The addition or removal of any graduation requirement in a major requires that this form, accompanied by any supporting documentation, be completed and approved as indicated below.

College/School: Engineering
Department: Chemical Engineering

Degree level: Bachelor's
Program title: Chemical Engineering

To be initiated with catalog year 2006/2007

Brief description of requested changes (attach a more detailed description and any supporting documentation)

See attached memorandum.

APPROVALS

On completion of appropriate department approvals, submit form to Chair, Graduate Council, or Chair, Undergraduate Curriculum Committee, for approval below and forward to the Office of the Registrar.

Originator: P. A. Jennings
Date: 4/11/05

Chair, Graduate Council
Date

Department Head/Program Chair: P. A. Jennings
Date: 4/11/05

OR

Dean or Associate Dean
Date: 4/12/05

Chair, Undergraduate Curriculum Committee
Date

Registrar's Use Only
Operator Init Date

Distribution: Original – Registrar
Copy – Academic Unit/SEGS
The Department of Chemical Engineering wishes to submit the following changes in the B.S. level curriculum (7033) for approval and inclusion in the 2006-2007 catalog. The changes are designed to: (1) implement the quality enhancement plan submitted to ABET in 2003; and (2) reduce the credit hours of “deficiency” coursework required for graduate students with undergraduate degrees in areas other than Chemical Engineering.

The focus of the quality enhancement plan was the laboratory component of the curriculum. It includes (1) moving laboratory experiments from the senior laboratory course (CHE 4105 - Unit Operations Laboratory) to six junior/senior-level courses; (2) adding additional experiments to those courses; and (3) creating a senior course that would emphasize design of experiments, rather than simple performance of [“canned”] experiments. Implementation of this plan was begun in the 2004-2005 academic year. Although originally designed to be implemented with no change in course numbering (only changes in course content), concern has been raised that a major change in content (and catalog description) of courses should be accompanied by change in course number. The new courses being presented for approval address that concern.

There are no changes proposed for the first two years of the curriculum. In the Fall of the Third Year, two changes are being proposed. The current four-credit-hour course, CHE 3131 - Transfer Processes 1, is being replaced with the three-credit-hour CHE 3101 - Transport Processes (existing “inactive” course, which will be reactivated with the same course description and prerequisites) and a new one-credit-hour laboratory/project course CHE 3105 - Transport Processes Laboratory. The current two-credit-hour course, CHE 3141 - Process Modeling Principles, is being dropped from the curriculum. [Much of the material in that course is to be included in a new senior-level elective course, CHE 4240 - Advanced Computational Methods for Engineering Applications.] It is being replaced in the Fall curriculum by a Restricted Elective (engineering) currently located in the Spring of the Fourth Year.

In the Spring of the Third Year, two changes are being proposed. The current four-credit-hour course, CHE 3132 - Transfer Processes 2, is being replaced with a new three-credit-hour CHE 3103 - Heat Transfer Processes and a new one-credit-hour laboratory/project course CHE 3106 - Heat Transfer Laboratory. The current four-credit-hour course, CHE 4122 - Chemical Process Control, is being moved to Fall of the Fourth Year and being replaced by the three-credit-hour CHE 4151 - Chemical Reactor Design (currently offered in the Fall of the Fourth Year).

In the Fall of the Fourth Year, three changes are being proposed. The current three-credit-hour course, CHE 4131 - Separation Processes, is being replaced with the three-credit-hour CHE 4104 - Mass Transfer and Separation Processes and a new one-credit-hour laboratory/project course
CHE 4106 - Mass Transfer and Separations Laboratory. The current three-credit-hour course, CHE 4151 - Chemical Reactor Design is being moved to Spring of the Third Year and being replaced by the four-credit-hour CHE 4122 - Chemical Process Control (currently offered in the Spring of the Third Year. The two-credit-hour laboratory course CHE 4105 - Unit Operations Laboratory is being dropped from the curriculum. [A new senior-level elective course, CHE 4285 - Design of Experiments is being developed to supplement the new laboratory courses in the curriculum.]

In the Spring of the Fourth Year, a new Restricted Elective (CHE) is replacing the Restricted Elective (Engineering) moved to the Fall of the Third Year. There is no net change in total credit hours required in the curriculum.

