J. Sargeant Reynolds Community College
Course Content Summary

Course Prefix and Number: ARC 221 **Credits:** 3

Course Title: Architectural CAD Applications Software I

Course Description: Teaches the principles and techniques of architectural drawing practices through the use of architecture-specific CAD software. Utilizes the commands and features of the software to generate drawings that emphasize architectural design and structural systems. Use local prerequisites. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

General Course Purpose: The primary purpose of this course will be to provide students with a foundation in the use and application of contemporary architectural design software also known as "Building Information Modeling" (BIM). This course serves as a requirement for the Architectural and Engineering Technology AAS - Contemporary Technology for Design and Building Construction Management Specializations. Course is also a requirement of the Computer-Aided Design Specialist CSC.

Course Prerequisites and Co-requisites:
None

Student Learning Outcomes:
Upon completing the course, the student will be able to
a. Recognize the role of BIM software in current architectural, engineering, and construction practice;
b. Evaluate the capabilities of a BIM model to generate conventional working drawings;
c. Utilize the software to streamline a design process that explores options and multiple possibilities;
d. Develop the building model for creating realistic presentation images in 3D with rendered materials as well as shading and shadows; and
e. Create and modify architectural elements to complete a coordinated, cohesive project.

Major Topics to Be Included:
a. Navigating the program interface and workspace
b. Creation of the conceptual model
c. Working with the basic sketching and modifying tools
d. Creation of multiple wall styles in combination with the addition of components such as doors, windows, and equipment
e. Linking of CAD and Revit files into a BIM model
f. Modifying toposurfaces to represent site features
g. Manipulating the model to provide multiple views and perspectives
h. Application and creation of materials in the model
i. Creation of schedules and material take-offs
j. Adding floors, ceilings and roofs to define the structure of materials
k. Modeling stairs, railings, and ramps
l. Providing interior design elements such as furniture and casework
m. Setting up sheets for plotting with appropriate text, dimensions, details, tags, and annotations
n. Creating construction details

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