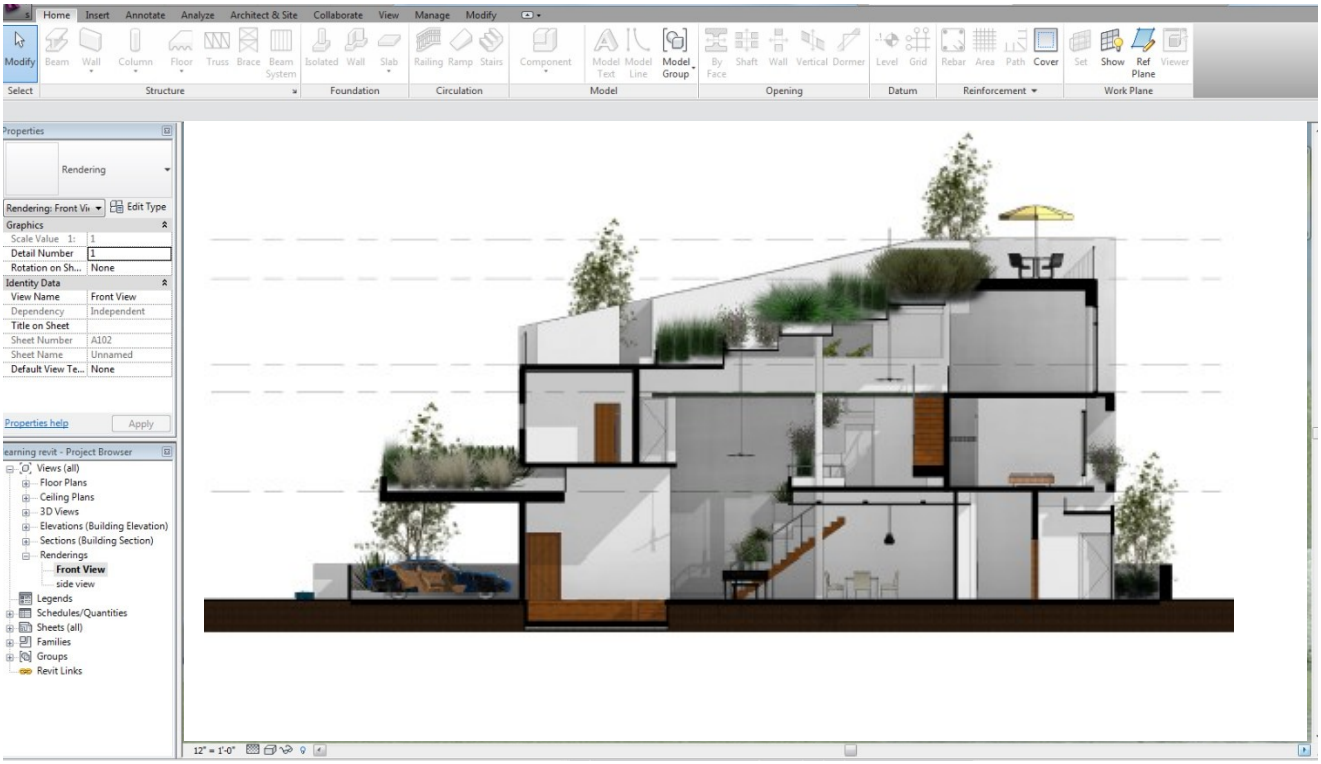
BUILDING INFORMATION MODELING



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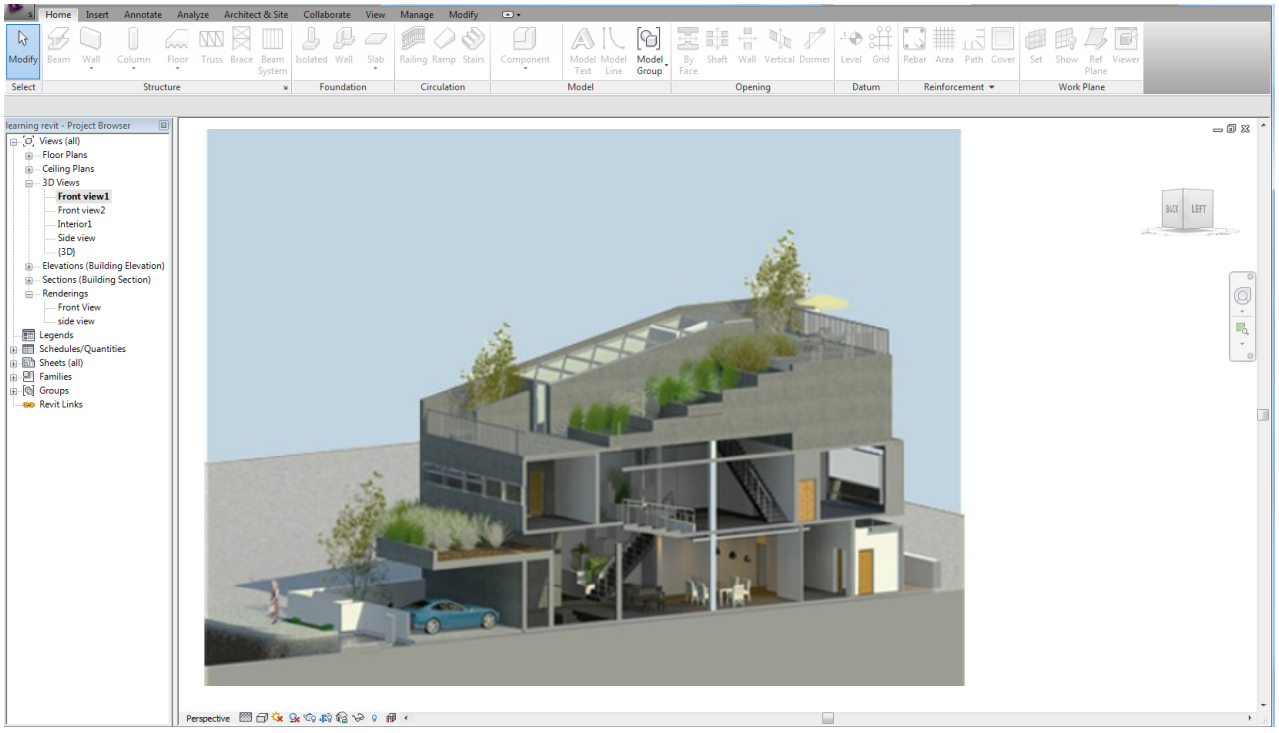
University of Florida
School of Architecture



University of Florida
School of Architecture
Spring-2026

SYLLABUS

1. Course: BUILDING INFORMAITON MODELING (BIM): **ARC 4310C** (3 credits)

2. Class Textbooks and Software

Required Software:

i- AUTODESK REVIT (Free download from Autodesk Student Community website: http://students6.autodesk.com/
ii- REVIT EXTENSIONS (Free download from Autodesk Student Community website: http://students6.autodesk.com/)

Recommended Texts and Resources

i. Building Information Modeling: Framework for Structural Design: **Second Edition**, ISBN-10: 1482240432, CRC Press, Taylor and Francis Group. http://www.crcpress.com/; **Fall 2025**. By N. Nawari & M. Kuenstle.
ii. BIM Handbook: A Guide to Building Information Modeling for Owners, Managers, Designers, Engineers and Contractors. By Eastman
iii. http://wikihelp.autodesk.com/Revit/enu/2025
iv. http://www.designreform.com
v. http://www.revitcity.com
vi. http://www.cadplan.co.za/index.html

