ARC I ARCE 223: Building Technology III, EAS I, 3-CU, 2019S SoA, CAPLA
Instructor: Aletheia Ida University of Arizona

COURSE DATA

ARC I ARCE 223 Building Technology III: Environmentally Adaptive Systems, EAS I
Spring 2019
3-credit units

FACULTY

Aletheia Ida, PhD, Assistant Professor
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Arch Rm. 203e
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GTAs

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CRITERIA

FULFILLMENT

This course satisfies a Building Technology Stream requirement in Environmentally Adaptive Systems I for the Bachelor of Architecture and Bachelor of Architectural Engineering programs.

PREREQUISITES

PHYS 102 College Physics (or equivalent)

ENROLLMENT

The minimum-maximum enrollment will be determined annually by the School Director in consultation with the instructor of this course.

CONTACT

TU 9:30am – 10:45am	EDUC 353 (Lecture)
TU 11:00am – 12:15pm	Arch. Rm. 205 (ARCE Lab Prep/Review)
TH 9:30am – 12:15pm	Arch. Rm. 205 (Lecture/Labs)

WEB + D2L

This course will be supported over D2L: https://d2l.arizona.edu/d2l/home/756043

COST

Required Textbook	free eBook (open access to UA students)
Required Software	$195 (for Rhino student license, or available free on CAPLA computers)
Physical Model Materials	$25 (estimated)

COURSE CONTENT

CATALOGUE DESCRIPTION

This course introduces fundamentals of environmentally adaptive architectural design, including bioclimatics, electromagnetics, fluid physics, and the related interactions with materials, form, and spatial composition.

COURSE DESCRIPTION

This course is organized in segments around basic environmental fundamentals, including:

Climate
This segment provides an overview of the course subject including relevant physics fundamentals, climate fundamentals, bioclimatic design concepts, and human thermal comfort fundamentals.

Precedent Project Analysis
This segment provides an introduction to solar, daylighting, and airflow principles and makes use of precedent projects in architecture to learn the basic tools for environmental analysis.

Energy Flows
This sequence involves iteration of prior environmental analysis methods and principles with further depth on electromagnetics, solar geometry, passive solar cooling, shading strategies, passive solar heating, active solar design strategies, physics of light and optics, natural daylighting strategies, basic color theory, physics of fluids, passive ventilation design strategies, air and water thermodynamics, wind protection strategies, physics of sound, and acoustic design strategy fundamentals.

Synthesis
This segment provides techniques and exercises for design development and thorough integration of environmental design strategies in architecture.

LEARNING OUTCOMES

After taking this course, students should be able to:

1. Summarize the fundamental principles of environmental sustainability in design practice.
2. Classify the fundamental principles of physics related to environmental performance in design practice, including: thermal (solar), optical (light), kinetic (wind), and acoustic (sound) phenomena.
3. Characterize basic theories and methods for defining relationships between human behavior, human thermal comfort, and the physical environment through proper climatic design response.
4. Differentiate the basic concepts of passive, active, and integrated environmental performance strategies in architectural design.
5. Differentiate the basic concepts that distinguish Skin Load Dominated from Internal Load Dominated buildings.
6. Evaluate the success of environmental performance aspects of architectural designs utilizing physical and digital tools for analysis.
7. Utilize visualization methods and systems of notation relevant to depicting, representing, and conveying environmental phenomena in architectural design concept thinking.
8. Integrate both quantitative and qualitative aspects of environmental performance in architectural design.

NAAB PERFORMANCE CRITERIA:

The material covered in this course offers students proficiency (at the indicated level of accomplishment) in the following subject areas as defined by the National Architectural Accrediting Board (NAAB), http://www.naab.org/accreditation/2009_Conditions.aspx:[1]

> **B6. Environmental Systems**
> ABILITY to demonstrate the principles of environmental systems' design, how design criteria can vary by geographic region, and the tools used for performance assessment. This demonstration must include active and passive heating and cooling, solar geometry, daylighting, natural ventilation, indoor air quality, solar systems, lighting systems, and acoustics.

