By Chu Kai Wang, Charles G salmon and Joe A Pincheire 3- Design of Reinforced concrete Structures , 2nd Edition 2008 By Mohammed Tharwat Ghonein, Vol. 3 4- Design of concrete Structure , 14th Edition 2010 By Arthur H. Nilson , Daved Derwin and Charles W . Dolan

	5- Reinforced concrete design , 6th Edition 2009 By Edward G. Nawy 6- ACI Code 318- 2019
A- Recommended books and references (scientific journals, reports ,....	
B- Electronic references, websites	Reputable websites. Libraries sites in some international universities.
12. Course development plan	

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

The course provides the possibility of designing different drainage systems, providing accurate details of soil permeability and the method of calculating the permeability coefficient, types of trocars and their differences, the design of open drainage channels and the design of covered trocars, the distance between tubular trocars and details of vertical drainage.

1. Teaching Institution	University of Basrah
2. University Department/Centre	Civil Engineering Department
3. Course title/code	Drainage Engineering
4. Modes of Attendance offered	Class attendance or online
5. Semester/Year	2nd semester / 3rd year
6. Number of hours tuition (total)	45 hrs
7. Date of production/revision of this specification	2024
8. Aims of the Course	

9· Learning Outcomes, Teaching, Learning and Assessment Method
A- Knowledge and Understanding

A1- Clarify the basic concepts of drainage engineering systems and their applications in agricultural fields. A2- Gaining the ability to deal with the problems of rising groundwater levels. Acquisition of basic skills in managing puncture systems. A3- Gaining experience in designing the puncture system and its suitability according to the different surrounding conditions. Gaining experience in knowing the difference between the old and modern puncture systems. A4- Optimum management of the puncture system.
B. Subject-specific skills B1 - The ability to design puncture systems in their various ways. B2 - The ability to think about the problems of rising groundwater levels. B3 - Writing scientific reports and reading charts and tables.
Teaching and Learning Methods
• Readings, self-learning, panel discussions. • Exercises and activities in the lecture. • Homework. • Directing students to some websites to benefit and develop their capabilities. • Conducting seminars to explain and analyze a specific issue and find solutions to it
Assessment methods
• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
C. Thinking Skills C1- Attention: Arousing the students' attention by implementing one of the applied programs on the display screen in the hall. C2- Response: Follow up the student's interaction with the material displayed on the screen. C3- Attention: Follow up on the interest of the student who interacted more with the presented material, by increasing this interaction by requesting other programs and applications to display.

C4 - Forming the direction: meaning that the student is sympathetic to the presentation and may have an opinion about the direction of the presented topic and defend it. C 5- Formation of value behavior: meaning that the student reaches the top of the emotional ladder, so that he has a stable level in the lesson and does not become lazy or fidgety.
Teaching and Learning Methods
• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.
Assessment methods
• Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture. • Sudden exams during the theoretical and practical lecture. • Quarterly exams for the theoretical and practical side. • Final exams for the theoretical and practical side.
D. General and Transferable Skills (other skills relevant to employability and personal development) D1- Develop the student's ability to perform the duties and deliver them on time D2 - Logical and programmatic thinking to find programmatic solutions to various problems D3 - developing the student's ability to dialogue and debate D4 - Develop the student's ability to deal with modern technology, especially the Internet

10. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method

1	3	Definition of drainage, and benefits of drainage	Introduction	theoretical	questions and discussion
2	3	drainage project investigations	Introduction	theoretical	questions and discussion
3	3	Soil permeability, a method for calculating the permeability coefficient	Introduction	theoretical	questions and discussion
4	3	Types of drainage system	Drainage networks	theoretical	questions and discussion
5	3	Open channel of drainage system	Drainage networks	theoretical	questions and discussion
6	3	Vertical drainage	Drainage networks	theoretical	questions and discussion
7	3	Continuity equation, Manning equation	Design of drainage system	theoretical	questions and discussion
8	3	Examples for design of drainage system	Design of drainage system	theoretical	questions and discussion
9	3	Examples for design of drainage system	Design of drainage system	theoretical	questions and discussion
10	3	Hooghoudt equation	Spacing of drains	theoretical	questions and discussion

11	3	Hooghoudt equation for layered soil	Spacing of drains	theoretical	questions and discussion
12	3	Equivalent depth	Spacing of drains	theoretical	questions and discussion
13	3	Hydraulic conductivity in the case of steady flow of a confined and unconfined aquifer	Vertical drainage	theoretical	questions and discussion
14	3	Hydraulic conductivity in case of unsteady flow	Vertical drainage	theoretical	questions and discussion
15	3	Pumping from multiple wells	Vertical drainage	theoretical	questions and discussion

11. Infrastructure	
1- Required reading: · Books · COURSE MATERIALS · OTHER	
2. Key references (sources)	
A- Recommended books and references (scientific journals, reports ,....	
B- Electronic references, websites	Reputable websites. Libraries sites in some international universities.

12. Course development plan

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

The model description provides a brief description of the main features of the course and the scientific outputs that the model student is expected to achieve if the student takes advantage of the learning opportunities available for the course. It should be compared with the description of the program.

1. Teaching Institution	University of Basrah
2. University Department/Centre	Civil Engineering Department
3. Course title/code	Engineering Economy
4. Modes of Attendance offered	Class attendance or online
5. Semester/Year	2nd semester / 3rd year
6. Number of hours tuition (total)	30 hrs
7. Date of production/revision of this specification	2024
8. Aims of the Course	
• The course aims to present the fundamentals of project management with special focus on Project Selection stage, cost estimation, cash flow, Crashing, EVM, Risk management and contracts	

9· Learning Outcomes, Teaching, Learning and Assessment Method

A- Knowledge and Understanding A1- Introduction, strategic planning, Project Selection process. A2- Earn Value Management and project compression technique. A3- Risk and Procurement Management. A4- Stakeholder and Human resource Management
B. Subject-specific skills B1 – economic evaluation methods and cost estimation B2 – application of EVM and crashing techniques.
Teaching and Learning Methods
• Scientific and research skills are developed through teaching and learning activities. Analysis and problem-solving skills are further developed by means of a set of problems prepared by the lecturers in small study groups and all work submitted is evaluated and responded to.
Assessment methods
• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
C. Thinking Skills C1- Attention: Arousing the students' attention by implementing one of the applied programs on the display screen in the hall. C2- Response: Follow up the student's interaction with the material displayed on the screen. C3- Attention: Follow up on the interest of the student who interacted more with the presented material, by increasing this interaction by requesting other programs and applications to display. C4 - Forming the direction: meaning that the student is sympathetic to the presentation and may have an opinion about the direction of the presented topic and defend it. C 5- Formation of value behavior: meaning that the student reaches the top of the emotional ladder, so that he has a stable level in the lesson and does not become lazy or fidgety.
Teaching and Learning Methods

- The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject.
- The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum.
- The method of laboratory display using special devices for measuring the different properties of the substance under experiment.

Assessment methods
• Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture. • Sudden exams during the theoretical and practical lecture. • Quarterly exams for the theoretical and practical side. • Final exams for the theoretical and practical side.
D. General and Transferable Skills (other skills relevant to employability and personal development) D1- Develop the student's ability to perform the duties and deliver them on time D2 - Logical and programmatic thinking to find programmatic solutions to various problems D3 - developing the student's ability to dialogue and debate D4 - Develop the student's ability to deal with modern technology, especially the Internet

10. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2	Introduction to Strategic Planning and Project Selection	Introduction to project management	Lecture	Written exam
2	2	Project Selection Methods	Simple and Compound Interest	Lecture	Written exam

3	2	Project Selection Methods	Net Present Value (NPV)	Lecture	Written exam
4	2	Project Selection Methods	Payback Period (PP)	Lecture	Written exam
5	2	Project Selection Methods	Return On Investment (ROI), Internal Rate of Return (IRR)	Lecture	Written exam
6	2	Project Selection Methods	Accounting Rate of Return (ARR)	Lecture	Written exam
7	2	Cost Management	Cost Estimation	Lecture	Written exam
8	2	Cost Management	Cash Flow	Lecture	Written exam
9	2	Project Monitoring and Control	Crashing	Lecture	Written exam
10	2	Project Monitoring and Control	EVM	Lecture	Written exam
11	2	Risk Management	Planning for Risk	Lecture	Written exam
12	2	Procurement Management	Contracts	Lecture	Written exam
13	2	Linear Programming	LP Formulation and LP Simplex	Lecture	Written exam
14	2	Stakeholder Management	Stakeholder Management	Lecture	Written exam
15	2	Human resource management	Human resource management	Lecture	Written exam

11. Infrastructure	
1- Required reading: · Books · COURSE MATERIALS · OTHER	1. A Guide to the project management body of knowledge – PMI. 2. إدارة المشاريع الإنشائية والعلاقات المهنية: احسان العطار
2. Key references (sources)	
A- Recommended books and references (scientific journals, reports ,....	1. Project Management, A Systems Approach to Planning, Scheduling, and Controlling, 10th edition, KERZNER 2. Principles of Construction management By: Roy Piltcher 3. Construction Planning, Programming and Control by Brian Cooke 4. Operations Management Creating Value Along the Supply Chain Russell - Chapter 9: Project management
B- Electronic references, websites	Reputable websites. Libraries sites in some international universities.

12. Course development plan

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

The model description provides a brief description of the main features of the course and the scientific outputs that the model student is expected to achieve if the student takes advantage of the learning opportunities available for the course. It should be compared with the description of the program.

1. Teaching Institution	University of Basrah
2. University Department/Centre	Civil Engineering Department
3. Course title/code	Transportation Engineering
4. Modes of Attendance offered	Class attendance or online
5. Semester/Year	2nd semester / 3rd year
6. Number of hours tuition (total)	45 hrs
7. Date of production/revision of this specification	2024
8. Aims of the Course	
This course aims to present the basic concepts of transportation planning as an introduction to studying the process of travel demand forecasting and public transportation.	

