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

DEPARTMENT: Agricultural and Biological Engineering
EFFECTIVE SESSION: Spring

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. Expiration of a course
4. Change in course number
5. Change in course title
6. Change in course credit/transfer
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:
Subject Abbreviation: ABE
Course Number: 21000
Long Title: Thermodynamics Principles of Engineering and Biological Systems
Short Title: Thermodynamics Principles of Engineering and Biological Systems

EXISTING:
Subject Abbreviation: ABE
Course Number: 21000

TERMS OFFERED
Summer: ___ Fall: ___ Spring: [ ]
CAMPUS(ES) INVOLVED
Calumet: [ ] Cont Ed: [ ] Ft. Wayne: [ ] Tech Statewide: [ ] W. Lafayette: [ ]
Indianapolis: [ ]

CREDIT TYPE
1. Fixed Credit: Cr. Hrs.
2. Variable Credit Range: Minimum Cr. Hrs: ______ (Check One) To ______ Or ______
Maximum Cr. Hrs: ______
3. Equivalent Credit: Yes [X] No [ ]

COURSE ATTRIBUTES: Check All That Apply
1. Pass/No Pass Only
2. Satisfactory/Insatisfactory Only
3. Repeatable
4. Maximum Repeatable Credit: ______
5. Credit by Examination
6. Registration Approval Type: Department [ ] Instructor [ ]
7. Variable Title
8. Honors
9. Full Time Privilege
10. Off Campus Experience
Include comment to explain fee:

Schedule Type
Lecture: minutes Per Mtg.
Recitation: 
Presentation: 
Laboratory: 
Lab Prep: 
Studio: 
Distance: 
Clinic: 
Experiential: 
Research: 
Ind. Study: 
Prac/Observ: 

Webs: 16
% of Credit: 100%

OFFICE OF THE REGISTRAR

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.

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:

West Lafayette Department Head: Date: West Lafayette College/School Dean: 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