3. Materials and Equipment

- Laptop Computer with the following minimum requirements:
- Intel Core i7 or better processor, at least 2.0 Ghz.
- 16 GB of RAM (64-bit)
- 500 Gigabyte Hard Drive with a speed of 7,200rpm
- Support for DirectX 11 and discrete graphics card, 256 mb graphics memory
- 100mbit or 1Gbit Ethernet Adapter for Broadband

4. Instructor:

N. Nawari, Ph.D, P.E., F.ASCE
Class Hours: M 5:10 pm.-8:10 pm.
Labs Hours: Tuesday: 8:30 am – 10.25 am
Tuesday: 10:40 am – 12.35 pm
Office Hours: M 3:00 pm.-5:00 pm**. Building**: AH0116
Email: nnawari@ufl.edu

5. Prerequisites

None

6. General Requirements

1- The class is to be handled and conducted in a professional manner. Student attitude and participation are essential for completing the course successfully.
2- The student is required to attend all course lectures. The **s**tudent is responsible for knowing the lecture material, homework assignments, and announcements that are made in class. The student should be aware that there is a strong correlation between student performance and class attendance.
3- The student is required to read the material in the text, which follows the class lectures. See the table for reading assignments.
4- The student is required to complete the homework, quizzes, projects, midterms, and final described below for his/her grade. Exam attendance is mandatory**.** If you have a valid reason for missing a homework assignment, project, or any other assignment, you are responsible for notifying me and scheduling a make-up before the exam is administered or the final project due date. Unexcused absences will be given a zero score.

7. Course Description

The widespread adoption of 3D modeling has revolutionized architectural design, transforming digital tools from passive representation into active design collaborators. Modern parametric software enables architects to construct "live" relationships rather than static geometry, creating designs that balance precision with adaptability through mathematical constraints and data-driven logic. This paradigm shift toward iterative, non-linear workflows has fundamentally altered design methodology. Architects now build dynamic systems where component relationships respond intelligently to changes, propagating updates throughout the entire design ecosystem. The emerging integration of **BIM and AI** represents the next evolutionary leap, embedding computational intelligence directly into the creative process.

8. Course Content

This course addresses the principles of building information modeling. The course also develops the key concepts of BIM and their relationship to digital design, detailing, construction, AI, Machine Learning (ML), and generative design. Students will learn how to efficiently implement **BIM** and recent **Generative Design** Tools to develop, coordinate, and communicate design intent, as well as to convey data necessary for further building analysis, such as materials takeoff, MEP, and structures.

The main topics addressed include:

- Introduction to **BIM** fundamentals
- Modeling Building Elements: modeling exterior and interior walls, creating floors and roofs, adding doors, windows, footings, columns, and beams.
- Building Envelope: modeling wall types and design features, working with doors, windows, and wall openings, and creating roofs with different shapes and slopes.
- Curtain Systems: designing curtain grid patterns, adjusting grids and mullions, creating and using curtain panel types.
- Interiors and Circulation: creating stairs and ramps, customizing stair shapes, and modeling elevators.
    - Sheets and construction documents
    - Families creation

- Model Sharing: internal and external sharing
- Site Design and Analysis
- Conceptual Massing and Energy Simulation
- Passive and Green Building Design
- AI and Machine Learning (ML)
- Visualization and Rendering
- Constructability: Project phase and Design Options
- Integrated practice

In addition to weekly homework, two projects are required:

1- Project 1: due on 3/02/2026
2- Project 2; due on 4/28/2026

At the completion of this course, students should have a sound understanding of these concepts and principles, along with the skills gained in using REVIT platforms, and be able to apply them to produce creative architectural solutions, using these digital media as spatial design tools in all phases of design. Furthermore, students will learn and experience architectural solutions in a non-linear workflow and their relationships to the integrated design practices.

POLICIES

9. Homework and Lab Assignments

All assignment due dates will be given on the Canvas website or during the lab session. All assignments turned in after the due date will lose 20% of the total points possible for each day they are late. No credit will be given for an assignment turned in more than 5 days after the due date. The students are responsible for the materials presented and discussed in class, lab period, and in assigned readings. Projects and exercises are written with the assumption that individual students are keeping up with the reading assignments and attending all the lectures and lab sessions.

