BI 0011 - ARCHITECTURAL DRAWING II

Catalog Description

Formerly known as DES 21
Prerequisite: Completion of BI 10 with grade of "C" or better or equivalent as determined by instructor
Hours: 90 (36 lecture; 54 laboratory which may be scheduled TBA)
Description: Advances the skills and knowledge of residential architectural drawing production started in BI 10. Course focuses on production of residential architectural drawings of a 2-story wood framed house in the context of current and relevant building codes, construction materials and methods, industry standard work flow, production and graphic standards through the use of a drawing software application. Additional skills of software utilization, drawing management, complex drawing creation and printing will be covered. This course teaches intermediate AutoCAD skills. (CSU)

Course Student Learning Outcomes

- CSLO #1: Apply appropriate, current and relevant industry standards in preparing technical documentation for the appropriate discipline of their study.
- CSLO #2: Define the five steps in the design process.
- CSLO #3: Design complete working drawings in discipline of study for use in manufacturing/building application that conform to business and industry CAD standards.
- CSLO #4: Demonstrate proper use of Architectural Design Flow process.

Effective Term

Fall 2022

Course Type

Credit - Degree-applicable

Contact Hours

90

Outside of Class Hours

72

Total Student Learning Hours

162

Course Objectives

This course requires 36 hours lecture and 54 hours laboratory. In some class sections, the 54 hours of laboratory may be scheduled "to be arranged" or "TBA." The TBA hours and objectives are expected of all students enrolled in the course.
Upon successful completion of the course, the student will:
Lecture Objectives:
1. Architectural drawing and drafting standards
A. Describe the use of drawings in terms of the design process and agency review.
B. Discuss the importance of office standards, drawing standards and CAD standards.
C. Identify common industry standards organizations for drawings and CAD.
D. Discuss common reference symbols and how it correlates with other information within drawings.
2. Architectural site plans
A. Explain the purpose of an architectural site plan and how that relates to information shown.
B. Discuss architectural site plans in terms of graphics, annotations and reference symbols.
C. Explain common inter-related site plan terms, dimensions and constraints. 3
3. Foundation plans
A. Describe the purpose of a foundation plan and how that relates to information shown.
B. Discuss foundation plans in terms of graphics, annotations and reference symbols.
C. Discuss common concrete foundation terms, dimensions and elements.
4. Architectural floor plans
A. Describe the purpose of a architectural floor plans and how that relates to information shown.
B. Discuss architectural floor plans in terms of graphics, annotations and reference symbols.
C. Discuss common architectural floor plan terms, dimensions and elements.
5. Architectural floor plan code requirements
A. Explain common code requirements for means of egress and how it relates to floor plans.
B. Discuss the iterative design and permitting process in terms of code compliance.
C. Discuss common means of egress requirements terms, dimensions and elements.
6. Architectural roof plans
A. Describe the purpose of roof plans and how that relates to information shown.
B. Discuss roof plans in terms of graphics, annotations and reference symbols
C. Define common roof plan terms, dimensions and elements.
7. Architectural exterior elevations
A. Describe the purpose of exterior elevations and how that relates to information shown.
B. Discuss exterior elevations in terms of graphics, annotations and reference symbols
C. Discuss common exterior elevation terms, dimensions and elements.
8. Architectural building sections
A. Describe the purpose of building sections and how that relates to information shown.
B. Discuss building section in terms of graphics, annotations and reference symbols.
C. Discuss common building section terms, dimensions and elements.
9. Residential stair sections
A. Describe the purpose of stair sections and how that relates to information shown.
B. Discuss stair sections in terms of graphics, annotations and reference symbols.
C. Discuss common stair code requirements terms, dimensions and elements. 1
10. Residential electrical plans
A. Describe the purpose of electrical plans and how that relates to information shown.