Changes are summarized on the attached curriculum listing. Deleted courses are indicated in italics and strike-through. New courses are indicated in bold. Relocated courses are indicated in italics.

Note: some other existing courses in the curriculum will require changes in prerequisites in catalog course listings, but will not require changes in descriptions or course numbering.
### BACHELOR OF SCIENCE in CHEMICAL ENGINEERING (7033)

#### 2006-2007 Catalog

**YEAR 1 -- Fall**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUS 1301</td>
<td>Intro to Economics</td>
<td>3</td>
</tr>
<tr>
<td>CHE 1101</td>
<td>Intro to Chemical Engineering</td>
<td>2</td>
</tr>
<tr>
<td>CHM 1101</td>
<td>General Chemistry 1</td>
<td>4</td>
</tr>
<tr>
<td>COM 1101</td>
<td>Composition and Rhetoric</td>
<td>3</td>
</tr>
<tr>
<td>MTH 1001</td>
<td>Calculus 1</td>
<td>4</td>
</tr>
</tbody>
</table>

Total Credits: 16

**YEAR 1 -- Spring**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHE 1102</td>
<td>Intro to Chemical Engineering 2</td>
<td>1</td>
</tr>
<tr>
<td>CHM 1102</td>
<td>General Chemistry 2</td>
<td>4</td>
</tr>
<tr>
<td>COM 1102</td>
<td>Writing About Literature</td>
<td>3</td>
</tr>
<tr>
<td>MTH 1002</td>
<td>Calculus 2</td>
<td>4</td>
</tr>
<tr>
<td>PHY 1001</td>
<td>Physics 1</td>
<td>4</td>
</tr>
<tr>
<td>PHY 2091</td>
<td>Physics Laboratory 1</td>
<td>1</td>
</tr>
</tbody>
</table>

Total Credits: 17

**YEAR 2 -- Fall**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHE 2101</td>
<td>Chemical Process Principles 1</td>
<td>3</td>
</tr>
<tr>
<td>CHM 2001</td>
<td>Organic Chemistry 1</td>
<td>3</td>
</tr>
<tr>
<td>CHM 2011</td>
<td>Organic Chemistry Laboratory 1</td>
<td>2</td>
</tr>
<tr>
<td>MTH 2201</td>
<td>Differential Equations</td>
<td>4</td>
</tr>
<tr>
<td>PHY 2002</td>
<td>Physics 2</td>
<td>4</td>
</tr>
<tr>
<td>PHY 2092</td>
<td>Physics Laboratory 2</td>
<td>1</td>
</tr>
</tbody>
</table>

Total Credits: 17

**YEAR 2 -- Spring**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHE 2102</td>
<td>Chemical Process Principles 2</td>
<td>3</td>
</tr>
<tr>
<td>CHE 3260</td>
<td>Materials Science and Engineering</td>
<td>3</td>
</tr>
<tr>
<td>CHE 3265</td>
<td>Materials Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>CHM 2002</td>
<td>Organic Chemistry 2</td>
<td>3</td>
</tr>
<tr>
<td>HUM 2051</td>
<td>Civilization I: Ancient - Medieval</td>
<td>3</td>
</tr>
<tr>
<td>MTH 2001</td>
<td>Calculus 3</td>
<td>4</td>
</tr>
</tbody>
</table>

Total Credits: 17

---

/ 34
YEAR 3 -- Fall
CHE 3101 Transport Processes ................................................. 3
CHE 3105 Transport Processes Laboratory .............................. 1
CHE 3141 Process Modeling Principles .................................. 2
CHE 3131 Transfer Processes 1 .............................................. 4
CHE 3170 Intro to Environmental Engineering .................... 3
CHM 3001 Physical Chemistry 1 .......................................... 3
CHM 3011 Physical Chemistry Laboratory 1 ......................... 2
HUM 2052 Civiliz. It: Renaissance - Modern ..................... 3
---------- Restricted Elective (Engineering) ......................... 3

YEAR 3 -- Spring
CHE 3103 Heat Transfer Processes .................................... 3
CHE 3131 Transfer Processes 2 ......................................... 4
CHE 3106 Heat Transfer Laboratory .................................. 1
CHE 3110 Chemical Eng. Thermodynamics ......................... 3
CHE 3180 Introduction to Design Projects ......................... 1
CHE 4151 Chemical Eng. Reactor Design .......................... 3
COM 2223 Sci. & Tech. Communications ............................ 3
---------- Restricted Elective (Adv.Chem) ........................... 3

