UNIVERSITY OF FLORIDA – College of Design Construction and Planning
School of Architecture- Spring 2026

ARC 4494C Integrated Building Technology 4

SYLLABUS

GENERAL COURSE INFORMATION:

Course times:	T | Period 2-3 (Lecture) 8:30 AM - 10:25 AM R | Period 2-3 (Lab) 8:30 AM - 10:25 AM
Total Credits:	3
Prerequisites:	Completion of: 3493C IBT3
Class Room:	Online Synchronous, Live Zoom sessions At scheduled class time (Lecture & Lab)
Graduate Teaching Assistants:	None assigned
Instructor:	

Digital Media & ET
Faculty: Mani Karami
Office: Zoom, by email appt.
Contact: maniarch@ufl.edu
Office Hours: T, 10:30 AM - 12 PM

COURSE DESCRIPTION:

This course emphasizes the development of digital design and environmental design skills applicable to large-scale building projects. It focuses on both the technical aspects of macro-scale design drivers and the detailed implications of environmental performance and building assemblies.

COURSE RATIONALE AND PLACEMENT:

As the fourth and final course of an integrated building technology sequence, the course is intended to build upon the knowledge of the previous courses in scope and ambition. By teaching these topics as a series of inter-related modules with hands-on learning laboratory assignments, students are expected to learn the important technological information associated with each topic, to see sustainable design connections across modules, and to develop a facility in integrating these ideas into their design studio projects. The course is taught in conjunction with Design Studio 8, for which it is indented to compliment and reinforce in design objectives with technical knowledge and testing, as well as reinitiate a technical framework of detail for your Design Studio class.

COURSE OBJECTIVES:

Digital Media (Module 1)

Taught in conjunction with the Design 8 studio, these two modules build upon previous coursework in Digital Technology and introduce intermediate to advanced topics in parametric design. The course covers 2D and 3D digital fabrication basics, including laser cutting and 3D printing. It also addresses current trends in architectural design, such as SubD modeling, advanced digital simulation, form-finding, and optimization. The modules culminate in a project that combines and integrates the design and fabrication methods covered.

Environmental Design (Module 2)

This module addresses critical issues associated with large-scale building systems and their detail design implications. Experiences of artificial lighting systems are introduced and exercised through design problems, as well as environmentally responsive assessments of building systems, and assemblies with

regards to artificial light and energy use. The complementary module will build upon previous prerequisite course knowledge in the testing and refinement of building performance and façade assemblies with an intent to address the effects of environmental factors taught in the previous integrated building tech courses on a large-scale single project.

COURSE TEXTS AND READINGS:

Digital Media (Module 1):
Required Texts:
There are no required texts for this module. However, **a one-month Fab Lab membership will be required for the digital module**, with the orientation date to be determined. Additionally, 3D printing costs will be assessed by the Fab Lab based on the specifics of each project and the time required for printing.

Required Software:
Rhino + Grasshopper

Environmental Technologies (Module 2)
Recommended Texts:
Mechanical and Electrical Equipment for Buildings; 13th Edition; Walter Grondzik and Alison Kwok; Wiley; 2019; IBSN 978-1118615904 (Available online at UF George A. Smathers Libraries)

Recommended Materials:
Auditorium Acoustics and Architectural Design 2nd Edition, Michael Barron, Spon Press, 2009. (Available at UF Architecture & Fine Arts Library)
Architectural Lighting 2nd Edition, M. David Egan, Victor Olgyay, McGraw Hill, 2001. (Available at UF Marston Science Library)

COURSE SCHEDULE:
The course schedule is available as a separate document on Canvas.

COURSE EVALUATION
Students will be responsible for the material in the reading assignments as well as the course lectures and laboratory sessions. There will be a range of project assignments and may include both individual and group work. Assignments will ask students to apply knowledge of class material in two potential forms; topic-specific lab assignments relative to direct coursework and synchronous assignments that complement concurrent, studio-based design projects.

- Module 1 (Digital Media) assignments will expand on the fundamentals of parametric design methodologies and typical digital fabrication paradigms, including 3D printing and laser cutting. The module will explore the relationships between these technologies and their applications in preliminary design and construction logic. Students will complete specific assignments and/or workshops. The module includes a targeted project with two milestones: a Preliminary Digital Model due in week 7 and a Final Physical Fabrication Model due in week 11. This project will integrate materials, joinery, design, fabrication, and other relevant aspects of the Digital Media module.

- Module 2 (Environmental Technology) will examine how fundamental relationships are between environment, context, and design thinking/response through targeted assignments and/or projects. Module 2 assignments will include a comprehensive lamp design project/competition that models and analyzes lighting systems and their surrounding environment. Module 2 includes no exam.

Each module will be graded individually. These grades will contribute to a cumulative course grade. The semester grade will be based on the following breakdown relative to content modules and final project:

Digital Media Module:	**60%**
Lab Assignments/HW	*22%*
Laser Cutting Practice Model	*2%*
Digifab: Digital Progress / Physical Sketch Model	*4%*
Digifab: Preliminary Digital Model/Board	*12%*
Digifab: Final Physical Fabrication Model/Board	*20%*
Environmental Design Module:	**30%**
Lamp Design Labs	*15%*
Lamp Design Project	*15%*
Attendance:	**10%**
Total:	**100%**

Missing/Late Work
Specific expectations and assessment criteria will be included as part of each individual assignment in separate handouts. Missing or late work will be graded down at 10% of the final assessed grade per day. Work submitted later than 5 days will not be graded. If an assessment is missing or late due to an excused absence (see Shared Policies section of the syllabus), it needs to be completed in a timely manner. Specific submission deadlines will be coordinated by the module instructor.