9· Learning Outcomes, Teaching, Learning and Assessment Method

A- Knowledge and Understanding A1- Application of the basic elements of transportation planning. A2- Application of the sequential steps of the travel demand forecasting process (four-step process). A3- Introduction/Entrance to public transportation.
B. Subject-specific skills B1 - Ability to identify and analyze engineering problems B2 - Apply quantitative and numerical methods for the purpose of solving transportation engineering problems. B3 - Ability to design, collect, analyze and interpret data and data.
Teaching and Learning Methods
• Scientific and research skills are developed through teaching and learning activities. Analysis and problem solving skills are further developed by means of a set of problems prepared by the lecturers in small study groups and all work submitted is evaluated and responded to.
Assessment methods
• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
C. Thinking Skills C1- Attention: Arousing the students' attention by implementing one of the applied programs on the display screen in the hall. C2- Response: Follow up the student's interaction with the material displayed on the screen. C3- Attention: Follow up on the interest of the student who interacted more with the presented material, by increasing this interaction by requesting other programs and applications to display. C4 - Forming the direction: meaning that the student is sympathetic to the presentation and may have an opinion about the direction of the presented topic and defend it. C 5- Formation of value behavior: meaning that the student reaches the top of the emotional ladder, so that he has a stable level in the lesson and does not become lazy or fidgety.
Teaching and Learning Methods

- The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject.
- The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum.
- The method of laboratory display using special devices for measuring the different properties of the substance under experiment.

Assessment methods
• Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture. • Sudden exams during the theoretical and practical lecture. • Quarterly exams for the theoretical and practical side. • Final exams for the theoretical and practical side.
D. General and Transferable Skills (other skills relevant to employability and personal development) D1- Develop the student's ability to perform the duties and deliver them on time D2 - Logical and programmatic thinking to find programmatic solutions to various problems D3 - developing the student's ability to dialogue and debate D4 - Develop the student's ability to deal with modern technology, especially the Internet

10. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	3	Introduction to Transportation Engineering	Introduction and Background	Lecture	Written exam
2	3	Introduction to Transportation Engineering	History of transportation engineering	Lecture	Written exam
3	3	Introduction to Transportation Engineering	Modes of Transportation & mode selection	Lecture	Written exam
4	3	Transportation Planning	Urban transportation Planning	Lecture	Written exam

5	3	Transportation Planning	Basic Elements of Transportation Planning	Lecture	Written exam
6	3	Travel Demand Forecasting	Travel Demand Forecasting process	Lecture	Written exam
7	3	Travel Demand Forecasting	Data Collection	Lecture	Written exam
8	3	Travel Demand Forecasting	Trip Generation	Lecture	Written exam
9	3	Travel Demand Forecasting	Trip Generation	Lecture	Written exam
10	3	Travel Demand Forecasting	Trip Distribution	Lecture	Written exam
11	3	Travel Demand Forecasting	Modal Split	Lecture	Written exam
12	3	Travel Demand Forecasting	Traffic Assignment	Lecture	Written exam
13	3	Public Transportation	Bus and Rail Operations	Lecture	Written exam
14	3	Public Transportation	Capacity of Bus Stop	Lecture	Written exam
15	3	Public Transportation	Constructing Route Schedule	Lecture	Written exam

11. Infrastructure	
1- Required reading: · Books · COURSE MATERIALS · OTHER	Traffic & Highway Engineering (4th Edition, SI) Nicholas J. Garber and Lester A. Hoel Cengage Learning, Stamford, USA, 2010.
2. Key references (sources)	
A- Recommended books and references (scientific journals, reports ,....	
B- Electronic references, websites	Reputable websites. Libraries sites in some international universities.

12. Course development plan
Update and develop academic subjects periodically.

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

The model description provides a brief description of the main features of the course and the scientific outputs that the model student is expected to achieve if the student takes advantage of the learning opportunities available for the course. It should be compared with the description of the program.

1. Teaching Institution	University of Basrah
2. University Department/Centre	Civil Engineering Department
3. Course title/code	Computer Applications -II
4. Modes of Attendance offered	Class attendance or online
5. Semester/Year	2nd semester / 3rd year
6. Number of hours tuition (total)	60 hrs
7. Date of production/revision of this specification	2024
8. Aims of the Course	
• The course aims to introduce the structural analysis and design using CSI ETABS.	

9· Learning Outcomes, Teaching, Learning and Assessment Method
A- Knowledge and Understanding A1- Structural analysis and design of structures using CSI ETABS.

B. Subject-specific skills B1- Structural analysis and design of structures using CSI ETABS.
Teaching and Learning Methods
• Scientific and research skills are developed through teaching and learning activities. Analysis and problem solving skills are further developed by means of a set of problems prepared by the lecturers in small study groups and all work submitted is evaluated and responded to.
Assessment methods
• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
C. Thinking Skills C1- Attention: Arousing the students' attention by implementing one of the applied programs on the display screen in the hall. C2- Response: Follow up the student's interaction with the material displayed on the screen. C3- Attention: Follow up on the interest of the student who interacted more with the presented material, by increasing this interaction by requesting other programs and applications to display. C4 - Forming the direction: meaning that the student is sympathetic to the presentation and may have an opinion about the direction of the presented topic and defend it. C 5- Formation of value behavior: meaning that the student reaches the top of the emotional ladder, so that he has a stable level in the lesson and does not become lazy or fidgety.
Teaching and Learning Methods
• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.

Assessment methods
• Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture. • Sudden exams during the theoretical and practical lecture. • Quarterly exams for the theoretical and practical side. • Final exams for the theoretical and practical side.
D. General and Transferable Skills (other skills relevant to employability and personal development) D1- Develop the student's ability to perform the duties and deliver them on time D2 - Logical and programmatic thinking to find programmatic solutions to various problems D3 - developing the student's ability to dialogue and debate D4 - Develop the student's ability to deal with modern technology, especially the Internet

10. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	4	Introduction to Etabs	Introduction to Etabs	Practice	Practical exam
2	4	Modelling of the Structures	Modelling of the Structures	Practice	Practical exam
3	4	Modelling of the Structures	Modelling of the Structures	Practice	Practical exam
4	4	Modelling of the Structures	Modelling of the Structures	Practice	Practical exam
5	4	Loading Definition	Loading Definition	Practice	Practical exam
6	4	Loading Application	Loading Application	Practice	Practical exam
7	4	Lateral Loads	Lateral Loads	Practice	Practical exam
8	4	Structural Analysis	Structural Analysis	Practice	Practical exam

9	4	Results Display	Results Display	Practice	Practical exam
10	4	Results Display	Results Display	Practice	Practical exam
11	4	Reinforced Concrete Frame Design	Reinforced Concrete Frame Design	Practice	Practical exam
12	4	Reinforced Concrete Frame Design	Reinforced Concrete Frame Design	Practice	Practical exam
13	4	Steel Frame Design	Steel Frame Design	Practice	Practical exam
14	4	Steel Frame Design	Steel Frame Design	Practice	Practical exam
15	4	Export and Import Files	Export and Import Files	Practice	Practical exam

11. Infrastructure	
1- Required reading: · Books · COURSE MATERIALS · OTHER	1CSI ETABS Manuals
2. Key references (sources)	
A- Recommended books and references (scientific journals, reports ,....	
B- Electronic references, websites	Reputable websites. Libraries sites in some international universities.

12. Course development plan
Adding practical laboratory hours to conduct mechanics of material experiments

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

Prestressed concrete is a type of reinforced concrete that contains reinforcing bars that have been pre-stressed in order to generate initial stresses in the concrete section that are inherently opposite to the stresses that the structure is likely to be exposed to during service use. This is done by pulling (or stringing) a special type of heavy-duty bars to a certain amount inside the concrete and then releasing it after ensuring its impediment from returning to its original position and based on Newton's laws and other engineering laws that will in turn apply opposite stresses on the concrete, which are the initial stresses that make concrete pre-stressed based

1. Teaching Institution	University of Basrah
2. University Department/Centre	Civil Engineering Department
3. Course title/code	Prestressed concrete design
4. Modes of Attendance offered	Class attendance or online
5. Semester/Year	1st semester / 4th year
6. Number of hours tuition (total)	60 hrs
7. Date of production/revision of this specification	2024
8. Aims of the Course	
• Giving students an adequate idea of how to manufacture, install and dispose of pre-stressed concrete and its uses, as well as how to design pre-stressed concrete beams. Calculation of live and dead loads lifted on the precast concrete structure.	

9· Learning Outcomes, Teaching, Learning and Assessment Method
A- Knowledge and Understanding A1- Clarify the basic concepts of pre-stressed concrete. A2- Acquisition of skills in dealing with problems and issues related to pre-stressed concrete. A3- Acquisition of basic skills as an introduction to the design and implementation of prestressed concrete. A4- Gain a basic understanding of how this type of concrete works.
B. Subject-specific skills B1 - The ability to understand the mechanism of prestressing. B2 - The ability to think about addressing a particular problem or issue. B3 - Writing scientific reports. B4 - The ability to gain experience in dealing with solving structural problems related to prestressing.
Teaching and Learning Methods
• Readings, self-learning, panel discussions. • Exercises and activities in the lecture. • Homework. • Directing students to some websites to benefit and develop their capabilities. • Conducting seminars to explain and analyze a specific issue and find solutions to it
Assessment methods
• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
C. Thinking Skills C1- Attention: Arousing the students' attention by implementing one of the applied programs on the display screen in the hall. C2- Response: Follow up the student's interaction with the material displayed on the screen. C3- Attention: Follow up on the interest of the student who interacted more with the presented material, by increasing this interaction by requesting other programs and applications to display.

C4 - Forming the direction: meaning that the student is sympathetic to the presentation and may have an opinion about the direction of the presented topic and defend it. C 5- Formation of value behavior: meaning that the student reaches the top of the emotional ladder, so that he has a stable level in the lesson and does not become lazy or fidgety.
Teaching and Learning Methods
• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.

