

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	Mathematics 1,2
4. Modes of Attendance offered	Class attendance or online
5. Semester/Year	1 st semester 1 st year
6. Number of hours tuition (total)	120 hrs
7. Date of production/revision of this specification	2023
8. Aims of the Course	
<ul style="list-style-type: none">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- Studying of the Cartesian coordinates and basics of analytic geometry.

A2- Learning group of methods to drawing functions by different manners.

A3- Using concept of limits and approximations to illustrate and understanding mathematic differential concepts.

A4- Using concept of limit to justify calculus and differentiation.

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.

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	8	Algebraic Preliminaries	Numbers, Sets, Inequalities, Absolute value	Lecture	Written exam
2	8	Functions	Domain, Range, Graphs, Symmetry, Asymptotes	Lecture	Written exam
3	8	Limits	Definition of limit and theorems, limits at infinity, L Hopital s rules	Lecture	Written exam
4	8	Derivatives	Definition, power, and sum rules, high order derivatives	Lecture	Written exam
5	8	Application of Derivative	Maximum and minimum, Increasing and Decreasing Function, Second derivative test, concavity	Lecture	Written exam
6	8	Transcendental Functions	Trigonometric Functions, graphs, derivatives of trigonometric functions, Inverse trigonometric functions	Lecture	Written exam
7	8	Transcendental Functions	Natural Logarithm Function, Exponential Function	Lecture	Written exam
8	8	Integration, Definition, theorem, Applications	Area under curves, length of curves, Indefinite Integral	Lecture	Written exam
9	8	Application of Integration	Volume of solid, surface area,	Lecture	Written exam
10	8	Integration of some complex functions	Logarithm, exponential and trigonometric	Lecture	Written exam

			functions		
11	8	Method of integration 1,2	Substitution method s, some techniques for trigonometric function	Lecture	Written exam
12	8	Method of integration 3,4	Integration by parts 1, 2	Lecture	Written exam
13	8	Method of integration 5,6	Partial fraction method , trigonometric Substitution 1	Lecture	Written exam
14	8	Method of integration 7	trigonometric Substitution 2	Lecture	Written exam
15	8	Matrices 1,2	Basics, Solving algebraic linear	Lecture	Written exam

11. Infrastructure	
1- Required reading: · Books	Calculus, Thomas, Pearson Education 2005.
2- Recommended books and references (scientific journals, reports ,....	Any other Calculus and analytic geometry textbook.
B- Electronic references, websites	Reputable websites. Libraries sites in some international universities.

12. Course development plan
There is no developing material for this course soon since the basic preliminary subjects here is the foundation and important entrance to the next study scientific materials for many stages and subjects, the developing of this material indeed depends on the developing of these courses for the next stages of engineering subjects.