Environmental Technology II / Human Comfort and Systems

Ed Akins, Associate Professor
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Office Hours: TUES and THURS (appointments preferred – times will be posted at office door)

Class Room: N-173
Class Periods: TUES / THURS 9:30AM -10:50AM

Course Description:
"Known or unknown, every world exists because the others do."
-Wendell Berry, A Timbered Choir: The Sabbath Poems, pg. 194 ‘The Old Man Climbs a Tree.’

The course seeks to involve the study of systems beyond the context of mechanized components and to engage in the relationship of buildings to their immediate and extended contexts. Using sustainability as an armature for this discussion, it is intended that the student become aware of the ethical obligations of the profession through a clear understanding of the inter-relationships between elements at both the macro and micro scale, of the man-made and natural. Architecture can be understood as specific and responsive in a process of design that seeks a symbiotic or reparative relationship with its surroundings. As such, human comfort will be viewed as one of many elements that determine a ‘building ecology’ and the systems within this building ecology will be evaluated and reviewed through measures of appropriateness to day, season, use and enclosure.
Lectures will be given to provide a basic overview or technical instruction on the various passive and active environmental systems and in most cases will provide examples of how this technology or process can be integrated into design thinking towards holistic architecture. Architecture has the ability to become a greater part of the solution to environmental challenges and concerns that are present at multiple societal scales. Therefore the idea of Human Comfort as a measure of design must be considered in all scenarios of impact, cost and result. This course will help prepare each student to be a participant in the design and discussion of system integration and passive strategies that reduce dependence of our profession and society upon purely technologically controlled environments. The student will therefore become a voice within a global conversation that includes humility and societal sensibilities as an integral part of the design process.

**Learning Objectives:**
1) To be aware of basic environmental passive systems and traditional mechanical systems used in contemporary buildings.
2) To be able to prioritize the use of passive systems over the use of traditional mechanical systems.
3) To research and evaluate information in support of selecting appropriate environmental control systems.
4) To be aware of technical language and information used to document the design intent and operation of systems.
5) To become aware of system design integration and current / emerging technologies.

**Course Structure:**
The course is organized in the following five sections:

**Section #1:**
Sustainable Design
Energy: Basic Principles

**Section #2:**
Thermal Comfort
Climate

**Section #3:**
Passive Solar
Shading

**Section #4:**
Greenroofs and Water
Water and Waste
Passive Cooling I and II

**Section #5:**
Photovoltaics / Active Solar
Mechanical Equipment for Heating and Cooling

**Evaluation**
Your grade will be based on one lab project in multiple parts, five quizzes, one final, and course attendance / participation:

LEED LAB: Agnes Scott Analysis 25%
Quizzes #1 through #5 10% each
Final 15%
Archiving and participation 10%

One letter grade will be deducted if the project is submitted after deadline.
An additional letter grade will be deducted for assignments each calendar day after deadline.
Class Progress is an evaluation based on student’s work improvement, class exercises, work habits, motivation and maturity. A semester-end Digital Record (on DVD or D2L) of your LEED LAB efforts will be required.

Letter grades and accompanying point values are determined according to KSU grading scales (see page 5).
Course Reading – Required / Recommended Texts:

Required Text:


Recommended Texts (to be updated throughout the semester):


Course Schedule (attached):

The syllabus and class outline represent a tentative outline and schedule for this class. The instructor reserves the right to make changes, deletions, corrections, or additions during the course. You will be given notice in advance of any course changes. It is the student's responsibility to be in class when changes are given. Please see the attached schedule and continue to check D2L throughout the semester for announcements and updates to any course files.

Class Behavior:

1) ALL CELL PHONES MUST BE TURNED OFF FOR THE DURATION OF THE CLASS.

2) If the format of the course is lecture delivery, please do not talk during class. Raise hand to speak / address the class. Listen attentively to others and please do not interrupt.

3) No food is allowed in the classroom.

4) Attendance is not only required but also necessary for doing well in this class. Attendance will be taken at every class. Missing more than three classes will result in a grade penalty. Leaving early, or arriving late, will be counted as an absence.

5) All excused absences need to be cleared in advance with the instructor.

6) Missing class for health reasons requires a note from a medical practitioner.

7) Students will be required to log into the D2L service for some class tests and should confirm that they can gain access to the system within the first week of classes.

