Advanced Topics in Architectural Design | Intro to Technical Drawing and BIM

ARC 6611

Class Periods: Tuesdays, 6:30pm – 9:00pm Thursdays, 6:30pm – 8:00pm

Location: Virtual via Zoom

Academic Term: Summer 2021

Instructor:
Prof. Malcolm Jones
Email: malcolmj813@ufl.edu
Office Hours: Available Thursdays; 8:00pm – 10:00pm. Contact me to schedule.

Teaching Assistants:
Pending…

Course Description

Expanding familiar concepts in the conception and production of architecture. Examines the potential for a program to generate architectonic form, bringing a multidisciplinary approach to historical manifestations. – 3 Credits

Course Pre-Requisites / Co-Requisites

This is an introductory course. Digital literacy and basic 3D modeling ability is not required, but will be of great benefit (ARC2180 or equivalent).

Course Objectives

All students at the end of this course should demonstrate the abilities to:

- Understand basic mathematics, geometries, and theories of CAD and BIM software
- Realize and manage inherent strengths and weaknesses of the different software while creatively combining them to achieve a desired result.
- Understand the principles of drawing to scale
- Implement Architectural Drawing Conventions and Layer Naming Standards
- Model, construct, and represent complex geometries as well as produce analytical drawings of architectural elements
- Understand and work with generative design processes, and apply suitable tools to corresponding situations
- Recognize, appropriate, and deploy the major parametric design paradigms and logics into a project on a variety of scales
- Efficiently collaborate within a shared BIM model.
- Understand the workflow associated with creating, organizing and printing a set of architectural drawings.

Course Content

The course content is divided into 3 components that will all work together to expand your technical drawing abilities.

1. **In Class Lectures**
   The course will be conducted in the form of weekly lectures. Each week a new homework assignment will be posted on the class page. Homework assignments will be due the following class day at midnight. This is to allow for any questions to be addressed during the following class meeting before the assignment is due.

2. **Working Drawings**
   Students will also be required to create a "Working Set of Drawings" that will document their class assignments. This "Drawing Set" must be created using the software for that particular assignment. The "Drawing Set" will be continually updated each week with new assignments so as to not create a large volume of work at the end of the semester.

   Depending on the assignment, students will present, pin-up, or digitally submit their "Drawing Set" and receive feedback on their work. This feedback must be implemented into the drawings as part of each assignment. Failure to incorporate these changes will result in a loss of points. Proper implementation can result in bonus points that may improve an individual score.

3. **Collaborative Projects**
   Understanding how to work together is one of the most important aspects of any BIM software. We will be exploring this in great detail in this course. Each student will be working as part of a group for their final projects and will be responsible for coordinating with their classmates within a shared BIM model.

Requirements

It is assumed that every student in this seminar will take an active role in ensuring its quality. Students are encouraged to bring their own laptops to class and try to follow the lecture demonstrations, for more direct feedback and understanding of the processes at work. Example files and handouts will be uploaded to the course website prior to class for download.

- Come to class (**on time**). Attendance is mandatory and will be checked every class. Do the work. Complete each assignment by its due date and scheduled time.
- Do your **OWN** work. Plagiarism will not be tolerated and will result in a failing grade for the semester (not to mention disciplinary action at the university level).
- Get curious! Take this opportunity to test your own personal boundaries.

Materials and Supply Fees
N/A

Required Textbooks and Software

There is **NO** mandatory text for this class. It will be beneficial to invest in some of the software for personal use in the long term, since this will be your bread-and-butter far into your academic and professional careers. The majority of the companies offer free or discounted educational licenses. In most cases free trial versions are available for download. This course will focus primarily on two pieces of software: **Autodesk AutoCad** and **AutoDesk Revit Architecture**. Both of these are free to students for three years.
Autodesk: http://www.autodesk.com/education/free-software/all
Enscape3D: https://enscape3d.com/educational-license/
Revit and AutoCad Tutorials: https://www.youtube.com/channel/UCVXDCZr7WOj87Y5kaYTBkmQ/playlists
LinkedIn Learning: LinkedIn Learning: Online Courses for Creative, Technology, Business Skills

Recommended Materials

The following books are recommended references that will be very useful throughout this course and into the rest of your Architectural Careers but are not required to complete any of the assignments:

The Architect's Studio Companion | Rules of Thumb for Preliminary Design
Edward Allen, Joseph Iano

Architectural Graphic Standards
The American Institute of Architects

Building Construction Illustrated
Francis D.K. Ching

Site Planning and Design Handbook
Thomas H. Russ

Handouts and readings will be provided and distributed as PDFs for download prior to class; it is your decision if you want to print them out for reference. As the software and methods are undergoing constant evolution with each new release, a lot of documentation can be found online in the form of tutorials or help forums; there are no standardized methods or texts that apply to all situations. The course is meant to introduce you to the basic fundamental knowledge regarding the conceptual and practical uses of each tool, while further detailed exploration is up to you.

