DEPARTMENT OF ARCHITECTURE
UNIVERSITY OF THE PUNJAB, LAHORE.

BACHELORS OF ARCHITECTURE (B. ARCH)
5 YEARS PROGRAM

COURSE OUTLINE

Course Title	**Material and Construction System IV**
Course Code	**ARCH-354**
Credit Hours	**2**
Semester	**5th Semester / Fall**
Prerequisites	**NA**
Tutor	**As per Timetable**
Student Advising	**As per Timetable**
Contact	-

Teacher Signature **Chairman Signature**

Course introduction

It is fourth course in the Materials and Constructions Course Series. It focuses on the properties of steel and its corresponding structural and technical applications in building construction. It also explores the use and applications of modular and prefabricated structures in architecture.

Learning Objective:

This course will give students a detailed understanding of materials commonly employed in Architecture and construction (pre fabricated buildign, pre engineered building) including their methods of manufacturing, material properties, and life-cycle impact. The course will provide detailed guidance on material preparation and material testing that are commonly employed in the construction and civil engineering disciplines.

Outcome

Upon the successful completion of the course, students will be able to:

- evaluate the choice of materials and their application to mitigate related environmental and functional concerns
- understand structural and material constraints to decide the best choice of construction system for a given architectural project.
- Identify and comprehend tension in steel due to applied load
- Understand variations in steel construction to choose optimum systems for 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	Introduction to the Course
Unit 2	Pre-Fabricated and Modular Structures
Unit 3	
Unit 4	Properties of Steel and Steel Structures
Unit 5	Pre-Engineered Buildings
Unit 6	**Presentation**
Unit 7	Steel Columns
Unit 8	Steel Trusses
Unit 9	**Mid Term Exam**
Unit 10	Detail of Steel Structures
Unit 11	Site Visit
Unit 12	Tensile Structures
Unit 13	Design in Steel
Unit 14	Geodesic Structures
Unit 15	Student Presentations
Unit 16	Case Studies of Highrise Buildings
Unit 17	Case Studies of High-tech Buildings
Unit 18	**Final Exam**
Recommended Books/References	**Recommended Text Books** • Building Structures Illustrated by Francis D.K.Ching • Design of Concrete Structures by Arthur H.Nilson, David

	Darwin, Charles W.Dolan • Construction materials, methods and techniques by William P. Spence and Eva Kultermann • Structure and Architecture by Angus J.Macdonald • Structural Detail in concrete by M.Y.H Bangash **Reference Books** The Structural basis of architecture by Bjorn N.Sandaker, Arne P.Eggen& Mark R.Cruvellier ▪ Structure for architects and Engineers by Philip Garrison ▪ The Architect's Studio Companion by Edward Allen and Joseph Iano.