COURSE STRUCTURE AND ORGANIZATION

This course is designed around four primary learning modules. Each learning module lasts for a period of approximately 2-4-weeks during which time students will develop and complete an exercise for submission at the end of each module. There is a fundamentals quiz in the beginning of the semester to aid in assessment of foundation knowledge in order to address any gaps before advancing with the course learning contents. In the final learning module, the students will work on the synthesis of knowledge and skill development application from the first three modules. The exercises and synthesis project are focused on the iterative environmental analysis aspects of architecture in different climate contexts.

The class convenes in two basic formats: collaborative learning lectures and lab sessions. The students may be assigned specific seating groups in the collaborative learning space during the different modules throughout the course to facilitate particular learning activities. The students will be assigned to a specific lab section in order to facilitate lab activities with manageable student numbers in the spaces allocated.

COURSE OBJECTIVES

During this course, students will engage with environmental phenomena including solar, daylight, airflow, and thermal gradients, to apply scientific knowledge in design processes for appropriate architectural response and passive strategies.

COURSE COMPONENTS + CRITERIA OF EVALUATION

This course is designed to achieve the learning objectives indicated. Because architecture is an art as well as a science, and because every student and student-group present new challenges in the teaching of design, instructors may add, alter, or modify assignments, criteria, or project weights in order to adapt to evolving circumstances that are inherent in the practice of Architecture, and also to evaluate students' abilities to make such adaptations. The Instructor will notify the students in advance of such changes; students for their part will notify the professor within one week of such notification if the proposed changes will cause undue hardship. Students acknowledge the dynamic nature of this course.

Course components are identified in detail on the Course Schedule. The graded components of this course and their criteria of evaluation are currently anticipated to be as follows, but are subject to change as set forth above:

EXAMS

An early exam (online in-class quiz) will be conducted to evaluate the learning performance of individual students on a baseline understanding of physics fundamentals and early concepts introduced in this class. Exam content will be based on lecture materials and assigned readings.

LAB EXERCISES

Lab projects will be executed for each segment of the course. The lab projects consist of both physical and digital empirical methods of analysis and evaluation. Labs will be primarily conducted in-class during dedicated lab sessions and will be executed following directed instruction for methods to be employed. The

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[1] **Understanding:** The capacity to classify, compare, summarize, explain and/or interpret information.
Ability: Proficiency in using specific information to accomplish a task, correctly selecting the appropriate information, and accurately applying it to the solution of a specific problem, while also distinguishing the effects of its implementation.

exercises are intended to serve as a pedagogical tool for students to engage in applied learning of the contents delivered during the lectures and in the assigned readings for this course.

FINAL PROJECT

The final project for the course is a comprehensive synthesis of the accumulative and iterative progression of course content. The synthesis project is intended to allow students to apply their knowledge and skills for climate, solar, daylight, airflow, and thermal gradient analyses to inform the architecture design process and outcomes. Final projects must improve upon the earlier studies and integrate the appropriate balance of design strategies for the given climate conditions per each students' site context.

PARTICIPATION

Students are expected to actively participate in all course activities. This requires that students attend all classes as per the Course Schedule and be prepared for active engagement as per any assigned readings or assignments. Attendance at classes will be regularly documented. Active learning exercises during lectures may be conducted based on assigned readings, current lecture material, or lab projects. Active participation will be required at all lab sessions, which requires students to be present with the required lab materials appropriately prepared for assigned lab activities.

READING ASSIGNMENTS

Readings will be assigned on a weekly basis as per content in the required textbook or otherwise posted on the course D2L site. The reading assignments are intended to prepare students for active listening, participation, and engagement during lecture and lab sessions, and thus should be completed prior to the beginning of class as indicated on the course schedule. A Reading Notebook will be maintained through the duration of the course according to the note-taking methods specified in class lecture. The Reading Notebook must be a *Moleskine black 5"x8.25" plain journal soft-bound (classic or cashiers collection)*. The Reading Notebook will be submitted three times during the semester for a notebook check, and will inform the engagement each student is undertaking with the course material outside of class time.

