

**J. Sargeant Reynolds Community College  
Course Content Summary**

**Course Prefix and Number:** BLD 210

**Credits:** 3

**Course Title:** Building Structures

**Course Description:** Introduces analysis and design of steel, wood, and reinforced concrete structural members, including loads, reactions, bending moments, stresses, and deflection for selection of beam and column sizes. Considers bolted and welded connections in steel design. Introduces determination of reinforcing steel sizes and arrangements in concrete members. Prerequisite: MTH 116. Lecture 3 hours per week.

**General Course Purpose:** The primary purpose of this course is to provide the student with a fundamental understanding of the engineering principles that govern the structural design of a building.

**Course Prerequisites and Co-requisites:**

**Prerequisite:** MTH 116

**Course Objectives:**

Upon completing the course, the student will be able to

- a. Analyze simple structures and size beams and columns;
- b. Understand grades and shapes of structural steel;
- c. Use formulas, charts, tables, and load requirements to size structure;
- d. Draw shear and bending moment diagrams for all types of beams; and
- e. Understand basic concrete design requirements, including the use of steel reinforcement.

**Major Topics to Be Included:**

- a. Structural shapes
- b. Unit stress
- c. Reactions, moments, and shear
- d. Theory of bending and properties of sections
- e. Use of the beam formula, beam design, and deflection
- f. Floor framing systems
- g. Columns and connections
- h. Concrete design

**Effective Date of Course Content Summary:** August, 2008