



Program Name Diploma in Architecture Assistantship  
 Subject Name Structural Design-I  
 Subject Code ARPC-4004  
 Semester Fourth  
 Subject Co-ordinator Name Ar. Rajeev Bhardwaj

Evaluation Scheme  
 Subject Name Structural Design-I Study Scheme (Hrs/Week) Marks in Evaluation Scheme  
 Internal Assessment External Assessment

Th	Pr	Th	Pr	Th	Pr	Total
3		40		60		100

- Reference Books
1. Theory of Structures by Birender Singh (published by Kaption publishing House)
  2. Structural Mechanics by Birender Singh (published by Kaption publishing house)
  3. Bansal R. K., "Engineering Mechanics", Lakshmi Publications Pvt Ltd, 3/E,1996.

Course Outcomes		
	CO-1	To understand the basic principles of structural mechanics that would be pertinent to simple design elements
	CO-2	To understand the structural behavior of building elements.

Teaching Plan

Unit	Name of Topic	Proposed Date	Actual Date	Signature	Remarks
1	<b>Unit 1</b> <b>Resultant of force system &amp; equilibrium</b> , Force definition, SI Unit, types, system of force. Resultant of concurrent forces, law of parallelogram, triangle law of forces, polygonal law of forces, resolution and addition of forces. Moment of forces, statement of various theorems, resultant of non-concurrent forces, parallel and non-parallel forces. Equilibrium: Concept of equilibrium, equilibrium of two and more forces, Conditions of equilibrium, graphical conditions of equilibrium body, constraints type of reaction.	09-02-2024			
		13-02-2024			
		14-02-2024			
		16-02-2024			
		20-02-2024			
		21-02-2024			
2	<b>Unit 2</b> <b>Centre of Gravity (CG)</b> CG by geometrical consideration for rectangular, triangle, semicircle. CG of regular solids, cubes, spheres, semi-spheres, right circular cones. Centre of gravity by method of moments of area, mass or volume of regular figures, composite figures and regular figures with cut out holes.	23-02-2024			
		27-02-2024			
		28-02-2024			
		01-03-2024			
		05-03-2024			
		06-03-2024			
		08-03-2024			
		12-03-2024			
		13-03-2024			
		15-03-2024			
3	<b>Unit 3</b> <b>Moment of Inertia</b> Meaning of terms - second moment of area, radius of gyration of a section Theorem of parallel axis and perpendicular axis (statement only without proof) Second moment of regular figures - rectangle, triangle, circle and annular sections (formulae only)	19-03-2024			
		20-03-2024			
		22-03-2024			
		26-03-2024			
		27-03-2024			
		29-03-2024			
		02-04-2024			
		03-04-2024			
		05-04-2024			
		09-04-2024			
4	<b>Unit 4</b> <b>Shear force and Bending moment</b> Definition and concepts of Shear force and bending Moment, calculations of reactions SF and BM diagrams for simply supported, over-hanging, cantilever beams subjected to concentrated or uniformly distributed loads on entire or partial span. Calculation of position and magnitude of maximum shear force and bending moment, point of contra-flexure.	10-04-2024			
		12-04-2024			
		16-04-2024			
		19-04-2024			
		23-04-2024			
		24-04-2024			
		26-04-2024			
		30-04-2024			
		01-05-2024			
		03-05-2024			
		07-05-2024			
		08-05-2024			
		10-05-2024			
14-05-2024					
15-05-2024					
17-05-2024					

*Ar. Rajeev Bhardwaj*

5	Unit 5 Simple Stress and Strain: Concept and definitions, units, types of stresses, axial stresses in bars, strains Hooks law, tensile test on mild steel, working stress and factor of safety, temperature stresses in bars. Bending stresses, neutral axis Symmetrical and asymmetrical sections Assumptions in theory of bending	21-05-2024			
		22-05-2024			
		24-05-2024			
		28-05-2024			
		29-05-2024			
		31-05-2024			

Assignments

Assignments	Contents of Syllabus Covered	Proposed Date	Actual Date	Signature	Remarks
A-1	Unit 1	04-03-2024			
A-2	Unit 2 ,Unit 3	08-04-2024			
A-3	Unit 4	24-05-2024			

House Test/Class Test

Name of Test	Contents of Syllabus Covered	Proposed Date	Actual Date	Signature	Remarks
Class Test 1	Unit 1	As Per HPTSB			
Class Test 2	Unit 1 , Unit2 , Unit 3	As Per HPTSB			
House Test	Unit 1 , Unit2 , Unit3 & Unit 4	As Per HPTSB			

Checked

(Signature of H.O.D)

*[Handwritten Signature]*  
24.01.24

Approved

Principal

Govt. Polytechnic For Women Rehan  
Distt. Kangra

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24/1/24