



THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Separation Processes

CBE 2523

Credit Hours:

3.00 - 3.00

Course Levels:

Undergraduate (1000-5000 level)

Course Components:

Recitation
Lecture
Lab

Course Description:

The application of mass and energy balances and transport phenomena such as fluid, heat, and mass transfer to chemical engineering separation operations of distillation, absorption, evaporation, extraction, drying, etc.

Prerequisites and Co-requisites:

Prereq: 2200 (201), and enrollment in CBE major. Prereq or concur: 2420 (420), or permission of instructor or Grad standing.

Course Goals / Objectives:

- Master material and energy balance equations for various unit operation processes for chemical separations
 - Master basic design principles and applications relevant to stage-wise operations
 - Be familiar with principals underlying and the derivation of the design equations for distillation, absorption, adsorption, extraction, leaching, evaporation, drying, membrane processing (RO and UF), and filtration
 - Be familiar with the process safety issues involved in various unit operation processes
 - Be familiar with the operation of various unit operation equipment/processes in the laboratory
 - Be exposed to process simulation software (e.g., ASPEN) and master its use in process calculation and design
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Course Topics:

- Phase Diagrams; Stage-wise operations: Gas-Liquid Absorption
 - Liquid-Liquid Extraction; Liquid-solid Leaching and extraction
 - Introduction to process simulation (ChemCad or ASPEN); Adsorption;
 - Distillation – McCabe-Thiele Method; Enthalpy-Concentration Method
 - Evaporation; Drying of Process Materials
 - Filtration, Membrane Separation: reverse osmosis, ultrafiltration
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Designation:

Required