

# Architectural, Engineering, and CAD Technologies (AEC)

## Architectural, Engineering, and CAD Technologies (AEC) Classes

### AEC 99V : Special Studies

**Description:** See explanation under the heading of Special Studies.

### AEC 101 : Construction Graphics and Conventions

**Credits:** 3

**Class Hours:** 3 lecture

**Description:** This course covers an introduction to the principles of graphic communication and conventions as it applies to drawing and reading construction plans using hand sketching, various computer-aided design, and construction administration software. Techniques for measuring items of construction work from plans and specifications, layout, terminology, graphic standards and drafting fundamentals are studied. There is an emphasis on how to locate information and cross reference with details, schedules, and specifications for clarification. This course also introduces students to some computer architectural 3D modeling using SketchUp or similar software.

**Semester Offered:** Fall

**Course Student Learning Outcomes (CSLOs):**

1. Describe how complex plan sets are organized.
2. Explain the special characteristics of commercial plans and summarize how to read and interpret them.
3. Compare and describe the components of civil plans.
4. Recognize the components of an exterior wall section.
5. Identify typical contract documents and describe their function.
6. Distinguish and define the components of site plans.
7. Utilize software to aid in the reading and interpretation of construction plans.
8. Define typical construction symbols, line types, and terminology.

### AEC 110 : Basic AutoCAD

**Credits:** 4

**Class Hours:** 4 lecture

**Prerequisites:** "C" or higher or concurrent enrollment in AEC 101.

**Description:** This course introduces the foundations of AutoCAD. Included are the basic commands and operations from 2D drawing and editing tools to the creation of solid models and renderings. Students study 2D drawing, text, dimensions, blocks, hatching, reference files, sharing data, 3D drawing, and plotting capabilities. Students are provided additional concepts and tools that demonstrate technical knowledge essential to the architectural, engineering, and construction technology related fields.

**Semester Offered:** Spring

**Course Student Learning Outcomes (CSLOs):**

1. Execute the basic commands necessary to create 2D and 3D drawings using AutoCAD.
2. Create, render, and manipulate 3D AutoCAD drawings, and convert 2D drawings to 3D drawings.
3. Apply the full range of AutoCAD commands, options, keyboard, toolbar, and menu interfaces as acceptable for employment as a CAD technician.
4. Demonstrate the proper use of industry-accepted terms and drawing setup.
5. Manage files within an AutoCAD drawing project.
6. Work from written as well as oral instructions. Use assigned time efficiently for productive work and to meet production deadlines.

# AEC 161 : Building Information Modeling Software

**Credits:** 3

**Class Hours:** 3 lecture

**Prerequisites:** "C" or higher or concurrent enrollment in AEC 101.

**Description:** This course provides students with the opportunity to work on a medium-size modeling/drafting project using the latest architectural software. Emphasis is on the three-dimensional drawing. Architectural models, rendering, and animation are important elements of the course. Students create photo realistic computer images of buildings, components, and the project site.

**Semester Offered:** Fall

**Course Student Learning Outcomes (CSLOs):**

1. Demonstrate oral and written communication, computation, and problem-solving skills appropriate to BMI construction.
2. Demonstrate the appropriate software commands to create a 3D building model including the following assemblies: walls, floors, doors, windows, roofs, components, dimensions and stairs.
3. Compose and print a sheet in a building model set.
4. Create still renderings, perspective views, and walk through animations of a building model using Building Information Modeling (BIM) software.
5. Import a vector-based reference drawing into a model file.
6. Demonstrate the loading of components into a building model.

# AEC 164 : Residential Planning and Design

**Credits:** 3

**Class Hours:** 3 lecture

**Prerequisites:** "C" or higher in AEC 101. "C" or higher or concurrent enrollment in AEC 110.

**Description:** This course addresses residential design fundamentals and design development. The application of AEC 101 and AEC 110 techniques contribute to preliminary board designs of increasing complexity. This course includes architectural design concepts, study models and principles, application of architectural software, rendering, and group and juried presentations.

**Semester Offered:** Spring

**Course Student Learning Outcomes (CSLOs):**

1. Describe and apply reasonable space requirements, code restrictions, site and building orientation constraints, and room proximity standards towards the development of a residential design.
2. Use the AutoCAD® and SketchUp® computer programs (or similar programs) to develop and finalize an architectural design.
3. Clearly and adequately explain a design presentation to other groups. Fairly and objectively critique the designs and presentations of others.
4. Report to a workplace regularly and punctually. Engage effectively and congenially with peers and supervisors. Work from written, as well as oral instructions, and use assigned time efficiently to meet production deadlines.
5. Demonstrate oral and written communication, computation, and problem-solving skills appropriate to the level of the coursework.
6. Explain and demonstrate the building design process.