

# LESSON PLAN

**(5 periods per week, total 60 periods in SEM)**

<b>DISCIPLINE:</b> Civil Engineering		<b>SEMESTER:</b> 5 <sup>th</sup> Semester		<b>NAME OF THE TEACHING FACULTY:</b> Sima Chhatria PTGF (Civil Engg.)	
<b>SUBJECT:</b> Structural Design-II		<b>NO. OF DAYS/PER WEEK CLASSES ALLOTTED:</b> 4		<b>SEMESTER FROM DATE:</b> 16.08.2024 <b>TO DATE:</b> _____ <b>NO. OF WEEKS:</b> 15	
Week	Class Day		Theory Topic		
<b>1<sup>ST</sup></b>			1. Introduction		
	<b>1<sup>st</sup></b>	<b>1.1</b>	Common steel structures, Advantages & disadvantages of steel structures,		
		<b>1.2</b>	Types of steel, properties of structural steel.		
	<b>2<sup>nd</sup></b>	<b>1.3</b>	Rolled steel sections, special considerations in steel design.		
	<b>3<sup>rd</sup></b>	<b>1.4</b>	Loads and load combinations		
	<b>4<sup>th</sup></b>	<b>1.5</b>	Structural analysis and design philosophy.		
<b>2<sup>ND</sup></b>	<b>1<sup>st</sup></b>	<b>1.6</b>	Brief review of Principles of Limit State design		
			2. Structural Steel Fasteners and Connections.		
	<b>2<sup>nd</sup></b>	<b>2.1</b> <b>2.1.1</b>	Bolted Connections, Classification of bolts, advantages and disadvantages of bolted connections,		
	<b>3<sup>rd</sup></b>	<b>2.1.2</b>	Different terminology, spacing and edge distance of bolt holes.		
	<b>4<sup>th</sup></b>	<b>2.1.3</b> <b>2.1.4</b>	Types of bolted connections, Types of action of fasteners, assumptions and principles of design.		
<b>3<sup>RD</sup></b>	<b>1<sup>st</sup></b>	<b>2.1.5</b>	Strength of plates in a joint, strength of bearing type bolts (shear capacity & bearing capacity), reduction factors, and shear capacity of HSFG bolts.		
	<b>2<sup>nd</sup></b>	<b>2.1.6</b>	Analysis & design of Joints using bearing type and HSFG bolts (except eccentric load and prying forces),		
	<b>3<sup>rd</sup></b>	<b>2.1.7</b>	Efficiency of a joint.		
	<b>4<sup>th</sup></b>	<b>2.2</b> <b>2.2.1</b>	Welded Connections: Advantages and Disadvantages of welded connection		
<b>4<sup>TH</sup></b>	<b>1<sup>st</sup></b>	<b>2.2.2</b>	Types of welded joints and specifications for welding		
	<b>2<sup>nd</sup></b>	<b>2.2.3</b>	Design stresses in welds		
	<b>3<sup>rd</sup></b>	<b>2.2.4</b>	Strength of welded joints		
			3. Design of Steel tension Members		
	<b>4<sup>th</sup></b>	<b>3.1</b>	Common shapes of tension members.		
<b>5<sup>TH</sup></b>	<b>1<sup>st</sup></b>	<b>3.1</b>	Common shapes of tension members.		
	<b>2<sup>nd</sup></b>	<b>3.2</b>	Maximum values of effective slenderness ratio		
	<b>3<sup>rd</sup></b>	<b>3.2</b>	Maximum values of effective slenderness ratio		