8) Each exercise and/or project will include detailed project presentation requirements, deadlines and review criteria.

9) Projects will be evaluated by the professor and, in some cases, with other faculty.
**NAAB Requirements:**
The National Architectural Accrediting Board (NAAB) has established that a curriculum must meet the performance standard for thirty-seven performance outcomes to adequately prepare a student for a career as an architect. This course specifically addresses the following outcomes, which at the conclusion of this course a student will acquire:

Student Performance Criterion addressed with reference to the NAAB Performance Criteria (note anticipated percentage of time to be spent in each subject area):

A.7 Use of Precedent (15%)
A.9 Historical Traditions and Cultures (03%)
A.10 Cultural Diversity (03%)
A.11 Applied Research (08%)
B.3 Sustainability (25%)
B.8 Environmental Systems (10%)
B.10 Building Envelope Systems (20%)
B.11 Building Service Systems (10%)
C.2 Human Behavior (06%)

**Supplies:**

**Materials and Tools**
Exercises and projects may have their own lists of required and/or recommended materials. A computer is required for all tests and some homework assignments including LEED LAB.

**Grading System:**
The value of this course will be a result of the student’s fundamental responsibilities:

- being a positive contributor to the course as a whole and your individual teams
- reading course handouts and requirements and responding to their requirements
- taking notes on lectures, discussions, and comments made in class
- keeping track of any changes to project or exercise requirements announced in class
- attendance at every class

**Grades:**
The following are used to specify the level of performance in academic courses:

Letter grades and accompanying point values are determined according to the following criteria:

**A** (95+)
This represents exceptional work, exceeding the requirements and exhibiting advancement beyond level in design theory, technical understanding, and or work process.

**A-** (90+)

**B+** (88+)

**B** (85)
This grade represents good work, exceeding the requirements and exhibiting creative solutions that respond to the important issues, communicated clearly.

**B-** (80+)

**C+** (78+)

**C** (75)
This grade represents competent work, meeting all of the requirements and exhibiting a consistent effort in research, and design process, communicated clearly.

**C-** (70+)

**D+** (68+)

**D** (65)
This grade represents marginal work, meeting some or all of the requirements but exhibiting inconsistency in design research and process; lacking in clarity or poorly communicated and generally understood as below level in sophistication and competency.

**F** (0)
This represents failing work, meeting less than minimum requirements, work done below level in sophistication and competency, failure to turn in work on time, or fulfill the obligations of the course as set out in the syllabus.
Grades (continued):

Students will receive the evaluation and grade for each assigned component within two weeks after the assessment. Student work will be graded according to the following criteria:

1) Accuracy and completeness
2) Clarity of thought and/or procedure
3) Quality of craft - if applicable
4) Regular work habits
5) Participation in studio discussions

Class and laboratory work are considered essential and the grades on each will be combined at the end of the semester and reported as one. Failure in either class or lab may result in failure of the entire course.

A grade of "F" is assigned also if a student is removed from class under the provisions of the section on Academic Dishonesty.

WF   Withdrawal After Deadline:
A WF occurs when a student has withdrawn officially after the midpoint of the semester.
A grade of "WF" in a course is counted in the student's scholastic average as a failing grade

Other Campus Data:
It is the student's responsibility to disclose to the instructor any special needs and/or learning disabilities he/she may have before the first week of class is over.

Student Success Services KSU
Student Success Services (http://studentsuccess.kennesaw.edu) is a student-centered, service-directed offering of Kennesaw.
It strives to meet the needs of students by providing assistance to students with needs associated with veteran's issues, addiction recovery, disabled student services, women's support, interpersonal violence prevention, homeless student intervention, student athlete success, student health promotion and wellness and personal and career counseling.

