THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Principles of Biochemical Engineering

CBE 5765

Credit Hours:
3.00 - 3.00

Course Levels:
Undergraduate (1000-5000 level)
Graduate (5000-8000 level)

Course Components:
Lecture

Course Description:
The application of biochemical engineering principles for modern bioprocesses and in the area of industrial biotechnology.

Prerequisites and Co-requisites:
Prereq: 2523 (523) or 3610 (610), or Grad standing, or permission of instructor.

Course Goals / Objectives:
- Master basic biochemical engineering principles and applications relevant to bioprocesses and biotechnology operations
- Be familiar with basic biochemistry and microbiology literature and terminology
- Be familiar with principals underlying and the derivation of the design equations for enzyme reactions and fermentation reactor operation and design
- Master the solution of various biochemical engineering process design problems
- Be familiar with issues in biotechnology industry product/process development
- Be prepared to design and operate bioreactor/fermentor in laboratory and pilot plant

Course Topics:

- Introduction; Biological Molecules
- Enzyme Technology – Enzyme Kinetics
- Immobilized Enzyme and Reactor
- Introduction to Fermentation and General Microbiology
- Fermentation Medium Formulation and Microbial Growth Requirement
- Fermentation Kinetics and Modeling
- Continuous Culture and Reactor
- Thermal Death Kinetics of Cells; Medium Sterilization
- Fermentor Operation – Agitation and Aeration
- Reactor Scale up
- Multiphase, Immobilized Cell Bioreactors

Designation:

Elective