



NILASAILA INSTITUTE OF SCIENCE & TECHNOLOGY  
SERGARH-756060, BALASORE (ODISHA)  
(Approved by AICTE& affiliated to SCTE&VT, Odisha)



## LESSON PLAN

**SUBJECT: Th-2 (STRUCTURAL DESIGN– II)**

### CHAPTER WISE DISTRIBUTION OF PERIODS

Sl.No.	Name of the chapter as per the Syllabus	No. of Periods as per the Syllabus	No. of periods actually needed
1	Introduction:	5	5
2	Structural Steel Fasteners and Connections.	10	10
3	Design of Steel tension Members	10	10
4	Design of Steel Compression members.	10	10
5	Design of Steel beams:	10	10
6	Design of Tubular Steel Structures	6	6
7	Design of Masonry Structures	9	9
	Total Period:	60	60

Discipline: Civil ENGINEERING	Semester: 5th	Name of the Teaching Faculty: Er. Biswajit Behera
Week	Class Day	Theory / Practical Topics
1 <sup>st</sup>	1 <sup>st</sup>	1.1 Common steel structures, Advantages & disadvantages of steel structures.
	2 <sup>nd</sup>	1.2 Types of steel, properties of structural steel. 1.3 Rolled steel sections, special considerations in steel design.
	3 <sup>rd</sup>	1.4 Loads and load combinations. 1.5 Structural analysis and design philosophy
	4 <sup>th</sup>	1.4 Loads and load combinations. 1.5 Structural analysis and design philosophy
2 <sup>nd</sup>	1 <sup>st</sup>	1.6 Brief review of Principles of Limit State design.
	2 <sup>nd</sup>	2.1 Bolted Connections 2.1.1 Classification of bolts, advantages and disadvantages of bolted connections.
	3 <sup>rd</sup>	2.1.2 Different terminology, spacing and edge distance of bolt holes.
	4 <sup>th</sup>	2.1.3 Types of bolted connections. 2.1.4 Types of action of fasteners, assumptions and principles of design.
3 <sup>rd</sup>	1 <sup>st</sup>	2.1.3 Types of bolted connections. 2.1.4 Types of action of fasteners, assumptions and principles of design.
	2 <sup>nd</sup>	2.1.5 Strength of plates in a joint, strength of bearing type bolts (shear capacity & bearing capacity), reduction factors, and shear capacity of HSFG bolts.
	3 <sup>rd</sup>	2.1.6 Analysis & design of Joints using bearing type and HSFG bolts (except eccentric load and prying forces)
	4 <sup>th</sup>	2.1.7 Efficiency of a joint. 2.2 Welded Connections:
4 <sup>th</sup>	1 <sup>st</sup>	2.2.1 Advantages and Disadvantages of welded connection 2.2.2 Types of welded joints and specifications for welding
	2 <sup>nd</sup>	2.2.3 Design stresses in welds. 2.2.4 Strength of welded joints

	<b>3<sup>rd</sup></b>	2.2.3 Design stresses in welds. 2.2.4 Strength of welded joints
	<b>4<sup>th</sup></b>	3.1 Common shapes of tension members.
<b>5<sup>th</sup></b>	<b>1<sup>st</sup></b>	3.1 Common shapes of tension members.
	<b>2<sup>nd</sup></b>	3.2 Maximum values of effective slenderness ratio.
	<b>3<sup>rd</sup></b>	3.4 Analysis and Design of tension members.( Considering strength only and concept of block shear failure.)
	<b>4<sup>th</sup></b>	3.4 Analysis and Design of tension members.( Considering strength only and concept of block shear failure.)
<b>6<sup>th</sup></b>	<b>1<sup>st</sup></b>	3.4 Analysis and Design of tension members.( Considering strength only and concept of block shear failure.)
	<b>2<sup>nd</sup></b>	3.4 Analysis and Design of tension members.( Considering strength only and concept of block shear failure.)
	<b>3<sup>rd</sup></b>	3.4 Analysis and Design of tension members.( Considering strength only and concept of block shear failure.)
	<b>4<sup>th</sup></b>	Revision
<b>7<sup>th</sup></b>	<b>1<sup>st</sup></b>	Revision
	<b>2<sup>nd</sup></b>	4.1 Common shapes of compression members.
	<b>3<sup>rd</sup></b>	4.2 Buckling class of cross sections, slenderness ratio
	<b>4<sup>th</sup></b>	4.2 Buckling class of cross sections, slenderness ratio
	<b>1<sup>st</sup></b>	4.3 Design compressive stress and strength of compression members.

