

Cover Sheet: Request 14554

ARC4XXX Integrated Building Technology 4

Info

Process	Course New Ugrad/Pro
Status	Pending at PV - University Curriculum Committee (UCC)
Submitter	Mark Mcglothlin mmcglath@ufl.edu
Created	12/15/2019 4:40:28 PM
Updated	1/13/2020 10:05:44 PM
Description of request	ARC4XXX Integrated Building Technology is the final course in a multi-course sequence addressing building technologies. It will replace the existing, fourth-year course ARC4620 Environmental Technology 2.

Actions

Step	Status	Group	User	Comment	Updated
Department	Approved	DCP - Architecture 011502000	Mark Mcglothlin		12/15/2019
No document changes					
College	Approved	DCP - College of Design, Construction and Planning	Abdol Chini		12/19/2019
No document changes					
University Curriculum Committee	Pending	PV - University Curriculum Committee (UCC)			12/19/2019
No document changes					
Statewide Course Numbering System					
No document changes					
Office of the Registrar					
No document changes					
Student Academic Support System					
No document changes					
Catalog					
No document changes					
College Notified					
No document changes					

Course|New for request 14554

Info

Request: ARC4XXX Integrated Building Technology 4

Description of request: ARC4XXX Integrated Building Technology is the final course in a multi-course sequence addressing building technologies. It will replace the existing, fourth-year course ARC4620 Environmental Technology 2.

Submitter: Mark Mcglothlin mmcglath@ufl.edu

Created: 1/14/2020 11:47:56 AM

Form version: 3

Responses

Recommended Prefix ARC

Course Level 4

Course Number XXX

Category of Instruction Advanced

Lab Code C

Course Title Integrated Building Tech 4

Transcript Title Integrated Tech 4

Degree Type Baccalaureate

Delivery Method(s) On-Campus

Co-Listing No

Effective Term Earliest Available

Effective Year Earliest Available

Rotating Topic? No

Repeatable Credit? No

Amount of Credit 3

S/U Only? No

Contact Type Regularly Scheduled

Weekly Contact Hours 3

Course Description The course will emphasize the development of structures, materials and methods, and environmental design skills that apply to high-rise, long-span and large-scale building design. The course will give focus to both the technical knowledge of macro-scale design-drivers, as well as the detail implications of structure, environmental performance, and building assemblies.

Prerequisites ARC3XXX Integrated Building Technology 3

Co-requisites ARC4322 Architecture Design 7

Rationale and Placement in Curriculum 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 7, for which it is intended to compliment and reinforce in design objectives with technical knowledge and testing, as well as reinitiate a technical framework of detail for Design Studio 8 the following spring semester.

Course Objectives Structures Module

This module builds upon and advances an understanding of primary structural concepts from previous courses in the development of large-scale, high-rise, and long-span structural systems, while at the same time developing an understanding of the structural implications of details. Lateral forces are covered in detail.

Materials and Methods Module

This module focuses upon both the implications of large-scale building programs with regards to codes and occupancies, as well as the integrated and multi-faceted understanding of façade assembly

systems. The effects of zoning and building codes will be covered. Façade and curtain wall assemblies will be covered in detail in response to environmental and interactive criteria.

Environmental Design Module

This module addresses critical issues associated with large-scale building systems and their detail design implications. Computer modeling of acoustical, lighting, and thermal systems are practiced, as well as environmental responsive assessments of building systems, assemblies, and in particular envelope with regards to acoustics, daylight and artificial light, thermal dynamics 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 Textbook(s) and/or Other Assigned Reading Structures Module:

Required Texts:

Structures: Fourth Edition; Schodek, Daniel; Prentice Hall; 2000; ISBN-13: 978-0130278210

Shaping Structures; Allen, Edward & Zalewski, Waclaw; J. Wiley and Sons; 1998; ISBN-13: 978-0471289968

Materials and Methods Module:

Required Texts:

Architectural Detailing: Function, Constructibility, Aesthetics: Third Edition; Allen, Edward, and Patrick Rand; J. Wiley and Sons; 2016; ISBN-13: 978-1118881996

Building Codes Illustrated: Fifth Edition; Winkel, S. R. R., & Ching, Francis D.K.; J. Wiley and Sons; 2016; ISBN-13: 978-1119150923

Environmental Technologies Module

Required Texts:

Heating Cooling Lighting: Sustainable Design Methods for Architects; Third Edition; Norbert Lechner; J. Wiley and Sons; 2008; ISBN 978-0470048092 (continued from ARC 3XXX, IBT2)

Mechanical and Electrical Equipment for Buildings; Twelfth Edition; Walter Grondzik and Alison Kwok; J. Wiley and Sons; 2014; ISBN 978-1118615904

