DEPARTMENT: Manufacturing & Construction Engineering Technology and __________

EFFECTIVE SESSION: Fall 2010

INSTRUCTIONS: Please check the items below which describe the purpose of this request.

- [ ] 1. New course with supporting documents
- [ ] 2. Add existing course offered at another campus
- [ ] 3. Explication of a course
- [ ] 4. Change in course number
- [ ] 5. Change in course title
- [ ] 6. Change in course credit/credit type
- [ ] 7. Change in course attributes (department head signature only)
- [ ] 8. Change in instructional hours
- [ ] 9. Change in course description
- [ ] 10. Change in course requisites
- [ ] 11. Change in semesters offered (department head signature only)
- [ ] 12. Transfer from one department to another

PROPOSED:

<table>
<thead>
<tr>
<th>Subject Abbreviation</th>
<th>CNET</th>
<th>Subject Abbreviation</th>
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</thead>
<tbody>
<tr>
<td>Course Number</td>
<td>450</td>
<td>Course Number</td>
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<tr>
<td>Long Title</td>
<td>Issues in Sustainability</td>
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<tr>
<td>Short Title</td>
<td>Issues-Sustainability</td>
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</tbody>
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Abbreviated title will be entered by the Office of the Registrar if omitted. (22 CHARACTERS ONLY)

CREDIT TYPE

1. Fixed Credit: Cr. Hrs. 3
2. Variable Credit Range: Minimum Cr. Hrs. (Check One) To — Or — Maximum Cr. Hrs.
3. Equivalent Credit: Yes [ ] No [ ]
4. Thesis Credit: Yes [ ] No [ ]

COURSE ATTRIBUTES: Check All That Apply

1. Pass/Not Pass Only
2. Satisfactory/Unsatisfactory Only
3. Repeatable
4. Maximum Repeatable Credit:
5. Credit by Examination
6. Designator Required
7. Registration Approval Type
   - Department [ ] Instructor [ ]
8. Variable Title
9. Remedial
10. Honors
11. Full Time privilege
12. Off Campus Experience

COURSE DESCRIPTION (INCLUDE REQUISITES):

P: Junior standing. This course introduces students to the broad concepts and issues involved in sustainability that they may take them into the world and become leaders in their communities. In the project associated with this course, students will read, conduct research, synthesize material, and produce and present their findings. Students will also implement one campus sustainability initiative.

Calumet Department Head Date
[Signature]
3-9-2010

Calumet School Dean Date
[Signature]
3-9-2010

Fort Wayne Department Head Date
[Signature]

Fort Wayne School Dean Date
[Signature]

North Central Department Head Date
[Signature]

North Central Chancellor Date

Indianapolis Department Head Date
[Signature]

Indianapolis School Dean Date
[Signature]

West Lafayette Department Head Date
[Signature]

West Lafayette College/School Dean Date
[Signature]

West Lafayette Registrar Date

OFFICE OF THE REGISTRAR
CNET 450: Issues in Sustainability

Regina Leffers, Ph.D., Director of the Center for the Built Environment, Associate Professor of Construction Engineering Technology, IPFW, ET 221 C, 481-6370. leffersr@ipfw.edu

Location:

Meeting Time:

Required Texts:

*The Green Age: Transforming Your Life for the 21st Century*, a manuscript written by Matt Kubik, Architect and Regina Leffers, Ph.D. (Submitted for publication)

*Issues In Sustainability and Technology: A World Perspective* (a manuscript currently being written by IPFW faculty members and graduate students), P. Ashton, A. Bourne, R. Curia, R. Duchovic, B. Dupen, M. Kubik, R. Leffers, T. Light, J. Mohammed, S. Nawaz, R. Pablo, and A. Tun.

*United States Sustainability Primer*, available online at: www.naturalstepusa.org

Course Purpose:

This Area VI general education course is appropriate for all students across disciplines who have completed the first two years of their degree program.

During the process of working on this project, the general education criteria for Area VI will be satisfied in the following way. Students will be required to plan, conduct research, and present. The project is to produce a sustainability report on the IPFW campus. Students will look specifically at campus greenhouse gas emissions produced, energy use, waste streams, and water use. In order to do that, students will read material that will assist them in understanding the problem, investigate how our IPFW campus contributes to that problem, conduct research to find potential ways to solve the problem, synthesize the material in order to produce a written report and present their findings. They will also implement one campus initiative to change one thing that will make the campus more sustainable.