YEAR 4 -- Fall
CHE 4104 Mass Transfer and Separation Processes ... 3
CHE 4106 Mass Transfer Laboratory ................................ 1
CHE 4105 Unit Operations Laboratory ............................... 2
CHE 4122 Chemical Process Control ................................ 4
CHE 4131 Separation Processes ......................................... 3
CHE 4181 Chemical Eng. Plant Design 1 ......................... 3
---------- Technical Elective * ......................................... 3
---------- Humanities Elective ....................................... 3

YEAR 4 -- Spring
CHE 4182 Chemical Eng. Plant Design 2 ......................... 3
---------- Restricted Elective (CHE) .................................. 3
---------- Technical Elective * ..................................... 3
---------- Hu / SS Elective ........................................... 3
---------- Free Elective * ............................................ 3

Total Credit Hours Required = 134

* BUS 3xxx, Restricted Elective (Business) may be taken in place of three credits of Technical Elective. CWE 1001 may be taken in place of three credits of Free Elective. CWE 2001 may be taken in place of three credits of Technical Elective.
CHE 3101 TRANSPORT PROCESSES
Required Course - Fall 2006 – Dr. Manolis M. Tomadakis

Catalog Data: CHE 3101 Transport Processes. Credits 3. Topics include molecular-level transport mechanisms, bulk transport of momentum, pipe flow and pipeline design and optimization, rheologic behavior and viscometry, compressible flow, pressure and flow measurement, flow through fixed and fluidized beds, two-phase flow, pumping, gas compression, mixing, boundary-layer theory. (Prerequisites: CHE 2102, MTH 2201)

Prerequisites by Topic: Differential Equations (MTH 2201), Material and Energy Balances (CHE 2102), Fluid Statics (CHE 2102), Programming or Use of Spreadsheet Software (CHE 1102)


Topics Covered:
1. Flow of Fluids: Fluid Statics and Momentum Balances (6 hours)
2. Flow in Pipes and Channels: Shear Stress Models, Frictional Loss, Bernoulli Equation (8 hours)
3. Non-Newtonian Flow and Viscometry Project Discussion. (4 hours)
4. Flow and Pressure Measurement. (4 hours)
5. Pumping of Liquids (5 hours)
6. Compressible Flow and Gas Compressors. (6 hours)
7. Two-Phase Flow: Gas-Liquid Flow, Pneumatic Conveying, Hydraulic Transport (6 hours)
8. Flow Through Porous Media and Particle Beds: Fixed and Fluidized Bed Hydraulics (6 hours)
9. Liquid Mixing and Vessel Scale-Up. (6 hours)
10. Boundary Layer Flow and Introduction to Transport Phenomena. (3 hours)
11. Exams and Reviews. (6 hours)

CHE 3105 TRANSPORT PROCESSES LABORATORY
Required Course - Fall 2006 – Dr. Manolis M. Tomadakis

Catalog Data: CHE 3105 Transport Processes Laboratory Credits 1. Laboratory Experiments and design projects related to CHE 3101. (Corequisite CHE 3101)

Prerequisites by Topic: Differential Equations (MTH 2201), Material and Energy Balances (CHE 2102), Fluid Statics (CHE 2102), Programming or Use of Spreadsheet Software (CHE 1102)


Topics Covered:
1. Pipeline Design and Optimization Project Discussion (10 hours)
2. Pipe Hydraulics Experiment Preview (1 hour)
3. Fixed and Fluidized Bed Flow Experiment Preview (1 hour)
4. Laboratory Experiments (4 hours per student group)
Florida Institute of Technology

ADDING A NEW COURSE TO THE CURRICULUM

This course is available for student registration only after the approval process has been completed.