10. Attendance and Unexcused

Attendance is more than your physical presence during the scheduled class and lab periods. It requires active involvement during class and laboratory periods, including preparing the assigned readings and participating in laboratory discussions.
Students are expected to attend all class meetings (lectures, lab periods, field trips and guest lectures, and discussions). A missed attendance should require prior authorization from the Instructor, except in extenuating circumstances. It is the student's responsibility to obtain information regarding lecture notes or handouts distributed during any missed session. Students who miss class without their Instructor's prior approval will receive a grade of zero on the missed assignment.

Additional details regarding attendance and accommodation are as follows. Attendance for all lectures, labs and/or workshops is mandatory and is recorded. Chronic absences and/or tardiness will have a negative impact on your grade. Tardiness of more than 20 minutes to any lab/lecture will be counted as an unexcused absence. Three or more unexcused absences may result in a full letter-grade reduction in the course. Four unexcused absences can result in course failure (see grade breakdown above). Materials covered in the lecture will be tested. If you must miss class, it is your responsibility to notify the instructors in a timely manner and to get the assignments and notes from your classmates. Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at: www.https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/

11. University Excused

Authorized absences must be approved by your Instructor in advance of the absence, unless you have an emergency or illness. Make-up work must be completed outside of normal class hours within ONE WEEK following an excused absence. IT IS YOUR RESPONSIBILITY to see your Instructor and make arrangements for make-up work.

12. Class Meetings

M 5:10 pm.-8:00 pm at AH0116. It is required that each student attends and works in all classes. Excused absences must have written confirmation.

13. Lab Meetings

Each student should attend and participate in all lab sessions. Excused absences must have written confirmation.

Labs Hours: Tuesday: 8:30 am – 10.25 am for section 0837. Building: AH0116.
Tuesday: 10:40 am – 12.35 pm for section 0851. Building: AH0116.

14. Student with Disabilities

In accordance with University policy, if you have a documented disability and require accommodation to obtain equal access in this course, please get in touch with the Instructor at the beginning of the semester or when given an assignment for which an accommodation is required. Students with disabilities must verify their eligibility through the Disability Resource Center in the Dean of Students office, located in 0001 Building 0020 (Reid Hall), Te1. 352-392-8565, fax. 352-392-8570, e-mail at accessuf@dso.ufl.edu. Upon verification, the DRC staff member will present you with "accommodation letters", to give to your instructors.

15. Building Hours

Students are required to comply with the University-established building hours of operation.

16. School Policy

As a reminder, the classrooms, studio, offices, and hallways are **non-smoking** areas. Smokers using the building's entrance areas are expected to dispose of their refuse appropriately**.** The use of cell phones etc, is prohibited during scheduled class meeting times. Students are expected **to turn off incoming cell phone** ringers so that they do not disturb class proceedings. In summary, students are required to maintain the studio, computer lab, and class areas in conformance with fire, safety, and health regulations and codes, and to maintain a "professional working environment." Miscellaneous damage from activities such as cutting directly on desktops will not be tolerated. The use of pressurized spray paint or spray fixative is not allowed in the studio/classroom hall or stair towers.

17. Evaluation

No assignment, interim or final will be accepted without a valid excuse after the date and time due. Incomplete projects must be submitted on the assigned time and dates. No assignments/Submissions will be accepted or graded subsequent to the due date. Homework assignments will be graded periodically during the semester. Grades will be based on a student's performance on homework problems, lab computer problems, projects, quizzes, and exams given throughout the semester, including skills and participation in all class activities.

Assessment of a student's performance in the classwork, homework problems, lab computer assignments, and projects, given throughout the semester session, including skills and participation in all class activities. There are different requirements and expectations for graduate and undergraduate students for coursework assignments and projects.

