Module (Course Syllabus) Catalogue

2023-2024

College/ Institute	Erbil Technical Engineering College
Department	Civil Engineering Department
Module Name	THEORY OF PLATES AND SHELLS
Module Code	
Degree	Technical Diploma ☐ Bachler ☐ High Diploma ☐ Master ☐ PhD ☒
Semester	
Qualification	
Scientific Title	
ECTS (Credits)	
Module type	Prerequisite ☐ Core ☒ Assist. ☐
Weekly hours	
Weekly hours (Theory)	(3)hr Class ( )Total hrs Workload
Weekly hours (Practical)	( )hr Class ( )Total hrs Workload
Number of Weeks	
Lecturer (Theory)	**Prof. Dr. Mereen Hassan Fahmi Rasheed**
E-Mail & Mobile NO.	mereen.akrawi@epu.edu.iq (07504615781)
Lecturer (Practical)	
E-Mail & Mobile NO.	
Websites	

Course Book

	Course Description	This course covers analysis methods for PLATE AND SHELL structures. Bending of thin rectangular and circular plates with various loading and support conditions. Analysis and design of different types of shells for small bending theory.
	Course objectives	This course aims at providing graduate students the thorough knowledge in the analysis and behaviour of structural plates and shells. Using different types of theories and approximate methods for thin plates with small displacements.
	Student's obligation	
	Required Learning Materials	

Evaluation

Task		Weight (Marks)	Due Week	Relevant Learning Outcome
Paper Review		20%	10	1-6
Assignments				
	10%	8	1-7	
Quiz		5%	3-10	1-76
Lab.				
Midterm Exam		15%	8	1-5
Final Exam		50%	15	1-6
Total		100%		

Specific learning outcome:

1. Understand the equations of rectangular plates and boundary conditions in advanced level.

2. Understand the Navier and Levy methods in advanced level

3. Understand the approximate solution techniques and apply the rectangular plates

4. Learn the circular plates		
5. Learn the membrane theories of shells		
6. Learn the bending theories of shells		

Course References:	• S. P. Timoshenko and S. W. Kreiger, "Theory of Plates and Shells", McGraw – Hill Edition, 1989. • Other references: • R. Szilard, "Theories applications of plate analysis" John Wiley and Sons, 2004 P. L. Gould, "Analysis of Shells and Plates" Springer-Verlag, NY, 1988

Course topics (Theory)	**Week**	**Learning Outcome**
• Introduction	1	1
• Pure bending of plates and Derivation of the differential equation of thin plate.	2	2-3
• Laterally loaded Rectangular plates using Navier's solution method.	3	2-3
• Laterally loaded Rectangular plates using Levy's solution method.	4	2-3
• Thin Plate on elastic foundation.	5	2-3
• Approximate methods. Ritz method, Galerkin's method and Finite Difference method.	6	2-3
• Buckling of thin plates.	7	2-3
• Pure bending of cylindrical plates.	8	2-3
• Laterally loaded Circular plates.	9	4
• Shells, introduction.	10	5-6
• General theory of cylindrical shells.	11	5-6
• Another types of shells.	12	5-6

Practical Topics	Week	Learning Outcome

Questions Example Design

Extra notes:

External Evaluator
I have reviewed the course catalogue which are prepared will covered the required subjected related to the course (Theory of Plates and Shells)

Asst. Prof. Bahman Omar Taha