Subject CHE
Course No. 3103
Credit Hours 3
Term to be added to the file Spring 2006
(e.g., Fall 2003)

Class Hours 3
Lecture Hours 3
Lab Hours
Contact Hours (CEU only)

Department Chemical Engineering
(e.g., Computer Sciences)
Schedule Type Lecture
(e.g., lecture, lab or special project)

College/School
☐ College of Engineering-01
☐ College of Science and Liberal Arts (science)-20
☐ School of Aeronautics-03
☐ SEG-90
☐ College of Science and Liberal Arts (liberal arts)-21
☐ School of Management-22
☐ School of Psychology-05

(Please check appropriate box)

Computer Title (restricted to 25 spaces, including blanks) HEAT_TRANSFER_PROC

Catalog Title Heat Transfer Processes

Catalog Description of Course (limited to 350 characters, including spaces)
Theory and applications of heat transfer; conduction, convection, radiation, condensation and evaporation; heat transfer in reaction vessels; humidification and water cooling; thermowell and heat exchanger design and optimization; flash and batch differential distillation; continuous binary and multi-component rectification, batch fractionation.

In addition, you may attach a course syllabus and/or more detailed description.

Restrictions ☐ Prerequisite CHE 2102 (course number)
☐ Corequisite (course number)
☐ Prerequisite MTH 2201 (course number)
☐ Corequisite (course number)
☐ Prerequisite (course number)
☐ Corequisite (course number)

Grades to be issued
☐ A, B, C, D, F
☐ S, U
☐ P, F
☐ Other

Additional Restriction
(e.g., major, class level, department head approval)

If this course replaces a course currently offered in BANNER, please indicate old course information

Subject Alpha Prefix (e.g., CSE) CHE
Course No. (e.g., 1301) 3132

APPROVALS
Upon completion of appropriate department approvals, submit form to Chair, Graduate Council, or Chair, Undergraduate Curriculum Committee for approval below and forward to Catalog Coordinator.

Organizer
Date 3/24/05

Chair, Graduate Council
Date

Department Head/Program Chair
Date 3/24/05

Chair, Undergraduate Curriculum Committee
Date 4/12/05

CATALOG COORDINATOR

REGISTRAR'S USE ONLY

Catalog Coordinator Date

SCACRSE SCADETL SCAPREQ SCABASE
SCARRES Operator Init Date

DISTRIBUTION:
Original—Registrar
Copy—Academic Unit/SEGS
 Florida Institute of Technology • Office of the Registrar
150 West University Boulevard, Melbourne, FL 32901-6975 • (321) 674-8136 • Fax (321) 674-7827
RG-307-6031
CHE 3103 HEAT TRANSFER PROCESSES
Required Course - Spring 2006 – Dr. Manolis M. Tomadakis

Catalog Data: CHE 3103 Heat Transfer Processes Credits 3. Theory and applications of heat transfer; conduction, convection, radiation, condensation and evaporation; heat transfer in reaction vessels; humidification and water cooling; thermowell and heat exchanger design and optimization; flash and batch differential distillation; continuous binary and multi-component rectification, batch fractionation (Prerequisites: CHE 2102, MTH 2201)

Prerequisites by Topic: Differential Equations (MTH 2201), Material and Energy Balances (CHE 2102), Fluid Statics (CHE 2102), Programming or Use of Spreadsheet Software (CHE 1102)


Topics Covered:
1. Conduction: Slab/cylindrical/spherical Geometry, Resistances in Series, Unsteady-state (7 hours)
2. Convection: Forced and Natural (5 hours)
3. Radiation (3 hours)
4. Thermowell Design Project Discussion (2 hours)
5. Heat Transfer with Phase Change: Evaporation and Condensation (4 hours)
6. Heat Transfer in Reaction Vessels (3 hours)
7. Heat Exchangers: Shell-and-Tube and Other Types (4 hours)
8. Humidification and Water Cooling. (4 hours)
9. Vapor-Liquid Equilibrium, Flash Distillation, Differential Batch Distillation (4 hours)
10. Continuous Rectification: Lewis-Sorel and McCabe-Thiele Methods and Project Discussion. (7 hours)
11. Heat Balances: Ponceon-Savarit Method. (4 hours)
12. Batch Fractionation (3 hours)
13. Multi-component, Azeotropic, and Extractive Distillation (4 hours)
14. Exams and Reviews (6 hours)

CHE 3106 HEAT TRANSFER PROCESSES LABORATORY
Required Course - Spring 2006 – Dr. Manolis M. Tomadakis

Catalog Data: CHE 3106 Heat Transfer Processes Laboratory. Credits 1. Laboratory Experiments and design projects related to CHE 3103 (Corequisite: CHE 3103).