	<b>4<sup>th</sup></b>	<b>3.3</b>	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>	<b>3.3</b>	Analysis and Design of tension members(Considering strength only and concept of block shear failure.)
	<b>2<sup>nd</sup></b>	<b>3.3</b>	Analysis and Design of tension members(Considering strength only and concept of block shear failure.)
	<b>3<sup>rd</sup></b>	<b>3.3</b>	Analysis and Design of tension members(Considering strength only and concept of block shear failure.)
	<b>4<sup>th</sup></b>	<b>3.3</b>	Analysis and Design of tension members(Considering strength only and concept of block shear failure.)
<b>7<sup>TH</sup></b>	<b>1<sup>st</sup></b>	<b>3.3</b>	Analysis and Design of tension members(Considering strength only and concept of block shear failure.)
	4. Design of Steel Compression members		
	<b>2<sup>nd</sup></b>	<b>4.1</b>	Common shapes of compression members.
	<b>3<sup>rd</sup></b>	<b>4.2</b>	Buckling class of cross sections, slenderness ratio
	<b>4<sup>th</sup></b>	<b>4.2</b>	Buckling class of cross sections, slenderness ratio
<b>8<sup>TH</sup></b>	<b>1<sup>st</sup></b>	<b>4.3</b>	Design compressive stress and strength of compression members
	<b>2<sup>nd</sup></b>	<b>4.3</b>	Design compressive stress and strength of compression members
	<b>3<sup>rd</sup></b>	<b>4.3</b>	Design compressive stress and strength of compression members
	<b>4<sup>th</sup></b>	<b>4.3</b>	Analysis and Design of compression members (axial load only)
<b>9<sup>TH</sup></b>	<b>1<sup>st</sup></b>	<b>4.3</b>	Analysis and Design of compression members (axial load only)
	<b>2<sup>nd</sup></b>	<b>4.3</b>	Analysis and Design of compression members (axial load only)
	<b>3<sup>rd</sup></b>	<b>4.3</b>	Analysis and Design of compression members (axial load only)
	5. Design of Steel beams:		
	<b>4<sup>th</sup></b>	<b>5.1</b>	Common cross sections and their classification.
<b>10<sup>TH</sup></b>	<b>1<sup>st</sup></b>	<b>5.2</b>	Deflection limits, web buckling and web crippling.
	<b>2<sup>nd</sup></b>	<b>5.2</b>	Deflection limits, web buckling and web crippling.
	<b>3<sup>rd</sup></b>	<b>5.2</b>	Deflection limits, web buckling and web crippling.
	<b>4<sup>th</sup></b>	<b>5.3</b>	Design of laterally supported beams against bending and shear.
<b>11<sup>TH</sup></b>	<b>1<sup>st</sup></b>	<b>5.3</b>	Design of laterally supported beams against bending and shear.
	<b>2<sup>nd</sup></b>	<b>5.3</b>	Design of laterally supported beams against bending and shear.
	<b>3<sup>rd</sup></b>	<b>5.3</b>	Design of laterally supported beams against bending and shear.
	<b>4<sup>th</sup></b>	<b>5.3</b>	Design of laterally supported beams against bending and shear.
<b>12<sup>TH</sup></b>	<b>1<sup>st</sup></b>	<b>5.3</b>	Design of laterally supported beams against bending and shear.
	6. Design of Tubular Steel Structures		
	<b>2<sup>nd</sup></b>	<b>6.1</b>	Round Tubular Sections, Permissible Stresses
	<b>3<sup>rd</sup></b>	<b>6.2</b>	Tubular Compression & Tension Members
	<b>4<sup>th</sup></b>	<b>6.2</b>	Tubular Compression & Tension Members
<b>13<sup>TH</sup></b>	<b>1<sup>st</sup></b>	<b>6.2</b>	Tubular Compression & Tension Members
	<b>2<sup>nd</sup></b>	<b>6.3</b>	Joints in Tubular trusses
	<b>3<sup>rd</sup></b>	<b>6.3</b>	Joints in Tubular trusses

			<b>7. Design of Masonry Structures:</b>
	<b>4<sup>th</sup></b>	<b>7.1</b>	Design considerations for Masonry walls & Columns, Load Bearing & Non-Load Bearing walls, Permissible stresses, Slenderness Ratio, Effective Length, Height & Thickness.
<b>14<sup>TH</sup></b>	<b>1<sup>st</sup></b>	<b>7.1</b>	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>	<b>7.1</b>	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>	<b>7.1</b>	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>	<b>7.1</b>	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>	<b>7.1</b>	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>	<b>7.1</b>	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>	<b>7.1</b>	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>	<b>7.1</b>	Design considerations for Masonry walls & Columns, Load Bearing & Non-Load Bearing walls, Permissible stresses, Slenderness Ratio, Effective Length, Height & Thickness.