



National University of Sciences and Technology

School of Art, Design and Architecture

ARCH-341 – Structure II

Credit Hours:	3(2+1)	Semester:	Fall
Instructor:		Extension:	
Email:			
Website:			
Counseling Hours:			
Research Assistant:		Office:	
Email:		Extension:	
Website:			
Pre-requisites:	ARCH-241 Structure I		
Course Description:	<p>Structural Stability is a vital part of architecture design. To enhance already developed skills to understand Preliminary Sizing of Structural Elements and Limitations of Materials. This will help students understand the concept of mixing structures with their architecture design. Through this module the students will be equipped with the understanding of structural mechanism & engineering mechanics of various structural elements, their geometry, deflections, radius of gyration, moment of inertia which will help them preliminary size their structures. It will also help them understand the loading criteria's, their load paths & reactions. Through this they will be able to self-identify shearing & moments along their structural elements.</p> <p>Concepts of Different types of connections and their working methodology will explain the loading paths to much deeper depth and will develop a better understanding. The following shall be the integral parts of the course:</p> <ol style="list-style-type: none"> 1. Structural Forms & their Applications <ol style="list-style-type: none"> 1.1 Natural 1.2 Manufactured – Designed 1.3 Mass 1.4 Frame 1.5 Shell 1.6 Skeleton Frames 1.7 Load Bearing 1.8 Formation – Structural Efficiency 1.9 Cost 		

- 1.10 Shapes & Appearance
- 1.11 Construction Process
- 2. Physical Workings - Components
 - 2.1 Forces
 - 2.2 Moments
 - 2.3 Vertical Reactions
 - 2.4 Horizontal Reactions
 - 2.5 Shearing
 - 2.6 Flexure
 - 2.7 Deflections
 - 2.8 Cracking
 - 2.9 Second Moment of Area
 - 2.10 Radius of Gyration
 - 2.11 Slenderness Ratios
- 3. Loadings, Reactions & Supports
 - 3.1 Load Transfer Supports to Ground – Bearing Pressures
 - 3.2 Different Types of Connections and their Limitations

- 4. Preliminary & Construction Processes
 - 4.1 Different Types of Slabs & their Thickness
 - 4.2 Column Sizes & Building Spans
 - 4.3 Beam Depths and their Widths
 - 4.4 Load Accumulations to Foundations
 - 4.5 Factor of Safety – EuroCode & ACI
- 5. Materials & Construction Processes
 - 5.1 Materials
 - 5.2 Materials Properties & their Limitations
 - 5.3 Different types of construction methodology
 - 5.4 The Role and Relationship of an architect and engineer