

Cover Sheet: Request 14551

ARC2XXX Integrated Building Technology 1

Info

Process	Course New Ugrad/Pro
Status	Pending at PV - University Curriculum Committee (UCC)
Submitter	Mark Mcglothlin mmcglath@ufl.edu
Created	12/15/2019 1:09:18 PM
Updated	1/13/2020 9:19:40 PM
Description of request	ARC2XXX Integrated Building Technology 1 is the second of a multiple course sequence. This course will replace the existing second-year course, ARC2461 Materials and Methods 1.

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 14551

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Submitter: Mark Mcglothlin mmcglath@ufl.edu

Created: 1/14/2020 11:44:16 AM

Form version: 5

Responses

Recommended Prefix ARC

Course Level 2

Course Number XXX

Category of Instruction Introductory

Lab Code C

Course Title Integrated Building Tech 1

Transcript Title Integrated Tech 1

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 As the second course in a multi-year integrated building technology sequence, there will be an emphasis on further developing components of materials and methods, digital design and on the introduction of environmental design that will increase the student's understanding of the impact of context and building technologies on design decisions.

Prerequisites ARC2XXX Intro to Building Tech

Co-requisites ARC2304 Architecture Design 4

Rationale and Placement in Curriculum 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.

Course Objectives As the second course in a multi-course sequence, this course will build upon the skills and knowledge introduced in ARC2XXX Building Technology, advancing the students understanding of fundamental aspects of building material systems and digital design tools, methodologies and means of representation. Further, this course will introduce the fundamental relationship of climate and context in the design process.

- Understand and advance fundamental aspects of building material systems
- Understand and advance the role and relationship of digital design tools to design projects
- Apply digital design methods to targeted design projects
- Understand the spatial and tectonic relationships of design in the digital realm
- Further Develop skills in digital representation methods and output
- Introduce the principles of context, solar orientation, heat gain and thermal comfort

Course Textbook(s) and/or Other Assigned Reading Materials and Methods (Module 1):

Required Text:

Fundamentals of Building Construction: Materials and Methods; Sixth Edition; Edward Allen and Joseph Iano; Wiley; 2014; ISBN 978-1-118-13891-5

Digital Media (Module 2)

Required Text: None

Environmental Design (Module 3):

Selected readings will be provided in the form of a course reader from:

Environmental Control Systems: Heating, Cooling, Lighting; Illustrated Edition; Fuller Moore; McGraw-Hill, Inc.; 1993; ISBN 978-0070428898

Required Text:

Heating Cooling Lighting: Sustainable Design Methods for Architects; Third Edition; Norbert Lechner; Wiley; 2008; ISBN 978-0470048092

Weekly Schedule of Topics Materials/Methods Module

Weeks 1-5

Week 1 Stereotomic Construction – Mass

Week 2 Concrete

Week 3 Masonry

Week 4 Introduction to Frame systems and logics

Week 5 Framework, Space and Hierarchy

Digital Media Module

Weeks 6-10

Week 6

Illustrator Linework and Diagrams

Week 7

Illustrator Plans and Sections

Week 8

V-Ray for Rhino Exterior Rendering

Week 9

V-Ray for Rhino Interior Rendering, Materials

Week 10 InDesign Layouts

Environmental Technology Module

Weeks 11-15

Week 11

Climate, Orientation

Week 12

Psychrometry, Heat flow principles

Week 13

Principles of thermal comfort

Week 14

Solar geometry, Shading devices

Week 15

Indoor air quality, Natural ventilation

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:

Materials/Methods Module: 35% of course grade
Digital Media Module: 30% of course grade
Environmental Tech Module: 35% of course grade
Total: 100%

Materials/Methods Module (weeks 1-5): 35% of course grade

Lab assignments: 75% of module grade
Concrete Lab Assignment – 25%
Masonry Lab Assignment – 25%
Framework, Space and Hierarchy Lab Assignment – 25%