Marietta Campus Writing Center_KSU
http://writingcenter.kennesaw.edu
Johnson Library, Room 121   (470) 578-5005
Appointments via this website: https://kennesaw.mywconline.com
Monday through Thursday:   9 AM- 7 PM
Friday through Sunday:       Closed

Additional On-Campus Tutoring Resources
- Chemistry Tutoring available at the Math Lab, Library 4th Floor, Room 421
- Foreign Language Academic Resources available in Pilcher 134
- Technology Workshops available at the ITS, Burruss Building, 4th Floor
- Psychology Tutoring, Psychology Lab on the 4th Floor of the Social Sciences Building

Disabled Student Support Services
The mission of disAbled Student Support Services is to assure equal access to all educational experiences by students with identified, legally defined disabilities, and to promote the University's knowledge of and compliance with all applicable federal and state laws. In addition, this unit strives to enhance students' total academic and personal development and to promote the recognition of the contributions made by individuals with disabilities to the rich diversity of the University. For accommodation information, go to http://studentsuccess.kennesaw.edu/sds/

CODE of CONDUCT
The KSU Student Conduct Code is found here: http://scai.kennesaw.edu/codes.php
All students should be aware of this document and should abide by the guidelines therein. Additionally, see the University Academic Integrity statement on the next page.

EMERGENCY CONTACT NUMBERS
KSU Police Department
Emergencies: 470-578-6666 or 770-423-6666
Non-Emergencies: 470-578-6206
Non-Emergency E-mail: police@kennesaw.edu
Tipster Line (Report Anonymously): 470-578-6305
DOWNLOAD LIFESAVER HERE: http://livesafe.kennesaw.edu/index.php
University Policies:

Academic Integrity Statement
Every KSU student is responsible for upholding the provisions of the Student Code of Conduct, as published in the Undergraduate and Graduate Catalogs. Section II of the Student Code of Conduct addresses the University’s policy on academic honesty, including provisions regarding plagiarism and cheating, unauthorized access to University materials, misrepresentation/falsification of University records or academic work, malicious removal, retention, or destruction of library materials, malicious/intentional misuse of computer facilities and/or services, and misuse of student identification cards. Incidents of alleged academic misconduct will be handled through the established procedures of the University Judiciary Program, which includes either an “informal” resolution by a faculty member, resulting in a grade adjustment, or a formal hearing procedure, which may subject a student to the Code of Conduct’s minimum one semester suspension requirement.

Disruption of Campus Life Statement
It is the purpose of the institution to provide a campus environment, which encourages academic accomplishment, personal growth, and a spirit of understanding and cooperation. An important part of maintaining such an environment is the commitment to protect the health and safety of every member of the campus community. Belligerent, abusive, profane, threatening and/or inappropriate behavior on the part of students is a violation of the Kennesaw State University Student Conduct Regulations. Students who are found guilty of such misconduct may be subject to immediate dismissal from the institution. In addition, these violations of state law may also be subject to criminal action beyond the University disciplinary process.

Disruptive Behavior and Academic Dishonesty:
A faculty member reserves the right to remove any student from his or her course if the student’s behavior is of a disruptive nature or where there is evidence of academic dishonesty. In instances of disruptive behavior and/or academic dishonesty, the faculty member will discuss the circumstances with the student(s) before taking final action.

In the event the student cannot be reached, he/she will be given the grade of "Incomplete" until such time as he/she can be reached. The student shall have the right of appeal of the faculty member’s decision first to the faculty member’s department head and then to the appropriate college or school dean and, if necessary, to the Vice President for Academic Affairs.

Removal of a student from a course under this provision will result in the faculty member’s issuing a grade of "F". A grade of "F" issued under these circumstances shall not be superseded by a voluntary withdrawal and will be included in the student’s cumulative grade point average calculated for graduation purposes.

Primary communication
Your KSU issued email will be the primary source of communication for the class. Instructors may also use the D2L online interface for communication of assignments, discussion boards, and other alternate communications.

END OF SYLLABUS DOCUMENT
<table>
<thead>
<tr>
<th>WK</th>
<th>Day</th>
<th>Month</th>
<th>Date</th>
<th>Lecture Description</th>
<th>Quiz/LEED Lab/Other</th>
<th>% Reading/Lecture</th>
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<tr>
<td>1</td>
<td>TUES</td>
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<td>INTRO: Course Introduction: Syllabus + Schedule</td>
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<td>Energy: Basic Principles</td>
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<td>Climate</td>
<td>Prof. Akins Video: The Druk White Lotus School - Ladakh</td>
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<td>TUES</td>
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<td>LEED LAB TALK 03</td>
<td>Chapter 8: 177 - 206</td>
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<td>LEED LAB TALK 03</td>
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<td>Active Systems / Photovoltaics</td>
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<td>Dr. Abaza + Akins Building 2 TECH LAB TOUR</td>
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