Project 1: Multi-Story Building Information Modeling

Develop a comprehensive Building Information Model (BIM) for a 2-3 story structure located within the United States. This project requires creating detailed architectural and structural plans, sections, elevations, and 3D models while incorporating applicable US. Students must demonstrate proficiency in BIM modeling, coordinate interdisciplinary systems (structural, architectural, etc), and integrate sustainable design strategies. Deliverables include construction documentation, material schedules, and energy performance analysis.

Project 2: Residential Building Design - Tampa, Florida

Conduct detailed modeling and analysis of a 2-story residential building designed explicitly for Tampa's subtropical climate and local building requirements. This project emphasizes regional considerations, including hurricane resistance, compliance with flood zone requirements, energy efficiency for hot-humid climates, and Florida-specific building codes. Students will develop comprehensive models addressing structural systems, envelope design stormwater management, and landscape integration, suitable for Central Florida's environmental conditions. The project should incorporate local materials, construction methods, and sustainable practices relevant to the Tampa Bay region.

Students are expected to be present and prepared for all class sessions, group discussions, reviews, and field trips. Each Instructor will outline the specific criteria to be used in evaluating projects. The School uses the University's standard grading system, a letter grade that is translated into points of course credit as follows:

Grade Values for Conversion May 11, 2009 and After												
Letter Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E, I, NG, S-U, WF
Grade Points	4.0	3.67	3.33	3.00	2.67	2.33	2.00	1.67	1.33	1.00	.67	0.00

Please note that the University requires a graduate student to maintain a 3.0 (B) average to remain in good academic standing. Every effort is made to counsel students experiencing academic difficulties to identify the cause and possible solutions, so they can continue and complete their studies at the University. The graduate design studio and support courses are in required sequences that must be taken in order.

An incomplete ("I") grade for any graduate or undergraduate architecture design studio prerequisite course must be resolved with a grade change form completed before the first day of class of the following semester to enroll in the next course in the studio sequence. Faculty who issue incomplete grades must be available to work with their student and complete the grade change form prior to the first day of classes the following semester. Special circumstances can be addressed through an official appeals process with the SoA Director and the approval of the course instructor.

Note

If you need classroom accommodation for a disability, you must first register with the Dean of Students Office. The Dean of Students Office will provide documentation for you to give to the Instructor when requesting accommodation.

18. Grading

Homework, Classwork, Labs	35 %
Project I	25 %
Project II	35 %
Attendance	05**%** of grade
TOTAL	100 %

19. Grading Scale

Letter Grade:	Percentage Range:		Grade Points:
A	100 %	to 93.0%	4.0
A-	< 93.0 %	to 90.0%	3.67
B+	< 90.0 %	to 87.0%	3.33
B	< 87.0 %	to 84.0%	3.0
B-	< 84.0 %	to 80.0%	2.67
C+	< 80.0 %	to 77.0%	2.33
C	< 77.0 %	to 74.0%	2.0
C-	< 74.0 %	to 70.0%	1.67
D+	< 70.0 %	to 67.0%	1.33
D	< 67.0 %	to 64.0%	1.0
D-	< 64.0 %	to 61.0%	0.67
F	< 61.0 %	to 0.0%	0

20. Honor Code

All students are expected to follow the honor code- submit only their original work. Students are expected to work individually on their assignments. Students may discuss the assignment, the interpretation of the results, the procedure to be used, etc., in groups to enhance understanding and to analyze alternative approaches.

