Eastern Illinois University
New Course Proposal
AET 3803, Sustainable Construction

Please check one:  □  New course  □  Revised course

PART I: CATALOG DESCRIPTION

1. Course prefix and number, such as ART 1000:  AET 3803
2. Title (may not exceed 30 characters, including spaces):  Sustainable Construction
3. Long title, if any (may not exceed 100 characters, including spaces):
4. Class hours per week, lab hours per week, and credit [e.g., (3-0-3)]:  3-0-3
5. Term(s) to be offered:  □ Fall  □ Spring  □ Summer  □ On demand
6. Initial term of offering:  □ Fall  □ Spring  □ Summer  Year:  2010
7. Course description (not to exceed four lines):
   Study of the principles of environmentally sustainable construction with application of green buildings and standard construction techniques and mechanical systems. Included is the Green Building Rating System LEED (Leadership in Energy and Environmental Design) for benchmarking the design, construction, and operation of high performance green buildings.
8. Registration restrictions:
   a. Identify any equivalent courses (e.g., cross-listed course, non-honors version of an honors course).
      None
   b. Prerequisite(s)  AET 2253 Construction Equipment and Materials and AET 3603 Mechanical Systems in Residential and Commercial Buildings or approval of instructor.
   c. Who can waive the prerequisite(s)?
      □ No one  □ Chair  □ Instructor  □ Advisor  □ Other (Please specify)
   d. Co-requisites (course(s) which MUST be taken concurrently with this one):  NONE
   e. Repeat status:  □ Course may not be repeated.
      □ Course may be repeated to a maximum of 6 hours or ______ times.
   f. Degree, college, major(s), level, or class to which registration in the course is restricted, if any:  None
   g. Degree, college, major(s), level, or class to be excluded from the course, if any:  None
9. Special course attributes [cultural diversity, general education (indicate component), honors, remedial, writing centered or writing intensive]  None
10. Grading methods (check all that apply):  □ Standard letter  □ C/NC  □ Audit  □ ABC/NC (“Standard letter”—i.e., ABCDF--is assumed to be the default grading method unless the course description indicates otherwise.)
11. Instructional delivery method:  □ lecture  □ lab  □ lecture/lab combined  □ independent study/research
PART II: ASSURANCE OF STUDENT LEARNING

1. **List the student learning objectives of this course:** Students will be able to:

   1. Identify terminology and definitions commonly used in sustainability and the building industry.
   2. Describe the principles of sustainable design, site development considerations, and Green Building concepts.
   3. Evaluate the cost implications of applying green building principles to constructing a building.
   4. Identify site issues with respect to green construction.
   5. Describe green principles to improve building efficiency.
   6. Assess renewable energy sources for use in green building.
   7. Identify green building principles to improve the effective use of available building materials.
   8. Identify green building principles to improve the indoor environment of a building.
   9. Identify the environmental performance of different segments of the LEED Green Building Rating System as applied to a building.
   10. Use the “Assessment Guide for LEED” to analyze buildings for green concepts.

   a. If this is a general education course, indicate which objectives are designed to help students achieve one or more of the following goals of general education and university-wide assessment:
      - EIU graduates will write and speak effectively.
      - EIU graduates will think critically.
      - EIU graduates will function as responsible citizens.

   Not a general education course

   b. If this is a graduate-level course, indicate which objectives are designed to help students achieve established goals for learning at the graduate level:
      - Depth of content knowledge
      - Effective critical thinking and problem solving
      - Effective oral and written communication
      - Advanced scholarship through research or creative activity

   Not a graduate level course

2. **Identify the assignments/activities the instructor will use to determine how well students attained the learning objectives:**

   Since this course will be traditionally delivered, student knowledge will be evaluated using quizzes, tests, final and projects. Selected concepts and terminology will be evaluated using short quizzes. Two tests and a final exam will be used to evaluate a student’s ability to integrate concepts. A series of projects will be used to give students hands-on experience in identifying, analyzing and assessing the use of green construction and renewable energy sources.
3. Explain how the instructor will determine students’ grades for the course:

<table>
<thead>
<tr>
<th>Objective</th>
<th>Quizzes 10% Total</th>
<th>Projects 20% Total</th>
<th>First Test 20% Total</th>
<th>Second Test 20% Total</th>
<th>Final Exam 30% Total</th>
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<tbody>
<tr>
<td>1</td>
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4. For technology-delivered and other nontraditional-delivered courses/sections, address the following:
   a. Describe how the format/technology will be used to support and assess students’ achievement of the specified learning objectives:
   b. Describe how the integrity of student work will be assured:
   c. Describe provisions for and requirements of instructor-student and student-student interaction, including the kinds of technologies that will be used to support the interaction (e.g., e-mail, web-based discussions, computer conferences, etc.):

   Not a technology delivered course

5. For courses numbered 4750-4999, specify additional or more stringent requirements for students enrolling for graduate credit. These include:
   a. course objectives;
   b. projects that require application and analysis of the course content; and
   c. separate methods of evaluation for undergraduate and graduate students.

   Not applicable

6. If applicable, indicate whether this course is writing-active, writing-intensive, or writing-centered, and describe how the course satisfies the criteria for the type of writing course identified. (See Appendix *.)

   Not applicable
### PART III: OUTLINE OF THE COURSE

<table>
<thead>
<tr>
<th>Weeks</th>
<th>Topic(s)</th>
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<tbody>
<tr>
<td>0.5</td>
<td>Overview of the fundamentals of green building.</td>
</tr>
<tr>
<td>1</td>
<td>Exploration of the economic, social, and environmental imperatives of sustainability and the building industry using selected web sites with class discussions.</td>
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<tr>
<td>1</td>
<td>Overview of sustainable design practices, green building practices, and natural resource use.</td>
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<tr>
<td>1</td>
<td>Evaluation of the soft, capital, and life-cycle cost implications of green building.</td>
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<td>1</td>
<td>Site development strategies, alternatives, reductions and efficiencies to consider when engaging in green construction.</td>
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<tr>
<td>1</td>
<td>Developing management decisions for site water runoff issues due to erosion, sedimentation control, and large storm water runoff.</td>
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<td>1.5</td>
<td>Identification of the ways to improve water use through efficient landscaping, retention, recycling, etc.</td>
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<tr>
<td>1.5</td>
<td>Identification of the ways to improve the energy efficiency of a building through passive heating and cooling and maximization of its energy performance.</td>
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<tr>
<td>1.5</td>
<td>Using various Illinois alternative and renewable energy source web sites, these energy sources, such as wind, solar, geothermal, tidal, and biomass, will be analyzed for use in green building situations.</td>
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<tr>
<td>1</td>
<td>Study of the mechanisms needed to establish on-site power generation using renewable energy sources.</td>
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<tr>
<td>1.5</td>
<td>Identification of ways for improving the selection, reuse, and recycling of building materials and its transportation to construction sites.</td>
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<tr>
<td>1</td>
<td>Exploration of methods to improve a building’s indoor environmental quality through techniques such as mechanical, passive, and hybrid ventilation systems.</td>
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<td>1</td>
<td>Identifying, assessing, and analyzing methods of improving a building’s environmental performance using the U.S. Green Building Council’s (USGBC) LEED® (Leadership in Energy and Environmental Design) Green Building Rating System through a focused study project.</td>
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<tr>
<td>1</td>
<td>Developing basic expertise in becoming a LEED Accredited Professional through a study project focused on individual environmental performance.</td>
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<td>15</td>
<td>Total</td>
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</table>

Provide a week-by-week outline of the course’s content. Specify units of time (e.g., for a 3-0-3 course, 45 fifty-minute class periods over 15 weeks) for each major topic in the outline. Provide clear and sufficient details about content and procedures so that possible questions of overlap with other courses can be addressed. For technology-delivered or other nontraditional-delivered courses/sections, explain how the course content “units” are sufficiently equivalent to the traditional on-campus semester hour units of time described above.

