

CME 402 Separation Technologies II (Required)

Course Instructor: *Dr. William Calvo*

Website: none

Course Goals:

Introduction to separation technologies in a plant design. Principles of supercritical fluids extraction and membrane separation. Packed tower design for separations. Batch versus continuous operation. [3 credits]

Pre- or Corequisite(s): U3 or U4 standing in CME, CME 401

Text(s): Separation Process Principles. J.D. Seader and E.J. Henley. John Wiley & Sons, Inc. 1998.

Class/ Laboratory Schedule:

Spring: Lecture, Monday 6:50-9:40 pm

Topics Covered:

Week 1: Separation processes in industrial plants

Week 2: Supercritical extraction concept involving H₂O, CO₂ fluids

Week 3: Application of supercritical CO₂ in extractions

Week 4: Application of supercritical H₂O in extractions

Week 5: Membrane separation: Theory and principles. Quiz 1

Week 6: membrane separation: Industrial applications.

Week 7: Packed Tower Design for separations

Week 8: Review/Mid-term

Week 9: Batch mode separation

Week 10: Continuous mode separation

Week 11: Challenges to continuous separation in slurry reactors. Quiz 2

Week 12: Method selection for efficient separations; select separation project

Week 13: Fundamentals of separation process design. Separation project

Week 14: Separation project; oral presentation

Week 15: Review/Separation Project Report due/Final Exam

Contribution of course to meet professional component:

Relationship of course to program outcomes:

CTPC "3a-k" Outcomes	% contribution
A. Ability to apply knowledge of math, engineering, and science	24%
B. Ability to design and conduct experiments, analyze data	10%
C. Ability to design system, component or process to meet needs	17%
D. Ability to function on multi-disciplinary teams	
E. Ability to identify, formulate, and solve engineering problems	25%
F. Understanding of professional and ethical responsibility	5%
G. Ability to communicate effectively	3%
H. Broad education	2%
I. Recognition of need and ability to engage in life-long learning	2%
J. Knowledge of contemporary issues	2%
K. Ability to use techniques, skills, and tools in engineering practice	10%
Any other outcomes and assessments?	
	100%

Prepared by _____

Date Prepared: _____