

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:

Lecturer Nabeel Najm Abdullah



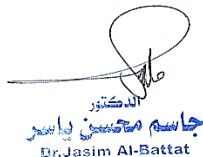
Signature

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 محمد ياسر
Dr. Jasim Al-Battat



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

Dean's Approval

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Prestress Concrete		Module Delivery
Module Type	Core		☐ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar
Module Code	CE411		
ECTS Credits	8		
SWL (hr/sem)	200		
Module Level	4	Semester of Delivery	
Administering Department	Type Dept. Code	College	Type College Code
Module Leader			e-mail
Module Leader's Acad. Title			Module Leader's Qualification
Module Tutor			e-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	1\9\2025	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

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Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	1. To develop an understanding of the basic principles of structural analysis and be able to explain them. 2. To determine and analyze models of applied loads on structures. 3. To develop and utilize influence lines of structures. 4. To utilize various methods of analysis of beams, trusses, and frames to determine the response of both determinate and indeterminate structures. 5. To understand the role of structural analysis within the context of engineering design and decision making.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Ability to apply knowledge of basic mathematics through differential equations, science, and engineering to solving engineering problems. 2. Ability to formulate and solve civil engineering problems. 3. Understanding of professional and ethical responsibility. 4. Recognition of the need for, and an ability to engage in, life-long learning. 5. Ability to use modern tools, techniques, and computation methods necessary for civil engineering practice.
Indicative Contents المحتويات الإرشادية	Part I: Statically Determinate Structures Types of structural elements, Types of structures, Types of loads, Types of supports, Equations of equilibrium, Equations of condition, Determinacy and stability. Internal loadings developed in structural members, sign convention, Shear force and bending moment diagrams for a beam, Relationships between load, shear force and bending moment, Moment diagrams by method of superposition, Shear and moment diagrams for a frame. Determinacy and stability of trusses, The method of joints, The method of sections. Influence lines for statically determinate structures, Influence lines for beams, Relationships of influence lines and structural loading, Influence lines for trusses, Moving loads on beams, Absolute maximum moment in a beam. Approximate analysis of statically indeterminate structures, Indeterminate trusses, Vertical loads on building frames, Lateral loads on building frames: portal method. Deflection of a beam, Significance of beam deflections, Double integration method, Singularity function method, Moment-area method. Part II: Statically Indeterminate Structures 3 Force methods, Method of consistent deformations, Basic procedure, Primary structure, Redundant reaction components. Displacement methods, The slope-deflection method, Derivation of the slope-deflection equations, Application of the slope-deflection method to the analysis of statically indeterminate beams, Analysis of rigid frames without joint translation. The moment distribution method, General description of the moment distribution method, Distribution factor, Procedure, Modified stiffness factor for hinged far end, Support settlement, Application of moment distribution to frames without sidesway. Energy methods, Strain energy in an elastic system: axial loading, flexural loading, Castigliano's theorem method, Joint displacement in trusses, Application of Castigliano's theorem to statically indeterminate structures: beams, frames.

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main objective is to insure that students understand the basic concepts and developing their problem solving strategies. Most engineering students have difficulty in application of the fundamental concepts they have learned to specific cases. Therefore, the lecture material is incorporated with as many possible illustrative examples in order to facilitate the application of principles to actual problems. Importance is placed on the significance of the results obtained for physical problems, as it is often the case nowadays with the development of engineering software, that the student is concerned with merely "solving the problem" and obtaining results without their interpretation physically.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ 15 اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	142	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	10
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	108	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	7.2
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	250		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	3 , 7	All
	Assignments	2	10% (10)	2,4,6,8,10,12	All
	Class activity	1	10% (10)		
	Report	1	10% (10)		
Summative assessment	Midterm Exam	1 hr	10% (10)	10	1-5
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الأسبوعي النظري

	Material Covered
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Week 1	Introduction
Week 2	Yield line analysis for slabs
Week 3	One-Way Joist Slab (Ribbed Slab)
Week 4	Flat slab
Week 5	Waffle slab
Week 6	Precast slab
Week 7	Slabs on grade
Week 8	Composite slab
Week 9	Prestress concrete
Week 10	Analysis of flexural member of prestress concrete beams
Week 11	Analysis of flexural member of prestress concrete beams
Week 12	Design of flexural member of prestress concrete beams
Week 13	Design of flexural member of prestress concrete beams
Week 14	development length and anchorage zone design
Week 15	Deflection and crack control for flexural member of prestress concrete beams
Week 16	Preparatory week before the final Exam

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	

Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	Available in the Library?
Required Texts	"Elementary Theory of Structures", Yan-yu Hsieh, Prentice-Hall, 1982.	Yes
Recommended Texts	"Structural Analysis", Russel C. Hibbeler, 9 th ed., Pearson Education, 2014.	No
Websites		

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.