



ChE 481 - Biochemical Engineering.

Code and Name: ChE 481 - Biochemical Engineering.

Credit Hours: 3 (Lecture: 3, Tutorial: 1)

Textbook:

- Biochemical Engineering, Shigeo Katoh and Fumitake Yoshida, 2nd Ed., Wiley VCH, 2015

Other References:

- None

Course Description:

Introduction, application of chemical engineering, biological systems, Flow Measurements, food and medicine applications.

Pre-requisites: ChE 311: Chemical Reaction Engineering.

Co-requisites: None

Course Learning Outcomes:

With relation to ABET Student Outcomes (SOs: 1-7)

1. Recognize and describe elements of physical transport processes, chemical and biochemical kinetics, cell kinetics and chromatographic separation (1)
2. Outline the needed information, physical properties and equations to determine bioreactor power consumption and aeration rate and to determine sterilization period (4)
3. Calculate the values of mass transfer coefficient, growth rate, sterilization period, bioreactor power consumption (1)
4. Analyze the various factors affecting the kinetics of biochemical reactions, cell growth and sterilization efficiency (2)
5. Analyze, in groups, the importance of biochemical engineering in human life (5)

Topics to be covered:

- Introduction
- Elements of Physical Transport Processes
- Chemical and Biochemical Kinetics.
- Cell Kinetics.
- Bioreactors.
- Cell–Liquid Separation and Cell Disruption
- Sterilization
- Adsorption and Chromatography

Grading Policy:

The grading for the course are 60% coursework and 40% Final Exam. The course work consists of two Midterm Exams, where each midterm exam is worth 20%. It also includes quizzes, homework, and projects for the remaining 20% that is modified by the course instructor.

