

### CVX3441 Structural Analysis & Design I

<b>Level</b>	3
<b>Course Code</b>	CVX3441
<b>Course Title</b>	Structural Analysis & Design I
<b>Credit value</b>	4
<b>Core/Optional</b>	Core (Civil Engineering)
<b>Course Aim/s</b>	To provide knowledge of basic theories of structural analysis & design their applications
<b>Course Learning Outcomes (CLO):</b>	<p>At the completion of this course student will be able to:</p> <p>CLO1: Identify the main basic features of the Civil Engineering structures, applied loadings and their patterns and support conditions (Uni Structural)</p> <p>CLO2: Study about the different basic methods to use the analysis of trusses, flexural structures, Arches, Cables and Framed Structures.(Uni Structural)</p> <p>CLO3: Identify the different structural design philosophy and their practical uses (Multi Structural)</p> <p>CLO4: Study about the design concepts associated with structural steel design (Multi Structural)</p> <p>CLO5: Apply the design concepts studied in CO4 with design of basic civil engineering structure (Multi Structural)</p>
<b>Content (Main topics, sub topics)</b>	<p><b>Outline Syllabus:</b></p> <p>Unit 1: Basic Structural Analysis</p> <p style="padding-left: 20px;">Session 01: Introduction</p> <p style="padding-left: 20px;">Session 02: Supports, Connections, Foundations and Idealizations</p> <p style="padding-left: 20px;">Session 03: Basic Concepts</p> <p style="padding-left: 20px;">Session 04: Two Dimensional Force System</p> <p style="padding-left: 20px;">Session 05: Supports and statically Determinate Structures</p> <p style="padding-left: 20px;">Session 06: Analysis of Statically Determinate Structures</p> <p style="padding-left: 20px;">Session 07: Displacement of statically Determinate Pin jointed trusses</p> <p style="padding-left: 20px;">Session 08: Analytical Methods for the Displacements of Statically Determinate Pin Jointed Trusses</p> <p style="padding-left: 20px;">Session 09: Introduction to Portal Frames used in Civil Engineering structures</p> <p style="padding-left: 20px;">Session 10: Shear Force Diagram and Bending Moment Diagram of Portal Framed Structures</p> <p style="padding-left: 20px;">Session 11: Deflections of Portal Framed Structures</p> <p style="padding-left: 20px;">Session 12: Introduction to Arches used in Civil Engineering structures</p> <p style="padding-left: 20px;">Session 13: Analyzing Arches for different load conditions.</p> <p style="padding-left: 20px;">Session 14: Introduction to Suspension Bridges</p> <p style="padding-left: 20px;">Session 15: Analyzing of Suspension Bridges</p> <p style="padding-left: 20px;">Session 16: Influence Lines of Flexural Members</p> <p style="padding-left: 20px;">Session 17: Influence Lines of Axially loaded Trusses and Framed Structures</p> <p style="padding-left: 20px;">Session 18: Stability of Columns and Struts</p> <p style="padding-left: 20px;">Session 19: Applications of Euler Formula for Columns and Struts for different load conditions.</p> <p style="padding-left: 20px;">Session 20: Depended stress strain behaviour of materials</p> <p>Unit 2: Basic Structural design</p> <p style="padding-left: 20px;">Session 21: Structural Design</p> <p style="padding-left: 20px;">Session 22: Steel Design</p> <p style="padding-left: 20px;">Session 23: Design of Steel Axially loaded Members'</p> <p style="padding-left: 20px;">Session 24: Design of Steel Members Subjected to Bending</p> <p style="padding-left: 20px;">Session 25: Design of Steel Portal Frames</p> <p style="padding-left: 20px;">Session 26: Wind loads</p> <p style="padding-left: 20px;">Session 27: Connections in Steel Design</p> <p style="padding-left: 20px;">Session 28: Statistical Basis for Limit State Design</p> <p>Unit 3: Example of Design Exercises</p> <p style="padding-left: 20px;">Session 29: Design Example of Steel Roof Truss</p> <p style="padding-left: 20px;">Session 30: Design Example of Steel Portal Frame</p>