Summary MM Exam: 25% of module grade

Digital Media Module (weeks 6-10): 30% of course grade

Intermediate 2D Assignments: 30% of module grade
VRay/Rhino Assignment: 35% of module grade
Case Study Assignment: 35% of module grade

Environmental Technology Module (weeks 11-15): 35% of course grade

Lab Project Assignments: Shading: 60% of module grade, as follows:
Psychrometry Lab Assignment – 20%
Solar Shading Lab Assignment – 20%
Natural Ventilation Lab Assignment – 20%

Summary ET Exam: 40% of module grade

Instructor(s) Materials/Methods Module: to be determined
Digital Media 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 2XXX. Integrated Building Technology I
SYLLABUS

GENERAL COURSE INFORMATION:

Course times: TBD
Total Credits: 3
Prerequisites: Completion of: ARC2XXX Introduction to Building Technology
Class Room: TBD
Instructors: Materials and Methods Module: Weeks 1-5

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

Digital Media Module: Weeks 6-10
Faculty Member 2
Office: XX
Contact: XX
Office Hours: XX

Environmental Design Module: Weeks 11-15
Faculty Member 3
Office: XX
Contact: XX
Office Hours: XX

COURSE DESCRIPTION:

As the second course in a multi-year integrated building technology sequence, there will be an emphasis on further developing components of materials and methods and digital design through two, 5-week modules. Further, a third 5-week module will introduce fundamental aspects of environmental design, with the overarching intent to increase the students' understanding of the impact and/or relationships between context, building technologies, and design decisions.

COURSE RATIONALE AND PLACEMENT:

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.

COURSE METHODOLOGY:

This course will cover a range of topics and will be delivered in focused, topical modules.

Materials and Methods Module (weeks 1-5)

This module continues the hands-on investigations with materials at a 1:1 scale and the implications of material decisions on design work. This module will offer an introduction to various material systems, with particular emphasis on mass-based systems, such as concrete and masonry, as well as an initial examination of lattice and/or frameworks.

Digital Media Module (weeks 6-10)

This module uses a case study project to introduce students to intermediate techniques of architectural representation using digital methods. The module incorporates vector graphics into the production of architectural drawings in plan and section, as well as the role of architectural diagrams in design representation. The module

also covers the basics of 3D architectural visualization via rendering programs, and finally a full project presentation layout using professional layout programs.

Environmental Technology Module (weeks 11-15)

Taught in conjunction with the Design 4 studio, Integrated Technology I provides a general introduction to climatology, and passive thermal response with particular emphasis on the context differing climates and locations. The topics of solar geometry, shading devices, and building orientation are covered. The topics of indoor air quality and natural ventilation, and the principles of heat flow and characteristics of thermal mass are introduced.

Content Delivery: The modules will be composed of three different methods of content delivery.

- Lectures: Lectures will present the overarching content and issues to the class as a whole. These will be led by module instructors. Student attendance is expected.
- Labs: Lab sessions provide an opportunity to examine, discuss and understand content covered in each module in a more hands-on manner. Specific lab assignments will vary per module.
- Workshops: Workshops consist of brief intensive sessions to study specific topics within a module. Workshops will occur during lab sessions and may include group work, to better facilitate hands-on learning.

COURSE OBJECTIVES:

As the second course in a multi-course sequence, this course will build upon the skills and knowledge introduced in ARC2XXX Introduction to Building Technology, advancing the students understanding of fundamental aspects of building material systems and digital design tools, methodologies and means of representation. Further, this course will introduce the fundamental relationship of climate and context in the design process.

