ARCH A180: ARCHITECTURAL CONSTRUCTION DOCUMENTS

Item	Value
Curriculum Committee Approval Date	10/19/2022
Top Code	020100 - Architecture and Architectural Technology
Units	4 Total Units
Hours	144 Total Hours (Lecture Hours 36; Lab Hours 108)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	Yes
Basic Skills	Not Basic Skills (N)
Repeatable	No
Grading Policy	Standard Letter (S)

Course Description

A basic course focusing on representation skills as applied to digital and physical construction models and documents for a wood frame structure. Further emphasis is on architectural symbols and conventions, specifications, building codes, products, materials, equipment, and the development of a student-designed structure. PREREQUISITE: ARCH A155. ADVISORY: ARCH A105 and ARCH A115. Transfer Credit: CSU.

Course Level Student Learning Outcome(s)

1. Create all necessary drawings for the construction of a single story, wood frame, single family residence.
2. Demonstrate the application of construction principles to foundation framing plans, sections details, material schedules utility plans.

Course Objectives

- 1. Demonstrate mastery of drafting skill and use of tools and equipment.
- 2. Evaluate the relationship and organization of working drawings; arrange and integrate a complete set.
- 3. Create all necessary drawings (plans, elevation, schedules, sections and details) for a single story, wood frame residence.
- 4. Apply the principles of construction to a foundation plan and details.
- 5. Apply the principles of construction to a framing plan and details.
- 6. Apply the principles of construction to building sections.
- 7. Apply State Building Code requirements for single-family residences to each working drawing.
- 8. Apply Title 24 energy requirements for single-family residence to drawings.
- 9. Apply concepts and principles of residential mechanical and electrical systems to working drawings.
- 10. Apply concepts and principles of residential exterior and interior finishes to working drawings.
- 11. Apply concepts and principles of residential doors and windows to working drawings.
- 12. Demonstrate an understanding of the purpose, content, and relationship of construction documents by answering questions from worksheets and written tests and quizzes.

Lecture Content

Drafting Techniques Tools and instruments Line types and graphical imagery Lettering and drawing with instruments Residential Development Analysis Zoning and building code Owner/client desires Contract documents/legal liability Construction Documents Types of drawing views Plan, elevation, and section views Working drawings and their characteristics, symbols, and objectives Specifications and contract forms Related Project Floor plan Layout and finishes Dimensioning Coordination symbols Plumbing systems, fixtures, and symbols Framing plan Structural system theory and materials Vertical and lateral forces effect on building Resistant devices Roof, ceiling, and wall framing elements Foundation plan Concrete and raised framing systems Anchorage devices Footings Sections Vertical expressions of items B and C above Elevations (Exterior) Building envelope Weather resistance Roof and wall material selections Window and door types and selections Elevations (Interior) Views and finishes Cabinetry types, materials, and construction Schedules and details Organizational expression of door, window, and material selections Enlarged views of the assembly of selected conditions for construction Utilities (Electrical and Heating Plan) Heating and air conditioning Energy conservation and efficiency Types of systems Electrical and lighting Phone, television, miscellaneous elements Site plan Grading and topography Site analysis and placement Site amenities and improvement Utilities Specifications Quality and performance requirements Construction Specifications Institute standard 16 division format

Lab Content

The lab component will apply the Course Content listed for the course through the use of project-based learning activities. Students will have one or more projects and several design exercises that correspond to the lectures and that require the implementation of principles learned in the lectures, reading materials, as well as technical research done online. A. Residential Design Exercises 1. Designer/Client Relationship 2. Principles of Construction (Type V) 3. Wood Frame Structural Systems 4. CAD BIM Office Standards 5. Project Design Phases (PD, SD, DD, CD, CO) 6. Building Lifecycle Phases (Design, Build, Operate, Demo) B. Integrating Code Requirements into a Project 1. Planning Zoning Codes 2. Structural Building Codes 2. Title 24 Energy Requirements 3. Electrical Mechanical Codes C. Technical Documents 1. Plan(s) 2. Elevations 3. Sections 4. Project Details 5. Schedules 6. Specifications D. Design Documents Working Drawings Set 1. Develop Concept Diagrams Images 2. Develop Systems Document 3. Develop and Present at Actual and Scaled Sizes 4. Document Design in Working Drawings Set

Method(s) of Instruction

- Lecture (02)
- DE Live Online Lecture (02S)
- DE Online Lecture (02X)
- Lab (04)
- DE Live Online Lab (04S)
- DE Online Lab (04X)

Instructional Techniques

1. Demonstrate mastery of digital and manual skills needed to design, visually communicate, and develop a constructable, small-scale wood structure. 2. Evaluate the relationship and organization of construction documents; arrange and integrate a complete set using CAD and/or BIM digital tools. 3. Create all necessary drawings (plans, elevation, schedules, sections and details) for a wood frame structure. 4. Apply the principles of wood frame construction to a complete set of construction documents and models to include: foundation, framing, floor plans, elevations, sections, and details. 5. Implement applicable code requirements to a small scale project. 6. Demonstrate an understanding of the purpose, content, and relationship of construction documents by answering questions from worksheets and written tests and quizzes.

Reading Assignments

Students will spend 1 hour a week on chapter reading.

Writing Assignments

No writing assignments outside of out-of-class assignments listed.

Out-of-class Assignments

Students will spend 3 hours a week on sketching, drafting, or 3D modeling their project or drawing assignment.

Demonstration of Critical Thinking

Evaluation and critique of student drawings (visual)Evaluation of worksheets, tests, and quizzes (academic)

Required Writing, Problem Solving, Skills Demonstration

Critical thinking skills will be demonstrated through the preparation of technical drawings in response to building construction influences. Writing will occur in the form of construction specifications, instructions, and notations on documents.

Eligible Disciplines

Architecture: Any bachelors degree and two years of professional experience, or any associate degree and six years of professional experience.

Textbooks Resources

1. Required Ching, Francis D.K. . Building Construction Illustrated, latest ed. New York: John Wiley Sons, 2010

Other Resources

1. International Building Code w/ California adoptions, current (2011).