ARCH A162: 3-D MODELING: RHINO 1

Item	Value
Curriculum Committee Approval Date	04/03/2019
Top Code	020100 - Architecture and Architectural Technology
Units	2 Total Units
Hours	72 Total Hours (Lecture Hours 18; 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 course introduces 3-D Modeling for design visualization using Rhino software. Hands-on instruction will focus on digitally modeling designs with rectilinear and non-rectilinear geometry, including preparing files for fabrication and presentation. Students should have basic knowledge of computers and file management. Transfer Credit: CSU.

Course Level Student Learning Outcome(s)

1. Students will be able to design and visually present an architectural project with complex geometry using 3-D modeling software at an entry-level professional quality, as evaluated by the instructor.

Course Objectives

- 1. Set up a new file and get started
- 2. Manage and manipulate forms, space, and surfaces
- 3. Operate the program well enough to represent a design concept as a 3-D digital model
- 4. Plot or export images into a useful format for design presentation
- 5. Control textures and lighting to create rendered views
- 6. Compose images for design presentation

Lecture Content

Getting Started Starting a new file, scenes Interface and pull downs Viewports Navigation NURBS Modeling Points, Lines, polylines Curves, surfaces Solids Meshes Editing Tools Toolbars Rotation Scale, mirror Bend, taper, twist, shear Shapes and geometry Planes, Cube Sphere, ellipses, cones, cylinder Tube, torus Parabolas Curves Defining curves Arcs, circles, ellipse Dynamic curves Editing and manipulating curves surfaces Solids Basics, texture mapping Editing Surfaces Meshes Defining Using NURBS Density, curves, control grips Rendering Presentation Graphics Rendering programs Surfaces Lights Exporting files Project Presentation Exporting Projecting Formatting Animation

Lab Content

McNeel Level 1 Training (7 weeks) Rhino Command Research Precision Modeling (Massing) Organic Modeling (Ernst Hackel) Intro to Grasshopper (3–4 weeks) Code Sampling Code Customization Code Sharing Personal Project (5–6 weeks) 3D design for other classes Technique-driven investigations Continuation of Grasshopper

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

Lecture and in-class modeling assignments, quizzes, individual and small group activities and instruction.

Reading Assignments

Students will spend 2 - 3 hours a week reading assigned chapters from the text book, instructor handouts, and articles from online sources. Students will be expected to follow along with assigned exercises in the reading material and online assignments.

Writing Assignments

Students will spend 1 - 2 hours a week completing written assignments, code writing, and examinations. Writing for this course includes minor notations and short professional descriptors. Critical thinking is reinforced in the act of developing a graphic, 3D concept and presenting it.

Out-of-class Assignments

Students will spend 3 - 4 hours per week completing weekly 3D modeling and programming assignments or projects. Development of a visual and 3D-based personal projects to align individual student interests with project-appropriate design technniques covered in class and/or online.

Demonstration of Critical Thinking

Instructor-graded assignments, quizzes and final grading of design project presentation.

Required Writing, Problem Solving, Skills Demonstration

Writing for this course only includes minor notations and short professional descriptors. Critical thinking is reinforced in the act of developing a graphic concept and presenting it.

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 Parsons, R. and Akos, G.. The Grasshopper Primer, 3.3 ed. ModeLab, 2014 Rationale: Primary source of Grasshopper 3D programming information

Manuals Resources

1. Fugier, M., Golay, P., Hambly, J., and Steeg, V.. Rhinoceros v6.0, Level 1 Traing Manual, Robert McNeel Associates , 02-21-2019

Other Resources

1. Instructor handouts and current software reference book as recommended by instructor.