

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

EFD 36-11

DEPARTMENT School of Chemical Engineering SESSION spring 2012 (2012-20)

INSTRUCTIONS: Please check all that apply.

<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 checked="" 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 type="checkbox"/> 5. Change in course title	<input type="checkbox"/> 11. Change in semesters offered (department head signature only)
<input checked="" type="checkbox"/> 6. Change in course credit/type	<input type="checkbox"/> 12. Transfer from one department to another

PROPOSED: Subject Abbreviation <input type="text"/>	EXISTING: Subject Abbreviation <u>CHE</u>	TERMS OFFERED Check All That Apply: <input type="checkbox"/> Summer <input type="checkbox"/> Fall <input checked="" type="checkbox"/> Spring
Course Number <input type="text"/>	Course Number <u>45000</u>	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
Long Title <input type="text"/>	Abbreviated title will be entered by the Office of the Registrar if omitted. (30 CHARACTERS ONLY)	
Short Title <input type="text"/>		

CREDIT TYPE	COURSE ATTRIBUTES: Check All That Apply
1. Fixed Credit: Cr. Hrs.	1. Pass/Not Pass Only <input type="checkbox"/>
2. Variable Credit Range: Minimum Cr. Hrs. <input type="text"/> To <input type="checkbox"/> Or <input type="checkbox"/> Maximum Cr. Hrs. <input type="text"/>	2. Satisfactory/Unsatisfactory Only <input type="checkbox"/>
3. Equivalent Credit: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	3. Repeatable <input type="checkbox"/>
	4. Credit by Examination <input type="checkbox"/>
	5. Special Fees <input type="checkbox"/>
	6. Registration Approval Type <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	Min Per Mig	Week	Weeks Offered	% of Credit Allocated
Lecture	5U		3	16
Recitation				7b
Presentation				
Laboratory	1TU		1	16
Lab Prep				25
Studio				
Distance				
Clinic				
Experiential				
Research				
Ind. Study				
Pract/Observ				

2011 FEB 21 AM 9:19
RECEIVED
OFFICE OF THE REGISTRAR

COURSE DESCRIPTION (INCLUDE REQUISITES/RESTRICTIONS):
 Restrictions: Must be enrolled in the School of Chemical Engineering
 Prerequisites: CHE 30600, 37800
 Concurrent Pre-req: CHE 43500
 Use of process and product synthesis methods and concepts; detailed design of unit operation equipment, the economics of chemical plants and flow sheet optimization methods. Synthesize, develop, and evaluate a preliminary design of a chemical process that meets market requirements for a specific product. Analysis of design alternatives using case studies and optimization methods.

***COURSE LEARNING OUTCOMES**

1. Apply systematic strategies for synthesizing chemical process designs that involve conventional unit operations (1, 3).
2. Understand the difference between steady state and batch chemical processes and the implication on their design and operation (1, 3).
3. Know where and how to obtain information on industrial chemical processes, process operating parameters, equipment costs, cost of chemicals and materials, and associated safety and environmental hazards (6, 8, 9).
4. Understand the role of physical property estimates on process design and be able to use appropriate physical property estimation methods in unit operations design (1, 2, 3, 5).
5. Estimate the capital and operating cost of a process and to assess its profitability (1, 8).
6. Perform detailed hands-on work with tools that ultimately lead to the design of a chemical plant (1, 5).
7. Communicate project progress and final results in a professional manner orally and in written form (7).
8. Work effectively in a team to execute open-ended design projects with time-bound deliverables in a professional and ethical manner (1, 3, 4, 6, 9).

Calumet Department Head	Date	Calumet School Dean	Date
Fort Wayne Department Head	Date	Fort Wayne School Dean	Date

Sandra Schaffner
2/23/12

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DEPARTMENT: School of Chemical Engineering SESSION: spring 2012 (2012-20)

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PROPOSED: Subject Abbreviation: _____ Course Number: _____ Long Title: _____ Short Title: _____	EXISTING: Subject Abbreviation: CHE Course Number: 45000	TERMS OFFERED Check All That Apply: <input type="checkbox"/> Summer <input type="checkbox"/> Fall <input checked="" type="checkbox"/> Spring
Abbreviated title will be entered by the Office of the Registrar if omitted. (30 CHARACTERS ONLY)		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

CREDIT TYPE 1. Fixed Credit: Cr. Hrs. 2. Variable Credit Range: Minimum Cr. Hrs _____ (Check One) To <input type="checkbox"/> Or <input type="checkbox"/> Maximum Cr. Hrs _____ 3. Equivalent Credit: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> 4	1. Pass/Not Pass Only 2. Satisfactory/Unsatisfactory Only 3. Repeatable Maximum Repeatable Credit: _____ 4. Credit by Examination Social Fees _____	COURSE ATTRIBUTES: Check All That Apply 6 Registration Approval Type Department <input type="checkbox"/> Instructor <input type="checkbox"/> 7 Variable Title 8 Honors 9 Full Time Privilege 10 Off Campus Experience
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Presentation					
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Clinic					
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Pract/Observ					

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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
<i>A Varney</i>	12/7/2010	<i>[Signature]</i>	<i>[Signature]</i>
West Lafayette Department Head	Date	West Lafayette College/School Dean	Date
		West Lafayette Registrar	Date

OFFICE OF THE REGISTRAR

To: The Faculty of the College of Engineering

From: The Faculty of the School of Chemical Engineering

Re: Change of existing CHE 45000 from 2 credit hours to 4 credit hours resulting in a change in description and requisites.

