ARCH A021N: FRAMECAD STUDIO 1 NONCREDIT

Item	Value
Curriculum Committee Approval Date	11/02/2022
Top Code	020100 - Architecture and Architectural Technology
Units	0 Total Units
Hours	48 Total Hours (Lecture Hours 36; Lab Hours 12)
Total Outside of Class Hours	0
Course Credit Status	Noncredit (N)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	Yes; Repeat Limit 99
Open Entry/Open Exit	No
Grading Policy	P/NP/SP Non-Credit (D), • Letter Non-Credit (L)

Course Description

FrameCAD Studio 1 is a project-based course that develops design skills to produce a steel panel project using FrameCAD software. Basic steel frame design concepts will be covered as well as use of FrameCAD Structure and FrameCAD Detailer. Students will also receive basic machine safety and steel panel assembly experience. ADVISORY: ARCH A004N. NOT DEGREE APPLICABLE. Not Transferable.

Course Level Student Learning Outcome(s)

1. Completers will be demonstrate knowledge of steel frame panelization design parameters and manufacturing processes in their project design.
2. Completers will be able to design and produce a custom build project using FrameCAD software and a FrameCAD machine.
3. Students will practice machine and work area safety procedures in and around the FrameCAD machine and lab work areas.

Course Objectives

- 1. Apply understanding of steel framing and panelization design parameters and considerations.
- 2. Create a complete structure using FrameCAD Structure.
- 3. Create machine configuration files for FrameCAD Detailer that are consistent with the machine.
- 4. Transfer a structure created in FrameCAD Structure into FrameCAD Detailer and complete the project for production.
- 5. Design a structure using FrameCAD software and prepare it for export to FrameCAD Factory.
- 6. Practice safe work habits around FrameCAD machine and project production areas.
- 7. Fabricate FrameCAD produced components into a floor or wall panel.
- 8. Assemble a structure produced using FrameCAD with an impact drill.

Lecture Content

Steel Frame Design Design parameters and considerations Design loads: wind, seismic, dead and live loads Load tables, spans, trusses Shear bracing options Coordination: panels, service holes, windows/ doors Codes and Steel Standards FrameCAD Software - Structure (small project) Settings and project set up Panels and doors Floor and anchoring Roof, overhangs FrameCAD Software - Detailer (small project) Machine configuration Import of Structure files Constructability review Tooling checks Labeling and redundency checks Workplace Safety Machine safety Production area safety Assembly and impact drill safety Moving panels and coordination of material handling Export to Machine Consistency with machine settings Scheduling file in FrameCAD Factory software Introduction to machine operation Project Reviews Export documents Present work Generate engineering reports Gnerate production reports

Lab Content

Machine and Workspace Safety 440 Power safety Workspace safety zones Decoiler, Machine Output area safety Eye protection and gloves, shoes Production safety Panel completion and assembly Workspace safety Drill operation and safety Screw types and use Safe carry and material movement Assembling panels Coordinating files with machine Reviewing file on screen Scheduling work Project labeling and printing Tools and insconsistencies Optimizing files

Method(s) of Instruction

- Enhanced NC Lect (NC1)
- Enhanced NC Lab (NC2)
- Online Enhanced NC Lect (NC5)
- Online Enhanced NC Lab (NC6)
- Live Online Enhanced NC Lect (NC9)
- Live Online Enhanced NC Lab (NCA)

Instructional Techniques

Instructional methods will include: lecture, lecture-demonstrations, class discussions, video tutorials, hands-on demonstrations, supervised production and assembly of parts and connection of panels, safety and clean up demonstrations.

Reading Assignments

FrameCAD manuals will be provided via PDF for students to review and reference. Students will have to research and review design projects.

Writing Assignments

Some of the out-of-class assignments may be reviewed and revised in class.

Out-of-class Assignments

Students will be assigned to research and select appropriate doors and windows for their FrameCAD design project. Students will be assigned to research online city code and planning requirements for their proposed project and comply with applicable rules for their project. Students will be assigned to collect and summarize their research, notes, and project documents into a project folder. Students will need to run engineering reports and panel drawings for their project and must organized it all into their project folder. Students will be assigned to collect cost data for their project and summarize steel coil, fastener, and attachment connector

quantities and costs. Out of class time spent on readings, assignments, and writings will be approximately 4 hours per week (60 hours total).

Demonstration of Critical Thinking

Students will design and select appropriate materials for their project. Students will analyze and adjust designs based on coordination with the machine and production considerations.

Required Writing, Problem Solving, Skills Demonstration

Students will design and select appropriate materials for their project. Students will analyze and adjust designs based on coordination with the machine and production considerations.

Eligible Disciplines

Architecture: Any bachelor's degree and two years of professional experience, or any associate degree and six years of professional experience. Architecture: Any bachelor's degree and two years of professional experience, or any associate degree and six years of professional experience. Construction management: Any bachelor's degree and two years of professional experience, or any associate degree and six years of professional experience. Engineering: Master's degree in any field of engineering OR bachelor's degree in any of the above AND master's degree in mathematics, physics, computer science, chemistry, or geology OR the equivalent. (NOTE: A bachelor's degree in any field of engineering with a professional engineer's license is an alternative qualification for this discipline.) Master's degree required. Title 5, section 53410.1

Manuals Resources

1. FrameCAD. FrameCad Structure Procedures Overview, FrameCAD Limited , 03-01-2021 2. FrameCAD. Detailer Configuration Quick Start, FrameCAD Limited , 03-01-2021 3. FrameCAD. Detailer Plus User Manual, FrameCAD Limited , 03-01-2021