Prerequisites by Topic: Differential Equations (MTH 2201), Material and Energy Balances (CHE 2102), Fluid Statics (CHE 2102), Programming or Use of Spreadsheet Software (CHE 1102).


Topics Covered:
2. Double-Pipe Heat Exchanger Experiment Preview (1 hour).
3. Laboratory Experiment (2 hours per student group).
Florida Institute of Technology

ADDING A NEW COURSE
TO THE CURRICULUM

This course is available for student registration only after the approval process has been completed.

Subject CHE
 Alpha Prefix (e.g., CSE)
 Number Choice (e.g., 1301)
 Course No. 3105
 Credit Hours 1
 Term to be added to the file Fall 2006
 (e.g., Fall 2003)

Class Hours 3
 Lecture Hours 
 Lab Hours 
 Contact Hours (CEU only) 

Department Chemical Engineering
 (e.g., Computer Sciences)
 Schedule Type Laboratory
 (e.g., lecture, lab or special project)

College/School
 □ College of Engineering-01
 □ College of Science and Liberal Arts (science)-20
 □ College of Science and Liberal Arts (liberal arts)-21
 □ School of Aeronautics-03
 □ SEGTS-90
 □ School of Management-22
 □ School of Psychology-05

Computer Title (restricted to 25 spaces, including blanks) TRANSPORT_PROC_LAB

Catalog Title Transport Processes Laboratory

Catalog Description of Course (limited to 350 characters, including spaces)

Laboratory experiments and design projects related to fluid flow, especially flow through porous media.

In addition, you may attach a course syllabus and/or more detailed description.

Restrictions □ Prerequisite □ Corequisite CHE 3101
 (course number) (course number)
 □ Prerequisite □ Corequisite
 (course number) (course number)
 □ Prerequisite □ Corequisite
 (course number) (course number)

Grades to be issued □ A, B, C, D, F
 □ S, U
 □ P, F
 □ Other

Additional Restriction
 (e.g., major, class level, department head approval)

If this course replaces a course currently offered in BANNER, please indicate old course information

Subject Alpha Prefix (e.g., CSE) Course No. (e.g., 1301)

APPROVALS

Upon completion of appropriate department approvals, submit form to Chair, Graduate Council, or Chair, Undergraduate Curriculum Committee for approval below and forward to Catalog Coordinator.

P. A. Jennings 4/11/05
Chair, Graduate Council

P. A. Jennings 4/11/05
Chair, Undergraduate Curriculum Committee

Dean of Associate Dean 4-12-05

CATALOG COORDINATOR

SCARCSE SCADETL SCAPREG SCABASE
SCARRES Operator Init

REGISTRAR'S USE ONLY

Date

Date

DISTRIBUTION:
Original—Registrar
Copy—Academic Unit/SEGSS

Florida Institute of Technology • Office of the Registrar
150 West University Boulevard, Melbourne, FL 32901-6975 • (321) 674-8136 • Fax (321) 674-7827

RG:307-6031
This course is available for student registration only after the approval process has been completed.

Subject CHE
Alpha Prefix (e.g., CSE)
Course No. 3106
Number Choice (e.g., 1301)
Credit Hours 1
Term to be added to the file Spring 2006
(e.g., Fall 2003)
Class Hours 3
Lecture Hours 3
Lab Hours 3
Contact Hours (CEU only) 3
Department Chemical Engineering
(Schedule Type Laboratory
(e.g., Computer Sciences)
(Please check appropriate boxes)
College/School
☐ College of Engineering-01
☐ College of Science and Liberal Arts (science)-20
☐ College of Science and Liberal Arts (liberal arts)-21
☐ School of Aeronautics-03
☐ SEGS-90
☐ School of Management-22
☐ School of Psychology-05
Computer Title (restricted to 25 spaces, including blanks) HEAT_TRAN_PROC_LAB
Catalog Title Heat Transfer Processes Laboratory
Catalog Description of Course (limited to 350 characters, including spaces)
Laboratory experiments and design projects related to heat transfer processes.

In addition, you may attach a course syllabus and/or more detailed description.