Assessment methods
• Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture. • Sudden exams during the theoretical and practical lecture. • Quarterly exams for the theoretical and practical side. • Final exams for the theoretical and practical side.
D. General and Transferable Skills (other skills relevant to employability and personal development) D1- Develop the student’s ability to perform the duties and deliver them on time D2 - Logical and programmatic thinking to find programmatic solutions to various problems D3 - developing the student's ability to dialogue and debate D4 - Develop the student's ability to deal with modern technology, especially the Internet

10. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method

1	4		effects of prestressing and advantages and disadvantages	theory	Questions and discussion
2	4		materials of prestress concrete	theory and tutorial	Questions and discussion and quiz
3	4		prestressing systems and equipment	theory	Questions and discussion
4	4		concrete stress control by prestressing	theory and tutorial	Questions and discussion and quiz
5	4		loss of prestress force	theory	Questions and discussion
6	4		elastic flexural analysis	theory and tutorial	Questions and discussion
7	4		elastic flexural analysis	theory	Questions and discussion
8	4		flexural strength	theory	Questions and discussion and quiz
9	4		flexural strength	theory and tutorial	Questions and discussion
10	4		shear in prestressed concrete beams	theory	Questions and discussion
11	4		shear in prestressed concrete beams	theory	Questions and discussion
12	4		camber and deflections	theory and tutorial	Questions and discussion
13	4		camber and deflections	theory	Questions and discussion and quiz
14	4		yield line analysis for slabs	theory	Questions and discussion
15	4		yield line analysis for slabs	theory and tutorial	Questions and discussion

11. Infrastructure	
1- Required reading: · Books · COURSE MATERIALS · OTHER	• Design of Concrete Structures, David Darwin, Charles W. Dolan, Arthur H. Nilson, McGraw-Hill. • Design of prestressed Concrete, Arthur H. Nilson, John Wily and Sons • Prestressed Concrete Building, Design, and Construction, Charles W. Dolan and H.R.(Trey) Hamilton, Springer. Design of prestressed Concrete Structures, T.Y. Lin and Ned H. Burns, John Wily and Sons
2. Key references (sources)	
A- Recommended books and references (scientific journals, reports ,....	
B- Electronic references, websites	Reputable websites. Libraries sites in some international universities.

12. Course development plan
• Conducting multiple visits to prestressed concrete plants or work sites for the purpose of gaining on-site experience

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

The model description provides a brief description of the main features of the course and the scientific outputs that the model student is expected to achieve if the student takes advantage of the learning opportunities available for the course. It should be compared with the description of the program.

1. Teaching Institution	University of Basrah
2. University Department/Centre	Civil Engineering Department
3. Course title/code	Foundation Engineering-I
4. Modes of Attendance offered	Class attendance or online
5. Semester/Year	1st semester / 4th year
6. Number of hours tuition (total)	60 hrs
7. Date of production/revision of this specification	2024
8. Aims of the Course	
• The course aims to know the designs of shallow foundations so that no shear failure occurs in the supporting soil for the foundation and foundation settlement is within the allowable value.	

9· Learning Outcomes, Teaching, Learning and Assessment Method

A- Knowledge and Understanding A1- Knowing how to conduct field investigations. A2- Knowing the methods of calculating the bearing capacity of the soil for shallow foundations. A3- Knowing the factors affecting the bearing capacity of the soil. A4- Knowing how to calculate the immediate, consolidation and secondary settlement. Knowing how to calculate the stresses in the soil mass as a result of loads of different shapes applied to the soil surface.
B. Subject-specific skills B1 – Design of shallow foundations for buildings so that the loads of the buildings transfer to the soil safely. B2 - Determine the number and depth of boring required in the soil investigations. B3 - Determine the total settlement that occurs under the shallow foundations.
Teaching and Learning Methods
• Scientific and research skills are developed through teaching and learning activities. Analysis and problem solving skills are further developed by means of a set of problems prepared by the lecturers in small study groups and all work submitted is evaluated and responded to.
Assessment methods
• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
C. Thinking Skills C1- Attention: Arousing the students' attention by implementing one of the applied programs on the display screen in the hall. C2- Response: Follow up the student's interaction with the material displayed on the screen. C3- Attention: Follow up on the interest of the student who interacted more with the presented material, by increasing this interaction by requesting other programs and applications to display. C4 - Forming the direction: meaning that the student is sympathetic to the presentation and may have an opinion about the direction of the presented topic and defend it.

C 5- Formation of value behavior: meaning that the student reaches the top of the emotional ladder, so that he has a stable level in the lesson and does not become lazy or fidgety.
Teaching and Learning Methods
• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.

Assessment methods
• Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture. • Sudden exams during the theoretical and practical lecture. • Quarterly exams for the theoretical and practical side. • Final exams for the theoretical and practical side.
D. General and Transferable Skills (other skills relevant to employability and personal development) D1- Develop the student's ability to perform the duties and deliver them on time D2 - Logical and programmatic thinking to find programmatic solutions to various problems D3 - developing the student's ability to dialogue and debate D4 - Develop the student's ability to deal with modern technology, especially the Internet

10. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	4	- Definition - Foundation Classification - General Requirements of Foundations - Foundation Selection	Introductory Concepts	Lecture	Written exam
2	4	- Purpose of Sub-soil Exploration - Planning for Site Investigation - Methods of Soil Exploration	Site Investigations	Lecture	Written exam
3	4	- Soil Samples - Causes of Disturbance - Soil Samplers - Number of Borings	Site Investigations	Lecture	Written exam
4	4	- Depth of Borings - Field Tests	Site Investigations	Lecture	Written exam
5	4	- Soil Exploration Report - Bearing Failure Patterns	Soil Bearing Capacity for Shallow Foundations	Lecture	Written exam
6	4	- Terzaghi's Ultimate Bearing Capacity Equation - Factor of Safety	Soil Bearing Capacity for Shallow Foundations	Lecture	Written exam
7	4	- Ground Water Table Effect - Meyerhof's Bearing Capacity Equations - General (Hansen's) Bearing Capacity Equations	Soil Bearing Capacity for Shallow Foundations	Lecture	Written exam
8	4	- Skempton's Method [$\varphi = 0$]	Soil Bearing Capacity for	Lecture	Written exam

		- Foundations Under Eccentric Loads	Shallow Foundations		
9	4	- Footings on Layered Soils - Footings Adjacent to a Slope	Soil Bearing Capacity for Shallow Foundations	Lecture	Written exam
10	4	-Bearing Capacity From Field Tests	Soil Bearing Capacity for Shallow Foundations	Lecture	Written exam
11	4	- Foundations Subjected to Uplift or Tension Forces - Types of Settlement - Contact Pressure	Foundation Settlement	Lecture	Written exam
12	4	-Stresses in the Soil Mass	Foundation Settlement	Lecture	Written exam
13	4	-Immediate Settlement Semi-infinite mass Saturated clay underlain by a hard stratum	Foundation Settlement	Lecture	Written exam
14	4	-Consolidation Settlement Compressibility characteristics Pre-consolidation pressure In-situ (e-log σ') curve -Calculation of one-dimensional consolidation settlement	Foundation Settlement	Lecture	Written exam
15	4	-Rate of consolidation settlement Correction for construction period -Secondary Settlement -Allowable Settlement	Foundation Settlement	Lecture	Written exam

11. Infrastructure	
1- Required reading: · Books · COURSE MATERIALS · OTHER	Foundation Analysis and Design, 5th Ed, Bowles, 1996.
2. Key references (sources)	
A- Recommended books and references (scientific journals, reports ,....	Principles of Foundation Engineering, 9th Ed, Das, 2019.
B- Electronic references, websites	Reputable websites. Libraries sites in some international universities.

12. Course development plan

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

The course provides the basic information for the properties of steel material and to identify the different design methods of steel structures and how to design structural members subjected to flexural forces, both lateral supported and not lateral supported. Also learn how to design the connections between the structural members

1. Teaching Institution	University of Basrah
2. University Department/Centre	Civil Engineering Department
3. Course title/code	Design of steel structures-2
4. Modes of Attendance offered	Class attendance or online
5. Semester/Year	1st semester / 4th year
6. Number of hours tuition (total)	45 hrs
7. Date of production/revision of this specification	2024
8. Aims of the Course	
• Definition of the structural properties of iron. • Introducing the methods of designing steel structures. • Design of structural members subject to flexion. • Design of links using screws and welding.	

9· Learning Outcomes, Teaching, Learning and Assessment Method

A- Knowledge and Understanding A1- Clarify the basic concepts of design A2- Acquisition of skills in designing members of steel structures subjected to flexural forces. A3- Recognize the design of the links between the structural members. .
B. Subject-specific skills B1 - The ability to design members of steel structures subject to bending. B2 - The ability to design different links for the structural members. B3 - Writing scientific reports. B4 - The ability to gain experience in dealing with programmed systems.
Teaching and Learning Methods
• Readings, self-learning, panel discussions. • Exercises and activities in the lecture. • Homework. • Directing students to some websites to benefit and develop their capabilities. • Conducting seminars to explain and analyze a specific issue and find solutions to it
Assessment methods
• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
C. Thinking Skills C1- Attention: Arousing the students' attention by implementing one of the applied programs on the display screen in the hall. C2- Response: Follow up the student's interaction with the material displayed on the screen. C3- Attention: Follow up on the interest of the student who interacted more with the presented material, by increasing this interaction by requesting other programs and applications to display. C4 - Forming the direction: meaning that the student is sympathetic to the presentation and may have an opinion about the direction of the presented topic and defend it.

C 5- Formation of value behavior: meaning that the student reaches the top of the emotional ladder, so that he has a stable level in the lesson and does not become lazy or fidgety.
Teaching and Learning Methods
• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.
Assessment methods
• Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture. • Sudden exams during the theoretical and practical lecture. • Quarterly exams for the theoretical and practical side. • Final exams for the theoretical and practical side.
D. General and Transferable Skills (other skills relevant to employability and personal development) D1- Develop the student's ability to perform the duties and deliver them on time D2 - Logical and programmatic thinking to find programmatic solutions to various problems D3 - developing the student's ability to dialogue and debate D4 - Develop the student's ability to deal with modern technology, especially the Internet

10. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	3		introduction	Lectures and discussions	questions
2	3		Limit states for steel design	Lectures and discussions	questions

3	3		Working and factored loads	Lectures and discussions	questions
4	3		Materials properties and specification	Lectures and discussions	Questions and quiz
5	3		Design of beams	Lectures and discussions	questions
6	3		Laterally supported beams	Lectures and discussions	questions
7	3		Laterally unsupported beams	Lectures and discussions	questions
8	3		Design for flexure	Lectures and discussions	questions
9	3		Web bearing and web buckling	Lectures and discussions	questions
10	3		Design of gantry girders	Lectures and discussions	questions
11	3		Moment capacity	Lectures and discussions	questions
12	3		Design for shear	Lectures and discussions	questions
13	3		Bolted connections	Lectures and discussions	Questions and quiz
14	3		Bolted connections	Lectures and discussions	questions
15	3		Welded connections		questions

11. Infrastructure	
1- Required reading: · Books · COURSE MATERIALS · OTHER	-Structural steelwork design to limit state theory . by D. Lam -BS 5950 part-1 - steelwork design guide to BS 5950-1

2. Key references (sources)	BS 5950 part-1
A- Recommended books and references (scientific journals, reports ,....	Steelwork design guide to BS 5950-1
B- Electronic references, websites	Reputable websites. Libraries sites in some international universities.