WEIGHT

The Course Components are forecast to be:

EXAMS		**10**
Quiz 1 EAS Fundamentals	10	
LAB PROJECTS		**45**
Exercise 1 Climate Studies	15	
Exercise 2 Precedent Projects	15	
Exercise 3 Spatiotemporal Flows	15	
FINAL PROJECT		**25**
Comprehensive Passive Design	25	
PARTICIPATION		**5**
READING NOTEBOOK		**15**
Total Weight		**100**

REFERENCES

REQUIRED

The required textbook for this course is available through the UA Library as an online eBook:
http://site.ebrary.com.ezproxy1.library.arizona.edu/lib/arizona/detail.action?docID=10831468

Zeumer, Martin, et.al. *Energy Manual: Sustainable Architecture.* Basel, Switzerland: Birkhäuser, 2008.

REQUIRED SOFTWARE

The software required for this course will be available on all computers in the CAPLA Computer Lab and may also be installed directly on student computers for their use in conducting the digital component of assigned lab exercises and executing the documentation thereof:

Rhino 5 (for Windows)
https://www.rhino3d.com/order-na-std
Grasshopper
http://www.grasshopper3d.com/page/download-1
Ladybug + Honeybee
http://www.food4rhino.com/project/ladybug-Honeybee?ufh
https://github.com/mostaphaRoudsari/ladybug/blob/master/resources/Installation_Instructions.md
GHPython (0.6.0.3)
http://www.food4rhino.com/project/ghpython?ufh
Radiance (4.2)
http://radsite.lbl.gov/radiance/download.html
DAYSIM (4.0)
http://daysim.ning.com/page/download
EnergyPlus (8.3.0)
https://energyplus.net/downloads
Autodesk Flow Design
http://www.autodesk.com/education/free-software/flow-design
Adobe Creative Suite 6
https://store1.adobe.com/cfusion/store/html/index.cfm?event=displayProduct&categoryOID=7253

ADDITIONAL TEXTS

The following texts can be found on reserve at the University of Arizona Science or Main Library to supplement the assigned readings and lecture content of this course:

Albers, Josef. *Interaction of Color.* New Haven, CT: Yale University Press, 1971.

Aristotle. *Physics.* Bloomington, IN: Indiana University Press, 1969.

Arnheim, Rudolf. *Entropy and Art: An Essay on Disorder and Order.* Los Angeles, CA: University of California Press, 1971.

ASHRAE. *Handbook of Fundamentals.* Atlanta, GA: ASHRAE, Inc., 2009. Chapter 9 “Thermal Comfort.”

Banham, Reyner. *Architecture of the Well-Tempered Environment.* Chicago, IL: The University of Chicago Press, 1969.

Braham, William W. and J. A. Hale, Eds. *Rethinking Technology: A Reader in Architectural Theory*. New York, NY: Routledge, 2007

Brown, G.Z., et.al. *Inside Out: Design Procedures for Passive Environmental Technologies, 2nd Edition.* New York, NY: John Wiley & Sons, Inc., 1992.

Cook, Jeffrey, ed. *Passive Cooling.* Cambridge, MA: The MIT Press, 1989.

Daniels, Klaus. *Advanced Building Systems: A Technical Guides for Architects and Engineers.* Translated by Elizabeth Schwaiger. Berlin, Germany: Birkhauser, 2003.

DeKay, Mark and Brown, G.Z. *Sun, Wind, and Light: Architectural Design Strategies, 3rd Edition.* Hoboken, NJ: John Wiley & Sons, Inc., 2014.

Egan, M.David. *Architectural Acoustics.* New York, NY: McGraw Hill, Inc., 1988.

Fanger, P.O. *Thermal Comfort: Analysis and Applications in Environmental Engineering.* Copenhagen: Danish Technical Press, 1970.

Fernandez-Galiano, Luis. *Fire and Memory: On Architecture and Energy.* Cambridge, MA: MIT Press, 2000.

Givoni, Baruch. *Man, Climate and Architecture.* New York, NY: Elsevier Publishing Co. Ltd., 1969.

