Course Details

Credits: 3
Semester: Spring 2025
Lecture Time: Tuesday, 5:10 PM- 8:10 PM (Periods 10-E1)

Contact Information

Course Instructor: Dr. R. Raymond Issa
Office: RNK 325
E-mail: raymond-issa@ufl.edu
Office Hours: By appointment

Lab Instructor: Chady Elias
Office: RNK 338 (Center for Advanced Construction Information Modeling)
E-mail: chadyelias@ufl.edu
Office Hours: By appointment

Course Expectations

Pre-Requisites

BCN3255 - Computer Graphic Communications, *or consent of professor (based on previous construction drawings in another related discipline)*

Course Description

This course will cover the fundamental principles and practices of Building Information Modeling (BIM) and Virtual Design and Construction (VDC). Additional lectures may also be supplemented to present the use of information systems in the construction context.

Course Method

Teaching methodology will consist of weekly online tutorials/classes which will present the basic practice of using a variety of BIM software tools including, but not limited to: Autodesk Revit, Navisworks Manage, ACC, Assemble Systems, cmBuilder, and ReCap Pro. All classwork material can be found on the course Canvas site. **Instructional materials for this course consist of only those materials specifically reviewed, selected, and assigned by the instructor(s). The instructor(s) is only responsible for these instructional materials.**

Course Objectives

Upon completion of this course students should be able to:

1. Create functional 3D models, with all the necessary embedded information, based on construction documentation.
2. Evaluate 3D models to determine both modeling quality and reporting accuracy.
3. Visualize and communicate construction concepts using 2D and 3D applications.

4. Demonstrate skills related to creating, analyzing and implementing multi-dimensional Building Information Models to solve construction problems.
5. Develop a BIM execution plan and manage related project information.

Required Software

You are required to install the following software on your personal computers:

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 2024
      ii. Navisworks Manage 2024
      iii. Recap Pro 2024
2. Autodesk Construction Cloud
   a. Access to the online platforms will be provided by the instructor at the start of the semester and access will be removed following the end of the semester,
3. CMBuilder
   a. Request a student version from https://www.cmbuilder.io/

Recommended Tutorials

- Revit 2024 Essential Training for Architecture
- Revit 2022 Essential Training for Structure
- Revit 2023 Essential Training for MEP
- Navisworks 2023 Essential Training
- CMBuilder Essential Training
- Recap Workflow for Reality Capture

Grading Criteria

Assignments

The assignments in this class are designed to reinforce the basic modeling and analysis principles learned and are a chance for you to apply modeling skills to a project of simple scope. All assignments are individual. Students are encouraged to review the comments left by the instructor on their submission and are asked to fix major problems before starting the next assignments. Most assignments are dependent upon previous assignments. Students are expected to submit their assignments by the due date. **Failure to comply will result in 10 % of the assignment grade deducted for every day the assignment is late.** You can only submit up to three days late.

Group Project

The class will be assigned to groups created by the instructor based on previous modeling skill level. Each group will be assigned to construct a multi-disciplinary federated model of a building using available as-built documentation and specifications. Students are expected to show the progress of their work during each class session. Three major reviews are scheduled during the semester. These reviews will be graded as part of the group project grade. **Failure to submit the project by the due date will result in 25 % of the project grade deducted from the final project score.**

Cumulative Test

The cumulative test in this course is intended to be an opportunity for you demonstrate the skills you have acquired over the course of the semester. There will be no make-up exams, except for a documented need previously discussed with and approved by the course instructor. **Failure to be present for the cumulative exam will result in a failing grade.**

Grade Distribution

The grade of the class is computed based on the following table,

Description	Percentage of Final Grade
Lab Assignments	40%
Group Project	30%
Cumulative Test	30%
Total	**100%**

The letter grades will be computed according to the following scale,

A	90.0 and above	C	70.0 to 76.9
A-	87.0 to 89.9	C-	67.0 to 69.9
B	80.0 to 86.9	D	60.0 to 66.9
B-	77.0 to 79.9	E	Below 60

Attendance

As this is a graduate level course, attendance is not mandatory. The exception to this policy is during the days of in-class exercises or presentations in which your attendance is required to receive a grade. Furthermore, all students are expected to be responsible for the material taught and posted on Canvas. The course schedule is very rigorous given the amount of software to be covered. Therefore, failure to attend class may result in students falling behind.

Honors Policy

You are expected to follow the University Honors Policy when working on assignments, homework, projects, and exams. Please read and agree to this statement.

"I understand that the University of Florida expects its students to be honest in all of their academic work. I agree to adhere to this commitment to academic honesty and understand that my failure to comply with this commitment may result in disciplinary action, up to and including expulsion from the University."

Course Evaluation

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at https://evaluations.ufl.edu/evals. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results/.

UF Policies

University Policy on Accommodating Students with Disabilities: Students requesting accommodation for disabilities must first register with the Dean of Students Office (http://www.dso.ufl.edu/drc/). The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation. You must submit this documentation prior to submitting assignments or taking the quizzes or exams. Accommodations are not retroactive. Therefore, students should contact the office as soon as possible in the term for which they are seeking accommodations.

University Policy on Academic Misconduct: Academic honesty and integrity are fundamental values of the University community. Students should be sure that they understand the UF Student Honor Code at http://www.dso.ufl.edu/students.php.

Getting Help

For issues with technical difficulties for E-learning in Canvas, please contact the UF Help Desk at:
- Learning-support@ufl.edu
- (352) 392-HELP - select option 2
- https://lss.at.ufl.edu/help.shtml

Other resources are available at http://www.distance.ufl.edu/getting-help for:
- Counseling and Wellness resources.
- Disability resources.
- Resources for handling student concerns and complaints.
- Library Help Desk support.

Week	Date	Course Topic	Assignment Due (By 5:00 pm)
1	1/14	**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	
2	1/21	**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	1/28	**Architectural Modeling in Revit:** Placing and editing windows, doors, roofs, stairs, and ramps	
4	2/4	**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	2/11	**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 **Project Distributed**
6	2/18	**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

Week	Date	Course Topic	Assignment Due (By 5:00 pm)
7	2/25	**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
8	3/4	**Electrical, Fire Protection, and Plumbing Modeling in Revit:** Placing electrical and technology components Drawing fire protection pipes	**Assignment 4:** Plumbing Model
10	3/11	**Quantification:** Creating schedules in Revit Creating material takeoff in Revit Quantification in Navisworks Quantification in Assemble Systems	**Project: Architecture Review**
10	3/18	Spring Break	
11	3/25	**Animations and 4D Simulations** Creating 4D simulations in Navisworks Creating 4D simulations in Synchro Creating animations in Navisworks Creating animations in Lumion	**Assignment 5:** Quantification
12	4/1	**Clash Detection** File setup in Navisworks Creating clash tests and analyzing results Coordination meetings, in-class exercise	**Assignment 6:** Animations **Project: Structure Review**
13	4/8	**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
14	4/15	**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	4/21	Group projects due at 11:59 pm	
	4/22	Group project presentations during class time Optional Assignment 8: Reality Computing	
	4/15	Cumulative Test from 9:00 am till 12:00 pm (tentative)	

This schedule is tentative and might be adjusted as deemed necessary.