

# 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.

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|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| 1. Teaching Institution                                                                                                                                                                                                                                                                                                                                                                                                                                               | Shatt Al-Arab University College                |
| 2. University Department/Centre                                                                                                                                                                                                                                                                                                                                                                                                                                       | Civil Engineering Department                    |
| 3. Course title/code                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Engineering Geology                             |
| 4. Modes of Attendance offered                                                                                                                                                                                                                                                                                                                                                                                                                                        | Class attendance                                |
| 5. Semester/Year                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1 <sup>st</sup> semester / 1 <sup>st</sup> year |
| 6. Number of hours tuition (total)                                                                                                                                                                                                                                                                                                                                                                                                                                    | 60 hrs.                                         |
| 7. Date of production/revision of this specification                                                                                                                                                                                                                                                                                                                                                                                                                  | 2022                                            |
| 8. Aims of the Course                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                 |
| <ul style="list-style-type: none"><li>The course aims to provide basic information about the components of the earth's crust, types of rocks, forms of geological structures, factors and forces that affect the earth's crust, earthquakes, volcanoes, the natural properties of soil and subsurface water geology as an introduction to studying the geology of tunnels, dams and reservoirs sites, and the use of geological maps and geological survey.</li></ul> |                                                 |

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

##### A- Knowledge and Understanding

A1- Introducing the concept of engineering geology and its importance in knowing the origin, history and formation of the sphere Earth and the forces acting on its rocks.

A2- Determining the environmental problems resulting from geological phenomena, their causes, and ways to reduce their effects.

A3- Describe engineering methods for analyzing and designing systems that help

solve foundation geological problems.

A4- Clarify the sources of groundwater and their relationship to surface water and how to avoid its risks during implementation Engineering Works. Explain the methods of drawing topographic sections and knowing the thickness of the layers of the earth's surface. A6- Determining the required investigation methods for the locations of important buildings and facilities and the type of geological phenomena influential.

#### B. Subject-specific skills

B1 - Analyzing the natural phenomena that are important in realizing the reality of the components of the Earth

B 2 - Choosing engineering decisions in knowing the movement of ground water and explaining the factors affecting it

B3 - Designing illustrative geological maps of the Earth's surface layers and their uses in civil engineering

B4 - Using the concept of metal detection in the earth's crust and analyzing its components and their relationship to foundations Facilities

#### 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    | 2<br>2 | Definition of geology<br>Earth Structure            | Engineering Geology        | Th. Lecture<br>Prac. Lecture | Written exam      |
| 2    | 2<br>2 | Mineral groups                                      | Minerals                   | Th. Lecture<br>Prac. Lecture | Written exam      |
| 3    | 2<br>2 | Physical properties of minerals                     | Minerals                   | Th. Lecture<br>Prac. Lecture | Written exam      |
| 4    | 2<br>2 | Physical and engineering properties of rocks        | Rocks                      | Th. Lecture<br>Prac. Lecture | Written exam      |
| 5    | 2<br>2 | Rock cycle<br>geological structures                 | Rocks                      | Th. Lecture<br>Prac. Lecture | Written exam      |
| 6    | 2<br>2 | Earthquakes<br>Volcanoes                            | Rocks                      | Th. Lecture<br>Prac. Lecture | Written exam      |
| 7    | 2<br>2 | Geological origin and properties of soil and rivers | Soil and river geology     | Th. Lecture<br>Prac. Lecture | Written exam      |

|    |        |                                                                          |                                                                          |                              |              |
|----|--------|--------------------------------------------------------------------------|--------------------------------------------------------------------------|------------------------------|--------------|
| 8  | 2<br>2 | Transport and sedimentation in rivers                                    | Soil and river geology                                                   | Th. Lecture<br>Prac. Lecture | Written exam |
| 9  | 2<br>2 | The origin and sources of subsurface water                               | subsurface water geology                                                 | Th. Lecture<br>Prac. Lecture | Written exam |
| 10 | 2<br>2 | subsurface water movement<br>Artesian wells                              | subsurface water geology                                                 | Th. Lecture<br>Prac. Lecture | Written exam |
| 11 | 2<br>2 | topographic maps                                                         | geological maps                                                          | Th. Lecture<br>Prac. Lecture | Written exam |
| 12 | 2<br>2 | contour lines                                                            | geological maps                                                          | Th. Lecture<br>Prac. Lecture | Written exam |
| 13 | 2<br>2 | Topographic Profile & vertical section                                   | geological maps                                                          | Th. Lecture<br>Prac. Lecture | Written exam |
| 14 | 2<br>2 | Geological and geotechnical investigations of engineering building sites | Geological and geotechnical investigations of engineering building sites | Th. Lecture<br>Prac. Lecture | Written exam |
| 15 | 2<br>2 | Engineering geology and foundation problems                              | Geological and geotechnical investigations of engineering building sites | Th. Lecture<br>Prac. Lecture | Written exam |

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| <b>11. Infrastructure</b>                                               |                                                                            |
| 1- Required reading:<br>· Books<br>· COURSE MATERIALS<br>· OTHER        | 1. PRINCIPL OF ENGINEERING GEOLOGY & PRACTICES, AL-TAI MAJID ABOUD JASSIM  |
| 2. Key references (sources)                                             |                                                                            |
| A- Recommended books and references (scientific journals, reports ,.... |                                                                            |
| B- Electronic references, websites                                      | Reputable websites.<br>Libraries sites in some international universities. |

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