**PURDUE UNIVERSITY**

**REQUEST FOR ADDITION, EXPIRATION, OR REVISION OF AN UNDERGRADUATE COURSE**

**(10000-40000 LEVEL)**

**DEPARTMENT:** School of Chemical Engineering  
**EFFECTIVE SESSION:** Fall 2016

**PROPOSED:**

- Subject Abbreviation: CHE  
- Course Number: 45000  
- Long Title: Design and Analysis of Processing Systems

**EXISTING:**

- Subject Abbreviation:  
- Course Number:  
- Short Title: Des and Analysis of Proc Sys

**TERMS OFFERED:**

- Check All That Apply:  
  - Summer  
  - Fall  
  - Spring

**CAMPUS(ES) INVOLVED:**

- Calumet
- Cont Ed
- Ft. Wayne
- Indianapolis
- N. Central
- Tech Statewide
- W. Lafayette

**CREDIT TYPE:**

<table>
<thead>
<tr>
<th>1. Fixed Credit: Cr. Hrs.</th>
<th>2. Variable Credit Range:</th>
<th>3. Equivalent Credit:</th>
</tr>
</thead>
<tbody>
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<td>2</td>
<td></td>
<td>Yes</td>
</tr>
</tbody>
</table>

**REGISTRATION:**

- Pass/Not Pass Only
- Satisfactory/Unsatisfactory Only
- Repeatability
- Credit by Examination
- Special Fee

**COURSE ATTRIBUTES:**

- 6 Registration Approval Type
- Department
- Instructor
- 7 Variable Title
- 8 Honors
- 9 Full Time Privilege
- 10 Off Campus Experience

**SCHEDULE TYPE:**

- Lecture
- Recitation
- Presentation
- Lab/Study
- Dist Pract
- Clinic
- Experiential
- Research
- Inc. Study
- Pract/Observ

<table>
<thead>
<tr>
<th>Minutes Per Mth</th>
<th>Meetings Per Week</th>
<th>Weeks Offered</th>
<th>% of Credit Allocated</th>
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<tr>
<td>0</td>
<td>50</td>
<td>16</td>
<td>33%</td>
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**Course Description (Include Prerequisites/Restrictions):**

Prerequisite: CHE 449  Corequisite: CHE 435  For CHE students only.

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.

**OFFICE OF THE REGISTRAR**

Calumet Department Head  
Calumet School Dean  
Date  
Date

Fort Wayne Department Head  
Fort Wayne School Dean  
Date  
Date

Indianapolis Department Head  
Indianapolis School Dean  
Date  
Date

North Central Department Head  
North Central Chancellor  
Date  
Date

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

West Lafayette Registrar  
Date  
12/16/2008
**Course Title**: Design and Analysis of Processing Systems

**Short Title**: Des and Analysis of Proe Sys

**Subject Abbreviation**: CHE

**Course Number**: 45000

**Effective Session**: Fall 2016

**EFFECTIVE SESSION**

**TERMS OFFERED**

- Summer
- Fall [✔]
- Spring

**CAMPUS(ES) INVOLVED**

- Calumet
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- Ft. Wayne [✔]
- Tech Statewide
- Indianapolis
- W. Lafayette

**COURSE ATTRIBUTES**

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- Department [☐]
- Instructor [☐]
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**COURSE DESCRIPTION (INCLUDE REQUISITES/RESTRICTIONS)**

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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: Faculty of the College of Engineering

From: Faculty of the School of Chemical Engineering

RE: Removal of 1 credit hour from CHE 450

The faculty of the School of Chemical Engineering has approved the following changes to CHE 450. This action is now submitted to the Engineering Faculty with a recommendation for approval.

From:

**CHE 450 Design And Analysis Of Processing Systems**
Sem 2, Class 2, problem lab. 2, cr. 3
Prerequisites: CHE 306, 348, 378
Corequisite: CHE 435

Use of flowsheet balance calculations, chemical kinetics and thermodynamics, and transfer operations in designing chemical processing systems. Analysis of design alternatives using case studies and optimization methods.

To:

**CHE 450 Design And Analysis Of Processing Systems**
Sem 2, Class 1, problem lab. 2, cr. 2
Prerequisites: CHE 449
Corequisite: CHE 435

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.

**Rationale:** With the creation of CHE 449, there will now be a two semester design course sequence. There is only a need for this course to be 2 credit hours.

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

ECC Minutes 
Date 5/9/08
Chairman ECC

A. Varma, Head
School of Chemical Engineering
Date: 3/5/08
Supporting Documentation – CHE 450

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

Course Outline:

Week(s)
Topics
1     Course Introduction
2-3   Adv. material & energy balances for process flow sheets with recycle
4-6   Synthesis and design of process flow sheets
7-8   Advanced equipment costing
9-10  Process flow sheet economic evaluation
11-15 Advanced ASPEN simulation methods

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