12. Course development plan

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

Study and design of different types of hydraulic installations.

1. Teaching Institution	University of Basrah
2. University Department/Centre	Civil Engineering Department
3. Course title/code	Hydraulic structures
4. Modes of Attendance offered	Class attendance or online
5. Semester/Year	1st semester / 4th year
6. Number of hours tuition (total)	60 hrs
7. Date of production/revision of this specification	2024
8. Aims of the Course	
• Ability to design and implement hydraulic installations.	

9· Learning Outcomes, Teaching, Learning and Assessment Method
A- Knowledge and Understanding A1- Cognitive abilities. Understanding the types of hydraulic installations.
B. Subject-specific skills B1 - Ability to work on civil engineering projects.

Teaching and Learning Methods
• Readings, self-learning, panel discussions. • Exercises and activities in the lecture. • Homework. • Directing students to some websites to benefit and develop their capabilities. • Conducting seminars to explain and analyze a specific issue and find solutions to it
Assessment methods
• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
C. Thinking Skills C1- Attention: Arousing the students' attention by implementing one of the applied programs on the display screen in the hall. C2- Response: Follow up the student's interaction with the material displayed on the screen. C3- Attention: Follow up on the interest of the student who interacted more with the presented material, by increasing this interaction by requesting other programs and applications to display. C4 - Forming the direction: meaning that the student is sympathetic to the presentation and may have an opinion about the direction of the presented topic and defend it. C 5- Formation of value behavior: meaning that the student reaches the top of the emotional ladder, so that he has a stable level in the lesson and does not become lazy or fidgety.
Teaching and Learning Methods
• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.

Assessment methods
• Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture. • Sudden exams during the theoretical and practical lecture. • Quarterly exams for the theoretical and practical side. • Final exams for the theoretical and practical side.
D. General and Transferable Skills (other skills relevant to employability and personal development) D1- Develop the student's ability to perform the duties and deliver them on time D2 - Logical and programmatic thinking to find programmatic solutions to various problems D3 - developing the student's ability to dialogue and debate D4 - Develop the student's ability to deal with modern technology, especially the Internet

10. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	4		Intoduction		
2	4		Piping and seepagr		
3	4		Design of floor		
4	4		Bligh method		
5	4		Lane method		
6	4		Khosla method		
7..15	4		Hydraulic jumpe Stilling basin Vertical drop Culvert Aqueduct Siphon Vertical gate Weir		

11. Infrastructure	
1- Required reading: · Books · COURSE MATERIALS · OTHER	Hydraulic structures by Novak
2. Key references (sources)	Theorynand Design of irragation structures by Gupta
A- Recommended books and references (scientific journals, reports ,....	
B- Electronic references, websites	Reputable websites. Libraries sites in some international universities.

12. Course development plan

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

Highway engineering is a multidisciplinary field with interconnected sub disciplines that include planning, safety, operations, design, and related fields such as structural, hydraulic, and geotechnical engineering.

1. Teaching Institution	University of Basrah
2. University Department/Centre	Civil Engineering Department
3. Course title/code	Highway Engineering/415
4. Modes of Attendance offered	Class attendance or online
5. Semester/Year	1st Semester / 4th year
6. Number of hours tuition (total)	45 hrs
7. Date of production/revision of this specification	2024
8. Aims of the Course	
• The course aims to present the basic element for geometric design for highway and deals with the dimensions and layout of visible features of the highway. The features normally considered are the cross section elements, sight distance consideration, horizontal curvature, gradients, and intersection.	

9· Learning Outcomes, Teaching, Learning and Assessment Method
A- Knowledge and Understanding highway design features A1- The history of highway engineering gives us an idea about the roads of ancient times. A2- The emphasis of the geometric design is to address the requirement of the driver and the vehicle such as safety, comfort, efficiency, etc. A3- The characteristics of cross-sectional elements are important in highway geometric design because they influence the safety and comfort. A4- Horizontal alignment is one of the most important features influencing the efficiency and safety of a highway.
B. Subject-specific skills B1 - Proper design of a horizontal curve, including elements within a single curve and consistency of curvature along a highway. B2 - Design speed is the single most important factor that affects the geometric design. B3 - Derive and evaluate the information needed to apply engineering analysis methods to unfamiliar problems.
Teaching and Learning Methods
• Scientific and research skills are developed through teaching and learning activities. Analysis and design solving skills are further developed by means of a set of problems prepared by the lecturers in small study groups and all work submitted is evaluated and responded to.
Assessment methods
• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
C. Thinking Skills C1- Attention: Arousing the students' attention by implementing one of the applied programs on the display screen in the hall. C2- Response: Follow up the student's interaction with the material displayed on the screen.

C3- Attention: Follow up on the interest of the student who interacted more with the presented material, by increasing this interaction by requesting other programs and applications to display. C4 - Forming the direction: meaning that the student is sympathetic to the presentation and may have an opinion about the direction of the presented topic and defend it. C 5- Formation of value behavior: meaning that the student reaches the top of the emotional ladder, so that he has a stable level in the lesson and does not become lazy or fidgety.
Teaching and Learning Methods
• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.

Assessment methods
• Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture. • Sudden exams during the theoretical and practical lecture. • Quarterly exams for the theoretical and practical side. • Final exams for the theoretical and practical side.
D. General and Transferable Skills (other skills relevant to employability and personal development) D1- Develop the student’s ability to perform the duties and deliver them on time D2 - Logical and programmatic thinking to find programmatic solutions to various problems D3 - developing the student's ability to dialogue and debate D4 - Develop the student's ability to deal with modern technology, especially the Internet

10. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	3	Introduction to Highway Engineering	History of Highway Engineering	Lecture	Oral exam
2	3	Introduction to geometric design	Factors affecting geometric design	Lecture	Oral exam
3	3	Road classification	Factors affecting classification of roads	Lecture	Oral exam
4	3	Cross Sectional Element	Right of Highway	Lecture	Oral exam
5	3	Highway Location	Principle of Highway Location	Lecture	Oral exam
6	3	Horizontal alignment I	Analysis of super-elevation	Lecture	Written exam
7	3	Horizontal alignment II	Extra Widening	Lecture	Written exam
8	3	Horizontal alignment III	Horizontal Curve Fundamentals	Lecture	Written exam
9	3	Horizontal alignment III	Reverse, compound, and Spiral curves	Lecture	Written exam
10	3	Horizontal alignment IV	Sight Distance on Horizontal Curve	Lecture	Written exam
11	3	Vertical Alignment	Parabolic Formula	Lecture	Written exam

12	3	Macadam Bases & Stabilization	Stabilized Bases & Subases	Lecture	Written exam
13	3	Earthworks & Subgrades	Compaction	Lecture	Written exam
14	3	Earthworks & Subgrades	Control of Embankment Construction	Lecture	Written exam
15	3	Highway Drainage	Surface Drainage System Design	Lecture	Written exams

11. Infrastructure	
1- Required reading: · Books · COURSE MATERIALS · OTHER	1-Handbook: The Handbook of Highway Engineering.By T.F.Fwa.2006. 2. Hand book : Highway Engineering Handbook .By Roger.L.b.and Kenneth J. 2nd.ed. 2004. .
2. Key references (sources)	Hand book: Handbook of Transportation Engineering. By Myer Kutz.2004.
A- Recommended books and references (scientific journals, reports ,....	AASHTO (1993)
B- Electronic references, websites	Reputable websites. Libraries sites in some international universities.

12. Course development plan
Addition new exam and subject

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

The model description provides a brief description of the main features of the course and the scientific outputs that the model student is expected to achieve if the student takes advantage of the learning opportunities available for the course. It should be compared with the description of the program.

1. Teaching Institution	University of Basrah
2. University Department/Centre	Civil Engineering Department
3. Course title/code	Water supply engineering
4. Modes of Attendance offered	Class attendance or online
5. Semester/Year	1st semester / 4th year
6. Number of hours tuition (total)	45 hrs
7. Date of production/revision of this specification	2024
8. Aims of the Course	
• The course aims to present the material deals with water distribution and treatment. It presents all the details of hydraulic design of water treatment plant units.	

9· Learning Outcomes, Teaching, Learning and Assessment Method
A- Knowledge and Understanding A1-water quantity calculation. A2- piping materials description.

A3- water distribution systems. A4- design of water treatment plant units.
B. Subject-specific skills B1- Mathematical solution of problems governing design of water distribution and treatment systems. B2- EXCEL Sheets for fascinating the solution of repeated calculations.
Teaching and Learning Methods
• Scientific and research skills are developed through teaching and learning activities. Analysis and problem solving skills are further developed by means of a set of problems prepared by the lecturers in small study groups and all work submitted is evaluated and responded to.
Assessment methods
• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
C. Thinking Skills C1- Attention: Arousing the students' attention by implementing one of the applied programs on the display screen in the hall. C2- Response: Follow up the student's interaction with the material displayed on the screen. C3- Attention: Follow up on the interest of the student who interacted more with the presented material, by increasing this interaction by requesting other programs and applications to display. C4 - Forming the direction: meaning that the student is sympathetic to the presentation and may have an opinion about the direction of the presented topic and defend it. C 5- Formation of value behavior: meaning that the student reaches the top of the emotional ladder, so that he has a stable level in the lesson and does not become lazy or fidgety.
Teaching and Learning Methods

- The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject.
- The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum.
- The method of laboratory display using special devices for measuring the different properties of the substance under experiment.

