ARCH 65 Course Outline as of Fall 2024

CATALOG INFORMATION

Dept and Nbr: ARCH 65 Title: 3D MODELING WITH REVIT
Full Title: 3D Modeling with Revit
Last Reviewed: 2/6/2023

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	2.00	Lecture Scheduled	1.00	17.5	Lecture Scheduled	17.50
Minimum	2.00	Lab Scheduled	3.00	6	Lab Scheduled	52.50
		Contact DHR	0		Contact DHR	0
		Contact Total	4.00		Contact Total	70.00
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 35.00 Total Student Learning Hours: 105.00

Title 5 Category:	AA Degree Applicable
Grading:	Grade or P/NP
Repeatability:	00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:	
Formerly:	ARCH 27

Catalog Description:
In this course, students will learn to use the Building Information Modeling (BIM) application Autodesk Revit for three-dimensional (3D) modeling of buildings or structures as typical for architecture, interior design, and/or landscape design projects.

Prerequisites/Corequisites:

Recommended Preparation:
Eligibility for ENGL 100 OR EMLS 100 (formerly ESL 100) and completion of CS 5

Limits on Enrollment:

Schedule of Classes Information:
Description: In this course, students will learn to use the Building Information Modeling (BIM) application Autodesk Revit for three-dimensional (3D) modeling of buildings or structures as typical for architecture, interior design, and/or landscape design projects. (Grade or P/NP)
Prerequisites/Corequisites:
Recommended: Eligibility for ENGL 100 OR EMLS 100 (formerly ESL 100) and completion of CS 5

Limits on Enrollment:
Transfer Credit: CSU;
Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**			Effective:	Inactive:
CSU GE:	**Transfer Area**			Effective:	Inactive:
IGETC:	**Transfer Area**			Effective:	Inactive:
CSU Transfer:	Transferable	Effective:	Spring 2010	Inactive:	
UC Transfer:		Effective:		Inactive:	

CID:

Certificate/Major Applicable:
Both Certificate and Major Applicable

COURSE CONTENT

Student Learning Outcomes:
At the conclusion of this course, the student should be able to:
1. Create 3D geometry for modeling of architectural, interior design, and/or landscape design projects using computer software applications.
2. Produce rendered images, screen-captured images, and animations of architectural, interior design, and/or landscape design projects.
3. Provide real-time navigation through a building model, including display changes such as panning, zooming, orbiting, walk-through, camera setup and changes, and time-of-day and seasonal solar and shadow changes.

Objectives:
At the conclusion of this course, the student should be able to:
1. Utilize the Building Information Modeling (BIM) software application Autodesk Revit to create building models typical for residential or commercial projects.
2. Use digital tools to apply or control texture, color, light, and shadows to models.
3. Export models and views for use in other programs.
4. Import image or model information from other sources to use in model creation.
5. Print or plot graphic representations of 3D models in various visual styles including hidden line, grayscale, shaded, and realistic.
6. Prepare rendered and captured images of architectural, interior design, and/or landscape design projects.
7. Provide guided and animated tours of digitally created environments.

Topics and Scope:

I. Role of Models in Architecture, Interior Design, and Landscape Design
   A. Simultaneous creation of two-dimensional (2D) content
   B. Design and form exploration
   C. Verification of design intent

D. Coordination of allied disciplines
E. Interior and exterior views
F. Lighting and solar studies
G. Energy analysis
H. Structural analysis
I. Contextual site analysis
J. Presentation graphics including plans, elevations, sections, perspectives, and rendered images

II. Principles and Concepts of 3D Modeling and Rendering
A. 2D geometry
B. Aspects of materials such as value, color, and texture
C. Aspects of form and volume such as space, scale, balance, rhythm, and proportion
D. Aspects of visualization such as light, focal point, and emphasis

III. Introduction to Revit
A. Program interface organization and components
B. Creating 2D geometries such as model lines, detail lines, regions, dimensions, and annotation elements
C. Creation tools for building elements such walls, windows, doors, floors, ceilings, roofs, foundations, columns, beams, and structural systems
D. Creating 3D geometries with model-in-place components and massing
E. Identifying and applying textures and colors
F. Depicting light and shadow
G. Importing and exporting information from applications such as Trimble SketchUp, Autodesk AutoCAD, and/or McNeel Rhino3D
H. Preparing rendered and captured images
I. Generating animations
J. Digital tours of the model
K. Printing and plotting

IV. Leveraging Revit with Plug-Ins
A. Enscape3D use with Revit
B. Lumion use with Revit
C. Twinmotion with Revit
D. Virtual Reality (VR) with Revit

V. Presenting the Results of Digital Modeling

VI. Oral Presentations and Critiques

All topics are covered in both the lecture and lab portions of this course.

Assignment:

Lecture-Related Assignments:
1. Reading: Textbook or instructor provided handouts (5-15 pages per week)
2. Quiz(zes) (1-3)
3. Final exam or modeling project presentation

Lab-Related Assignments:
1. Modeling exercises (5-15)
2. Guided tours of models (2-4)
3. Oral presentations and critiques (6-8)

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments and skill demonstrations are more appropriate for this course.	Writing 0 - 0%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Modeling exercises	Problem solving 40 - 60%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Guided tours of models	Skill Demonstrations 10 - 20%

Exams: All forms of formal testing, other than skill performance exams.

Quiz(zes); final exam or modeling project presentation	Exams 10 - 30%

Other: Includes any assessment tools that do not logically fit into the above categories.

Oral presentations and critiques	Other Category 5 - 15%

Representative Textbooks and Materials:
Autodesk Revit 2023 Architecture Basics From the Ground Up. Moss, Elise. SDC Publications. 2022.
Instructor prepared materials