

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: 01/09/2025



Signature

Name of Head of Department:

Asst. Lecturer Nabeel Najm Abdullah



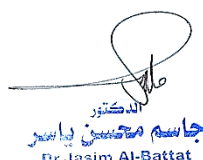
Signature

Name of Scientific Assistant: Dr. Jawad Kadhim

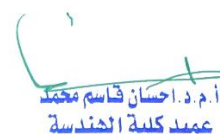
Reviewed by:  
Quality Assurance and University Performance Division  
Name of Division Director: Dr. Jasem Mohsen Yasser



Signature:



الدكتور  
جاسم موهسن ياسر  
Dr. Jasim Al-Battat



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                        |
| 2. University Department/Centre                                                                                                                                                                                                                                                                         | Civil Engineering Department                    |
| 3. Course title/code                                                                                                                                                                                                                                                                                    | Soil Mechanics 2                                |
| 4. Modes of Attendance offered                                                                                                                                                                                                                                                                          | Class attendance                                |
| 5. Semester/Year                                                                                                                                                                                                                                                                                        | 2 <sup>nd</sup> semester / 3 <sup>rd</sup> year |
| 6. Number of hours tuition (total)                                                                                                                                                                                                                                                                      | 75 hrs.                                         |
| 7. Date of production/revision of this specification                                                                                                                                                                                                                                                    | 2025                                            |
| 8. Aims of the Course                                                                                                                                                                                                                                                                                   |                                                 |
| <ul style="list-style-type: none"><li>The course aims to provide basic information about soil as an engineering material used to support foundations, identify its general properties, how it is affected by loads, changes in moisture content, and its behavior in the short and long term.</li></ul> |                                                 |

#### 9. Learning Outcomes, Teaching, Learning and Assessment Method

- A1- Identify the types of stresses in saturated soils.
- A2- Study the consolidation settlement and methods of calculating it.
- A3- Identify the methods used to find the shear resistance in the soil.
- A4- Identify the methods of calculating the lateral soil pressure.

#### B. Subject-specific skills

- B1 - Learn how to calculate the types of stresses generated in the soil.

- B2 - Study the theory of consolidation and methods of calculating settlement over time.
- B3 - Derivation of equations to find the soil shear resistance.
- B4 - Derivation of equations to evaluate the lateral soil pressure on supporting structures.

#### Teaching and Learning Methods

- Theoretical lectures, practical lectures, small discussion groups, presentation of scientific films, and writing reports.

#### 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<br>2 | Knowledge of different types of soil stresses                                   | In Situ Stresses                                 | Th. Lecture<br>Prac. Lecture | Written exam      |
| 2    | 3<br>2 | Fundamentals of Consolidation                                                   | Compressibility of Soil-Consolidation Settlement | Th. Lecture<br>Prac. Lecture | Written exam      |
| 3    | 3<br>2 | Determination of Consolidation Characteristics by Laboratory Consolidation Test | Soil-Consolidation Settlement                    | Th. Lecture<br>Prac. Lecture | Written exam      |
| 4    | 3<br>2 | Application to Laboratory Consolidation Test Results                            | Soil-Consolidation Settlement                    | Th. Lecture<br>Prac. Lecture | Written exam      |
| 5    | 3<br>2 | Application to calculate primary and secondary consolidation                    | Soil-Consolidation Settlement                    | Th. Lecture<br>Prac. Lecture | Written exam      |
| 6    | 3<br>2 | Determination of time rate of consolidation                                     | Soil-Consolidation Settlement                    | Th. Lecture<br>Prac. Lecture | Written exam      |
| 7    | 3<br>2 | How to accelerate consolidation settlement                                      | Soil-Consolidation Settlement                    | Th. Lecture<br>Prac. Lecture | Written exam      |
| 8    | 3<br>2 | Introduction to shear strength of soil                                          | Shear Strength of Soil                           | Th. Lecture<br>Prac. Lecture | Written exam      |
| 9    | 3<br>2 | Derivation of Mohr-Coulomb Failure Criterion                                    | Shear Strength of Soil                           | Th. Lecture<br>Prac. Lecture | Written exam      |
| 10   | 3<br>2 | Determination of shear strength parameters from laboratory tests                | Shear Strength of Soil                           | Th. Lecture<br>Prac. Lecture | Written exam      |
| 11   | 3<br>2 | Application of finding shear strength parameters from laboratory tests          | Shear Strength of Soil                           | Th. Lecture<br>Prac. Lecture | Written exam      |

|    |        |                                                                        |                        |                              |              |
|----|--------|------------------------------------------------------------------------|------------------------|------------------------------|--------------|
| 12 | 3<br>2 | Application of finding shear strength parameters from laboratory tests | Shear Strength of Soil | Th. Lecture<br>Prac. Lecture | Written exam |
| 13 | 3<br>2 | Introduction to lateral earth pressure                                 | Lateral Earth Pressure | Th. Lecture<br>Prac. Lecture | Written exam |
| 14 | 3<br>2 | Derivation of Rankine's Theory of active and passive pressure          | Lateral Earth Pressure | Th. Lecture<br>Prac. Lecture | Written exam |
| 15 | 3<br>2 | Application of Rankine's Theory of active and passive pressure         | Lateral Earth Pressure | Th. Lecture<br>Prac. Lecture | Written exam |

| 11. Infrastructure                                                      |                                                                            |
|-------------------------------------------------------------------------|----------------------------------------------------------------------------|
| 1- Required reading:<br>· Books<br>· COURSE MATERIALS<br>· OTHER        | - Principles of Geotechnical Engineering (By: Braja M. Das, 7th Ed.)       |
| 2. Key references (sources)                                             | - Principles of Geotechnical Engineering (By: Braja M. Das, 7th Ed.)       |
| A- Recommended books and references (scientific journals, reports ,.... |                                                                            |
| B- Electronic references, websites                                      | Reputable websites.<br>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%.<br>Adding new references |