Assessment methods
• Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture. • Sudden exams during the theoretical and practical lecture. • Quarterly exams for the theoretical and practical side. • Final exams for the theoretical and practical side.
D. General and Transferable Skills (other skills relevant to employability and personal development) D1- Develop the student's ability to perform the duties and deliver them on time D2 - Logical and programmatic thinking to find programmatic solutions to various problems D3 - developing the student's ability to dialogue and debate D4 - Develop the student's ability to deal with modern technology, especially the Internet

10. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	3	The students will learn how to calculate the water quantity required for different uses and how to estimate future population	Quantity of Water	Lecture	Written exam
2	3	The students will learn How to select the material of pipes and what are the types of pipes and fittings	Piping materials	Lecture	Written exam
3	3	The students will have a knowledge about the types and components of water distribution systems and how	Water distribution systems	Lecture	Written exam

		to analyze these systems using Hardy Cross method.			
4	6	The students will have a knowledge about the types of pumping stations and pumps and how to select the appropriate pumps according to the characteristics of flow system.	Water pumping stations	Lecture	Written exam
5					
6	3	The students will learn what are the types of water intake structures and how to design these structures.	Water intakes	Lecture	Written exam
7	3	The students will have a knowledge about the types of water sources and water impurities and what are the components of conventional water treatment plant. They will learn, also, how to design rapid mix unit	Water treatment: introduction and rapid mix unit	Lecture	Written exam
8	3	The students will have a knowledge about the coagulation process, the types of coagulants and how to determine the required coagulant dose and how to design a chemical feed system.	Water treatment: Coagulation process	Lecture	Written exam
9	6	The students will have a knowledge about flocculation process and the types of flocculation units and how to design flocculation unit.	Water treatment: Flocculation unit	Lecture	Written exam
10				Lecture	Written exam
11	3	The students will have a knowledge about Introduction the sedimentation process, classes of settling and efficiency of discrete and flocculant settling processes.	Water treatment: Sedimentation process	Lecture	Written exam
12	3	The students will learn what are the types of sedimentation tanks, the components of sedimentation tanks and how to design sedimentation unit.	Water treatment: Sedimentation unit	Lecture	Written exam
13	3	The students will have a knowledge about the types of water filters and how to design filtration unit	Water treatment: Filtration unit	Lecture	Written exam
14	3			Lecture	Written exam
15	3	The students will have a knowledge about the types of water disinfectants and how to how to calculate disinfectant dose.	Water treatment: Disinfection unit	Lecture	Written exam

11. Infrastructure

1- Required reading: **· Books** **· COURSE MATERIALS** **· OTHER**	**1. Steel, E. W. and McGhee, T. J., "Water supply and sewerage", McGraw-Hill KOGAKUSHA, LTD, 1979.**
2. Key references (sources)	**1. Vissman, W., Hammer, M. and Perez, E. M., "Water supply and pollution control", 8th Ed., Pearson Education Limited, 2014.** **2. Binnie, C. and Kimber, M., "Basic water treatment", 5th Ed., Thomas Telford Limited, 2013.**
A- Recommended books and references (scientific journals, reports ,....	**1. Barut, E. E., "Water treatment plant design", 4th Ed., McGraw-Hill, Inc., 2005.** **2. Journal of Environmental Engineering**
B- Electronic references, websites	**Reputable websites.** **Libraries sites in some international universities.**

12. Course development plan
The course is considered complete in line with the hours allocated for it.

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

The model description provides a brief description of the main features of the course and the scientific outputs that the model student is expected to achieve if the student takes advantage of the learning opportunities available for the course. It should be compared with the description of the program.

1. Teaching Institution	University of Basrah
2. University Department/Centre	Civil Engineering Department
3. Course title/code	Methods of Construction
4. Modes of Attendance offered	Class attendance or online
5. Semester/Year	1st semester / 4th year
6. Number of hours tuition (total)	45 hrs
7. Date of production/revision of this specification	2024
8. Aims of the Course	
• The aim of the course is to provide the student by the necessary information and tools required for the site engineer in projects, costs and management of equipment.	

9· Learning Outcomes, Teaching, Learning and Assessment Method
A- Knowledge and Understanding A1- The costs of ownership and operating the equipment. A2- Knowledge of the appropriate type of equipment for earth works. A3- The methods of determining the productivity of equipment. A4- The forces and moments relating to concrete formworks.
B. Subject-specific skills B1 – Application of determining the ownership and operation of construction equipment. B2 – Determining the production of equipment. B3 – Design the forms of concrete structures.

Teaching and Learning Methods
• Scientific and research skills are developed through teaching and learning activities. Analysis and problem solving skills are further developed by means of a set of problems prepared by the lecturers in small study groups and all work submitted is evaluated and responded to.
Assessment methods
• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
C. Thinking Skills C1- Attention: Arousing the students' attention by implementing one of the applied programs on the display screen in the hall. C2- Response: Follow up the student's interaction with the material displayed on the screen. C3- Attention: Follow up on the interest of the student who interacted more with the presented material, by increasing this interaction by requesting other programs and applications to display. C4 - Forming the direction: meaning that the student is sympathetic to the presentation and may have an opinion about the direction of the presented topic and defend it. C 5- Formation of value behavior: meaning that the student reaches the top of the emotional ladder, so that he has a stable level in the lesson and does not become lazy or fidgety.
Teaching and Learning Methods
• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.

Assessment methods
• Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture. • Sudden exams during the theoretical and practical lecture. • Quarterly exams for the theoretical and practical side. • Final exams for the theoretical and practical side.
D. General and Transferable Skills (other skills relevant to employability and personal development) D1- Develop the student's ability to perform the duties and deliver them on time D2 - Logical and programmatic thinking to find programmatic solutions to various problems D3 - developing the student's ability to dialogue and debate D4 - Develop the student's ability to deal with modern technology, especially the Internet

10. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	3	Ownership cost	Depreciation	Lecture	Written exam
2	3	Ownership cost	Costs of insurance, tax, storage, and investment.	Lecture	Written exam
3	3	Operation cost	Cost of fuel and lubrication	Lecture	Written exam
4	3	Operation cost	Maintenance, tyre and operator costs.	Lecture	Written exam
5	3	Replacement and useful life	Evaluation of economic life	Lecture	Written exam
6	3	Power of equipment	Resistance of equipment.	Lecture	Written exam

7	3	Power of equipment	Actual horse power and traction force.	Lecture	Written exam
8	3	Earthwork equipment	Swelling and shrinkage	Lecture	Written exam
9	3	Soil compaction	Rollers and compactors	Lecture	Written exam
10	3	Tractors	Types and operation of Tractors	Lecture	Written exam
11	3	Scraper Types, work and productivity	Scrapers	Lecture	Written exam
12	3	Earth Hauling Equipment Production Calculation and Selection	Earth hauling Equipment	Lecture	Written exam
13	3	Soil loading types and productivity	Soil loading equipment	Lecture	Written exam
14	3	Types and productivity of digging equipment	Power Shovel	Lecture	Written exam
15	3	concrete formworks	Design of concrete formworks	Lecture	Written exam

11. Infrastructure	
1- Required reading: · Books · COURSE MATERIALS · OTHER	1. **Peurif oy, P .E. "Construction Planning, Equipment, and Methods"**

2. Key references (sources)	
A- Recommended books and references (scientific journals, reports ,....	
B- Electronic references, websites	Reputable websites. Libraries sites in some international universities.

12. Course development plan

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

The model description provides a brief description of the main features of the course and the scientific outputs that the model student is expected to achieve if the student takes advantage of the learning opportunities available for the course. It should be compared with the description of the program.

1. Teaching Institution	University of Basrah
2. University Department/Centre	Civil Engineering Department
3. Course title/code	Foundation Engineering-II
4. Modes of Attendance offered	Class attendance or online
5. Semester/Year	2nd semester / 4th year
6. Number of hours tuition (total)	60 hrs
7. Date of production/revision of this specification	2024
8. Aims of the Course	
The course aims to • Structural design of shallow foundation. • Knowing the ultimate bearing capacity of single piles and pile groups. • Knowing the stability of the sheet-pile walls. • Design of the structural members of braced cuts.	

9· Learning Outcomes, Teaching, Learning and Assessment Method
A- Knowledge and Understanding A1- Knowing the structural design of shallow foundations including single, combined and mat foundations. A2- Knowing the ultimate bearing capacity of individual piles and pile groups. A3- Knowing the stability of the sheet-pile walls (cantilever and anchored). A4- Knowing the design of the structural members in the braced cuts.
B. Subject-specific skills B1 - Determine type of the foundation that is suitable for the building. B2 – Structural design of shallow foundation. B3 - Determine the bearing capacity of the piles to carry the applied loads of the buildings. B4 - Determine the stability of the sheet-pile walls.
Teaching and Learning Methods
• Scientific and research skills are developed through teaching and learning activities. Analysis and problem solving skills are further developed by means of a set of problems prepared by the lecturers in small study groups and all work submitted is evaluated and responded to.
Assessment methods
• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
C. Thinking Skills C1- Attention: Arousing the students' attention by implementing one of the applied programs on the display screen in the hall. C2- Response: Follow up the student's interaction with the material displayed on the screen. C3- Attention: Follow up on the interest of the student who interacted more with the presented material, by increasing this interaction by requesting other programs and applications to display. C4 - Forming the direction: meaning that the student is sympathetic to the presentation and may have an opinion about the direction of the presented topic and defend it.

C 5- Formation of value behavior: meaning that the student reaches the top of the emotional ladder, so that he has a stable level in the lesson and does not become lazy or fidgety.
Teaching and Learning Methods
• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.

