Govt. Polytechnic Vaishali

Branch → Civil Engineering.

Semester → 5th

Subject → Design of steel Structure (1615502)

Lecture plan → effective from 01-08-2020.

Subject Teacher → Sh. Akash Kumar
Dept. of Civil Engg.
Lecturer, Civil.

Units	Topics to be Covered	No. of lectures	Book.
Unit 1.	**Introduction**		
	• Types of section used, grades of steel & strength characteristics Advantages & disadvantages of steel as construction material.	L1	B1 & B2
	• Use of steel table & relevant I.S Code ; Types of loads on steel structure & its I.S code specification.	L2.	B1 & B2
Unit 2.	**Connections**		
	• Riveted connections. Types of rivets & their use. Types of riveted joints & its failure. strength of riveted joints & efficiency of a riveted joints.	L3.	B1 & B2
	• Assumption in theory of riveted joint.	L4.	B1 & B2
	• Design of riveted joint for axially loaded members.	L5.	B1 & B2
	• Welded connection : Introduction, permissible stress in weld, strength of weld.	L6.	,,
	• Advantages & disadvantages of welded joints. Types of weld & their symbols	L7.	,,
	• Design of filled weld & butt weld subjected to axial load.	L8.	,,
Unit 3.	**Design of Tension Member.**		
	• Types of sections used. Permissible stresses in axial tension and gross & net c/s area of tension member.	L9.	,,
	• Analysis and Design of tension members with welded & riveted connections.	L10 & L11	,, ,,

	• Introduction to lug angle and tension splice.	L12	B1 & B2
Unit 4	**Design of Compression Member.**		
	• Angle struts; types of section used, effective length, radius of gyration, slenderness ratio & its limit, permissible compressive stresses.	L13	B1 & B2
	• Analysis & Design of axially loaded angle struts with welded & riveted connection.	L14 & L15	"
	• Stanchions & columns types of section used; Simple & built up Section, effective length. Analysis & design of axially loaded column.	L16 & L17	"
	• Introduction to lacing & battening. (No Numerical)	L18	"
Unit 5	**Steel roof truss**		
	• Types of steel roof truss & its selection criteria.	L19	"
	• Calculation of panel load for dead load, live load & wind load as per IS 875-1987.	L20 & L21	"
	• Analysis & design of steel roof truss.	L22	"
	• Design of angle purlin as per IS arrangement of members at supports.	L23 & L24	"
Unit 6.	**Beams.**		
	• Different steel sections used, simple & built-up sections, permissible bending stress	L25	"
	• Design of simple beams, check for shear only.	L26	"
	• Design of built-up beams (Symmetrical I Section with cover plates only), check for shear only.	L27	"
	• Introduction to plate girder: Various Components & their functions. (No Numerical)	L28	"
Unit 7.	**Column Bases.**		
	• Types of column bases.	L29	"
	• Design of slab base.	L30	"
	• Design of Concrete block	L31	"

• Introduction to gusseted base. (No numerical)	L32	B1 & B2.

Books for reference.

B1 → Design of steel structure
By SK. Duggal.
T.M.H publication.

B2 → Design of steel structures.
By. N. Subramanian.
Oxford higher education.