53:134 Structural Design II (Steel Structures)
Spring 2005

Course Learning Objectives and Summary

1. Design of steel members for **combined bending and axial loads**.

   Use of interaction equations. Moment amplification due to axial loads, factor B_1. Determination of axial and flexural design strengths based on different failure modes.

2. Analysis of **indeterminate structures**.

   Force method, slope deflection method, direct stiffness method. Analysis of continuous beams, trusses and frames.

3. Deign of **continuous beams**.

   Analysis of continuous beams. Determination of required moment strength. Determination of design flexural strength.

4. Design of **indeterminate trusses**.

   Preliminary design: selection of sections. Analysis of the indeterminate truss. Checking of compression and tension members for compliance with code requirements.

5. Design of **frames**.

   Braced and unbraced frames. Moment amplification due to side sway, factor B_2. Preliminary design for indeterminate analysis. Determination of axial and flexural design strengths based on different failure modes. Checking of interaction equations.