Course Acronym:	ARCH
Course Number:	121
Descriptive Title:	Building Information Modeling (BIM) I
Division:	Industry and Technology
Department:	Architecture
Course Disciplines:	Architecture
Catalog Description:	This introductory course in Building Information Modeling (BIM) uses parametric building modeling software to create intelligent, three-dimensional (3D) computer models of buildings and their components. Students will create a schematic set of construction documents of a commercial building complete with floor plans, building sections, elevations, details, schedules and 3D views using BIM techniques.
Prerequisite:	
Co-requisite:	
Recommended Preparation:	Architecture 119 and Architecture 251
Enrollment Limitation:	
Hours Lecture (per week):	2
Hours Laboratory (per week):	4
Outside Study Hours:	4
Total Course Hours:	108
Course Units:	3
Grading Method:	Letter Grade only
Credit Status:	Credit, degree applicable
Transfer CSU:	Yes
Effective Date:	03/19/2001
Transfer UC:	No
Effective Date:	
General Education: ECC Term:	
Other:	
CSU GE:	
Term:	
Other:	

IGETC:	
Term:	
Other:	
Student Learning Outcomes:	**SLO #1 Construction Documents** By the conclusion of the course, students should be able to: • Understand basic concepts of Revit Architecture 2014 • Create a 3D Revit model to generate building plans, sections, elevations and 3D views • Understand basic concepts of detail and schedule creation • Understand basic concepts of stair and curtain wall creation • Understand basic concepts of creating parametric families • Create simple renderings and shadow studies • Understand how Revit is used in a professional office setting **SLO #2 3D Modeled Office Building** Using Revit software, students will create a detailed 3D computer model of a 3-story office building complete with floor plans, RCPs, building sections, interior and exterior elevations, details, and schedules as well as photo realistic renderings. Students will use Building Information Modeling (BIM) in design, analysis and documentation of their buildings. **SLO #3 Computer Generated Drawings** Students will be able to demonstrate proficiency in the basics of 3D BIM modeling using Autodesk Revit software, and will be able to create detailed computer models of buildings that can be used to generate building plans, sections, elevations, details, schedules, etc. Once completed with this course, the student will be prepared for entry-level employment with an architecture firm using computer software to generate drawings.
Course Objectives:	1. Design 3D computer models of buildings. 2. Create construction documents that include floor plans, sections, elevations and various schedules for doors, windows, rooms, etc. from the computer models. 3. Use the internet to download and incorporate various building elements such as doors, windows and furniture into the computer model. 4. Delineate renderings, animations and shadow studies of the computer models. 5. Use BIM in design, analysis and documentation of a building.
Major Topics:	**I. BIM software overview (12 hours, lecture)** A. AutoCAD versus BIM software B. Case studies of BIM projects C. Use of BIM software in professional practice D. Overview of BIM software interface

E.   Software vocabulary

II. Creation of a 2-story, 3D computer model of a building (18 hours, lab)

    A.   Creating walls, floors, and roofs
    B.   Creating doors and windows
    C.   Creating a floor plan from a sketch
    D.   Creating building sections
    E.   Creating building elevations
    F.   Creating door and window schedules

III. BIM software creation & modification of building elements (12 hours, lecture)

    A. Creating building elements with software Building Tools
    B. Modifying building elements with software Modification Tools
    C. Modifying walls, floors, and roofs with controlled constraints
    D. Modifying door and window locations

IV. Creation of a multi-story 3D computer model of an office building (18 hours, lab)

    A. Creating building levels
    B. Creating floor plans with windows and doors
    C. Adding furniture to the floor plan
    D. Creating stairs and stair sections
    E. Creating building sections
    F. Creating building elevations

V. Creating camera views and an animated study of the computer building model (12 hours, lecture)

    A. Placing camera views
    B. Rendering camera views
    C. Importing renderings and images to model
    D. Creating animation walkthrough

VI. Creating Revit model types, components, and families (18 hours, lab)

    A. Creating floor, wall, roof types
    B. Creating door and window types
    C. Creating annotation types
    D. Creating view types

VII. Schematic construction document set (18 hours, lab)

    A. Creating Cover Sheet
    B. Creating Overall Floor Plan Sheets
    C. Creating Building Elevation Sheets
    D. Creating Building Section Sheets
    E. Creating Enlarged Plan Sheets
    F. Creating Detail Sheets
    G. Creating Schedule Sheets

Total Lecture Hours:	36
Total Laboratory Hours:	72
Total Hours:	108
Primary Method of Evaluation:	Skills demonstration
Typical Assignment Using Primary Method of Evaluation:	Using BIM software, design a simple two-story office building complete with plans, building sections, elevations, details and schedules. Submit drawings electronically to the instructor.
Critical Thinking Assignment 1:	Using BIM software, design a roof system on a house that incorporates three different roof types. Submit drawings electronically to the instructor.
Critical Thinking Assignment 2:	Using BIM software, choose the proper camera views to create a video of your building. Submit video electronically to the instructor.
Other Evaluation Methods:	Class Performance, Homework Problems, Performance Exams
Instructional Methods:	Demonstration, lab, lecture
If other:	Internet access
Work Outside of Class:	Problem solving activity, required reading, skill practice, study
If Other:	
Up-To-Date Representative Textbooks:	Aubin, Paul F. <u>Revit Essentials for Architecture: 2021 and Beyond</u>, G3b Press, 2020 Yori, Robert. Kim, Marcus. Kirby, Lance. <u>Mastering Autodesk Revit 2020,</u> 1st Edition, Sybex, 2019
Alternative Textbooks:	
Required Supplementary Readings:	
Other Required Materials:	Notebook, flash drive, laptop
Requisite:	
Category:	
Requisite course(s): List both prerequisites and corequisites in this box.	
Requisite and Matching skill(s):Bold the requisite skill. List the corresponding course objective under each skill(s).	
Requisite Skill:	
Requisite Skill and Matching Skill(s): Bold the requisite skill(s). If applicable	

Requisite course:	Architecture 119, Architecture 251
Requisite and Matching skill(s):Bold the requisite skill. List the corresponding course objective under each skill(s).	**Demonstrate basic computer skills and computer file management techniques.** ARCH 119 - Compare and contrast different computer software packages that architects use in the design of buildings. **Understand Type V construction and building codes.** ARCH 251 – Knowledge and understanding of building codes, and knowledge of basic construction elements of a Type V building.
Requisite Skill:	
Requisite Skill and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s). If applicable	
Enrollment Limitations and Category:	
Enrollment Limitations Impact:	
Course Created by:	Michael Stallings
Date:	10/28/2014
Original Board Approval Date:	03/19/2001
Last Reviewed and/or Revised by:	Dan Richardson
Date:	05/28/2020
Last Board Approval Date:	1/17/2023