***All work is to be legible & presented in a professional manner.**

21. Shared Policies

The Office of Accreditation, Assessment, and Curriculum has created a go-link that should be included in the UF syllabi. This link will direct students to a separate webpage that provides all required academic policies, including attendance, grading, DRC, and evaluation verbiage, as well as campus academic, health, and wellness resources. Please see below for the link: : https://syllabus.ufl.edu/syllabus-policy/uf-syllabus-policy-links/

22. Campus Resources

Health and Wellness:

- *U Matter, We Care*: If you or someone you know is in distress, please contact umatter@ufl.edu, 352-392-1575, or visit U Matter, We Care website to refer or report a concern and a team member will reach out to the student in distress.
- *Counseling and Wellness Center*: Visit the Counseling and Wellness Center website or call 352-392-1575 for information on crisis services as well as non-crisis services.
- *Student Health Care Center*: Call 352-392-1161 for 24/7 information to help you find the care you need, or visit the Student Health Care Center website.
- *University Police Department*: Visit UF Police Department website or call 352-392-1111 (or 9-1-1 for emergencies).
- *UF Health Shands Emergency Room / Trauma Center:* For immediate medical care, call 352-733-0111 or go to the emergency room at 1515 SW Archer Road,
- Gainesville, FL 32608; Visit the UF Health Emergency Room and Trauma Center website.
- *E-learning technical support*: Contact the UF Computing Help Desk at 352-392-4357 or via email at helpdesk@ufl.edu.

Academic Resources:

- *Career Connections Center*: Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services.

- *Library Support*: Various ways to receive assistance with respect to using the libraries or finding resources.
- *Teaching Center*: Broward Hall, 352-392-2010 or to make an appointment 352- 392-6420. General study skills and tutoring.
- *Writing Studio:* 2215 Turlington Hall, 352-846-1138. Help with brainstorming, formatting, and writing papers.
- *Student Complaints On-Campus*: Visit the Student Honor Code and Student Conduct Code webpage for more information.

23. Copyright Statement

24. Tentative Schedule

This schedule is subject to change at the Instructor's discretion in light of new and unforeseen developments and technological updates.

Week 01 – Topic: Introduction to BIM and Revit Architecture
Week 02 – **Holiday**
Week 03 – Topic: Basic Modeling
Week 04 – Topic: Building Envelope, Curtain Systems; – Project 1 Assignment
Week 05 – Topic: Rooms, Areas, and Scheduling
Week 06 – Topic: Interior and Circulation
Week 07 – Topic: Views, Visualizations, rafting and Detailing; -Project 2 Assignment
Week 08 – Topic: Site Features Modeling
Week 09 – Topic: Components, and Families
Week 10 – **Holiday**
Week 11– Topic: Advanced Curtain Walls, Pattern Families, Adaptive Components
Week 12 – Topic: Conceptual Massing
Week 13 – Topic: AI and ML
Week 14 – Topic: Generative Design and AI
Week 15 – Topic: Performance Analysis /Green Building Studio
Week 16 – Exam Week No Class

Class	DATE	TOPICS	ASSIGN. PROBS.	SUPPL. Info.
1 M	01/12/2026	Organization, Introduction to BIM and Revit Architecture	In class and Canvas	
2 M	01/19/2026	**HOLIDAY**		
3 M	01/26/2026	Basic BIM Modeling	In class and Canvas	
4 **M**	02/02/2026	Building Envelope, Curtain Systems;	In class and Canvas	Project 1 Assignment
5 M	02/09/2026	Rooms, Areas, and Scheduling	In class and Canvas	
6 **M**	02/16/2026	Interior and Circulation	In class and Canvas	
7 M	02/23/2026	Interior and Circulation	In class and Canvas	
8 **M**	03/02/2026	Views, Visualizations, rafting and Detailing; - Project 2 Assignment	In class and Canvas	
9 M	03/09/2026	Site Features Modeling	In class and Canvas	
10 **M**	03/16/2026	**HOLIDAY**	In class and Canvas	**Project 1 Due date**
11 **M**	03/23/2026	Components, and Families	In class and Canvas	
12 **M**	03/30/2026	Advanced Curtain Walls, Pattern Families, Adaptive Components	In class and Canvas	
13 M	04/06/2026	Conceptual Massing	In class and Canvas	
14 **M**	04/13/2026	AI, ML, and BIM	In class and Canvas	
15 M	04/20/2026	Generative Design and AI	In class and Canvas	