



Biotechnology for Engineers

Course Description

This one semester course will introduce students in the engineering sciences to biotechnology using the principles and practices of microbiology, biochemistry, molecular biology, genetics, clinical chemistry, and chemical engineering. The aim of the course is to provide a basic background in biotechnology and an understanding of the technical problems often associated with the industrial application of microorganisms, enzymes, proteins, antibiotics, nucleic acids, and tissue engineering. Topics covered in this class include microorganisms, proteins, enzymes, bioprocessing, functional genomics, kinetics and energetics of microbial metabolism, fermentation, biotechnology in medicine, biotechnology in military applications, bioinstrumentation, bioprocess control, membrane bioreactors, design and operation of industrial bioreactors.

Potember, Staff

Biotechnology for Engineers

Course Schedule:

1. Lecture - Course Description / "Introduction to Biotechnology"
2. Lecture - " Microorganisms, Proteins and Enzymes"
3. Lecture - " Introduction to Bioprocesses"
4. Lecture - " Pharmaceutical Biotechnology and Functional Genomics"
5. Visit a Research Biotechnology Laboratory
6. Lecture - "Kinetics and Energetics of Microbial Metabolism"
7. Lecture – "Biofuels"
8. Lecture - " Fermentation: Theory, Design and Industrial Methods"
9. Lecture - "Biotechnology in Biomedicine"
10. Lecture - "Bioinstrumentation and Bioprocess Control"
11. Lecture - "Membrane Bioreactors"
12. Visit an Industrial Biotechnology Company
13. Lecture - "Biotechnology in the Department of Defense"
14. Lecture - "Bioethics"