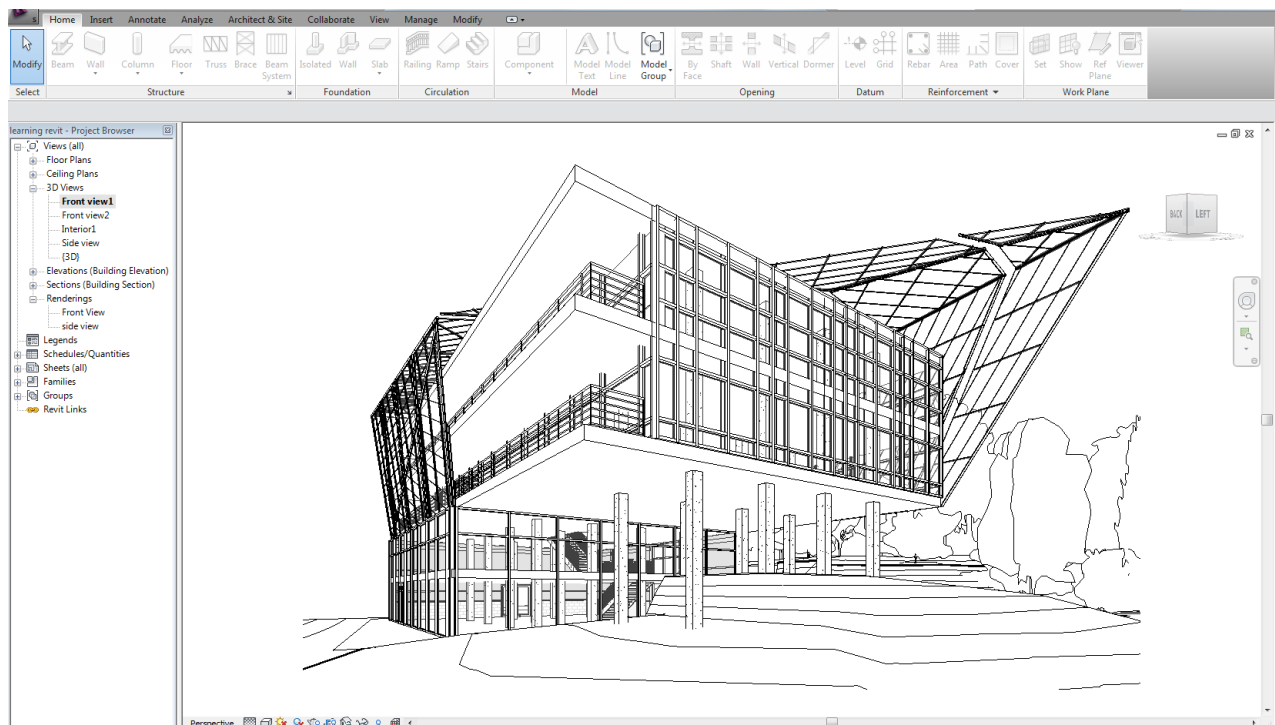


# BUILDING INFORMATION MODELING



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University of Florida  
School of Architecture



**University of Florida**  
**School of Architecture**  
**Spring-2025**

## SYLLABUS

**1. Course:** BUILDING INFORMATION MODELING (BIM): ARC 6311C & 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: ISBN-13: 978-1482240436, ISBN-10: 1482240432, CRC Press, Taylor and Francis Group. <http://www.crcpress.com/>; spring 2015. 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/2024>
- 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 i5 or I series processor, at least 2.0 Ghz.
- 8 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., M.ASCE; [nawari@ufl.edu](mailto:nawari@ufl.edu)

**Class Hours:** M 5:10 pm.-7:00 pm.

**Labs Hours:** Tuesday: 8:30 am – 10.25 am

Tuesday: 10:40 am – 12.35pm

**Office Hours:** M W 3:00 pm.-5:00 pm . **Building:** Zoom

### 5. Prerequisites

None

## 6. General Requirements

- 1- The class is to be handled and conducted in a professional manner. Student attitude and participation are required if the course is to be conceded successfully.
- 2- The student is required to attend all course lectures and labs. The **student 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 good reason for missing an exam, you are responsible for notifying me and scheduling a make-up before the exam is given. Unexcused absences will be given a zero score.

## 7. Course Description

Widespread adoption of 3D modeling enabled complex geometries and spatial relations to be tested, refined, and documented; gradually digital design moves beyond being a representational tool and is starting to have an impact on the design process and methodology. Iterative and non-linear design workflows are now much more flexible due to the evolving programs architects are adopting, with the concept of parametric simultaneously enabling precision with constraints while allowing for ambiguity and adaptability with outcome. Rather than designing “dead” geometry, we are constructing “live” relationships and constraints that make a design adaptable and flexible. A design is no longer simply described through geometry, but rather defined through relationships of components in mathematical terms.