- Understand and advance fundamental aspects of building material systems
- Understand and advance the role and relationship of digital design tools to design projects
- Apply digital design methods to targeted design projects
- Understand the spatial and tectonic relationships of design in the digital realm
- Further Develop skills in digital representation methods and output
- Introduce the principles of context, solar orientation, heat gain and thermal comfort

NAAB Student Performance Criteria

Primary Location for Student Performance Criteria

- None

Secondary Location for Student Performance Criteria

- None

COURSE TEXTS AND READINGS:

Materials and Methods Module:

Required Text:

Fundamentals of Building Construction: Materials and Methods; Sixth Edition; Edward Allen and Joseph Iano; Wiley; 2014; ISBN 978-1-118-13891-5

Digital Media Module 2:

Required Text: None

Environmental Technology Module:

Selected readings will be provided in the form of a course reader from:

Environmental Control Systems: Heating, Cooling, Lighting; Illustrated Edition; Fuller Moore; McGraw-Hill, Inc.; 1993; ISBN 978-0070428898

Required Text:

Heating Cooling Lighting: Sustainable Design Methods for Architects; Third Edition; Norbert Lechner; Wiley; 2008; ISBN 978-0470048092

COURSE SCHEDULE:

	Week	Date	Readings	Class Topic
Materials/ Methods Module	1 MM	XX	XX	Stereotomic Construction – Issues of Mass
	2 MM	XX	XX	Concrete
	3 MM	XX	XX	Masonry
	4 MM	XX	XX	Introduction to Frame systems and logics
	5 MM	XX	XX	Framework, Space and Hierarchy

	Week	Date	Readings	Class Topic
Digital Media Module	6 DIG	XX	XX	Illustrator Linework and Diagrams
	7 DIG	XX	XX	Illustrator Plans and Sections
	8 DIG	XX	XX	V-Ray for Rhino Exterior Rendering
	9 DIG	XX	XX	V-Ray for Rhino Interior Rendering, Materials
	10 DIG	XX	XX	InDesign Layouts

	Week	Date	Readings	Class Topic
Environmental Technology Module	11 ENV	XX	XX	Climate, Orientation
	12 ENV	XX	XX	Psychrometry, Heat flow principles
	13 ENV	XX	XX	Principles of thermal comfort
	14 ENV	XX	XX	Solar geometry, Shading devices
	15 ENV	XX	XX	Indoor air quality, Natural ventilation

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, and synchronous assignments that complement concurrent, studio-based design projects.

Material and Methods Module (weeks 1-5):

Assignments will expand the fundamentals of material systems and corresponding impacts to preliminary design and construction logics. Students will be expected to complete specific assignments and/or workshops. 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 covered during this module.

Digital Media Module (weeks 6-10):

Digital Media assignments will expand on previous digital coursework and focus on further refinement of architectural representation techniques through a series of lab assignments, incorporating vector graphics and basic 3D rendering techniques with applied lighting, environments, and material textures. The module culminates in a case study project presentation layout consisting of architectural drawings, graphics, and 3D visualization that applies the techniques covered in the course.

Environmental Technology Module (weeks 11-15):

Environmental Technology assignments will examine how fundamental relationships between of climate, context and design thinking/response through targeted assignments and/or workshops. These assignments include a small project through which the students design and build a mock-up of a shading device and assess its performance using heliodon method. This module will include a summary exam, in addition to assignments. This exam will be scheduled for the lecture period of week 15 and will include terminology, strategies for heat and indoor air quality, and other content covered during this module.

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:

Materials/Methods Module:	35% of course grade
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Materials/Methods Module (weeks 1-5): 35% of course grade

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Summary Exam – 25% of module grade

Digital Media Module (weeks 6-10): 30% of course grade

Intermediate 2D Assignments – 30% of module grade
 VRay/Rhino Assignment – 35% of module grade
 Case Study Assignment – 35% of module grade

Environmental Technology Module (weeks 11-15): 35% of course grade

Project Assignments: Shading – 60% of module grade
 Psychrometry Lab Assignment – 20%
 Solar Shading Lab Assignment – 20%
 Natural Ventilation Lab Assignment – 20%

Summary Exam – 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:

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.ua.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.ua.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:

I. 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