Restrictions
☐ Prerequisite ____________________________
☐ Corequisite ____________________________
☐ Prerequisite ____________________________
☐ Corequisite ____________________________
☐ Prerequisite ____________________________
☐ Corequisite ____________________________
Grades to be issued
☐ A, B, C, D, F
☐ A, B, C, D, E, F
☐ S, U
☐ P, F
☐ Other

Additional Restriction ____________________________
(e.g., major, class level, department head approval)
If this course replaces a course currently offered in BANNER, please indicate old course information
Subject Alpha Prefix (e.g., CSE) CHE 3103
Course No. (e.g., 1301) ____________________________

APPROVALS
Upon completion of appropriate department approvals, submit form to Chair, Graduate Council, or Chair, Undergraduate
Curriculum Committee for approval below and forward to Catalog Coordinator.

P.A. Jennings 4/11/05
Chair, Graduate Council
Date
P.A. Jennings 4/11/05
Date
Dean of Associate Dean

4-12-05
Chair, Undergraduate Curriculum Committee
Date

[Signature]
[Signature]

CATALOG COORDINATOR

SCACRSE SCADTL SCAPRSC SCABASE
SCARES SCARRES SCAPRSC SCABASE
Operator Init Date

REGISTRAR'S USE ONLY

Florida Institute of Technology
150 West University Boulevard, Melbourne, FL 32901-6975 • (321) 674-8136 • Fax (321) 674-7827
RG-307-6031
Florida Institute of Technology

ADDING A NEW COURSE TO THE CURRICULUM

This course is available for student registration only after the approval process has been completed.

Subject CHE
Alpha Prefix (e.g., CSE) 4104
Course Number Choice (e.g., 1301) Credit Hours 3
Term to be added to the file Fall 2006 (e.g., Fall 2003)

Class Hours 3 Lecture Hours 3 Lab Hours Contact Hours (CEU only)

Department Chemical Engineering Schedule Type Lecture
(e.g., Computer Sciences) (e.g., lecture, lab or special project)

College/School □ College of Engineering-01 □ School of Aeronautics-03 □ SEGs-90
(please check appropriate box) □ College of Science and Liberal Arts (science)-20 □ School of Management-22
□ College of Science and Liberal Arts (liberal arts)-21 □ School of Psychology-05

Computer Title (restricted to 25 spaces, including blanks) MASS_TRAN_SEP_PROC

Catalog Title Mass Transfer and Separation Processes

Catalog Description of Course (limited to 350 characters, including spaces)

Fundamental principles and applications of mass transfer and separation processes; diffusion and stagnant-layer approximation; two-film theory and surface renewal; adsorption equilibrium and dynamics; plate and packed towers for absorption; co-current and counter-current cascade in extraction.

In addition, you may attach a course syllabus and/or more detailed description.

Restrictions □ Prerequisite CHE 2102 □ Corequisite (course number)
□ Prerequisite MTH 2201 □ Corequisite (course number)
□ Prerequisite (course number) □ Corequisite (course number)
Grades to be issued □ A, B, C, D, F □ S, U
□ P, F □ Other

Additional Restriction (e.g., major, class level, department head approval)

If this course replaces a course currently offered in BANNER, please indicate old course information

Subject Alpha Prefix (e.g., CSE) CHE Course No. (e.g., 1301) 4131

APPROVALS
Upon completion of appropriate department approvals, submit form to Chair, Graduate Council, or Chair, Undergraduate Curriculum Committee for approval below and forward to Catalog Coordinator.

Originator 3/24/05
Date
Chair, Graduate Council
Date

Department Head/Program Chair 3/24/05
Date
OR

Dean of Associate Dean 4-12-05
Date
Chair, Undergraduate Curriculum Committee
Date

CATALOG COORDINATOR

REGISTRAR'S USE ONLY

Catalog Coordinator Date

SCACRSE SCADETSC SCAPREQ SCABASE
SCARRES Operator Init Date

DISTRIBUTION:
Original—Registrar
Copy—Academic Unit/SEGSS
Florida Institute of Technology • Office of the Registrar
150 West University Boulevard, Melbourne, FL 32901-6975 • (321) 674-8136 • Fax (321) 674-7827

RG-307-5031
CHE 4104 MASS TRANSFER AND SEPARATION PROCESSES
Required Course – Fall 2006 – Dr. Manolis M. Tomadakis

Catalog Data: CHE 4104 Mass Transfer and Separation Processes Credits 3. Fundamental principles and applications of mass transfer and separation processes; diffusion and stagnant-layer approximation; two-film theory and surface renewal; adsorption equilibrium and dynamics; plate and packed towers for absorption; co-current and counter-current cascade in extraction. (Prerequisites CHE 2102, MTH 2201)

Prerequisites by Topic: Differential Equations (MTH 2201), Material and Energy Balances (CHE 2102), Programming or Using Spreadsheet Software (CHE 1102).