Weekly Schedule of Topics Structural Technologies Module

Weeks 1-5

Week 1

Framework Systems

Week 2

Lateral Forces: Seismic + Wind

Week 3

Trusses/Large Span Structures

Week 4

Tall Buildings

Week 5

Structural Damping/Energy Dissipation

Materials/Methods Module

Weeks 6-10

Week 6

Zoning + Building Codes/Vertical Circ.+ Egress

Week 7

Façade/Curtain Wall Assemblies
Week 8

Façade/Curtain Wall Assemblies
Week 9

Details + Assembly
Week 19

Details + Assembly

Environmental Technology Module
Weeks 11-15

Week 11

Advanced acoustical modeling and design
Week 12

Advanced lighting modeling and design
Week 13

Advanced envelope modeling and design
Week 14

Performance assessments / optimization (thermal + energy)
Week 15

Performance assessments / optimization (acoustics + light)

Grading Scheme Each module will be graded individually. The semester grade will be based on the following breakdown relative to content modules and final project. To pass the course, all modules must be completed at a passing level (60% or better) AS WELL AS the cumulative course grade.

Summary Breakdown for Course

Structural Module: 33%

Materials Module: 34%

Environmental Module: 33%

Total: 100%

Structures Module (weeks 1-5): 33% of course grade

Framework Assignment: 20% of module grade

Lateral Forces Assignment: 20% of module grade

Large Span Structures Assignment: 20% of module grade

Tall Buildings Assignment: 20% of module grade

Summary Exam: 20% of module grade

Materials/Methods Modules (weeks 6-10): 34% of course grade

Life Safety Workshop/Assignment: 30% of module grade

Curtain wall/Enclosure Assignment: 25% of module grade

Advanced Details/Assemblies Assignment: 25% of module grade

Summary Exam: 20% of module grade

Environmental Technology Module (weeks 11-15): 33% of course grade

Advanced Acoustics Assignment: 20% of module grade
Advanced Lighting Assignment: 20% of module grade
Advanced Envelope Assignment: 20% of module grade
Comprehensive Building Analysis Model: 40% of module grade

Instructor(s) Structures Module: to be determined
Materials/Methods Module: to be determined
Environmental Technology Module: to be determined

Attendance & Make-up Yes

Accommodations Yes

UF Grading Policies for assigning Grade Points Yes

Course Evaluation Policy Yes

ARC 4XXX. Integrated Building Technology 4
SYLLABUS

GENERAL COURSE INFORMATION:

Course times: TBD
Total Credits: 3
Prerequisites: Completion of: 4XXX Integrated Building Technology 3
Class Room: TBD
Instructors: Structural Technology Module (weeks 1-5):

Faculty Member 1
Office: XX
Contact: XX
Office Hours: XX

Materials/Methods Module (weeks 6-10):

Faculty Member 2
Office: XX
Contact: XX
Office Hours: XX

Environmental Technology Module (weeks 11-15):

Faculty Member 3
Office: XX
Contact: XX
Office Hours: XX

COURSE DESCRIPTION:

The course will emphasize the development of structures, materials and methods, and environmental design skills that apply to high-rise, long-span and large-scale building design. The course will give focus to both the technical knowledge of macro-scale design-drivers, as well as the detail implications of structure, 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 7, for which it is intended to compliment and reinforce in design objectives with technical knowledge and testing, as well as reinitiate a technical framework of detail for Design Studio 8 the following spring semester.

COURSE OBJECTIVES:

Structures Module (weeks 1-5)

This module builds upon and advances an understanding of primary structural concepts from previous courses in the development of large-scale, high-rise, and long-span structural systems, while at the same time developing an understanding of the structural implications of details. Lateral forces are covered in detail.

Materials and Methods Module (weeks 6-10)

This module focuses upon both the implications of large-scale building programs with regards to codes and occupancies, as well as the integrated and multi-faceted understanding of façade assembly systems. The effects of zoning and building codes will be covered. Façade and curtain wall assemblies will be covered in detail in response to environmental and interactive criteria.

Environmental Design Module (weeks 11-15)

This module addresses critical issues associated with large-scale building systems and their detail design implications. Computer modeling of acoustical, lighting, and thermal systems are practiced, as well as environmental responsive assessments of building systems, assemblies, and in particular envelope with regards to acoustics, daylight and artificial light, thermal dynamics 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.