Givoni, Baruch. *Passive and Low Energy Cooling of Buildings*. New York, NY: Nostrand Reinhold, 1994.

Graham, Peter. *Building Ecology: First Principles for a Sustainable Built Environment*. Oxford, England: Blackwell, 2003.

Hardy, Steve, Ed. *Environmental Tectonics: Forming Climatic Change.* London: AA Publications, 2008.

Heschong, Lisa. *Thermal Delight in Architecture.* Cambridge, MA: The MIT Press, 1993.

Lechner, Norbert. *Heating, Cooling, Lighting: Sustainable Design Methods for Architects, 4th Edition.* Hoboken, NJ: John Wiley & Sons, Inc., 2015.

McDonough, William and Michael Braungart. *Cradle to Cradle***.** New York, NY: North Point Press, 2002.

Milne, M. and Givoni, B. "Architectural Design Based on Climate." In *Energy Conservation Through Building Design*, edited by Donald Watson, 96-113. New York, NY: McGraw-Hill, Inc., 1979.

Moe, Kiel. *Convergence: An Architectural Agenda for Energy.* London, England: Routledge, Taylor & Francis Group, 2013.

Moe, Kiel. *Building Systems: Design Technology and Society.* London, England: Routeledge, 2012.

Moe, Kiel. *Thermally Active Surfaces in Architecture.* New York, NY: Princeton Architectural Press, 2010.

Moe, Kiel. *Integrated Design in Contemporary Architecture.* New York, NY: Princeton Architectural Press, 2008.

Moore, Fuller. *Concepts and Practice of Architectural Daylighting.* New York, NY: Van Nostrand Reinhold, Inc., 1985.

Oke, T.R. *Boundary Layer Climates. Second edition*. New York, NY: Routledge, 1987.

Olgyay, Aladar and Victor Olgyay. *Solar Control and Shading Devices.* Princeton, NJ: Princeton University Press, 1957.

Olgyay, Victor. *Design With Climate: Bioclimatic Approach to Architectural Regionalism.* Princeton, NJ: Princeton University Press, 1963.

Parsons, Ken. *Human Thermal Environments, 2nd Ed.* New York, NY: Taylor & Francis, 2003.

Prigogine, Ilya. *From Being to Becoming: Time and Complexity in the Physical Sciences*. New York, NY: W.H. Freeman and Co., 1980.

Rosenberg, Norman J. *Microclimate: the Biological Environment.* New York, NY: Wiley, 1974.

Stein, B. & Reynolds, J. *Mechanical and Electrical Equipment for Buildings: 8th Edition.* New York, NY: John Wiley & Sons, Inc., 1992.

Szokolay, Steve V. *Introduction to Architectural Science, 2nd Edition.* Oxford, UK: Elsevier Ltd., 2008.

Thompson, D'Arcy Wentworth. *On Growth and Form, The Complete Revised Edition.* Dover Publications: New York, NY, 1992.

Watson, Donald and Kenneth Labs. *Climatic Building Design: Energy-Efficient Building Principles and Practice.* New York, NY: McGraw Hill, Inc., 1983.

Watson, Donald, Ed. *Energy Conservation Through Building Design.* New York, NY: McGraw Hill Book Co., 1979.

Van der Ryn, Sim and Stuart Cowan. *Ecological Design.* Washington, D.C.: Island Press, 1996.

SEMESTER SCHEDULE

A course calendar is attached to this syllabus.

POLICIES + STATEMENTS

GRADING

Evaluations will be distributed at intervals during the semester and will indicate performance according to the stated criteria of evaluation. Students are expected to use this system to monitor and adjust their performance and to seek additional support from the professor, as appropriate. Evaluations will be based primarily on student's work, rather than effort expended. Students are expected to acquire knowledge and skill, not merely *endeavor* to do so.

CHANGE

By its very nature, the practice of architecture requires an ability to adapt to change, both by responding to unforeseen events in the delivery of services and in the revision of the work. Because an ability to adapt and embrace change is an essential skill in our profession, it may be considered in evaluations for this course.

LATE WORK

Work submitted after the deadline will be graded one or more letter grades below what would have been awarded had the work been submitted on time, appropriate to the length of delay and the importance of the assignment, at the Instructor's discretion.

