

TITLE Minor Change-Course Name, Content, Catalog Desc, and Prereq:
Equilibrium Staged Operations, 0906-312

Sponsor(s) Dr. C. Stewart Slater e-mail: slater@rowan.edu
Dr. Brian Lefebvre e-mail: lefebvre@rowan.edu

DEPARTMENT Chemical Engineering
College Engineering

If LAS-check: History/Humanities Social Sciences Natural Sciences

UNDERGRAD slater
 New non gen-ed lefebvre
 Short-Term non hesketh
 Minor curricular c newland 06-312
 Existing non gen-
 Non gen-ed degree
 Major
 Minor, specialization, concentration, track, certificate program

DB
5/22/06

Signatures Required: representing approval before submission to Office of the Senate

Department Chair: Robert P. Hesketh Date: September 2005
Department CURRICULUM Chair: [Signature] Date: 10/5/2005
Academic DEAN: [Signature] Date: 10/10/05

COLLEGE CURRICULUM COMMITTEE: Open Hearing Date: 1/27/05
Approved:
Not Approved:
Signature: College Curriculum Chair [Signature]

Signature: SENATE CURRICULUM CHAIR [Signature]
Date: 2/27/06

Comments: _____

Signature: Executive Vice President/Provost: [Signature]
Date: 3/16/06
Approved:
Not Approved:

Signature: REGISTRAR [Signature]
Date: 3/20/06
Course Description Received & Approved
Hegis Taxonomy & Course # CHE 06.312

Notification Forward:
 SCC CHAIR Academic Dean
 IR Department Chair
 CAP VP/Student Affairs
 Registrar Other- Trans 3-29-06

Minor Change

1. Details:

- a) **Change:** Change the **Course Name, Content, Catalog Description, and Prerequisites** of Equilibrium Staged Operations, 0906-312

Former Name & Catalog Description

Equilibrium Staged Operations (0906.312)

Prerequisites: Principles Chem Processes II (0906-302), Fluid Mechanics I (0901-341), Math for Engineering Analysis II (1701-335)

This course gives students an introduction to equilibrium-staged separations. Students will learn the theory and principles of equilibrium staged calculations applied to: distillation, extraction, absorption, stripping columns. A major focus of the course is distillation systems; batch, and continuous for binary and multicomponent systems. Demonstrations, laboratories and computer simulations may be integrated throughout this course.

Former Content

- Distillation – Liquid/Vapor Equil Staged Ops
- Gas-Liquid Separation Processes: Absorption/Stripping
- Extraction – Liquid/Liquid

New Name & Catalog Description

Separation Processes I (0906.312)

Prerequisites: Principles Chem Processes II (0906-302), Fluid Mechanics I (0901-341), Calculus II (1701-131)

This course describes modes of diffusion of mass and chemical composition. This course includes mass transfer analysis; molecular diffusion in gases, liquids and solids and convective mass transfer. It will have an introduction to equilibrium-staged mass transfer operations such as: absorption/stripping, extraction/leaching operations. Demonstrations, laboratories and computer simulations may be integrated throughout this course.

New Content

- Introduction to Separation Processes
 - Classification
 - Industrial applications
- Principles of Molecular Diffusion
 - Gases
 - Liquids
 - Solids
- Mass Transfer analysis
 - Convective mass transfer coefficients
 - Mass transfer relationships for various geometries
 - Plates
 - Cylinders (inside and outside)
 - Particles / Spheres
- Gas-Liquid Equilibrium Separation Processes: Absorption/Stripping
 - Types of separation process and methods
 - Equilibrium between phases
 - Single and multiple equilibrium contact stages
 - Mass transfer between phases
 - Absorption/Stripping in plate and packed towers
- Liquid-Liquid and Fluid-Solid Equilibrium Separation Processes: Extraction, Leaching
 - Single-stage liquid-liquid extraction
 - Types of equipment and design of liquid-liquid extraction
 - Continuous multistage liquid-liquid extraction
 - Introduction and equipment for liquid-solid leaching
 - Equilibrium relations and single-stage leaching

- b) Sponsor:** Drs. C. Stewart Slater and Brian Lefebvre and Chemical Engineering Curriculum Committee
- c) Credit Hours:** 2 semester hours (no change)
- d) Course Level:** Undergraduate (no change)
- e) Curricular Effect:** Requirement for Chemical Engineering students (no change)
- g) Suggested Time/** Fall 2006
- Scale of Implementation:** 1 section (no change)
- h) Resources:** No additional resources will be needed for this minor change

2. Rationale:

The proposed change is consistent with the on-going assessment and review of the Chemical Engineering program. This change rearranges topics between the two courses: 0906-312 and 0906-314 to provide a more sequential coverage of material. Some new minor topics have also been added. This change has been pilot tested and is consistent with the sequence of the new text now used for the course sequence in chemical engineering, "Transport Processes

and Separation Process Principles” by Geankoplis. This change complements the other courses in the chemical engineering program.

3. Results of Consultations:

This change will not impact any other engineering program or science program, or their majors.