## 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, generative design and AI. 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 take off, 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, creating roofs with different shapes and slopes.
- Curtain Systems: designing curtain grid patterns, adjusting grids and mullions, creating and using curtain panels types.
- Interiors and Circulation: creating stairs and ramps, customizing stair shapes, 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
- Generative Design and AI
- 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 3/02/2024
- 2- Project 2; due on 4/27/2024

At the completion of this course, students should have a sound understanding of these concepts and principles along with the skill gained in utilizing **REVIT** platforms and are able to apply them to produce creative architectural solutions using these digital media as a spatial design tool 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 assignments due dates will be given in class or during the lab session. All assignments turned in after the due dates will lose 20 % of the total points possible for each day it is late. No credit will be given for an assignment turned in later than 5 days after the date it is due. The students are responsible for 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 lecture 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 the class and laboratory periods by preparing the assigned readings and engaging 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 receive prior authorization from the instructor except under extenuating circumstances. It is the student's responsibility to obtain information pertaining to lecture notes, or handouts distributed during any missed session. Students who miss class without prior approval of their instructor will receive a grade of zero on the missed in class assignment. **Students who miss more than 3 classes or lab periods without permission have to drop the class and are NOT allowed to attend classes or lab periods.**

### 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 W 5:10 pm.-6:00 pm at RNK 110. It is required that each student attends and works in all class. Excused absences must have written confirmation.

### 13. Lab Meetings

It is required that each student attends and works in all lab sessions. Excused absences must have written confirmation.

**Labs Hours:** Tuesday: 8:30 am – 10.25 am for section 0837. Building: ARC116  
Tuesday: 10:40 am – 12.35 pm for section 0851. Building: ARC116  
Tuesday: 12:50 pm – 2.45 pm for section 0854. Building: ARC116

### 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 contact 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 Student office located in 0001 Building 0020 (Reid Hall), Tel. 352-392-8565, fax. 352-392-8570, e-mail at [accessuf@dso.ufl.edu](mailto: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 class rooms, studio, offices and hallways are **non smoking** areas. Smokers using the building entrance areas are expected to dispose of their refuse in an appropriate manner. The use of cell phones etc, is prohibited during scheduled class meeting times. Students are expected to **turn off in-coming 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 desk tops will not be tolerated. The use of pressurized spray paint or spray fixative is not allowed in the studio / classrooms hall and 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 the assessment of a student's performance in the homework problems, lab computer problems, projects, quizzes, and exams given throughout the semester session including skills and participation in all class activities.

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 that a graduate student maintain a 3.0 (B) average to remain in good academic standing. Every possible effort is made to counsel students in academic difficulty to determine the cause and possible solution so that the student can continue and complete their studies in 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 in order to enroll in the next course of the studio sequence. Faculty that 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	25 %
Project I	25 %
Project II	50 %
<u>Attendance</u>	<u>- 10% of grade</u>
<u>TOTAL</u>	<u>100 %</u>

**19. Grading Scale**

A	92 and above
A-	87% – 91%
B+	84%-86%
B	80% - 83%
B-	77% - 79%
C+	74% - 76%
C	70% - 73%
C-	67% - 69%
D +	64% - 66%
D	60% - 63%
<u>F</u>	<u>59% and below.</u>

**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, interpretation of the results, procedure to be used, etc... in groups to enhance understanding and analyze alternative approaches.

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

## 21. Diversity Statement

We are diverse in many ways, and this diversity is essential to constructing and preserving an equitable and inclusive campus community. I want to welcome students from all backgrounds and perspectives who are attending this course. All students' learning needs will be addressed both in and out of class, and that the diversity that students bring to this class will be regarded as a resource, strength, and benefit. It is my intent to present materials and activities that are respectful of diversity which includes but not limited to race, color, national origin, language, sex, disability, age, sexual orientation, gender identity, religion, creed, ancestry, belief, veteran status, or genetic information. Your suggestions are encouraged and appreciated. Please let me know ways to improve the effectiveness of the course for you personally or for other students or student groups. Also, if any of our class meetings conflict with your religious events, please let me know so that we can make arrangements for you.”

## 22. Campus Resources

### Health and Wellness:

- *U Matter, We Care*: If you or someone you know is in distress, please contact [umatter@ufl.edu](mailto: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 e-mail at [helpdesk@ufl.edu](mailto: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 brainstorming, formatting, and writing papers.
- *Student Complaints On-Campus*: [Visit the Student Honor Code and Student Conduct Code webpage for more information](#).
- *On-Line Students Complaints*: [View the Distance Learning Student Complaint Process](#).

## 23. Copyright Statement

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All rights reserved. No part of this online class may be reproduced, distributed, posted, or transmitted in any form or by any means, including photocopying, recording, or other electronic or mechanical methods, without the prior written permission from Dr. N. Nawari, except in the case of materials used for homework, classwork, and projects. For permission requests, please send an email to [nnawari@ufl.edu](mailto:nnawari@ufl.edu).

## 24. Tentative Schedule

This schedule is subject to change at the instructor's discretion in light of new and unforeseen developments and technologies update.

Week 01 –	Topic: Introduction to BIM and Revit Architecture
Week 02 –	<b>Holiday</b>
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 –	Topic: Advanced Curtain Walls, Pattern Families, Adaptive Components
Week 11 –	Topic: Generative Desing and AI
Week 12 –	Topic: Materials, Lighting, and Rendering
Week 13 –	Topic: Conceptual Massing
Week 14 –	Topic: Performance Analysis /Green Building Studio
Week 15 –	Studio Final Review No Class
Week 16 –	Final project is due.