Office of the Registrar
FORM 40 REV. 7/08

EFD 68-07

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

DEPARTMENT: School of Chemical Engineering | EFFECTIVE SESSION: Fall 2010

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

- [x] 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/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:		EXISTING:	
Subject Abbreviation	CHE	Subject Abbreviation	
Course Number	44900	Course Number	
Long Title	Fundamental Process Design		
Short Title	Fund Process Design		

Abbreviated title will be entered by the Office of the Registrar if omitted. (30 CHARACTERS ONLY)

TERMS OFFERED (Check All That Apply): [ ] Summer [x] Fall [ ] Spring

CAMPUS(ES) INVOLVED: [ ] Calumet [ ] Cont Ed [ ] Ft. Wayne [ ] Indianapolis [ ] N. Central [ ] Tech Statewide [x] W. Lafayette

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 [x]

COURSE ATTRIBUTES: Check All That Apply

1. Pass/Not Pass Only [ ]
2. Satisfactory/Unsatisfactory Only [ ]
3. Repeatable [ ] Maximum Repeatable Credit: [ ]
4. Credit by Examination [ ]
5. Special Fees [ ]
6. Registration Approval Type: Department [ ] Instructor [ ]
7. Variable Title [ ]
8. Honors [ ]
9. Full Time Privilege [ ]
10. Off Campus Experience [ ]

Schedule Type	Minutes Per Mtg	Meetings Per Week	Weeks Offered	% of Credit Allocated
Lecture	3	50	16	100%
Recitation				
Presentation				
Laboratory				
Shop				
Distance				
Clinic				
Experiential				
Research				
Ind. Study				
Pract/Observ				

Cross-Listed Courses

COURSE DESCRIPTION (INCLUDE REQUISITES/RESTRICTIONS):

Prerequisite: CHE 378 Corequisites: CHE 306, CHE 348 For CHE students only.
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.

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 Department Head	Date	North Central Chancellor	Date
West Lafayette Department Head: [signature]	Date: 8-15-08	West Lafayette College/School Dean: [signature]	Date: 9/9/08
West Lafayette Registrar: [signature]	Date: 12/17/08		

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OFFICE OF THE REGISTRAR

12/16/08


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North Central Department Head	Date	North Central Chancellor	Date
West Lafayette Department Head: [signature]	Date: 8-15-08	West Lafayette College/School Dean: [signature]	Date: 9/9/08
		West Lafayette Registrar	Date

OFFICE OF THE REGISTRAR

Engineering Faculty Document No. 68-07
March 5, 2008

To: Faculty of the College of Engineering

From: Faculty of the School of Chemical Engineering

RE: New Design Course numbered CHE 449

The faculty of the School of Chemical Engineering has approved the following new course. This action is now submitted to the Engineering Faculty with a recommendation for approval.

CHE 449 Fundamental Process Design
Sem 1, Class 3, cr. 3
Prerequisites: CHE 378
Corequisites: CHE 306, CHE 348

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.

Rationale: In order to incorporate cost analysis information into the senior design course, as well as further expand the information taught in senior design, there will now be a two semester design course sequence with CHE 449 taught in the fall and CHE 450 still in the spring.

A. Varma, Head
School of Chemical

APPROVED FOR THE FACULTY
OF THE SCHOOLS OF ENGINEERING
BY THE ENGINEERING
CURRICULUM COMMITTEE
ECC Minutes #25
Date 5/9/08
Chairman ECC

Supporting Documentation – CHE 449

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

Week(s)	*Topic*
1-3	Process and Product Synthesis methods, concepts and heuristics
4-5	Process synthesis incl. introduction to algorithmic methods
6-7	Design of major unit operation equipment
8-9	Cost accounting and capital cost estimation
10-11	Flow sheet optimization methods
12	Design of batch and continuous processes
13-14	ASPEN simulation methods
15	Review

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.

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).
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).

Assessment of Course Outcomes: Each of the outcomes will be assessed by giving the students appropriate assignments and exams.