8 <sup>th</sup>	2 <sup>nd</sup>	4.3 Design compressive stress and strength of compression members.
	3 <sup>rd</sup>	4.4 Analysis and Design of compression members (axial load only).
	4 <sup>th</sup>	4.4 Analysis and Design of compression members (axial load only).
9 <sup>th</sup>	1 <sup>st</sup>	4.4 Analysis and Design of compression members (axial load only).
	2 <sup>nd</sup>	Revision
	3 <sup>rd</sup>	Revision
	4 <sup>th</sup>	5.1 Common cross sections and their classification.
10 <sup>th</sup>	1 <sup>st</sup>	5.1 Common cross sections and their classification.
	2 <sup>nd</sup>	5.2 Deflection limits, web buckling and web crippling.
	3 <sup>rd</sup>	5.2 Deflection limits, web buckling and web crippling.
	4 <sup>th</sup>	5.2 Deflection limits, web buckling and web crippling.
11 <sup>th</sup>	1 <sup>st</sup>	5.3 Design of laterally supported beams against bending and shear.
	2 <sup>nd</sup>	5.3 Design of laterally supported beams against bending and shear.
	3 <sup>rd</sup>	5.3 Design of laterally supported beams against bending and shear.
	4 <sup>th</sup>	Revision

<b>12<sup>th</sup></b>	<b>1<sup>st</sup></b>	Revision
	<b>2<sup>nd</sup></b>	6.1 Round Tubular Sections, Permissible Stresses
	<b>3<sup>rd</sup></b>	6.1 Round Tubular Sections, Permissible Stresses
	<b>4<sup>th</sup></b>	6.2 Tubular Compression & Tension Members
<b>13<sup>th</sup></b>	<b>1<sup>st</sup></b>	6.2 Tubular Compression & Tension Members
	<b>2<sup>nd</sup></b>	6.3 Joints in Tubular trusses
	<b>3<sup>rd</sup></b>	6.3 Joints in Tubular trusses
	<b>4<sup>th</sup></b>	6.3 Joints in Tubular trusses
<b>14<sup>th</sup></b>	<b>1<sup>st</sup></b>	Revision
	<b>2<sup>nd</sup></b>	Revision
	<b>3<sup>rd</sup></b>	7.1 Design considerations for Masonry walls & Columns, Load Bearing & Non-Load Bearing walls, Permissible stresses, Slenderness Ratio, Effective Length, Height & Thickness.
	<b>4<sup>th</sup></b>	7.1 Design considerations for Masonry walls & Columns, Load Bearing & Non-Load Bearing walls, Permissible stresses, Slenderness Ratio, Effective Length, Height & Thickness.
<b>15<sup>th</sup></b>	<b>1<sup>st</sup></b>	7.1 Design considerations for Masonry walls & Columns, Load Bearing & Non-Load Bearing walls, Permissible stresses, Slenderness Ratio, Effective Length, Height & Thickness.
	<b>2<sup>nd</sup></b>	7.1 Design considerations for Masonry walls & Columns, Load Bearing & Non-Load Bearing walls, Permissible stresses, Slenderness Ratio, Effective Length, Height & Thickness.
	<b>3<sup>rd</sup></b>	7.1 Design considerations for Masonry walls & Columns, Load Bearing & Non-Load Bearing walls, Permissible stresses, Slenderness Ratio, Effective Length, Height & Thickness.
	<b>4<sup>th</sup></b>	7.1 Design considerations for Masonry walls & Columns, Load Bearing & Non-Load Bearing walls, Permissible stresses, Slenderness Ratio, Effective Length, Height & Thickness.