ARCH A203: DESIGN/BUILD 3 ARCHITECTURE

Item	Value
Curriculum Committee Approval Date	12/08/2021
Top Code	020100 - Architecture and Architectural Technology
Units	4 Total Units
Hours	108 Total Hours (Lecture Hours 54; Lab Hours 54)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	No
Grading Policy	Standard Letter (S)

Course Description

This learn-by-doing course involves the design and construction of a small structure with an emphasis on integrating digital fabrication and/or manufacturing techniques. Students will work in teams with an instructor. Projects will vary and could involve off-campus assembly. ADVISORY: ARCH A180. Transfer Credit: CSU.

Course Level Student Learning Outcome(s)

1. Students will be able to design, develop and build a structure or interior installation that integrates some element of digital fabrication or manufacturing, safely, and at a skilled level of craft as evaluated by the instructor.
2. Students will be able to communicate their work graphically and/or verbally as evidenced in a project portfolio or media presentation to be evaluated by the instructor.

Course Objectives

- 1. Safely utilize hand and powered equipment and maintain a safe work area.
- 2. Maintain and store tools and equipment.
- 3. Demonstrate skilled construction and team assembly skills.
- 4. Design and develop a project that is functional and complete.
- 5. Communicate the design/build process and explain the project graphically and/or verbally with printed or digital media.
- 6. Integrate digital fabrication or manufacturing processes into a design/build project.

Lecture Content

The Project for Arch 203 is to be selected by the instructor and designed and developed by the students. The project will vary by semester and refect current opportunites available. The project should be of significant size to support human-scaled inhabitation or use and will generally be a type of micro-structure (less than 200 square feet) designed and built for mobility or deployment to a site. Emphasis will be placed on Sustainability and use of "green" materials and finishes where possible. Additionally, this project should engage the use of digital fabrication or manufacturing elements as part of the design. As related to the project, the following topics shall be addressed: Tool and Workplace Safety Safety review and quiz Material storage Intro to tools, equipment Clean up procedures Project development – Intermediate/Advanced level of complexity Design, concept development Shop drawings, models, sketches for construction Cost estimating/budgeting Purchasing, reclamation of materials Advanced manufacturing integration Use of digital fabrication equipment to enhance the design or constructability of all or part of the project (CNC, robotics, etc.) Use of digital manufacturing equipment to augment the structural performance, design or constructability of a project (FrameCAD, or other equipment). Coordination of digital model with equipment Safe operation of equipment. Construction – Intermediate/Advanced level of complexity Building of structure Foundation, seismic safety Framing, codes and techniques Windows, doors, insulation Systems: Electrical, mech/plumbing Exterior materials finishes Interior materials finishes > Transport and installation Documentation and presentation of project

Lab Content

As related to the project selected, the following items will be discussed and presented by the instructor during the Lecture and continued and executed in the Lab portion of the class: Tool and Workplace Safety Safety review and quiz Material storage Intro to tools, equipment Clean up procedures Project development – Intermediate/Advanced level of complexity Design, concept development Shop drawings, models, sketches for construction Cost estimating/budgeting Purchasing, reclamation of materials Advanced manufacturing integration Use of digital fabrication equipment to enhance the design or constructability of all or part of the project (CNC, robotics, etc.) Use of digital manufacturing equipment to augment the structural performance, design or constructability of a project (FrameCAD, or other equipment). Coordination of digital model with equipment Safe operation of equipment. Construction – Intermediate/Advanced level of complexity Building of structure Foundation, seismic safety Framing, codes and techniques Windows, doors, insulation Systems: Electrical, mech/plumbing Exterior materials finishes Interior materials finishes Transport and installation Documentation and presentation of project

Method(s) of Instruction

- Lecture (02)
- Lab (04)

Instructional Techniques

Lecture and in-class demonstrations, individual and small group activities and instruction.

Reading Assignments

Reading and research materials to be determined based on the nature of the project to be selected each semester.

Writing Assignments

Writing for this course includes minor notations and short professional descriptors as evidenced in the design drawings/models. Critical thinking is reinforced in the act of developing a design for construction and in the documentation and presentation of the project.

Out-of-class Assignments

Out of class assignments to be determined based on the specific needs of each project. Expected assignments to include design/construction

related activities such as research, drawing, information-gathering, and digital media work.

Demonstration of Critical Thinking

Critical thinking is reinforced in the act of developing a design for construction and in the documentation and presentation of the project.

Required Writing, Problem Solving, Skills Demonstration

Writing for this course includes minor notations and short professional descriptors as evidenced in the design drawings/models.

Eligible Disciplines

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

Other Resources

1. Instructor handouts and reference materials as needed for project. 2. Student will be encouraged to purchase personal hand tools. 3. Construction Grade Hand and Power Tools Needed: Saws, sanders, drills, finish nailer, hand tools. 4. Digital Fabrication Equipment: CNC, FrameCAD extruder, laser cutters, robots, water jet, etc. 5. Cleaning Supplies Equipment: Vacuum, broom, dustpan, trash cans. 6. Construction Materials (may vary by project): Wood, metal, glass/acrylic, hardware, adhesives, doors/windows, finish products (sealers, paint, etc.), fasteners, sandpaper, paint brushes/rollers, drop cloths/tarps, replacement blades, belts, and bits.