

REQUEST FOR ADDITION, EXPIRATION,
OR REVISION OF AN UNDERGRADUATE COURSE
(10000-40000 LEVEL)

EFD 29-12

DEPARTMENT Agricultural and Biological Engineering EFFECTIVE SESSION Spring

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

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

| | | |
|--|---|---|
| PROPOSED: Subject Abbreviation <input type="text"/> Course Number <input type="text"/> Long Title <u>Thermodynamics Principles of Engineering and Biological Systems</u> Short Title <input type="text"/> <small>Abbreviated title will be entered by the Office of the Registrar if omitted. (30 CHARACTERS ONLY)</small> | EXISTING: Subject Abbreviation <u>ABE</u> Course Number <u>21000</u> | TERMS OFFERED Check All That Apply: <input type="checkbox"/> Summer <input type="checkbox"/> Fall <input checked="" type="checkbox"/> Spring CAMPUS(ES) INVOLVED <input type="checkbox"/> Calumet <input type="checkbox"/> N. Central <input type="checkbox"/> Cont Ed <input type="checkbox"/> Tech Statewide <input type="checkbox"/> Ft. Wayne <input checked="" type="checkbox"/> W. Lafayette <input type="checkbox"/> Indianapolis |
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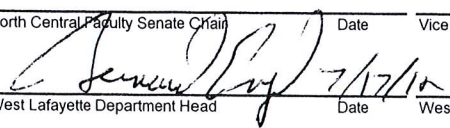
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|---|--|---|
| CREDIT TYPE 1. Fixed Credit: Cr. Hrs. <input type="text"/> 2. Variable Credit Range: <input type="text"/> Minimum Cr. Hrs. <input type="text"/> (Check One) To <input type="checkbox"/> Or <input type="checkbox"/> Maximum Cr. Hrs. <input type="text"/> 3. Equivalent Credit: Yes <input type="checkbox"/> No <input type="checkbox"/> | COURSE ATTRIBUTES: Check All That Apply 1. Pass/Not Pass Only <input type="checkbox"/> 2. Satisfactory/Unsatisfactory Only <input type="checkbox"/> 3. Repeatable <input type="checkbox"/> Maximum Repeatable Credit: <input type="text"/> 4. Credit by Examination <input type="checkbox"/> 5. Fees <input type="checkbox"/> Coop <input type="checkbox"/> Lab <input type="checkbox"/> Rate Request <input type="checkbox"/> Include comment to explain fee <input type="text"/> | 6 Registration Approval Type <input type="checkbox"/> Department <input type="checkbox"/> Instructor <input type="checkbox"/> 7 Variable Title <input type="checkbox"/> 8 Honors <input type="checkbox"/> 9 Full Time Privilege <input type="checkbox"/> 10 Off Campus Experience <input type="checkbox"/> |
|---|--|---|

| Schedule Type | Minutes Per Mtg | Meetings Per Week | Weeks Offered | % of Credit Allocated | Cross-Listed Courses |
|---------------|-----------------|-------------------|---------------|-----------------------|----------------------|
| Lecture | 50 | 3 | 16 | 100% | |
| Recitation | | | | | |
| Presentation | | | | | |
| Laboratory | | | | | |
| Lab Prep | | | | | |
| Studio | | | | | |
| Distance | | | | | |
| Clinic | | | | | |
| Experiential | | | | | |
| Research | | | | | |
| Ind. Study | | | | | |
| Pract/Observ | | | | | |

COURSE DESCRIPTION (INCLUDE REQUISITES/RESTRICTIONS):
 Application of thermodynamic principles to the design and operation of biological and engineering systems. The focus is on mass and energy balances for non-reacting processes and on the second law of thermodynamics. These principles are applied to biological and agricultural engineering systems. specific topics include refrigeration systems, power cycles, energy conversion systems, and environmental impacts of energy production.

Prerequisites: CHM 11500 and PHYS 17200

***COURSE LEARNING OUTCOMES**
 An ability to apply knowledge of mathematics, science, and engineering. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economics, environmental, social, political, ethical, health and safety, manufacturability, and sustainability. An ability to function on multidisciplinary teams. An ability to identify, formulate, and solve engineering problems. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context. A knowledge of contemporary issues. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

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| Calumet Department Head | Date | Calumet School Dean | Date |
| Fort Wayne Department Head | Date | Fort Wayne School Dean | Date |
| Indianapolis Department Head | Date | Indianapolis School Dean | Date |
| North Central Faculty Senate Chair | Date | Vice Chancellor for Academic Affairs | Date |
|  | Date | West Lafayette College/School Dean | Date |
| West Lafayette Department Head | Date | West Lafayette Registrar | Date |

TO: The Faculty of the College of Engineering
FROM: The Faculty of Agricultural and Biological Engineering
RE: Change to existing course ABE 21000 title and description

The faculty of the Department of Agricultural and Biological Engineering has approved the following changes to an existing course. This action is now submitted to the Engineering Faculty with a recommendation for approval.

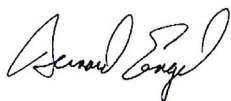
From: ABE 21000 Biological Applications of Material and Energy Balances
 Sem. 2, Class 3, Cr. 3.
 Prerequisites: CHM 11500 or equivalent and PHYS 17200 or equivalent.
 Typically offered Spring.

Description: Applications of material energy balances to biological and engineering systems; development of a framework for the analysis of biological systems from an engineering perspective. Introduction to applications of the first and second laws of thermodynamics to biological and mechanical engineering systems. Topics include refrigeration systems, power cycles, energy conversion systems, and environmental impacts of energy production.

To: ABE 21000 Thermodynamic Principles of Engineering and Biological Systems
 Sem. 2, Class 3, Cr. 3.
 Prerequisites: CHM 11500 and PHYS 17200. Normally offered Spring.

Description: Application of thermodynamic principles to the design and operation of biological and engineering systems. The focus is on mass and energy balances for non-reacting processes and on the second law of thermodynamics. These principles are applied to biological and agricultural engineering systems. Specific topics include refrigeration systems, power cycles, energy conversion systems, and environmental impacts of energy production.

Reason: There are no major changes to the content of the course. The new title and description more accurately reflect the course content as it has been taught for the past several years. The former title and description led to misunderstandings regarding course content and objectives on the part of students. This change should reduce the likelihood of such misunderstandings.



Bernard A. Engel, Professor and Head
 Agricultural and Biological Engineering Department

APPROVED FOR THE FACULTY
 OF THE SCHOOLS OF ENGINEERING
 BY THE ENGINEERING
 CURRICULUM COMMITTEE

ECC Minutes _____

Date

7/30/2012

Chairman ECC

R. Cipra