NAAB Student Performance Criteria

Primary Location for Student Performance Criteria

- None

Secondary Location for Student Performance Criteria

- B.3 Codes and Regulation
- B.4 Technical Documentation
- B.5 Structural Systems
- B.6 Environmental Systems
- B.7 Building Envelope Systems and Assemblies
- B.8 Materials and Assemblies
- B.9 Building Service Systems

COURSE TEXTS AND READINGS:

Structures (Module 1):

Required Texts:

Structures: Fourth Edition; Schodek, Daniel; Prentice Hall; 2000; ISBN-13: 978-0130278210

Shaping Structures; Allen, Edward & Zalewski, Wacław; J. Wiley and Sons; 1998; ISBN-13: 978-0471289968

Materials and Methods (Module 2):

Required Texts:

Architectural Detailing: Function, Constructibility, Aesthetics: Third Edition; Allen, Edward, and Patrick Rand; J. Wiley and Sons; 2016; ISBN-13: 978-1118881996

Building Codes Illustrated: Fifth Edition; Winkel, S. R. R., & Ching, Francis D.K.; J. Wiley and Sons; 2016; ISBN-13: 978-1119150923

Environmental Technologies (Module 3)

Required Texts:

Heating Cooling Lighting: Sustainable Design Methods for Architects; Third Edition; Norbert Lechner; J. Wiley and Sons; 2008; ISBN 978-0470048092 (continued from ARC 3XXX, IBT2)

Mechanical and Electrical Equipment for Buildings; Twelfth Edition; Walter Grondzik and Alison Kwok; J. Wiley and Sons; 2014; ISBN 978-1118615904

COURSE SCHEDULE:

	Week	Date	Readings	Class Topic
Structural Systems Module	1 STRUC	XX	XX	Framework Systems
	2 STRUC	XX	XX	Lateral Forces: Seismic + Wind
	3 STRUC	XX	XX	Trusses/Large Span Structures
	4 STRUC	XX	XX	Tall Buildings
	5 STRUC	XX	XX	Structural Damping/Energy Dissipation

Materials /Methods Module	Week	Date	Readings	Class Topic
	6 M+M	XX	XX	Zoning + Building Codes/Vertical Circ.+ Egress
	7 M+M	XX	XX	Façade/Curtain Wall Assemblies
	8 M+M	XX	XX	Façade/Curtain Wall Assemblies
	9 M+M	XX	XX	Details + Assembly
	10 M+M	XX	XX	Details + Assembly

Environmental Technology Module	Week	Date	Readings	Class Topic
	11 ET	XX	XX	Advanced acoustical modeling and design
	12 ET	XX	XX	Advanced lighting modeling and design
	13 ET	XX	XX	Advanced envelope modeling and design
	14 ET	XX	XX	Performance assessments / optimization (thermal + energy)
	15 ET	XX	XX	Performance assessments / optimization (acoustics + light)
	16	READING WEEK		NO CLASSES
	17	FINALS WEEK		FINAL EXAM

COURSE EVALUATION/GRADING:

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 which will correspond with module topics, and synchronous assignments that complement concurrent, studio-based design projects.

Structural Technology Module (weeks 1-5):

The Structural Technology assignments will expand upon fundamental structural principles and address issues of lateral forces, long span systems, and structural concepts for tall buildings. This module will include with a summary exam as part of the graded materials. This exam will be scheduled for the lecture period of week 5 and will include terminology, construction/material identification, and other content relative to this module.

Materials/Methods Module (weeks 6-10):

Assignments within this module will provide the opportunity to extend student knowledge to large-scale building egress, vertical movement, and enclosure strategies. This module will a summary exam, scheduled for week 10. This exam will address building codes, issues of enclose, system/material identification within building details, and other content relative to this module.

Environmental Technology Module (week 11-15):

Assignments within this module will examine how fundamental relationships between of climate, context and design thinking/response through targeted assignments and/or workshops. Module 3 assignments will include a comprehensive computer modeling project that models and analyzes acoustical, lighting, and thermal systems of a single building. Module 3 includes no exam.

Each module will be graded individually. The semester grade will be based on the following breakdown relative to content modules and final project. **To pass the course, all modules must be completed at a passing level (60% or better) AS WELL AS the cumulative course grade.**

Summary Breakdown for Course

Structural Module: 33%
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Environmental Module:	33%
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Materials/Methods Modules (weeks 6-10): 34% of course grade

- Life Safety Workshop/Assignment – 30% of module grade
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- Advanced Details/Assemblies Assignment – 25% of module grade
- Summary Exam – 20% of module grade

Environmental Technology Module (weeks 11-15): 33% of course grade

- Advanced Acoustics Assignment – 20% of module grade
- Advanced Lighting Assignment – 20% of module grade
- Advanced Envelope Assignment – 20% of module grade
- Comprehensive Building Analysis Model – 40% of module grade

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 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 Attendance section of 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.

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

Letter Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E
Numeric Grade	93-100	90-92	87-89	83-86	80-82	77-79	73-76	70-72	67-69	63-66	60-62	0-59
Quality Points	4.0	3.67	3.33	3.0	2.67	2.33	2.0	1.67	1.33	1.0	0.67	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.catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/

Additional details regarding attendance and accommodations 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 failure of the course (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, 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. 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.

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