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

Academic Program Description Form for Colleges and Institutes Academic Year

University: Shatt Al-Arab
College/Institute: Engineering
Scientific Department: Civil
Date of Form Completion: 01/09/2024

Signature
Name of Head of Department:

Asst. Lecturer Nabeel Najm Abdullah

Signature

Name of Scientific Assistant: Dr. Jawad Kadhim

Reviewed by:
Quality Assurance and University Performance Division
Name of Division Director: Dr. Jasem Mohsen Yasser

Signature:

الدكتور
جاسم محسن ياسر
Dr.Jasim Al-Battat

جامعة شط العرب
كلية الهندسة
العمادة
SHATT AL-ARAB UNIVERSITY

أ.م.د. احسان قاسم محمد
عميد كلية الهندسة

Dean's Approval

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	Shatt Al-Arab University College
2. University Department/Centre	Civil Engineering Department
3. Course title/code	Drainage Engineering /CE325
4. Modes of Attendance offered	Class attendance
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	
1. Clarify the basic concepts of drainage engineering systems and their applications in agricultural fields. 2. Gain the ability to address the problems of high groundwater levels. 3. Gain basic skills in managing drainage systems and gain experience in designing these systems under different surrounding conditions. 4. Gain experience in the difference between the old and modern drainage system and managing the drainage system optimally.	
9. Learning Outcomes, Teaching, Learning and Assessment Method	
1. Ability to design drainage systems in different ways. 2. Ability to think about problems of rising groundwater levels. 3. Writing scientific reports and reading charts and tables.	
This course covers a wide range of different drainage methods, their optimal conditions and design methods with the aim of enriching the knowledge base of the civil engineer in the field of agricultural engineering in a way that enables him to solve potential engineering problems in this field effectively.	
Teaching and Learning Methods	

The main strategy for delivering this module is to encourage student's participation in the exercises while refining and expanding their critical thinking skills. This will be achieved through theoretical lectures, small discussion groups, presentation of scientific films, writing reports, and using the scientific web sites.

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 and internet.

10. Course Structure					
Week	Hours	ILOs	Unit/Module or Topic Title	Teaching Method	Assessment Method
1	3	Definition of drainage, causes and benefits of drainage	Introduction to the Drainage Engineering	Th. Lecture	Written exams and oral discussions
2	3	Drainage Project Investigations	Introduction to the Drainage Engineering	Th. Lecture	Written exams and oral discussions
3	3	Soil permeability, calculating the soil permeability coefficient	Introduction to the Drainage Engineering	Th. Lecture	Written exams and oral discussions
4	3	Type of drainage systems	Drainage systems	Th. Lecture	Written exams and oral discussions
5	3	The advantages and disadvantages of open drains	Drainage systems	Th. Lecture	Written exams and oral discussions
6	3	The advantages and disadvantages of covered drains	Drainage systems	Th. Lecture	Written exams and oral discussions
7	3	Continuity equation and Manning equation	Design of drain cross sections	Th. Lecture	Written exams and oral discussions
8	3	Problems in the open drains designing	Design of drain cross sections	Th. Lecture	Written exams and oral discussions
9	3	Designing covered drains, drains depth, and solving some problems	Design of drain cross sections	Th. Lecture	Written exams and oral discussions
10	3	Hooghoudt equation	Distance between the drains	Th. Lecture	Written exams and oral discussions
11	3	Hooghoudt equation for a layered	Distance between the drains	Th. Lecture	Written exams and oral discussions
12	3	Equivalent depth and the equation of non-steady state drainage	Distance between the drains	Th. Lecture	Written exams and oral discussions
13	3	The relationship between level, discharge, and the coefficient of hydraulic conductivity in the case of steady flow for confined and unconfined aquifer	Vertical drainage	Th. Lecture	Written exams and oral discussions

14	3	The relationship between the level, discharge of the well, and the coefficient of hydraulic conductivity in the case of unsteady flow	Vertical drainage	Th. Lecture	Written exams and oral discussions
15	3	Special case for pumping wells	Vertical drainage	Th. Lecture	Written exams and oral discussions

11. Infrastructure	
1- Required reading: · Books · COURSE MATERIALS · OTHER	كتاب هندسة البزل تأليف الدكتور عبد الستار يونس الدباغ
2. Key references (sources)	
A- Recommended books and references (scientific journals, reports)	Irrigation and Drainage Engineering by Peter Waller and Muluneh Yitayew
B- Electronic references, websites	Reputable websites. Libraries sites in some international universities.

12. Course development plan
Adding new subjects to the curricula within the development of the course by no more than 5%. Adding new references