Assessment methods
• Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture. • Sudden exams during the theoretical and practical lecture. • Quarterly exams for the theoretical and practical side. • Final exams for the theoretical and practical side.
D. General and Transferable Skills (other skills relevant to employability and personal development) D1- Develop the student's ability to perform the duties and deliver them on time D2 - Logical and programmatic thinking to find programmatic solutions to various problems D3 - developing the student's ability to dialogue and debate D4 - Develop the student's ability to deal with modern technology, especially the Internet

10. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method

1	4	-Spread Footings (Pad and Wall) -Eccentrically Loaded Spread Footings	Structural Design of Shallow Foundations	Lecture	Written exam
2	4	-Rectangular Combined Footings -Trapezoidal Combined Footings	Structural Design of Shallow Foundations	Lecture	Written exam
3	4	-Strap Footings -Raft (Mat) Foundations	Structural Design of Shallow Foundations	Lecture	Written exam
4	4	Piled foundations -Introduction Definition Uses Types Choice Design criteria	Piled Foundations	Lecture	Written exam
5	4	-Ultimate Static Pile Capacity Ultimate point capacity	Piled Foundations	Lecture	Written exam
6	4	Skin resistance capacity	Piled Foundations	Lecture	Written exam
7	4	-Pile Groups Group efficiency Capacity of a pile group	Piled Foundations	Lecture	Written exam
8	4	Settlement of a pile group	Piled Foundations	Lecture	Written exam
9	4	-Load distribution in a pile group -Negative Skin Friction	Piled Foundations	Lecture	Written exam

10	4	Sheet-Pile Walls -Review of Lateral Earth Pressure Coulomb earth pressure theory Rankine earth pressure theory -Sheet-Pile Walls Types of sheet piling Safety factors -Cantilever Sheet piling Cantilever sheet piling in granular soil	Sheet-Pile Walls	Lecture	Written exam
11	4	Cantilever sheet piling in cohesive Soils (φ = 0) -Anchored Sheet piling; Free-Earth Support Rowe's moment reduction applied to free-earth support method	Sheet-Pile Walls	Lecture	Written exam
12	4	Capacity of deadman Location of deadman -Braced Cuts Pressure envelope for braced-cut design	Sheet-Pile Walls	Lecture	Written exam
13	4	Design of various components of a braced cut Bottom heaving of a cut in clay Slope Stability -Types of Slips -Stability Analysis	Sheet-Pile Walls	Lecture	Written exam

		-Total Stress Versus Effective Stress Analyses			
14	4	-Simplified Methods of Stability Analysis Infinite slopes Triangular cross-section Cylindrical failure (φ = 0 condition) Cylindrical failure (Taylor's stability charts	Slope Stability	Lecture	Written exam
15	4	-Slices Methods of Stability Analysis Fellenius method Simplified Bishop's method	Slope Stability	Lecture	Written exam

11. Infrastructure	
1- Required reading: · Books · COURSE MATERIALS · OTHER	Foundation Analysis and Design, 5th Ed, Bowles, 1996.
2. Key references (sources)	
A- Recommended books and references (scientific journals, reports ,....	Principles of Foundation Engineering, 9th Ed, Das, 2019.
B- Electronic references, websites	Reputable websites. Libraries sites in some international universities.

12. Course development plan

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

The course provides the basic information for the properties of steel material and to identify the different design methods of steel structures and how to design structural members subjected to flexural forces, both lateral supported and not lateral supported. Also learn how to design the connections between the structural members

1. Teaching Institution	University of Basrah
2. University Department/Centre	Civil Engineering Department
3. Course title/code	Design of steel structures-2
4. Modes of Attendance offered	Class attendance or online
5. Semester/Year	2nd semester / 4th year
6. Number of hours tuition (total)	45 hrs
7. Date of production/revision of this specification	2024
8. Aims of the Course	
• Definition of the method of designing iron joists made of plates. • Designs members subject to tension. • Design of members subject to compression. • Column base design.	

9· Learning Outcomes, Teaching, Learning and Assessment Method

A- Knowledge and Understanding A1- Clarify the basic concepts of design A2- Acquisition of skills in designing members of steel structures subjected to tensile or compressive forces A3- Understand the design of links and column bases. .
B. Subject-specific skills B1 - The ability to design members of steel structures subject to tensile or compression. B2 - The ability to design plate joists. B3 - The ability to design column bases
Teaching and Learning Methods
• Readings, self-learning, panel discussions. • Exercises and activities in the lecture. • Homework. • Directing students to some websites to benefit and develop their capabilities. • Conducting seminars to explain and analyze a specific issue and find solutions to it
Assessment methods
• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
C. Thinking Skills C1- Attention: Arousing the students' attention by implementing one of the applied programs on the display screen in the hall. C2- Response: Follow up the student's interaction with the material displayed on the screen. C3- Attention: Follow up on the interest of the student who interacted more with the presented material, by increasing this interaction by requesting other programs and applications to display. C4 - Forming the direction: meaning that the student is sympathetic to the presentation and may have an opinion about the direction of the presented topic and defend it.

C 5- Formation of value behavior: meaning that the student reaches the top of the emotional ladder, so that he has a stable level in the lesson and does not become lazy or fidgety.
Teaching and Learning Methods
• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.
Assessment methods
• Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture. • Sudden exams during the theoretical and practical lecture. • Quarterly exams for the theoretical and practical side. • Final exams for the theoretical and practical side.
D. General and Transferable Skills (other skills relevant to employability and personal development) D1- Develop the student's ability to perform the duties and deliver them on time D2 - Logical and programmatic thinking to find programmatic solutions to various problems D3 - developing the student's ability to dialogue and debate D4 - Develop the student's ability to deal with modern technology, especially the Internet

10. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	3		Design of plate girders	Lectures and discussions	questions
2	3		Moment capacity	Lectures and discussions	questions

3	3		Web design	Lectures and discussions	questions
4	3		Stiffeners design	Lectures and discussions	Questions and quiz
5	3		Tension members	Lectures and discussions	questions
6	3		Members with eccentric connections	Lectures and discussions	questions
7	3		Tension members with moments	Lectures and discussions	questions
8	3		Compound tension members	Lectures and discussions	questions
9	3		Compression members	Lectures and discussions	questions
10	3		Axially loaded compression members	Lectures and discussions	questions
11	3		Built-up columns	Lectures and discussions	questions
12	3		Members subjected to compression plus bending	Lectures and discussions	questions
13	3		Moments in columns of simple constructions	Lectures and discussions	Questions and quiz
14	3		Design of column base plate	Lectures and discussions	questions
15	3		Design of column base plate		questions

11. Infrastructure	
1- Required reading: · Books · COURSE MATERIALS · OTHER	-Structural steelwork design to limit state theory . by D. Lam -BS 5950 part-1 - steelwork design guide to BS 5950-1
2. Key references (sources)	BS 5950 part-1
A- Recommended books and references (scientific journals, reports ,....	Steelwork design guide to BS 5950-1
B- Electronic references, websites	Reputable websites. Libraries sites in some international universities.

12. Course development plan

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

The course provides general information about the water cycle and its relationship to everything that affects human life from the abundance of water suitable for consumption, as well as methods for calculating its quantities. Also the relationship of rain to the design of drainage networks and the drainage of rain water in cities. As well as information on engineering precautions to ward off the potential risk of flooding.

1. Teaching Institution	Basrah University
2. University Department/Centre	Civil Engineering Department
3. Course title/code	Engineering Hydrology
4. Modes of Attendance offered	Class attendance or online
5. Semester/Year	2nd semester / 4th year
6. Number of hours tuition (total)	60 hrs
7. Date of production/revision of this specification	2024
8. Aims of the Course	
• The course (Engineering Hydrology) aims to introduce the civil engineering student in the fourth stage to the various water sources, especially the sources of water coming from the atmosphere in the form of all forms of precipitation, especially rain. As well as the definition of the relationship of these precipitations to the abundance of fresh water through the study of methods of measuring the amount of rain reaching the surface of the earth and knowing the amount of water that will be lost in	

the form of evaporation or infiltration into the ground and the relationship of all this to the drainage of rivers and ways to benefit from it in the form of storage in fresh water bodies such as lakes and marshes. Also, one of the course objectives is to introduce the student to groundwater, how to calculate its quantities, and ways to benefit from and preserve it, as it is one of the important water sources.

9· Learning Outcomes, Teaching, Learning and Assessment Method
A- Knowledge and Understanding A1- Clarify the basic concepts of hydrology and its relationship to civil engineering. A2- Acquisition of skills in designing rainwater drainage networks. A3- Acquire basic skills in measuring and forecasting the future of rain and its relationship to river drainage and annual water quantities. A4- Gain a basic understanding of engineering designs and their applications in relation to rivers, dams and ferries bridges and flood protection installations.
B. Subject-specific skills B1 - The ability to understand the relationship of rain with engineering water phenomena. B2 - The ability to find solutions to extreme natural weather phenomena such as flooding. B3 - Writing detailed scientific reports for water accounts. B4 - The ability to gain experience in dealing with executive engineering plans for water facilities.
Teaching and Learning Methods
• Readings, self-learning, panel discussions. • Exercises and activities in the lecture. • Homework. • Directing students to some websites to benefit and develop their capabilities. • Conducting seminars to explain and analyze a specific issue and find solutions to it

Assessment methods
• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
C. Thinking Skills C1- Attention: Arousing the students' attention by implementing one of the applied programs on the display screen in the hall. C2- Response: Follow up the student's interaction with the material displayed on the screen. C3- Attention: Follow up on the interest of the student who interacted more with the presented material, by increasing this interaction by requesting other programs and applications to display. C4 - Forming the direction: meaning that the student is sympathetic to the presentation and may have an opinion about the direction of the presented topic and defend it. C 5- Formation of value behavior: meaning that the student reaches the top of the emotional ladder, so that he has a stable level in the lesson and does not become lazy or fidgety.

Teaching and Learning Methods
• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.
Assessment methods
• Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture. • Sudden exams during the theoretical and practical lecture. • Quarterly exams for the theoretical and practical side. • Final exams for the theoretical and practical side.