INCOMPLETE WORK

Work submitted that is incomplete will be graded one or more letter grades below what would have been awarded had the work been complete, appropriate to the extent of incompletion and the importance of the assignment, at the Instructor's discretion.

GRADING SCALE

Grades will be defined as follows:

scale	undergraduate criteria
A (90-100)	Excellence in most areas of evaluation, high competence in others.
B (80 to <90)	High Competence in most areas of evaluation, competence in others.
C (70 to <80)	Fulfilled all course requirements with competence. (Competence: the answering of all requirements; adequate fitness, ability, capacity; sufficient for the purpose.)
D (60 to <70)	Less than competent work in one or more areas of evaluation. One or more requirements lacking and/or sub-standard quality.
E (0 to <60)	Substantially incomplete work and/or work of an unsatisfactory quality.
Incomplete	Work left incomplete at the end of the semester *due to circumstances beyond the student's control*.

GRADE APPEAL

Students who believe they have been unfairly graded should follow the multi-step procedure outlined in the CAPLA Grade Appeal:
http://architecture.arizona.edu/student-forms-and-procedures

ATTENDANCE

Students are required to attend all classes for their duration. Upon the 3rd unexcused Absence (whether in part or for a session's entirety), the final grade will be lowered by 5% per each unexcused absence beyond the initial 3.

The UA's policy concerning Class Attendance, Participation, and Administrative Drops:
http://catalog.arizona.edu/policy/class-attendance-participation-and-administrative-drop

EXCEPTIONS

The UA policy regarding absences for any sincerely held religious belief, observance or practice will be accommodated where reasonable:
http://policy.arizona.edu/human-resources/religious-accommodation-policy.

Observances pre-approved by the UA Dean of Students will be honored, as listed at:
http://uhap.web.arizona.edu/policy/appointed-personnel/7.04.02

Absences pre-approved by the UA Dean of Students (or Dean Designee) will be honored:
https://deanofstudents.arizona.edu/absences

EXCUSED ABSENCE

The Instructor may grant an Excused Absence for an outside educational opportunity at the request of the Director or another instructor. Students granted an Excused Absence remain responsible for turning in work on time, even if due on the excused date, as well as getting all information and assignments covered during an Excused Absence. An Excused Absence does not count against the number of Absences specified above.

EMERGENCY ABSENCE

The Instructor may grant an Emergency Absence for bona fide events outside the control of a student, such as sudden serious illness, bodily harm, or other emergency.

written excuse

Emergency Absences must be certified by a professional in writing, such as doctor's excuses, police reports, or evidence of funeral. Written evidence must be submitted by the student within two weeks of the event and must include the certifying professional's contact information. Faculty or staff may verify the legitimacy of the source but may not inquire into the student's related personal information.

validity

"Immediate Family" is limited to parents, children, stepchildren, siblings, and cohabitating partners and spouses. To qualify as an Emergency Absence, the illness or event must be an actual emergency (i.e., events that require immediate attention); otherwise it will be treated as a standard Absence. Scheduled doctor consultations do not qualify.

make-up work

Students granted an Emergency Absence remain responsible for turning in all work as well as obtaining all information and assignments covered in their absence. At the Instructor's discretion, the student may be granted extended deadlines appropriate to the impact of the event. Instructors are not obliged to grant Emergency Absences if the period missed makes it unlikely for the student to be able to achieve a competent level of accomplishment consistent with expectations for the rest of the class; in such cases students are advised to drop the course or seek a medical withdrawal.