B. Discuss electrical plans in terms of graphics, annotations and reference symbols.
C. Discuss common electrical plan code requirements terms, dimensions and elements.
11. Printing and plotting for architectural graphic standards
A. Describe common drawing sizes and printing media. 2
B. Discuss controlling print size and scale from MS or PS.
C. Discuss controlling line gray-scaling, linetype scale and lineweight.
D. Discuss controlling LTSCALE, PSLTSCALE and annotative scales for objects.
E. Discuss controlling PLOTSTYLE tables.
12. Advanced CAD drawing production techniques for efficiency
A. Describe customizing the user interface for efficient object information collection.
B. Discuss common office "working files" and "sheet files" in projects.
C. Discuss creating complete project "sheet file" sets using layout tabs. 2
D. Discuss common interdisciplinary file backgrounds for file linking. (XREF)
E. Discuss common file linking formats and how to integrate information into drawings.
13. Advanced CAD drafting techniques for efficiency
A. Describe utilizing a template standards file for commonly used information.
B. Discuss using standard and annotative blocks with attributes for commonly used information.
C. Discuss using LAYERSTATES and advanced tools to control information.
D. Discuss using annotative text and dimensions and advanced tools to control information.
E. Discuss objects in terms of specific properties and how to quantify design data.
Laboratory Objectives:
1. Architectural drawing and drafting standards
A. Demonstrate ability to organize and maintain folders, files and other project information.
B. Demonstrate ability to apply industry standards in the development of drawings.
C. Demonstrate ability to apply industry graphic standards in the development of drawings.
2. Architectural site plans
A. Demonstrate the ability to develop an architectural site plan.
B. Demonstrate the ability to apply industry standard graphics, annotations and reference symbols.
3. Foundation plans
A. Demonstrate the ability to develop a foundation plan.
B. Demonstrate the ability to apply industry standard graphics, annotations and reference symbols
4. Architectural floor plans
A. Demonstrate the ability to develop a floor plan.
B. Demonstrate the ability to apply industry standard graphics, annotations and reference symbols.
5. Architectural floor plan code requirements
A. Demonstrate the ability to apply building code requirements in the development of a floor plan.
B. Demonstrate the ability to apply industry standard graphics, annotations and reference symbols.
6. Architectural roof plans
A. Demonstrate the ability to develop a roof plan.
B. Demonstrate the ability to apply industry standard graphics, annotations and reference symbols.
7. Architectural exterior elevations
A. Demonstrate the ability to develop an exterior elevation.
B. Demonstrate the ability to apply industry standard graphics, annotations and reference symbols.
8. Architectural building sections
A. Demonstrate the ability to develop a building section.
B. Demonstrate the ability to apply industry standard graphics, annotations and reference symbols.
9. Residential stair sections
A. Demonstrate the ability to develop a stair section.
B. Demonstrate the ability to apply industry standard graphics, annotations and reference symbols.
C. Demonstrate the ability to apply building code requirements in the development of a stair section.
10. Residential electrical plans
A. Demonstrate the ability to develop an electrical plan.
B. Demonstrate the ability to apply industry standard graphics, annotations and reference symbols.
11. Printing and plotting for architectural graphic standards
A. Demonstrate ability to print to different size media.
B. Demonstrate ability to control print size and scale from MS or PS.
C. Demonstrate ability to control line gray-scaling, linetype scale and lineweight.
D. Demonstrate ability to control LTSCALE, PSLTSCALE and annotative scales for objects.
E. Demonstrate ability to modify PLOTSTYLE tables.
12. Advanced CAD drawing production techniques for efficiency
A. Demonstrate ability to customize the user interface.
B. Demonstrate ability to use "working files" and "sheet files" in projects.
C. Demonstrate ability to develop complete project "sheet file" sets using layout tabs.
D. Demonstrate ability to use file backgrounds and file linking. (XREF)
E. Demonstrate ability to link multiple file formats to drawings. (.dwg, .pdf, .xls)
13. Advanced CAD drafting techniques for efficiency
A. Demonstrate ability to use a template drawing to incorporate file standards. (DESIGNCENTER)
B. Demonstrate ability to insert and modify standard and annotative block attributes.
C. Demonstrate ability to create and control layers through layer states and advanced layer tools.
D. Demonstrate ability to use annotative text and dimensions.
E. Demonstrate ability to quantify object data. (PROPERTIES PALETTE)

General Education Information

- Approved College Associate Degree GE Applicability
- CSU GE Applicability (Recommended-requires CSU approval)
- Cal-GETC Applicability (Recommended - Requires External Approval)
- IGETC Applicability (Recommended-requires CSU/UC approval)

Articulation Information

- CSU Transferable

Methods of Evaluation

- Objective Examinations
  - Example: Q: Explain the elemental differences between a Hip roof and a Gable roof. The weekly and semester drawings are examples to assess the depth of topic coverage and analysis for each student.
- Projects
  - Example: The student will produce a full set of architectural working drawings for a single story residence with all required

technical documentation. The project is evaluated and graded according to industry and accepted graphic standards.

- Skill Demonstrations
  - Example: The student will produce the four primary elevation drawings generated from their current floor plan. These drawings are evaluated by the instructor and graded according to industry and accepted graphic standards.

Repeatable

No

Methods of Instruction

- Laboratory
- Lecture/Discussion
- Distance Learning

Lab:

1. Instructor guides student learning through the development of weekly architectural drawings that conform to industry and graphic standards, for example a detailed drawing of a building foundation or roofing plan. The student developed working drawing is then checked for completeness and drafting accuracy to national industry standards and an appropriate grade assigned to the project. (Laboratory Objective 1)

Lecture:

1. The instructor will lead students in a group discussion on the correct elevation view development based on the elevation views information in the assigned pages from their textbooks and in lecture. The pros and cons of differing elevation development will be discussed. Students participate in the discussion and are required to take detailed development notes. (Lecture Objective 7)

Distance Learning

1. Students in online classes participate, individually and in groups, in discussion boards and respond to weekly assignments via the Learning Management System. The instructor will provide documented material (including videos) explaining or exploring the course content and provide individual feedback on all assignments. Instructors lecture on Residential two-story electrical construction and design. Students are given the chance to ask questions during an instructor-guided discussion board, through a discussion board for student to student feedback and if privacy is needed through the instructors' email. (Laboratory Objective 10 - A)

Typical Out of Class Assignments Reading Assignments

1. Students read chapter on face-frame cabinets with frameless cabinets for interior elevations and discuss in groups. 2. Students read Internet research comparing jurisdictional code requirements for residential construction and utilize their findings in developing technical documentation for build.

Writing, Problem Solving or Performance

1. Write papers comparing and contrasting various approaches to solving drafting problems relative to architecture. 2. Construct drawings, based upon their written solution, demonstrating the weekly-learned objectives.

Other (Term projects, research papers, portfolios, etc.)

Develop a portfolio that contains samples of your semester assignments to demonstrate to potential employers the concepts studied.

Required Materials

- Architectural Drafting and Design
  - Author: Jefferis/Madsen/Madsen
  - Publisher: Thomson
  - Publication Date: 2016
  - Text Edition: 7th
  - Classic Textbook?: No
  - OER Link:
  - OER:

Other materials and-or supplies required of students that contribute to the cost of the course.