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1- Develop the student’s ability to perform the duties and deliver them on time

D2 - Logical and programmatic thinking to find programmatic solutions to various problems

D3 - developing the student's ability to dialogue and debate

D4 - Develop the student's ability to deal with modern technology, especially the Internet

10. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	4		Introduction		Class
2	4		Water Cycle		Class
3	4		Precipitations		Class
4	4		Rain Gages		Class
5	4		Average Rain		Class
6	4		Evaporation		Class
7	4		Infiltration		Class
9	4		Measurements of rivers		Class
10	4		Rating curve		Class
11	4		Hydrographs		Class
12	4				Class
13	4		Analysis of a Hydrograph		Class
14	4				Class
15	4				Class

11. Infrastructure	
1- Required reading: · Books · COURSE MATERIALS	

· OTHER	
2. Key references (sources)	**Engineering hydrology/ Subramanya 2008**
A- Recommended books and references (scientific journals, reports ,....	
B- Electronic references, websites	Reputable websites. Libraries sites in some international universities.

12. Course development plan

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

Pavement Design and Analysis deals with the study of different types of pavement like flexible pavement and rigid pavement, and study the materials of creates these types of pavements and properties, behaviors, and specifications.

1. Teaching Institution	University of Basrah
2. University Department/Centre	Civil Engineering Department
3. Course title/code	Pavement Design and Analysis /425
4. Modes of Attendance offered	Class attendance or online
5. Semester/Year	2nd Semester / 4th year
6. Number of hours tuition (total)	45 hrs
7. Date of production/revision of this specification	2024
8. Aims of the Course	
• The course aims to present the basic element for design the pavement (flexible & Rigid) also analyze all stresses and applied loads on the pavement and take in the consider choose the materials which used in the pavement construction.	

9· Learning Outcomes, Teaching, Learning and Assessment Method
A- Knowledge and Understanding of pavement design and analysis. A1- Bituminous materials, Natural Asphalt, constituents of asphalt cement, and test of asphalt A2- The emphasis of the different aggregate characteristics with size and gradation, and methods of blending for dry mix design. A3- Bituminous mix design, with the objective of mix design. A4- Study of stress distribution through the pavement with the calculation of flexible pavement stresses and deflections.
B. Subject-specific skills B1 – Marshal mix design determines the optimum bitumen content for the mix of the flexible pavement. B2 – Flexible pavement design methods (CBR method and AASHTO Design method). B3 – Rigid pavement types and types of joints in the rigid pavement, and temperature stresses.
Teaching and Learning Methods
• Scientific and research skills are developed through teaching and learning activities. Analysis and design solving skills are further developed employing a set of problems prepared by the lecturers in small study groups and all work submitted is evaluated and responded to.
Assessment methods
• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
C. Thinking Skills C1- Attention: Arousing the students' attention by implementing one of the applied programs on the display screen in the hall. C2- Response: Follow up the student's interaction with the material displayed on the screen. C3- Attention: Follow up on the interest of the student who interacted more with the presented material, by increasing this interaction by requesting other programs and applications to display.

C4 - Forming the direction: meaning that the student is sympathetic to the presentation and may have an opinion about the direction of the presented topic and defend it. C 5- Formation of value behavior: meaning that the student reaches the top of the emotional ladder, so that he has a stable level in the lesson and does not become lazy or fidgety.
Teaching and Learning Methods
• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.

Assessment methods
• Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture. • Sudden exams during the theoretical and practical lecture. • Quarterly exams for the theoretical and practical side. • Final exams for the theoretical and practical side.
D. General and Transferable Skills (other skills relevant to employability and personal development) D1- Develop the student's ability to perform the duties and deliver them on time D2 - Logical and programmatic thinking to find programmatic solutions to various problems D3 - developing the student's ability to dialogue and debate D4 - Develop the student's ability to deal with modern technology, especially the Internet

10. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	3	Bituminous Materials	Test for Asphalt	Lecture	Oral exam
2	3	Aggregate	Physical Properties of Aggregate	Lecture	Oral exam
3	3	Gradation	Methods of Blending	Lecture	Written exam
4	3	Bituminous Mix Design	The objective of Mix Design	Lecture	Oral exam
5	3	Marshal Mix Design	Marshall Stability and Flow	Lecture	Written exam
6	3	Stress distribution through the pavement	Calculation of stresses and deflections	Lecture	Written exam
7	3	Introduction to pavement design	Types of pavements	Lecture	Oral exam
8	3	Flexible pavement design methods	CBR Method	Lecture	Written exam
9	3	Flexible pavement design methods	AASHTO Design Method	Lecture	Written exam
10	3	Flexible pavement design methods	Cumulative ESAL	Lecture	Written exam
11	3	Rigid Pavement	Rigid Pavement Types	Lecture	Oral exam
12	3	Rigid Pavement	Types of Joints in Rigid Pavement	Lecture	Oral exam
13	3	Rigid Pavement	Critical load position	Lecture	Written exam
14	3	Rigid Pavement	Temperature Stresses	Lecture	Written exam

15	3	Check Points	Rigid Pavement	Lecture	Written exams

11. Infrastructure	
1- Required reading: · Books · COURSE MATERIALS · OTHER	1-Handbook: The Handbook of Highway Engineering.By T.F.Fwa.2006. 2. Hand book : Highway Engineering Handbook .By Roger.L.b.and Kenneth J. 2nd.ed. 2004. .
2. Key references (sources)	Hand book: Handbook of Transportation Engineering. By Myer Kutz.2004.
A- Recommended books and references (scientific journals, reports ,....	AASHTO (1993)
B- Electronic references, websites	Reputable websites. Libraries sites in some international universities.

12. Course development plan
Addition new exam and subject

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

The model description provides a brief description of the main features of the course and the scientific outputs that the model student is expected to achieve if the student takes advantage of the learning opportunities available for the course. It should be compared with the description of the program.

1. Teaching Institution	University of Basrah
2. University Department/Centre	Civil Engineering Department
3. Course title/code	Sanitary engineering/ CE426
4. Modes of Attendance offered	Class attendance or online
5. Semester/Year	2nd semester / 4th year
6. Number of hours tuition (total)	45 hrs
7. Date of production/revision of this specification	2024
8. Aims of the Course	
• The course aims to present the material deals with sewer systems and sanitary sewage treatment plant description and design.	

9· Learning Outcomes, Teaching, Learning and Assessment Method
A- Knowledge and Understanding A1- Determination of storm water and sanitary sewage quantities.

A2- Design of sewer systems. A3- Design of sewage treatment units.
B. Subject-specific skills B1- Mathematical solution of problems governing design of sewer systems and sewage treatment plant. B2- EXCEL Sheets for fascinating the solution of repeated calculations.
Teaching and Learning Methods
• Scientific and research skills are developed through teaching and learning activities. Analysis and problem solving skills are further developed by means of a set of problems prepared by the lecturers in small study groups and all work submitted is evaluated and responded to.
Assessment methods
• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
C. Thinking Skills C1- Attention: Arousing the students' attention by implementing one of the applied programs on the display screen in the hall. C2- Response: Follow up the student's interaction with the material displayed on the screen. C3- Attention: Follow up on the interest of the student who interacted more with the presented material, by increasing this interaction by requesting other programs and applications to display. C4 - Forming the direction: meaning that the student is sympathetic to the presentation and may have an opinion about the direction of the presented topic and defend it. C 5- Formation of value behavior: meaning that the student reaches the top of the emotional ladder, so that he has a stable level in the lesson and does not become lazy or fidgety.
Teaching and Learning Methods

• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.

Assessment methods
• Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture. • Sudden exams during the theoretical and practical lecture. • Quarterly exams for the theoretical and practical side. • Final exams for the theoretical and practical side.
D. General and Transferable Skills (other skills relevant to employability and personal development) D1- Develop the student's ability to perform the duties and deliver them on time D2 - Logical and programmatic thinking to find programmatic solutions to various problems D3 - developing the student's ability to dialogue and debate D4 - Develop the student's ability to deal with modern technology, especially the Internet

10. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	3	The students will learn how to calculate sanitary sewage and storm water quantities	Quantity of sewage	Lecture	Written exam
2 3	6	The students will have a knowledge about the types of sewer systems, components of sewer systems, mechanisms of flow in sewer systems and the	Flow in Sewers	Lecture	Written exam

		formula govern the flow in sewer systems.			
4 5	6	The students will learn how to design sanitary and storm sewer systems	Design of sewer systems	Lecture	Written exam
6	3	The students will have a knowledge about the pollutants of sanitary sewage and the processes of sewage treatment.	Treatment of Sanitary Sewage: General description	Lecture	Written exam
7	3	The students will learn how to design screening unit	Treatment of Sanitary Sewage: Screening unit	Lecture	Written exam
8 9	6	The students will learn how to design grit removal unit	Treatment of Sanitary Sewage: Grit removal unit	Lecture	Written exam
10	3	The students will learn how to design primary sedimentation unit	Treatment of Sanitary Sewage: Primary sedimentation unit	Lecture	Written exam
11 12	6	The students will learn how to design activated sludge system	Biological treatment of sewage by activated sludge system	Lecture	Written exam
13 14	6	The students will learn how to design trickling filters	Biological treatment of sewage by trickling filters	Lecture	Written exam
15	3	The students will learn how to design secondary sedimentation unit	Secondary sedimentation unit	Lecture	Written exam

11. Infrastructure

1- Required reading: **· Books** **· COURSE MATERIALS** **· OTHER**	**2. Steel, E. W. and McGhee, T. J., "Water supply and sewerage", McGraw-Hill KOGAKUSHA, LTD, 1979.**
2. Key references (sources)	**3. Vissman, W., Hammer, M. and Perez, E. M., "Water supply and pollution control", 8th Ed., Pearson Education Limited, 2014.**

	4. Mays, L. W., "Storm water collection systems design handbook", The McGraw-Hill Companies, 2004.
A- Recommended books and references (scientific journals, reports ,....	**1. Davis. M. L., "water and wastewater engineering", McGraw-Hill Companies, Inc, 2010.**
B- Electronic references, websites	**Reputable websites.** **Libraries sites in some international universities.**

12. Course development plan
1. Addition of processes relating to sludge treatment and reuse. 2. Give brief description for the methods of treated sewage reuse.