Topics Covered:
1. Selection of Separation Processes. (2 hours)
2. Mass Transfer in Binary Gas Mixtures. (7 hours)
3. Multi-component Mass Transfer. (3 hours)
4. Unsteady-state Mass Transfer and Penetration Theory. (4 hours)
5. Diffusivity Correlations. (2 hours)
6. Drug Batch Design Module Discussion. (2 hours)
7. Adsorption: Gas-Solid Equilibrium and Fixed Bed Models. (9 hours)
9. Packed Towers for Absorption and Design Project Discussion. (5 hours)
10. Plate Towers and Other Types of Absorption Equipment. (2 hours)
11. Exams and Reviews. (5 hours)

CHE 4106 MASS TRANSFER AND SEPARATION PROCESSES LABORATORY
Required Course – Fall 2006 – Dr. Manolis M. Tomadakis

Catalog Data: CHE 4106 Mass Transfer and Separation Processes Laboratory Credits 1. Laboratory Experiments and design projects related to CHE 4104. (Prerequisite CHE 3103, Corequisite CHE 4104)

Prerequisites by Topic: Differential Equations (MTH 2201), Material and Energy Balances (CHE 2102), Distillation Principles (CHE 3103), Programming or Using Spreadsheet Software (CHE 1102)


Topics Covered:
1. Distillation Column Design and Optimization Project Discussion. (7 hours)
2. Liquid-Liquid Ternary Equilibrium, Extraction Methods, Mixer-and-Separator Systems. (8 hours)
3. Batch Column Distillation Experiment Preview. (1 hour)
4. Laboratory Experiment (2 hours per student group)
This course is available for student registration only after the approval process has been completed.

Subject: CHE  
Alpha Prefix (e.g., CSE)
Course No: 4106
Number Choice (e.g., 1301)
Credit Hours: 1
Term to be added to the file: Fall 2006
(e.g., Fall 2003)
Class Hours: 3  
Lecture Hours: 
Lab Hours: 3  
Contact Hours (CEU only): 
Department: Chemical Engineering
(e.g., Computer Sciences)
Schedule Type: Laboratory
(e.g., lecture, lab or special project)
College/School:
□ College of Engineering-01
□ College of Science and Liberal Arts (science)-20
□ College of Science and Liberal Arts (liberal arts)-21
□ School of Aeronautics-03
□ SEGS-90
□ School of Management-22
□ School of Psychology-05
(Please check appropriate box)

Computer Title (restricted to 25 spaces, including blanks): MASS_TRAN_SEP_PROC_LAB

Catalog Title: Mass Transfer and Separation Processes Laboratory

Catalog Description of Course (limited to 350 characters, including spaces):
Laboratory experiments and design projects related to separation processes

In addition, you may attach a course syllabus and/or more detailed description.

Restrictions:
□ Prerequisite
CHE 3103  
(course number)
□ Corequisite
CHE 4104  
(course number)
Grades to be issued:
□ A, B, C, D, F
□ S, U
□ P, F
□ Other
□ Prerequisite
(course number)
□ Corequisite
(course number)
Additional Restriction:
(e.g., major, class level, department head approval)

If this course replaces a course currently offered in BANNER, please indicate old course information
Subject: CHE  
Alpha Prefix (e.g., CSE)
Course No: 1301

APPROVALS

Upon completion of appropriate department approvals, submit form to Chair, Graduate Council, or Chair, Undergraduate Curriculum Committee for approval below and forward to Catalog Coordinator.

P. A. Jennings  
4/11/05
Originator
Date
Chair, Graduate Council
Date

P. A. Jennings  
4/11/05
Department Head/Program Chair
Date
OR

Dean or Associate Dean

CATALOG COORDINATOR

REGISTRAR’S USE ONLY

SCACRSE       
SCADETL       
SCAPREC       
SCABASE       
SCARES

Operator Init
Date