

Biomedical Engineering 321 (Bioreaction Engineering and Design)

Topics (Subject to change during the semester)	Dates	Assignment
Orientation/Introduction to Bioreaction & Bioprocessing	Jan. 4	Perusall assignment#0
Cells, structure, function, properties	Jan. 9	
Calculations	Jan. 11	Perusall assignment#1
Enzyme kinetics, Michaelis-Menten equation, competitive inhibition, TS analog inhibitor	Jan. 16	Ch 11
Data analysis and presentation	Jan. 18	Perusall assignment#2
Determine K_m , V_{max} , K_i , modes of inhibition	Jan. 23	Ch. 11
Enzymes Determine K_m , V_{max} , K_i , modes of inhibition Submit Teams Composition and presentation date	Jan. 25	
Cells as bioreactors, How cells grow & Cell Growth Kinetics	Jan. 30	Ch. 11.6 assignment#3
Feedback inhibition / Multi-enzyme systems	Feb. 1	
Material balances Choose a paper and submit 1 page proposal/summary	Feb. 6	Ch. 4 assignment#4
Material balances	Feb 8	
Review and problem set	Feb. 13	Ch. 1, 2, 11
Exam 1	Feb. 15	
Energy and heat balances	Feb. 20	Ch. 5 assignment#5
Study day Problem set II	Feb. 22	Ch. 4-5
Spring Break (No Class)		
PK/PD	Mar 6	assignment#6
PK/PD – problem solving	Mar 8	
Fluid flow and mixing	Mar 13	Ch.7 assignment#7
Fluid flow and mixing	Mar 15	
Unit operations	Mar 20	Ch10
Problem set IV	Mar 22	
Homogeneous reactions	Mar 27	
Class Presentations I	Mar 29	
Class Presentations II	April 3	
Study day -Problem set V	April 5	
Class Presentations III	April 10	
Class Presentations IV	April 12	
Review /problem solving	April 17	

Exam 2 : Thursday, April 26th 10:30am-12:30pm