J. Sargeant Reynolds Community College
Course Content Summary

Course Prefix and Number: ARC 132 **Credits:** 3

Course Title: Materials and Methods of Construction II

Course Description: Studies masonry and concrete materials related to the construction industry: materials, mixtures, handling and placing, finishing and curing, and protection of concrete work. Includes brick and cementitious materials, mortar and workmanship, and iron, steel, and aluminum as used in construction. Lecture 3 hours per week.

General Course Purpose: To give the student a comprehensive understanding of concrete and masonry construction systems as one of the primary components used in architectural design projects with a particular emphasis on commercial scope construction. In addition, an overview of the fundamentals of steel and metal construction is conducted toward the conclusion of the course. Course required for the Contemporary Technology for Design and Building Construction Management track of the Architectural and Engineering Technology AAS degree.

Course Prerequisites and Co-requisites:
None

Student Learning Outcomes:
Upon completing the course, the student will be able to
a. Identify the various types of soil encountered on a project and the difference between well-graded and poorly graded soils. Identify testing methods used to create a oils report;
b. Identify the nature of concrete including weather influences, demonstrate an understanding of the cement manufacturing process, identify the manufacturing methods and delivery methods of concrete;
c. Identify the various types of foundation/slab combinations available to accommodate various soil conditions;
d. Demonstrate an understanding of reinforced concrete and reinforcing steel and its purposes/applications;
e. Demonstrate an understanding of structural steel manufacturing process and the use of recycled materials in that process;
f. Develop an appreciation for the work of the craftsman, technician, and designer in the appropriate materials;
g. Estimate materials such as concrete, brick, and block for job requirements; and
h. Identify where and how concrete and masonry products can and should be used in construction projects including the use of expansion joints to accommodate temperature differences.

Major Topics to Be Included:
a. Concrete--foundation systems, slabs on grade, elevated slabs, reinforcing and forming for concrete and well as production of cement and site mixing of concrete; additives used in concrete to extend its capabilities
b. Masonry--block, brick, mortars as well as attachment accessories
c. Iron and steel systems

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