



## Course Descriptor

### CVEN 340 – Analysis of Structures I

<b>ACADEMIC YEAR</b>	2020-2021	<b>SEMESTER</b>	Spring
<b>Course Code</b>	CVEN 340	<b>Course Title</b>	Analysis of Structure I
<b>Credit hours</b>	3	<b>Level of study</b>	Undergraduate
<b>College / Centre</b>	College of Engineering	<b>Department</b>	CVEN
<b>Co-requisites</b>	--	<b>Pre-requisites</b>	CVEN333

#### 1. COURSE OUTLINE

Analysis of statically determinate and indeterminate trusses, beams and frames using classical methods such as virtual work, slope deflection, and moment distribution methods. Deflection calculations and influence lines in beams and trusses. Use of commercial software packages for structural analysis.

#### 2. AIMS

This course introduces students to the discipline of Structural Analysis and acts as the background for more advanced structural courses.

#### 3. LEARNING OUTCOMES, TEACHING, LEARNING and ASSESSMENT METHODS

Learning Outcomes (Definitive)	Teaching and Learning methods (Indicative)	Assessment (Indicative)
1. Identify, formulate and solve problems encountered in structural analysis as an integral part of the design process in engineering practice	Lecturers, Presentations	<i>Class Tests &amp; Assignment</i>
2. Understand the behavior of structures and components under various loading conditions	Lecturers, Presentations	<i>Class Tests &amp; Assignment</i>
3. Apply classical and contemporary methods of structural analysis in engineering practice	Lecturers, Presentations	<i>Class Tests &amp; Assignment</i>
4. Communicate effectively in reports and class discussions to strengthen these skills for use in practical engineering	Lectures, Presentation	<i>Class Tests &amp; Assignment</i>



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#### 4. ASSESSMENT WEIGHTING

Assessment	Percentage of final mark (%)
Assignments	20
Mid-term Examinations	2x20 = 40
Final Examination	40
<b>TOTAL</b>	<b>100%</b>

#### 5. ACHIEVING A PASS

Students will achieve **03** credit hours for this course by passing **ALL** of the course assessments [*alternatively, list the compulsory pass assessments\**] and achieving a **minimum overall score of 50%**

**NB \*Ensure that ALL learning outcomes are taken into account**

#### 6. COURSE CONTENT (Indicative)

WEEK	LECTURE TOPIC	TIME (HOURS)
1	Types of structure and loads	1-40
	Types of structure and loads - continue	1-40
	Analysis of Statically Determinate Structures	1-40
2	- Idealized Structure	1-40
	- Principle of Superposition	1-40
	- Equations of Equilibrium	1-40
3	- Determinacy and Stability	1-40
	- Application of the Equations of Equilibrium	1-40
	- Problems	1-40
4	Mid Term I	1-40
	Analysis of Statically Determinate Trusses	1-40
	- Common Types of Trusses	1-40
5	- Classification of Coplanar Trusses	1-40
	- The Method of Joints	1-40
	- Zero-Force Members	1-40
6	- The Method of Sections	1-40
	- Compound Trusses	1-40
	- Complex Trusses	1-40
7	- Space Trusses	1-40
	- Problems	1-40
	Mid Term	1-40



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	Internal Loadings Developed in Structural Members	1-40
8	- Internal Loadings at a Specified Point	1-40
	- Shear and Moment Functions <i>Experiment - 1 : Shear Force Test</i>	1-40
9	- Shear and Moment Diagrams for a Beam	1-40
	- Shear and Moment Diagrams for a Beam – continue <i>Experiment - 2 : Bending Moment Test</i>	1-40
	<b>TOTAL HOURS</b>	<b>45</b>
1 - 15	Plus <b>RECOMMENDED INDEPENDENT STUDY HOURS</b>	<b>90</b>
	<b>TOTAL COURSE HOURS</b>	<b>135</b>

#### 7. RECOMMENDED READING

Core text/s:

Hibbeler, R.C. (2014). *Structural Analysis*, 9th Ed  
Prentice Hall, Upper Saddle River, NJ

Library + online resources:  
NPTEL website (nptel.ac.in) for engineering books  
ICE virtual library (www.ice.org.uk)