



**DEPARTMENT OF ARCHITECTURE
UNIVERSITY OF THE PUNJAB, LAHORE.**

**BACHELORS OF ARCHITECTURE (B. ARCH)
5 YEARS PROGRAM**

COURSE OUTLINE

Course Title	Structural System I
Course Code	ARCH-261
Credit Hours	2
Semester	Fall
Prerequisites	NA
Tutor	As per Timetable
Student Advising	As per Timetable
Contact	-

Teacher Signature

Chairman Signature

Course introduction

The course will introduce the students to the basic concept of structure, masonry, load bearing capacity frame structure, wooden frame structure and structure materials.

Learning Objective:

To introduce students in fundamental concepts and principles of structures in buildings; to get students acquainted with basic structural elements and simple structural systems.

Outcome

At the end of this course students will get a basic understanding of the following

1. Load bearing capacity
2. Column and beam
3. Frame structure
4. Structural materials
5. Wooden light frame structure

Moreover, student would be able to integrate the above mentioned ideas and systems into there design projects.

Learning Methodology:

- Lectures as provided in the schedule of the semester activities
- Study of Archival Material and recommended books
- Guest Lectures as per requirement
- Presentation on allocated topics

Grade Evaluation Criteria

Following, is the criteria for the distribution of marks to evaluate final grade in a semester.

Marks Evaluation	Marks in percentage
Sessional (Assignments, Quizzes, Presentations)	30
Mid Term	30
Final examination	40
Total	100

Content	
Unit 1	<p>General introduction to the Course Contents</p> <p>Relationship between Structure and Architecture.</p> <p>Classification of Building Structures</p> <p>Assignment #1</p> <p>Structural Vocabulary: Take Pictures of different types of structures you see on your travelling route. Draw their free hand sketches on 1-2 half size scholar sheet (20" x 30") and mention the type of structure or any component of structure.</p> <p>At least 20 structures should be evaluated.</p>
Unit 2	Structural Behavior of Building Components
Unit 3	<p>An overview of Structures and Forces / Load & Stresses / Mass and Weight.</p> <p>Equilibrium</p>
Unit 4	Student Presentation
Unit 5	Introduction to load bearing Masonry structures. Study of relationship between wall thickness and wall height.
Unit 6	<p>Introduction to Frames Structures.</p> <p>Loading and load paths</p>
Unit 7	Introduction to different delimitations: Beam, simply supported, Cantilever, Continuous, Column types/forms, Waffle slab etc.
Unit 8	Site Visit
Unit 9	Mid Term Exam

Unit 10	Structural Materials I
Unit 11	Structural Materials II
Unit 12	Spanning with different construction materials
Unit 13	Student Presentation
Unit 14	Wooden Light Frame construction-WLF I
Unit 15	Wooden Light Frame construction-WLF II
Unit 16	Underpinning, shoring and shuttering I
Unit 17	Underpinning, shoring and shuttering II
Unit 18	Final Exam
Recommended Books/References	<ul style="list-style-type: none"> • Pearson Construction Technology, CM216, 2009 • Building Construction Illustrated by Francis D.K.Ching, 4ThEd, 2008 • Construction materials, methods and techniques by William P. Spence and Eva Kultermann, 3rdEd, 2006 • Modern Construction Handbook by Andrew Watts, 3rdEd, 2014 • Structure and Architecture by Angus J.Macdonald, 2ndEd, 2000 • Barry's Advanced Construction of Buildings by Stephen Emmitt , Christopher A. Gorse , 3rdEd, 2014 • Building Construction by Varghese, P.C., 3rdEd, 2009 • Construction Technology 2 Industrial and commercial building by Riley, Mike and Alison, 3rdEd, 2014 • Construction Practice by Cooke and Brain, 1stEd, 2011 • Professional Building Construction Directory 1994 by Professional

Publishers

- Structural basis of architecture by Bjorn N.Sandaker, Arne P.Eggen& Mark R.Cruvellier, 2ndEd, 2011
- Structure for architects and Engineers by Philip Garrison, 1stEd, 2005
- The Architect's Studio Companion by Edward Allen and Joseph Iano, 3rdEd, 2012