The faculty of the School of Chemical Engineering has approved the following change and submits it for your approval.

From:

CHE 45000 - Design And Analysis Of Processing Systems

Sem 2, Class 1, problem lab. 2, cr. 2

Prerequisites: CHE 44900

Corequisite: CHE 43500

Synthesize, develop, and evaluate a preliminary design of a chemical process that meets market requirements for a specific product. Analysis of design alternatives using case studies and optimization methods.

To:

CHE 45000 - Design And Analysis Of Processing Systems

Sem 2, Class 3, Lab 2, Cr. 4

Restrictions: Must be enrolled in the School of Chemical Engineering

Prerequisites: CHE 30600, 37800

Concurrent Pre-req: CHE 43500

Use of process and product synthesis methods and concepts; detailed design of unit operation equipment, the economics of chemical plants and flow sheet optimization methods. Synthesize, develop, and evaluate a preliminary design of a chemical process that meets market requirements for a specific product. Analysis of design alternatives using case studies and optimization methods.

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

ECC Minutes #10

Date 2/2/2011

Chairman ECC R. Cipra

Reason: In light of the removal of CHE 44900 and the consolidation of senior design back into one course, CHE 45000 will become 4 credit hours to incorporate all relevant material. This will allow for three lectures per week to cover material as well as 2 hours of lab per week for the actual design project.

A Varma

A. Varma, Head
School of Chemical Engineering
12/5/10

CHE 450 Design And Analysis Of Processing Systems (current)

Level: Undergraduate

Course Instructors: Professors R. Agrawal, J. Pekny, G. Reklaitis, and V. Venkatasubramanian

Textbook: Products and Process Design Principles – Synthesis, Analysis and Evaluation, W. D. Seider, J. D. Seader & D. R. Lewin, J. Wiley & Sons, 2004.

Course Outline:

<i>Topics</i>	<i>Lectures</i>
1. Course Introduction	1
2. Adv. material & energy balances for process flow sheets w. recycle	2
3. Synthesis and design of process flow sheets	6
4. Advanced equipment costing	4
5. Process flow sheet economic evaluation	4
6. Advanced Aspen simulation methods	8
7. Exams	3
Total	28

Course Objectives:

Synthesize, develop, and evaluate a preliminary design of a chemical process that meets market requirements for a specific product.

Course Outcomes: (numbers in parentheses refer to related program educational objective)

1. Apply systematic strategies for synthesizing chemical process designs that involve conventional unit operations (1, 3).
2. Create process flow sheet through conceptualization, process synthesis, process design and assessment (1, 3, 5).
3. Know where and how to obtain information on industrial chemical processes, process operating parameters, equipment costs, cost of chemicals and materials, and associated safety and environmental hazards (8, 9).
4. Estimate the capital and operating cost of a process and to assess its profitability (1,8).

5. Communicate project progress and final results in a professional manner orally and in written form (7).
6. Work effectively in a team to execute open-ended design projects with time-bound deliverables in a professional and ethical manner (1, 3, 4, 6, 9).

Assessment Methods for Course Outcomes: Each of the outcomes will be assessed by giving the students the appropriate homework problems, exams, team projects, and peer evaluation

CHE 450 Design And Analysis Of Processing Systems (proposed)

Level: Undergraduate

Course Instructors: Professors R. Agrawal, J. Pekny, G. Reklaitis, and V. Venkatasubramanian

Textbook: Products and Process Design Principles – Synthesis, Analysis and Evaluation, W. D. Seider, J. D. Seader & D. R. Lewin, J. Wiley & Sons, 2004.

Course Outline:

<i>Topics</i>	<i>Lectures</i>
1. Course Introduction	1
2. Process and Product Synthesis methods, concepts and heuristics	6
3. Adv. material & energy balances for process flow sheets w. recycle	2
4. Design of major unit operation equipment	4
5. Synthesis and design of process flow sheets	6
6. Cost accounting and capital cost estimation	4
7. Advanced equipment costing	4
8. Process flow sheet economic evaluation	4
9. Advanced Aspen simulation methods	8
10. Exams	3
Total	42

Course Objectives

To understand process and product synthesis methods and concepts; detailed design of unit operation equipment, the economics of chemical plants and flow sheet optimization methods; synthesize, develop, and evaluate a preliminary design of a chemical process that meets market requirements for a specific product.

Course Outcomes (numbers in parentheses refer to related program educational objective)

1. Apply systematic strategies for synthesizing chemical process designs that involve conventional unit operations (1, 3).

2. Understand the difference between steady state and batch chemical processes and the implication on their design and operation (1, 3).
3. Know where and how to obtain information on industrial chemical processes, process operating parameters, equipment costs, cost of chemicals and materials, and associated safety and environmental hazards (6, 8, 9).
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