The Course Canvas Site will primarily be used for project submissions for grading, and for storage and transportation between computers. You will want to transfer your computer work to a DVD at the end of the semester due to its extended shelf life. Flash drives and mechanical drives both have a tendency to fail irrecoverably, therefore periodical and redundant backups of your valuable work is highly advised.

Course Schedule

AutoCAD
Week 1: Understanding Construction Documents – Information Finding
Week 2: Collaborative Site Analysis and AutoCAD (X – Ref, Grid Lines, Paper Space, etc.)
Week 3: Space Programming – Drafting in AutoCAD

Revit
Week 4: BIM Modeling (Worksets, Templates, Sheets, Floor & RCP Plans, Enscape3D, etc.)
Week 5: BIM Modeling Cont. (Elevations, Schedules, etc.)
Week 6: BIM Modeling Cont. (Sections, Enlarged Plans and Details, etc.)
Week 7: Final Drawing Set DRAFT!
Week 8: Draft Set Review
Week 9: Final Drawing Set
Week 10: Enscape3D Rendering
Week 11: Rendering - Visual Presentation
Week 12: Great Job!

Attendance Policy, Class Expectations, and Make-Up Policy

Late and /or incomplete work will not be accepted. Attendance and working in lecture and lab are mandatory. Three unexcused absences will result in a full letter grade deduction, while four or more unexcused absences will result in an automatic "E" semester grade. Unexcused late arrival or early departure from the seminar is unacceptable and will automatically count as an absence. Plagiarism will not be tolerated, and will result in a failing grade for the semester.

*Excused absences must be consistent with university policies in the Graduate Catalog and require appropriate documentation. Additional information can be found in Attendance Policies.

Evaluation of Grades

Assignment	***Total Points***	***Percentage of Final Grade***
Attendance	100	10%
Class Participation	100	10%
Homework (7)	10 each	25%
Final Project Submission	100	25%
Final Drawing Set Submission	100	30%
Totals	470	100%

Grading Policy

The University of Florida Graduate School 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 School considers grades of C-minus or lower to be failing grades. A failing grade in a studio results in either suspension or expulsion from the architecture program. Students receiving one of these grades should immediately contact their Graduate Program adviser for guidance.

	Letter Grade	Numeric Grade	Quality Points	Qualitative Description
PASSING GRADES	A	100-93	4.0	*Outstanding work only*
	A-	92-90	3.67	*Close to outstanding*
	B+	89-87	3.33	*Very good work*
	B	86-83	3.0	*Good work*
	B-	82-80	2.67	*Good work with some problems*
	C+	79-77	2.33	*Slightly above average work*
	C	76-73	2.0	*Average work*
FAILING GRADES	C-	72-70	1.67	*Average work with some problems*
	D+	69-67	1.33	*Poor work with some effort*
	D	66-63	1.0	*Poor work*
	D-	62-60	0.67	*Poor work with some problems*
	E	59-0	0.0	*Inadequate work*

Minimum Cumulative GPA

More information on UF grading policy may be found at:
UF Graduate Catalog
Grades and Grading Policies

Student Work Archives

Students will be required to submit records of their studio project work; final model images, final drawing images and select process images. 10 good images for model work (unless more are necessary), clean scans for flat work and properly sized jpgs for digitally produced images

The Image: Each model image should be in a JPEG format with the image at its maximum resolution. Each drawing or poster image should be kept to a maximum size of 24 x 36 at 300 dpi. (please, avoid sending photoshop files).

File Naming Convention:
SemesterYearClass-StudentsLastNameFirstInitial-ProfsLastNameFirstInitial-ProjectName

Example images submitted by John Smith during the Fall semester for Walters's D7 studio. It is the NYTower project and the file naming system would look like this…
F18D7-SmithJ-WaltersB-NYTower-01
F18D7-SmithJ-WaltersB-NYTower-02

Submit the digital archives to your studio's Canvas website. Alternately, you may submit a flash-drive with files for archiving. Check with your studio professor for additional instructions or requests.

Students Requiring Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the Disability Resource Center. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluation

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations. 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 on the Gator Evals page.

University Honesty Policy

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class. If you have a concern that might be a violation of University policy, report that information (with any evidence) to the DSO office for potential charging consideration. Reports can be submitted online.

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see the Notification to Students of FERPA Rights.

Online Courses

Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited. Private communication regarding the course should be directed to professor email. Please notify the professor about technical issues with UF course delivery systems. Resolve technical issues by visiting the helpdesk website or call 352-392-4357.

Campus Resources:

CityLab-Orlando

Police / Fire / Medical Emergency – 911
Orlando Police Department Non-Emergency Number: 321-235-5300

Health and Wellness

U Matter, We Care:
If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student.

Counseling and Wellness Center: counseling.ufl.edu/cwc, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS)
Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or police.ufl.edu.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling.

Library Support, Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.

Student Complaints Campus
On-Line Students Complaints

Changes and Revisions

This syllabus is subject to change. Any changes will be posted to CANVAS.