### PART IV: PURPOSE AND NEED

1. Explain the department’s rationale for developing and proposing the course.

The Applied Engineering and Technology degree program is being updated as a result of significant changes in technology and society’s increasing demand on energy. A productive and healthy movement at the national level towards both conserving natural resources and utilizing modern and efficient renewable energy systems is driving construction professionals to be knowledgeable of these issues. Sustainability and Green Building in particular are the most promising areas. Students in the Construction Concentration in
the School of Technology need to be prepared for this technological change in order to become the knowledgeable builders and construction managers that will be needed.

a. If this is a general education course, you also must indicate the segment of the general education program into which it will be placed, and describe how the course meets the requirements of that segment. Not a general education course
b. If the course or some sections of the course may be technology delivered, explain why. Not a technology delivered course

2. Justify the level of the course and any course prerequisites, co-requisites, or registration restrictions.

A knowledge base is required to understand the application of the content of this course. Two courses AET 2253 Construction Materials and Equipment and AET 3603 Mechanical Systems of Buildings are prerequisites but may be taken at the same time. This course consequently needs to be in the upper division level.

3. If the course is similar to an existing course or courses, justify its development and offering. None

a. If the contents substantially duplicate those of an existing course, the new proposal should be discussed with the appropriate chairpersons, deans, or curriculum committees and their responses noted in the proposal.
b. Cite course(s) to be deleted if the new course is approved. If no deletions are planned, note the exceptional need to be met or the curricular gap to be filled.

4. Impact on Program(s):

a. For undergraduate programs, specify whether this course will be required for a major or minor or used as an approved elective. Elective for AET students in Construction Concentration

b. For graduate programs, specify whether this course will be a core requirement for all candidates in a degree or certificate program or an approved elective. N/A

If the proposed course changes a major, minor, or certificate program in or outside of the department, you must submit a separate proposal requesting that change along with the course proposal. Provide a copy of the existing program in the current catalog with the requested changes noted. N/A

PART V: IMPLEMENTATION

1. Faculty member(s) to whom the course may be assigned: Dr. Mori Toosi, Dr. Kaninika Bhatnagar, Dr. Wafeek Wahby, Dr. Dave Melton, Dr. Jerry Cloward

If this is a graduate course and the department does not currently offer a graduate program, it must document that it employs faculty qualified to teach graduate courses.
2. **Additional costs to students:** None

Include those for supplemental packets, hardware/software, or any other additional instructional, technical, or technological requirements. (Course fees must be approved by the President’s Council.)

3. **Text and supplementary materials to be used (Include publication dates):** *Green Building Fundamentals*, Michael Montoya, Prentice Hall 2010

**PART VI: COMMUNITY COLLEGE TRANSFER**

If the proposed course is a 1000- or 2000-level course, state either, "A community college course may be judged equivalent to this course" OR "A community college course will not be judged equivalent to this course." A community college course will not be judged equivalent to a 3000- or 4000-level course but may be accepted as a substitute; however, upper-division credit will not be awarded.

**PART VII: APPROVALS**

Date approved by the department or school: November 4, 2009

Date approved by the college curriculum committee: February 8, 2010

Date approved by the Honors Council *if this is an honors course*:

Date approved by CAA: March 11, 2010

*In writing-active courses, frequent, brief writing activities and assignments are required. Such activities -- some of which are to be graded -- might include five-minute in-class writing assignments, journal keeping, lab reports, essay examinations, short papers, longer papers, or a variety of other writing-to-learn activities of the instructor's invention. Writing assignments and activities in writing-active courses are designed primarily to assist students in mastering course content, secondarily to strengthen students' writing skills. In writing-intensive courses, several writing assignments and writing activities are required. These assignments and activities, which are to be spread over the course of the semester, serve the dual purpose of strengthening writing skills and deepening understanding of course content. At least one writing assignment is to be revised by the student after it has been read and commented on by the instructor. In writing-intensive courses, students’ writing should constitute no less than 35% of the final course grade. In writing-centered courses (English 1001G, English 1002G, and their honors equivalents), students learn the principles and the process of writing in all of its stages, from inception to completion. The quality of students' writing is the principal determinant of the course grade. The minimum writing requirement is 20 pages (5,000 words).*