Students will be synthesizing material from several different disciplines. In order to understand how to create a sustainability report, they will learn about the practical implications of the second law of thermodynamics for our material world (physics), combined with information about ecosystems and the conditions necessary to support human life (biology), building energy and structural systems (technology), and energy, water, and waste streams. They will be looking at spreadsheets that detail the energy use of our campus buildings and will calculate the carbon footprint (mathematics/quantitative reasoning), will learn about the changes that can be made that would affect that footprint, and will think critically about those changes to figure out what is most important to address first.

Students will be utilizing the two specific books required for this course, along with a web-based book called *The Natural Step* and will learn how to use a technique called “backcasting,” and will use this to plan their
project. They will also be working with spreadsheets detailing energy use of campus buildings and will talk with the Director of Buildings and Grounds, Jay Harris, to hear about what has been done to increase the energy efficiency of the campus thus far, and to assist them in understanding some potential next steps.

Their presentation has been submitted for consideration to the United States Green Build Convention, to be held in November of 2010 in Chicago. Their presentation will also be filmed by channel five so that it can be shown on campus access television.

Expected Course Outcomes:

1. Possess an appropriate mastery of the issues and concepts involved in sustainability.
2. Demonstrate the ability to plan, conduct, analyze, and interpret their research.
3. Demonstrate quantitative reasoning ability.
4. Apply creativity in the design of their response to the problem being addressed.
5. Function effectively on teams.
6. Demonstrate the ability to identify, analyze, and solve problems, as well as to construct arguments and consider the arguments of others.
7. Communicate effectively, in both written and oral work.
8. Understand the need for and demonstrate the ability to engage in lifelong learning, through problem solving and ability to apply theory.
9. Understand professional, ethical, and social responsibilities.
10. Develop a respect for diversity and knowledge of contemporary professional, societal, and global issues.
11. Have a commitment to quality, timeliness, and continuous improvement.
WEEK 1: Course Overview

Reading: Issues in Sustainability and Technology (IS&T), Technology, Sustainability, and Civic Responsibility, Duchovic

- Course introductions
- Course readings,
- Lecture format,
- Basic course guidelines, rules and regulations,
- Course philosophy, knowledge and educational goals,
- Assessment structure
- Student short introductions

WEEK 2: The Context of Sustainability

Readings: IS&T, The Energy Dilemma, Nawaz

IS&T, Climate Change/Global Warming: A Challenge towards Sustainability, Nawaz

WEEK 3: Continued Context of Sustainability

Readings: IS&T, Population, Urban Ecology, and Emerging Energy Technologies, Bourne

IS&T, Population and the Future of World Food, Bourne

WEEK 4: Continued Context of Sustainability

Readings: The Green Age (TGA), Chapters 5, 6, & 7, Kubik and Leffers

IS&T, Worldwide Water Resources, Consumption, and Sustainability, Light

WEEK 5: Continued Context of Sustainability

Readings: IS&T, Material Resources and Transportation, Dupen

IS&T, Sustainable Systems for Energy Generation, Mohammed

WEEK 6: Strategies for Sustainability

Readings: IS&T, Designing for Sustainability, Kubik

IS&T, Moving Toward a Sustainable Future: Making Change, Ashton and Leffers
WEEK 7: IPFW Campus: Current use

Readings:  *TGA, Chapters 1, 2, 3, & 4, Kubik and Leffers*

  Building energy use—reading the spreadsheets
  Building water use—reading the spreadsheets
  Material waste—reading the spreadsheets

WEEK 8: IPFW Campus: Measures implemented

Readings:  *TGA, Chapters 8, 9, 10, & 11, Kubik and Leffers*

  Jay Harris: Energy, water, material waste sustainability strategies that have already been implemented on campus.

  Explanation of electricity—what measures it, what uses it, what saves is?
  Explanation of water—what measures it, what uses it, what saves it?
  Explanation of material waste—what measures it, where does it go, what prevents it?

WEEK 9: Answering the Call to Sustain

Readings:  *The Natural Step*

  Students create and issue sustainability questionnaire
  Students decide on the sustainability initiative they will implement

WEEK 10: Answering the Call to Sustain

  Students conduct research and collaborate to develop IPFW Sustainability Report
  Students work on sustainability initiative

WEEK 11: Answering the Call to Sustain

  Students conduct research and collaborate to develop IPFW Sustainability Report
  Students work on sustainability initiative

WEEK 12: Answering the Call to Sustain

  Students conduct research and collaborate to develop IPFW Sustainability Report
Students work on sustainability initiative

WEEK 13: Answering the Call to Sustain

Students conduct research and collaborate to develop IPFW Sustainability Report
Students work on sustainability initiative

WEEK 14: Answering the Call to Sustain

Students complete IPFW Sustainability Report
Students complete sustainability initiative

WEEK 15: Student Project Report