

TEMPLATE FOR COURSE SPECIFICATION

HIGHER EDUCATION PERFORMANCE REVIEW: PROGRAMME REVIEW

COURSE SPECIFICATION

Gain complete knowledge of modeling differential equations and how to solve them and their physical and engineering applications

1. Teaching Institution	Shatt Al-Arab University -Eng. College
2. University Department/Centre	Civil Engineering Department
3. Course title/code	Construction Theory.
4. Modes of Attendance offered	Class attendance
5. Semester/Year	1 st semester / 3 th year
6. Number of hours tuition (total)	60 hrs
7. Date of production/revision of this specification	2024
8. Aims of the Course	<p>The course aims to expand on the concepts identified in Structural Theory-1, where the analysis of statically indeterminate structures is reviewed by imposing the conditions of the deformation form on the equilibrium of the structure. The methods used include the two basic approaches in analysis methods: the group of force methods (such as the method of compatible deformations) and the group of displacement methods (such as the slope-slung method and the method of moment distribution).</p>

9. Learning Outcomes, Teaching, Learning and Assessment Method

A- Cognitive objectives

A-1 Knowing the concept of a group of force methods in the analysis of statically indeterminate structures, as well as knowing the method of compatible deformations and applying it to statically indeterminate thresholds.

A-2 Knowing the concept of a group of displacement methods in the analysis of statically indeterminate structures, and knowing the slope-slung method and applying it to indeterminate thresholds and structures.

A-3 Knowing the method of moment distribution and applying it to indeterminate thresholds and structures.

A-4 Knowing the concept of strain energy and knowing Castellino's theories and applying them to the analysis of indeterminate thresholds and structures.

B- Course specific skill objectives.

B-1 The ability to analyze statically indeterminate structures and evaluate reaction components.

B-2 The ability to draw shear force and bending moment diagrams for statically indeterminate structures.

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	Classification of structures and review of equilibrium	Force Methods	The Lecture	Class work
2	4	Review of bending moment and shear force diagrams in beams	Method of Consistent Deformations	The Lecture	Class work and quiz
3	4	Bending moment and shear force diagrams in frames	Method of Consistent Deformations	The Lecture	Class work
4	4	Bending moment and shear force diagrams in frames	Method of Consistent Deformations	The Lecture	Class work and quiz
5	4	Review of truss analysis	Introduction to displacement methods and derivation of slope-deflection method	The Lecture	Class work
6	4	Introduction to concept of influence lines	Application of slope-deflection method to beams and non-sway frames	The Lecture	Class work
7	4	Applications on influence lines for beams	Displacement Methods: Moment Distribution	The Lecture	Class work

8	4	Applications on influence lines for trusses	Displacement Methods: Moment Distribution	The Lecture	Class work and quiz
9	4	Applications on influence lines for trusses	Displacement Methods: Moment Distribution	The Lecture	Class work
10	4	Determination of maximum reaction for series of moving loads	Displacement Methods: Moment Distribution	The Lecture	Class work
11	4	Moment-area method	Displacement Methods: Moment Distribution	The Lecture	Class work
12	4	Portal method	Energy Methods	The Lecture	Class work and quiz
13	4	Double-integration method	Energy Methods	The Lecture	Class work
14	4	Singularity function method	Energy Methods	The Lecture	Class work
15	4	Approximate method for truss analysis	Energy Methods	The Lecture	Class work

11. Infrastructure	
1- Required reading: · Books · COURSE MATERIALS · OTHER	Elementary Theory of Structures, Yan-Yu Hseih, Prentice Hall Structural Analysis, R.C. Hibbeler, Prentice Hall
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 new subjects to the curricula within the development of the course by no more than 5%. Adding new references