COLLEGE OF DESIGN, CONSTRUCTION AND PLANNING UNIVERSITY OF FLORIDA

Advanced Construction Information Technology

COURSE NUMBER: BCN 6785

TERM: Fall 2025
NUMBER OF CREDIT HOURS: 3
CLASS LOCATION: TBD
INSTRUCTIONAL METHODS: The class meets for three lecture hours per week.
CLASS MEETING TIMES: TBD
INSTRUCTOR: Dr. R. Raymond Issa
OFFICE: Rinker 325 **EMAIL:** raymond-issa@ufl.edu **PHONE:** 352.273.1152
OFFICE HOURS: TBD

COURSE DESCRIPTION:
Concepts of computer-aided construction, with a focus on the application of BIM-driven emerging information technologies used in the planning and management of construction projects.

COURSE OBJECTIVES:

- Create functional 3D models, with all the necessary embedded information, based on construction documentation.
- Develop a BIM execution plan and manage related project information.
- Evaluate 3D models to determine both modeling quality and reporting accuracy.
- Develop schedules and material takeoffs based on building information models using several platforms.
- Coordinate models from different disciplines and work on solving clashes within a coordination meeting.
- Visualize and communicate construction concepts using 2D and 3D applications.
- Demonstrate skills related to creating, analyzing and implementing multi-dimensional Building Information Models to solve construction problems.
- Associate construction schedules with building information models and create videos to showcase the developed models and the construction process.

PREQUISITES: None (Graduate Standing Only)

REQUIRED SOFTWARE:

You are required to install the class software on your personal computers. All software are available free of charge.

1. Autodesk Software available through the Autodesk Education Community http://www.autodesk.com/education/home
    a. Create a free account, using your ufl.edu account, and download the following software,
        i. Revit 2025
        ii. Recap Pro
        iii. Navisworks Manage 2025
        iv. TwinMotion
2. Autodesk Construction Cloud Platform

a. Access to the online platform will be provided by the instructor at the start of the course and access will be removed following the end of the course.

3. CMBuilder
    a. Create a free account, using your ufl.edu account, and download CMBuilder

ACCESSING UNIVERSITY ACADEMIC POLICIES AND CAMPUS RESOURCES

To support consistent and accessible communication of university-wide student resources, please use this link to academic policies and campus resources: **https://go.ufl.edu/syllabuspolicies.**

GRADING CRITERIA

Assignments

The assignments in this class are designed to encourage you to go beyond the lecture and explore different tools to apply in your models. All assignments are individual. Students are expected to submit their assignments by the due date. The class has 8 assignments. Each assignment is worth 10%. Assignments are due by the time specified on Canvas. **Late assignments are not accepted.**

Final Project

The final project in this course is intended to be an opportunity for you to demonstrate the skills you have acquired over the course of the semester. The project is divided into a research component and a model development component. The project is worth 20% of the grade.

Grade Distribution

The grade of the class is computed as follows:

Description	Percentage of Final Grade
Assignments	70% (700 pts.)
Final Project	30% (300 pts.)
Total	**100%**

GRADING SCALE:

Divide the total points you earn by **the total possible points**. Grades will be given according to the following scale:

A=93-100; A- =90-92.9; B+ =87-89.9; B=83-86.9; B- =80-82.9; C+ = 77-79.9; C=73-76.9; C-=70-72.9; D+ =67-69.9; D=63-66.9; D- =60-62.9; E<60.

COURSE CONTENT:

Week	Date	Course Topic	Assignments Due (By 5 pm)
1		**Course Overview:** Syllabus and schedule review Introduction to Virtual Design and Construction (VDC) Overview of the required software **Revit Overview:** Interface overview Worksets, phases, view range, and visibility graphics Grids and levels	

Week	Date	Course Topic	Assignments Due (By 5 pm)
2		**Architectural Modeling in Revit:** Placing and editing walls (basic walls, curtain walls, stacked walls) Placing and editing floors, shaft openings, and ceilings	**Assignment 0:** Resume Submission
3		**Architectural Modeling in Revit:** Placing and editing windows, doors, roofs, stairs, and ramps	
4		**Architectural Modeling in Revit:** Placing topography and site components Using generic models and massing **Documentation in Revit:** Placing annotations and rooms Creating key plans Creating sheets **Structural Modeling in Revit:** Linking multiple Revit files and monitoring files Placing and editing foundations, columns, beams, and beam systems	
5		**Structural Modeling in Revit:** Placing and editing trusses Placing and editing reinforcement Placing and editing steel connections Creating drafting views **BIM Execution Planning Overview (BEP).**	**Assignment 1:** Architectural Model **Group Project Distributed** 100 pts.
6		**Mechanical Modeling in Revit:** Overview and setup of system types Placing and editing air terminals, VAVs, and mechanical equipment Placing and editing ductwork, horizontal and vertical connections	**Assignment 2:** Structural Model 100 pts.
7		**Plumbing Modeling in Revit:** Plumbing overview and setup of system types Placing plumbing fixtures and mechanical equipment Connecting fixtures with piping	**Project BEP Review** **Assignment 3:** Mechanical Model 100 pts.
8		**Electrical, Fire Protection, and Plumbing Modeling in Revit:** Placing electrical and technology components Drawing fire protection pipes	**Assignment 4:** Plumbing Model 100 pts.
10		**Quantification:** Creating schedules in Revit Creating material takeoff in Revit Quantification in Navisworks Quantification in Assemble Systems	**Group Project:** **Architecture Review**
10		Spring Break	
11		**Animations and 4D Simulations** Creating 4D simulations in Navisworks Creating 4D simulations in Synchro	**Assignment 5:** Quantification 100 pts.

Week	Date	Course Topic	Assignments Due (By 5 pm)
		Creating animations in Navisworks Creating animations in Lumion	
12		**Clash Detection** File setup in Navisworks Creating clash tests and analyzing results Coordination meetings, in-class exercise	**Assignment 6:** Animations 100 pts. **Group Project: Structural Review**
13		**Reality Computing:** Introduction to laser scanning Registering scans in Recap Using point clouds in Revit Introduction to Unmanned Aerial Systems Introduction to photogrammetry	**Assignment 7:** Coordination 100 pts.
14		**Other VDC Technologies:** Autodesk Point Layout Virtual and augmented reality Generative Design **Review:** Final project review Cumulative test review Autodesk certification review	**Project: Mechanical Review**
15		**FINAL PRESENTATIONS**	**Group projects are due at 11:59 pm on the preceding day.** 300 pts.

Disclaimer: *This syllabus represents the current course plans and objectives. As the semester progresses, those plans* may need to change to enhance the class learning opportunity. ***Such changes, clearly communicated, are not unusual and should be expected.***