Please note: Certain laboratory assignments or course experiences may not be able to be replicated and, if missed, will require specific arrangements to be coordinated with module Instructor. **To pass the course, all modules must be** completed **at a passing level (60% or better) AS WELL AS the cumulative course grade.**

UF Grading Policy
Information on UF's grading policy for assigning grade points can be found at the following location: https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

Grading Scale

Name:	Range:	
A	100 %	to 94.0%
A-	< 94.0 %	to 90.0%
B+	< 90.0 %	to 87.0%
B	< 87.0 %	to 84.0%
B-	< 84.0 %	to 80.0%
C+	< 80.0 %	to 77.0%
C	< 77.0 %	to 74.0%
C-	< 74.0 %	to 70.0%
D+	< 70.0 %	to 67.0%
D	< 67.0 %	to 64.0%
D-	< 64.0 %	to 61.0%
F	< 61.0 %	to 0.0%

ATTENDANCE
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/

Additional details regarding attendance and accommodations are as follows. Attendance for all labs and/or workshops is mandatory and is recorded. Chronic absences and/or tardiness will have a negative impact on your grade, with a loss of up to 15% over your overall score for three or more unexcused absences (see grade breakdown above). Attendance to lectures is expected and strongly encouraged, as materials covered in the lecture will be tested. If you must miss class (lecture or lab), it is your responsibility to notify the instructors in a timely manner, as well as getting the assignments and notes from your classmates.

SHARED POLICIES
Course Evaluations:
Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at gatorevals.aa.ufl.edu/public-results/ .

Regarding accommodations for students with disabilities
Students with disabilities requesting accommodations should first register with the University of Florida Disability Resource Center by providing appropriate documentation (352-392-8565, www.dso.ufl.edu/drc/). Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Academic Honesty
Students in the School of Architecture are expected to adhere to all University of Florida academic honesty policies. Failure to do so will result in lowered grades and/or referral to the University Honor Court. Since the University's policies are necessarily generalized, the School of Architecture further clarifies academic honesty within the specific setting of design education. The following acts are considered to be academic dishonesty:

1. Plagiarism/misrepresentation
There shall be no question of what your work is and what someone else's is. This applies to all aspects of student performance, including but not limited to

- CAD drawings and construction details
- design guidelines (written and graphic)
- design, planning, and management projects or portions of projects
- class reports and papers (again, both written and graphic information)
- any assignment where sole authorship is indicated, such as take-home tests, individual projects, etc.

Examples of inappropriate activities include:

- copying graphics for a report without crediting the original source
- representing someone else's work as your own (using existing CAD construction details, tracing drawings, etc.)
- allowing someone else to represent your work as his own

Given the collaborative nature of this course, interaction between students is desirable, but the intention and degree of assistance must be appropriate. For example, it is appropriate to discuss the assignment/method/software program/course materials—but it is not appropriate to solve or resolve a large portion of the project together, unless defined as such in the assignment.

The importance of precedent and learning from past works is a necessary part of most design processes. Again, it is the intent and degree of "borrowing" ideas that is at question.

Anything not original must be paraphrased and cited, or quoted; using accepted style formats such as APA, MLA, Chicago Manual of Style, etc. This includes information obtained from the Internet, public documents, graphics, and personal interviews as well as more traditional written sources. Proper crediting of all information that is not common knowledge is necessary for academic honesty as well as for professionalism. (For example, analysis drawings and/or text should cite the sources from which data was obtained so that if questions arise later, they can be quickly and accurately answered.)

2. Multiple submissions of the same or similar work without prior approval
This course is aligned with design studios with the intent of establishing concurrent lessons between both courses. In noting this, there will be moments when assignments and/or exercises for each class are expected to inform one another. In these instances, if course instructors understand and agree that you are doing an assignment associated with a specific topic, then doing similar work for two different classes is acceptable. <u>It would be inappropriate to submit a single assignment for one class, then later submit the same assignment for another course if the instructors are expecting original work.</u>

3. Falsifying information

Examples include:

- misrepresenting reasons why work cannot be done as requested
- changing or leaving out data, such as manipulating statistics for a research project, or ignoring/hiding inconvenient but vital site information. (However, for educational purposes only, certain aspects of the "real world" may be jointly agreed upon as not being pertinent to the academic goals of the course, such as not dealing with specific project parameters or budget, changing the program, etc.)
- altering work after it has been submitted
- hiding, destroying, or otherwise making materials unavailable (hiding reference materials, not sharing materials with other students, etc.)

Counseling + Emergency Contacts

Police / Fire / Medical Emergency – 911
U Matter, We Care, 294-2273; http://www.umatter.ufl.edu
Sexual Violence: 392-5648 or 392-1111 after hours, confidential reporting
University Counseling Center, 301 Peabody Hall, 392-1575; https://counseling.ufl.edu
University of Florida Student Health Care Center, 392-11671; https://shcc.ufl.edu
University of Florida Dean of Students, 392-1261, after hours: 392-1111 (ask for on-call staff); https://dso.ufl.edu

Alachua County Victim Services and Rape Crisis Center (24hrs/day); 264-6760
Alachua County Crisis Center (24 hrs/day), 264-6789

link to academic policies and campus resources: https://go.ufl.edu/syllabuspolicies.