

Course Information:

Topic: Advance CADD
Grade Level: 10, 11, or 12
Length: Semester
Period/s Per Day: 1 period, 50 minutes

Essential Understanding:

CAD 1 is designed as an introductory course covering the operation of a typical CAD system. Content stresses CAD graphic commands, proper manipulation, industrial CAD software and hardware to produce engineering drawings. Emphasis is placed on developing entry-level CAD user skills using the current version of the AutoCAD software. The class is designed to prepare students for the world of work, advancement to the local community college, or a four-year university.

Course Objectives and Expectations:

This is an introduction course using Revit architectural software to produce three dimensional (3-D) designs and details of buildings. Topics consist of the techniques and methods to create architectural buildings to include: site plans, floor plans, roof design, 3-D photo-realistic rendering, and creating two dimensional (2-D) architectural drawings from the construction documents set of structural drawings.

Student Objectives:

Create architectural building models and views.
Demonstrate the building project process.
Design building components.
Demonstrate techniques used to edit the parametric elements of a building project.
Create 3-D rendering views used in walkthroughs.
Create architectural drawings.
Create civil drawings.
Create structural 2-D drawings.
Employ drawing sheets and plotting.
Create project details and schedules.

Pertinent Montana Content Standard:

This set of curriculum goals meets the following CTE. PATHWAY.2 Career and Technical Education Standards for the Ninth through the Twelfth grade Effective as of July 1, 2021

CTE.9-12.1.6.a, CTE.9-12.1.6.b, CTE.9-12.1.8, CTE.9-12.1.8.a, CTE.9-12.1.9.c, CTE.9-12.1.10, CTE.9-12.1.11, CTE.9-12.1.10.c, CTE.9-12.1.11.c, CTE.9-12.1.11.d

Course Outline and Assessments:

Timeline:

Week 1

Chapter 1: Introduction to BIM and Autodesk Revit

- 1.1 BIM and Autodesk Revit
- 1.2 Overview of the Interface
- 1.3 Starting Projects
- 1.4 Viewing Commands

Week 2

Chapter 2: Basic Drawing and Modify Tools

- 2.1 Using General Drawing Tools
- 2.2 Editing Elements
- 2.3 Working with Basic Modify Tools
- 2.4 Working with Additional Modify Tools

Week 3

Chapter 3: Setting Up Levels and Grids

- 3.1 Setting Up Levels
- 3.2 Creating Structural Grids
- 3.3 Adding Columns
- 3.4 Linking and Importing CAD Files
- Design Development Phase

Week 4

Chapter 4: Modeling Walls

- 4.1 Modeling Walls

- 4.2 Modifying Walls

Chapter 5: Working with Doors and Windows

- 5.1 Inserting Doors and Windows
- 5.2 Loading Door and Window Types from the Library
- 5.3 Creating Additional Door and Window Sizes

Week 5

Chapter 6: Working with Curtain Walls

- 6.1 Creating Curtain Walls
- 6.2 Adding Curtain Grids
- 6.3 Working with Curtain Wall Panels
- 6.4 Attaching Mullions to Curtain Grids

Week 6

Chapter 7: Working with Views

- 7.1 Setting the View Display
- 7.2 Duplicating Views
- 7.3 Adding Callout Views
- 7.4 Elevations and Sections

Week 7

Chapter 8: Adding Components

- 8.1 Adding Components
- 8.2 Modifying Components

Week 8

Chapter 9: Modeling Floors

- 9.1 Modeling Floors
- 9.2 Creating Shaft Openings
- 9.3 Creating Sloped Floors

Week 9

Chapter 10: Modeling Ceilings

- 10.1 Modeling Ceilings
- 10.2 Adding Ceiling Fixtures
- 10.3 Creating Ceiling Soffits

Week 10

Chapter 11: Modeling Roofs

- 11.1 Modeling Roofs
- 11.2 Creating Roofs by Footprint
- 11.3 Establishing Work Planes
- 11.4 Creating Roofs by Extrusion

Week 11

Chapter 12: Modeling Stairs, Railings, and Ramps

- 12.1 Creating Component Stairs
- 12.2 Modifying Component Stairs
- 12.3 Working with Railings
- 12.4 Sketching Custom Stairs
- 12.5 Creating Ramps

Week 12

- Construction Documents Phase

Week 13

Chapter 13: Creating Construction Documents

- 13.1 Setting Up Sheets
- 13.2 Placing and Modifying Views on Sheets
- 13.3 Printing Sheets

Week 14

Chapter 14: Annotating Construction Documents

- 14.1 Working with Dimensions
- 14.2 Working With Text
- 14.3 Adding Detail Lines and Symbols

- 14.4 Creating Legends

Week 15

Chapter 15: Adding Tags and Schedules

- 15.1 Adding Tags
- 15.2 Adding Rooms and Tags
- 15.3 Working with Schedules

Week 16

Chapter 16: Creating Details

- 16.1 Setting Up Detail Views
- 16.2 Adding Detail Components
- 16.3 Annotating Details
- 16.4 Keynoting and Keynote Legends

Week 17

Appendix A: Introduction to Worksets

- A.1 Introduction to Worksets

Appendix B: Additional Tools

- B.1 Reusing Selection Sets
- B.2 Wall Sweeps and Reveals
- B.3 Creating Curtain Wall Types with Automatic Grids
- B.4 Enhancing Views
- B.5 Creating Dormers
- B.6 Working with Guide Grids on Sheets
- B.7 Revision Tracking
- B.8 Annotating Dependent Views
- B.9 Importing and Exporting Schedules
- B.10 Creating Building Component Schedules
- B.11 Creating a Repeating Detail

Week 18

Complete Final written and drawing exam

Resources:

Online learning resource

[Customer Success](#)

REVIT 2020 educational version: [REVIT 2020](#)

HPS Technology Curriculum: [HPS Technology Curriculum](#)