

Arch 554 Steel Structures

Winter 2020

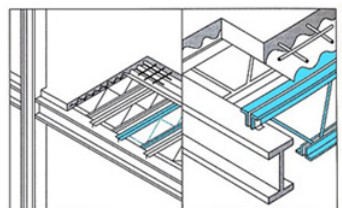
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Class Schedule Tuesday 8:30am – 11:30am.

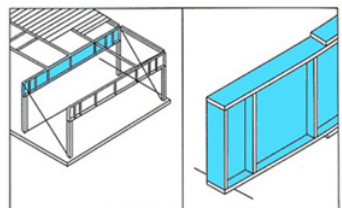
Overview:

Prerequisite: Arch 324Fall (3 credit hrs.)

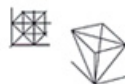
This course covers the structural design basis of constructional steel in architectural structures including its properties related to manufacture and erection of component parts. Various constructional typologies are studied, including prefabrication, jointing and assembly. The use of the material is explored through case studies including the fabrication of welded model structures and stress analysis.



(b) Steel deck and open-web bar joist system.



(d) Plate girders.



Introduction

- Overview of Systems, Forms, Behavior
- Basics of steel construction
- Examples of practice – Projects

Construction

- Historical development
- Manufacture
- Types of steel structures
- Philosophy of design
- Specifications and Codes

Material Properties

- Structural Nature of Steel
- Properties of Steel
- Material characteristics

The Design Process

- Elastic Principles
- Limit States vs Elastic Design
- Structural Safety & Load Factors
- Design control and QA
- Design for economy

Compression, Tension

- Compression Principles
- Buckling
- Column Forms
- Column Design
- Tie members design

Flexure, Torsion, Shear

- Flexure theory
- Beam stability
- Beam design
- Girders

Lab work

- Structural Analysis with Dr Frame
- Welding
- Prototype modelling, term project