DOCUMENTATION STANDARDS

A professional standard in contract documents insures that every page indicates sufficient information to link it to its host set and, similarly, every drawing provides sufficient metadata that it is clearly linked to its dataset. In keeping with this data standard, documentation in this course will comply with the following standards:

PROJECT DOCUMENTATION

Every sheet of every project will indicate the following information on its face:

- ☐ course number
- ☐ semester/year
- ☐ professor
- ☐ student author(s)
- ☐ current date of the work
- ☐ page or sequence number

DRAWING DOCUMENTATION

Every drawing will indicate:

- ☐ drawing type (plan, section, elevation, perspective, axonometric, etc.)[2]
- ☐ graphic scale[3]
- ☐ orientation indicator (north arrow for plan; directional description for vertical projections (e.g., South Elevation; Perspective Looking North)
- ☐ reference indicators (section and elevation markers, blow-up references) that link the drawing to relevant documents

ARCHIVE DOCUMENTATION

Work shall be submitted for this course that demonstrates both the learning objectives and the final project(s), as requested by the professor. Digital files shall be submitted in the following naming convention:
ARCXXX_YYYYS_category_Lastname_F

where
ARCXXX is the course number, e.g., ARC401;
YYYYS is the year and semester (F/S/SUM), e.g., 2013F;
category is the assignment type or drawing type, e.g., SitePlan, LongitudinalSection3, Homework4; and
Lastname_F is the student's last name and first initial

CLASSROOM BEHAVIOR + STUDIO CULTURE

As a condition of enrollment, students agree to abide by the standards set forth in the Student Code of Conduct:
http://azregents.asu.edu/rrc/Policy Manual/5-308-Student Code of Conduct.pdf

The use of cell phones, pagers, electronic devices or other materials unrelated to course specific activities are not permitted during course hours; neither are unauthorized discussions amongst students or other disturbances.

All electronic media are limited to narrowcasting (headsets) at all times, set to a volume that is not audible to others. Per the University policy, non-assist animals are forbidden from University buildings.

Students are responsible for checking their UA email and course D2L sites Monday-Friday, at least once every twenty-four hours, for communications from the Professor.

ACADEMIC POLICIES

Academic policies can be found in The University of Arizona General Academic Catalog:
http://catalog.arizona.edu/allcats.html

along with the UA Final Exam Regulations:
https://www.registrar.arizona.edu/courses/final-examination-regulations-and-information

and Final Exam Schedule:
http://www.registrar.arizona.edu/schedules/finals.htm

Requests for incomplete (I) or withdrawal (W) must be made in accordance with University policies:
http://catalog.arizona.edu/policy/grades-and-grading-system#incomplete
http://catalog.arizona.edu/policy/grades-and-grading-system#Withdrawal

ACADEMIC INTEGRITY

Students are encouraged to share intellectual views and discuss freely the principles and applications of course materials. However, graded work/exercises must be the product of independent effort unless otherwise instructed. Students are expected to adhere to the UA Code of Academic Integrity as described in the UA General Catalog:

http://deanofstudents.arizona.edu/academic-integrity/students/academic-integrity

INCLUSIVE EXCELLENCE

This course will follow the UA diversity initiative designed to create a welcoming environment for all.
http://diversity.arizona.edu/

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[2] A "DETAIL" is not a drawing type. Every drawing is a detail, considered from some perspective.
[3] It is essential that all drawings have *graphic* scales, as notational scales are meaningless with digital documentation and dissemination.

NONDISCRIMINATION + ANTI-HARASSMENT

Students are encouraged to express well-formed opinions and their reasons there for. They are expected to create a tolerant and open environment where such opinions can be expressed without bullying or discrimination. The University is committed to creating and maintaining an environment free of discrimination:
http://policy.arizona.edu/human-resources/nondiscrimination-and-anti-harassment-policy

ELECTIVE NAME AND PRONOUN USE

This course sponsors an educational environment of inclusion and mutual respect, including elective gender pronoun use and self-identification; rosters indicating such choices will be updated throughout the semester, upon student request.

PLAGIARISM

The practice of taking someone else's work or ideas and passing them off as one's own is known as plagiarism and is a serious violation of academic and professional ethics. The consequences for plagiarism are severe, including a failing grade for the course, suspension, or expulsion from the University per the UA policy on plagiarism: http://deanofstudents.arizona.edu/codeofacademicintegrity

TESTING: In any testing situation, whether graded or not, students shall not refer to outside resources (whether printed materials, such as books and journals, texts, Internet, e-mail, Google, instant messaging, or other resources) unless explicitly instructed to do so by the professor of record. Students operating digital devices in testing situations when not authorized to do so shall be assumed to be cheating.