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

Estimation is the art of estimating the quantities and construction paragraphs in terms of prices and construction period to the nearest reasonable number, usually before commencing work in order to allocate the expected financial amounts for its implementation.
Estimation is one of the basic tasks of the practicing engineer, through which estimates are made for the cost of construction works and projects. Therefore, the business owner or the project financier gives special importance to the accuracy of cost estimates because of their impact on determining the implementation of project decisions and working to provide the necessary amounts for them. For this reason, the estimated cost estimation processes are considered a source for testing the professional integrity of the engineer as well as the scientific competence of the engineer.

1. Teaching Institution	University of Basrah
2. University Department/Centre	Civil Engineering Department
3. Course title/code	Estimation and engineering specifications
4. Modes of Attendance offered	Class attendance or online
5. Semester/Year	2nd semester / 4th year
6. Number of hours tuition (total)	45 hrs
7. Date of production/revision of this specification	2024
8. Aims of the Course	
• Estimation is the art of estimating the quantities and construction paragraphs in terms of prices and construction period to the	

nearest reasonable number, usually before commencing work in order to allocate the expected financial amounts for its implementation.

- Estimation is one of the basic tasks of the practicing engineer, through which estimates are made for the cost of construction works and projects. Therefore, the business owner or the project financier gives special importance to the accuracy of cost estimates because of their impact on determining the implementation of project decisions and working to provide the necessary amounts for them. For this reason, the estimated cost estimation processes are considered a source for testing the professional integrity of the engineer as well as the scientific competence of the engineer.

9· Learning Outcomes, Teaching, Learning and Assessment Method
A- Knowledge and Understanding A1- Clarify the basic concepts in calculating the quantities of construction materials. A2- Acquisition of skills in dealing with problems and issues related to bills of quantities. A3- Acquisition of basic skills as an introduction to estimating construction buildings. A4 -Gain a basic understanding of how to accurately estimate various construction materials.
B. Subject-specific skills B1 - The ability to understand the estimation mechanism and engineering specifications. B2 - The ability to think about addressing a particular problem or issue. B3 - Writing scientific reports. B4 - The ability to gain experience in dealing with solving construction problems related to calculating the quantities of construction materials.
Teaching and Learning Methods
• Readings, self-learning, panel discussions. • Exercises and activities in the lecture. • Homework.

• Directing students to some websites to benefit and develop their capabilities. • Conducting seminars to explain and analyze a specific issue and find solutions to it
Assessment methods
• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
C. Thinking Skills C1- Attention: Arousing the students' attention by implementing one of the applied programs on the display screen in the hall. C2- Response: Follow up the student's interaction with the material displayed on the screen. C3- Attention: Follow up on the interest of the student who interacted more with the presented material, by increasing this interaction by requesting other programs and applications to display. C4 - Forming the direction: meaning that the student is sympathetic to the presentation and may have an opinion about the direction of the presented topic and defend it. C 5- Formation of value behavior: meaning that the student reaches the top of the emotional ladder, so that he has a stable level in the lesson and does not become lazy or fidgety.
Teaching and Learning Methods
• The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject. • The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum. • The method of laboratory display using special devices for measuring the different properties of the substance under experiment.
Assessment methods

• Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture. • Sudden exams during the theoretical and practical lecture. • Quarterly exams for the theoretical and practical side. • Final exams for the theoretical and practical side.
D. General and Transferable Skills (other skills relevant to employability and personal development) D1- Develop the student's ability to perform the duties and deliver them on time D2 - Logical and programmatic thinking to find programmatic solutions to various problems D3 - developing the student's ability to dialogue and debate D4 - Develop the student's ability to deal with modern technology, especially the Internet

10. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	3		Guessing (introduction)	theory	Questions and discussion
2	3		Construction cost estimation	theory and tutorial	Questions and discussion and quiz
3	3		Detailed estimation	theory	Questions and discussion
4	3		Materials in the unit of measure for construction work	theory and tutorial	Questions and discussion and quiz
5	3		Materials in the unit of measure for construction work	theory	Questions and discussion
6	3		Ceramic wall covering	theory and tutorial	Questions and discussion
7	3		flatness	theory	Questions and discussion
8	3		Estimation the construction work paragraphs for buildings	theory	Questions and discussion and quiz

9	3		casting concrete foundations	theory and tutorial	Questions and discussion
10	3		wooden mold work	theory	Questions and discussion
11	3		Estimation of steel reinforcement quantities for foundations	theory	Questions and discussion
12	3		Estimating the quantities of steel reinforcement for the foundations	theory and tutorial	Questions and discussion
13	3		Casting bridges and roofs	theory	Questions and discussion and quiz
14	3		Casting bridges and roofs	theory	Questions and discussion
15	3		Box Culvert	theory and tutorial	Questions and discussion

11. Infrastructure	
1- Required reading: · Books · COURSE MATERIALS · OTHER	1. Conjecture and Specifications, Medhat Fadil Fathallah, revised fourth edition, 1985. 2. Calculating Quantities, M. Fawaz Muhammad Al-Qudah, Al-Balqa Applied University, Jordan, first edition, 2006. 3. Calculation of Quantities and Specifications, Eng. Ahmed Hussein Abu Odeh, Civil Engineering Series (1), Part One, Al-Balqa Applied University/College of Technological Engineering, Jordan, first edition, 2008. 4. Civil Engineering and Costing, S.P. Mahajan, 624. 1042, M214. 5. Estimating Building and Construction, 692.5, H816, 73-119.
2. Key references (sources)	Engineering Estimation and costing - Journal
A- Recommended books and references (scientific journals, reports ,....	
B- Electronic references, websites	

12. Course development plan

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

The model description provides a brief description of the main features of the course and the scientific outputs that the model student is expected to achieve if the student takes advantage of the learning opportunities available for the course. It should be compared with the description of the program.

1. Teaching Institution	University of Basrah
2. University Department/Centre	Civil Engineering Department
3. Course title/code	Engineering ethics
4. Modes of Attendance offered	Class attendance or online
5. Semester/Year	2nd semester / 4th year
6. Number of hours tuition (total)	30 hrs
7. Date of production/revision of this specification	2024
8. Aims of the Course	
• The course aims to enhance the ethics of engineers from a professional point of view from several axes, the most important of which is the religious and societal axis, considering that ethics is an acquired matter since childhood, in addition to linking these ethics to all work facilities (whether it is engineering or administrative) and the impact of the lack of a moral sense among the worker on the further development of countries due to Depletion of economic resources by administrative or engineering fraud, which leads to the	

failure of engineering projects that may lead to disasters that lead to the death of citizens.

9· Learning Outcomes, Teaching, Learning and Assessment Method
A- Knowledge and Understanding A1- A study of the concept of professional ethics in its general, linguistic, and idiomatic sense, and the importance of these ethics. A2- Knowing the history and development of ethical engineering codes and their interrelationship with each other. A3- List some engineering disasters that occurred due to lack of professional ethics.
B. Subject-specific skills B1 - Organize work well and avoid chaos that does not lead to harvesting its fruits. B 2- Monitoring the work by providing a good system of supervision.
Teaching and Learning Methods
• The acquired professional ethics are reinforced by recalling Quranic verses or An Honorable Prophetic Hadith, or even mentioning some global examples of positive engineering profession codes and refining these ethics.
Assessment methods
• Interacting within the lecture. • Homework and reports. • Short exams (quizzes). • Semester and final exams.
C. Thinking Skills C1- Attention: Arousing the students' attention by implementing one of the applied programs on the display screen in the hall. C2- Response: Follow up the student's interaction with the material displayed on the screen. C3- Attention: Follow up on the interest of the student who interacted more with the presented material, by increasing this interaction by requesting other programs and applications to display.

C4 - Forming the direction: meaning that the student is sympathetic to the presentation and may have an opinion about the direction of the presented topic and defend it.

C 5- Formation of value behavior: meaning that the student reaches the top of the emotional ladder, so that he has a stable level in the lesson and does not become lazy or fidgety.

Teaching and Learning Methods

- The usual theoretical presentation method using the writing board and depending on the style (how and why) of the subject and according to the curriculum of the subject.
- The theoretical presentation method using the (data show) device and depending on the method (how and why) of the subject and according to the subject curriculum.
- The method of laboratory display using special devices for measuring the different properties of the substance under experiment.

Assessment methods

- Direct questions in a manner (how and why) for the subject during the theoretical and practical lecture.
- Sudden exams during the theoretical and practical lecture.
- Quarterly exams for the theoretical and practical side.
- Final exams for the theoretical and practical side.

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1- Develop the student's ability to perform the duties and deliver them on time

D2 - Logical and programmatic thinking to find programmatic solutions to various problems

D3 - developing the student's ability to dialogue and debate

D4 - Develop the student's ability to deal with modern technology, especially the Internet

10. Course Structure

Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	2	1st Lecture	Professional ethics concept	Lecture	Written exam

2	2	2nd Lecture	Professional ethics concept	Lecture	Written exam
3	2	3rd Lecture	General principles of professional ethics	Lecture	Written exam
4	2	4th Lecture	General principles of professional ethics	Lecture	Written exam
5	2	5th Lecture	Engineering Ethics	Lecture	Written exam
6	2	6th Lecture	History of engineering blogs	Lecture	Written exam
7	2	7th Lecture	History of engineering blogs	Lecture	Written exam
8	2	8th Lecture	Engineering disasters	Lecture	Written exam
9	2	9th Lecture	Examples of codes of ethics for the engineering profession	Lecture	Written exam
10	2	10th Lecture	Examples of codes of ethics for the engineering profession	Lecture	Written exam
11	2	11th Lecture	Examples of codes of ethics for the engineering profession	Lecture	Written exam
12	2	12th Lecture	Examples of codes of ethics for the	Lecture	Written exam

			engineering profession		
13	2	13th Lecture	Examples of codes of ethics for the engineering profession	Lecture	Written exam
14	2	14th Lecture	Institute of Electrical Engineers blog	Lecture	Written exam
15	2	15th Lecture	Institute of Electrical Engineers blog	Lecture	Written exam

11. Infrastructure	
1- Required reading: · Books · COURSE MATERIALS · OTHER	Ethics of the engineering profession, author: Dr. Nabil Abdel Razzaq
2. Key references (sources)	
A- Recommended books and references (scientific journals, reports ,....	
B- Electronic references, websites	

12. Course development plan