OUTLINE OF COURSE OBJECTIVES
Introduction to Biotechnology
Biology 268

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Office: Biology 209, ext 3894
Office hours: T Th 12:15-1:15pm

1. COURSE DESCRIPTION AND RATIONALE:

An introduction of both the principles and the applications of molecular biology methods with an emphasis on the application of recombinant DNA technology to animals, plants and microbial organisms. This course describes the use of genetically engineered products to solve environmental problems and cure human diseases. Pre-requisites Biol 223.

2. COURSE OBJECTIVES:

Upon successful completion of this course the student should recognize the foundations of modern biotechnology and explain the principles that form the basis for recombinant DNA technology.

3. LEARNING OUTCOMES: By the end of the course, students should be able to:

1. Understand the difference between old biotechnology and modern biotechnology (PLO7).
2. Design an experiment with step-by-step instructions to address a research problem (PLO5).
3. Provide examples of current applications of biotechnology and advances in the different areas like medical, microbial, environmental, bioremediation, agricultural, plant, animal, and forensic (PLO8).
4. Explain the concept and application of monoclonal antibody technology (PLO2).
5. Provide examples on how to use microbes and mammalian cells for the production of pharmaceutical products (PLO1).
6. Explain the general principles of generating transgenic plants, animals and microbes (PLO7).

4. RESOURCES AVAILABLE TO STUDENTS

Three textbooks will be used to supplement the lectures. These are:
- DNA Science: A first course in recombinant DNA technology, David Micklos and Greg Freyer, Eds.
- Molecular Biotechnology, Primrose, Ed.
- Biotechnology: Demystifying the concepts, Bourgaize, Jewell, Buiser, Eds.

Alternative Resources:
- Freezing Human Embryos - Value Dilemmas, Bioscience, Jan. 1990
- Religious Leaders Oppose Patenting Genes and Animals, Science, 26 May 1995
- 'Humanized' Pig Hearts To Solve Supply Problem, St. Paul Pioneer Press, May 24, 1995
- Ethics and Embryos, Newsweek, June 12, 1995
- Helping Your Friends Make Genetic Engineering Choices, Nutrition Today, 4 July/August 1994
• Cloning: Where Do We Draw The Line?, Time, Nov. 8, 1993
• The Genetic Revolution, Time, Jan. 17, 1994
• Bioethics: Science, June 28, 1996

Internet Resources:
  Human Genome Project Information: http://www.ornl.gov/TechResources/Human_Genome/home.html
  Biotechnology Information Center: http://www.nal.usda.gov/bic/
  Science/Biology/Biotechnology: http://dir.yahoo.com/Science/biology/biotechnology/

5. GRAADING CRITERIA

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<th>Component</th>
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<tr>
<td>Exam I</td>
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<td>Midterm</td>
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