CITATION: Plagiarism applies to professional and public works, as well as to the work produced by peers. Students shall be assiduous in citing the work of others, whether in copying a graphic, either in part or in total, in quoting a text, or in building upon ideas, designs, or forms. Citation is used to give credit to the original author and to allow others to identify and trace source material.

Building upon the work of others is an inevitable part of learning and inherent to scholarship; hence it is an acceptable practice as long as the original sources are properly cited. Textual citations should follow the *Chicago Manual Of Style*. Citations of buildings and other designed works should include both a) project and b) source information:

a) project citation: the work's name or title, its location, the name of its designer(s), and the date designed (or, if built, constructed).

b) source citation: the source from which the information or illustration of the work was obtained formatted according to the Notes and Bibliography format specified in the *Chicago Manual Of Style:*
http://www.chicagomanualofstyle.org/tools_citationguide.html

PRODUCTION: Using the labor of others, whether paid or freely given, offers the beneficiary an unfair advantage relative to peers and is prohibited unless expressly authorized in writing by the professor(s) of record.

COPYRIGHT

Materials in this course may be copyrighted. They are intended for use only by students registered and enrolled in the course and are only for instructional activities associated with and for the duration of the course. They may not be retained in another medium or disseminated, including being uploaded to file-sharing sites on the internet or elsewhere, without the written permission of the instructor. They are provided in compliance with the provisions of the Teach Act:
http://www.copyright.com/Services/copyrightoncampus/basics/teach.html.

Students should refer to University copyright polities:
http://www.library.arizona.edu/help/tutorials/copyright/index.html

THREATENING BEHAVIOR

The UA Threatening Behavior by Students Policy prohibits threats of physical harm to any member of the University community, including to oneself:
http://policy.arizona.edu/education-and-student-affairs/threatening-behavior-students

ACCESSIBILITY AND ACCOMMODATIONS

Universal Design is the obligation of every architect and should be a quality of every environment. It is also the University's goal that learning experiences be accessible. Students who anticipate or experience

physical or academic barriers based on disability, should discuss them with the Instructor; students are encouraged to explore possible accommodations with the Disability Resources Center (520-621-3268).
http://drc.arizona.edu/instructors/syllabus-statement

RETENTION OF WORK

The School of Architecture may retain samples of student work produced in this course as part of the accreditation process of the National Architectural Accrediting Board, Inc. (NAAB) or other University purposes. This may include models, mock-ups, prints, and other physical documents. Students will be notified of work that needs to be retained and shall submit those to the Archivist or the Instructor, as determined by the Instructor, before grades will be released. After accreditation review, the owners of the retained work will be given the opportunity to reclaim it at their own expense (at the name and email address affixed to the product by the student at the time of submittal) for up to 30 days after notification. By contributing work students aid the School in certifying its work, which is essential to the standing and reputation of the institution, for which the Faculty is grateful.

end of syllabus

TEMPLATE VERSION:

2018.01.24—Section 1: Changed title of OBJECTIVES AND OUTCOMES to LEARNING OUTCOMES at request of the Graduate College; added tips and a guide to distinguishing between Learning Outcomes and Course Objectives.
Section 2, COURSE STRUCTURE AND ORGANIZATION: Added clarifying notes requested by the Office of Academic Affairs.
Section 3, ATTENDANCE: Revised clause to make it clear that the grade penalty takes effect after the specified number of allowed unexcused absences; Added notes pertaining to online courses; updated link to UA policy.
MAKE-UP WORK: Clause revised according to Graduate College.
ACADEMIC POLICIES: Expanded to include new required sections by Office of Academic Affairs.

2018.06.14—Section 2: added MatLAB online safety certification.

2018.09.12—Section 2: Changed Learning Outcomes to Learning Objectives; added Course Objectives section.

2018.10.02—Section 2: Changed Learning Objectives back to Learning Outcomes; Section 3: Clarified ATTENDANCE policy; Sections 1+2: Added structured discussion section language.