Syllabus for BIOE108-01: Genetic Engineering

Spring 2017
Instructor: Chih-Wen Ni

Designation:	BIOE 108: Genetic Engineering
Catalog Description:	In this course, students will explore the molecular methods and applications of recombinant DNA technology and the issues regarding their use through case studies on the effect of genetic engineering on medicine, agriculture, biology, forensics and other areas of technology. The course has 3 major components: 1) techniques used in the generation of recombinant molecules, 2) application of recombinant technology to diagnostics and therapeutics and 3) genetically modified organisms. The discussion of potential ethic concerns of genome manipulations will also be included in the course.
Text Books and Other Required Materials:	1. An introduction to Genetic Engineering, Third Edition, Desmond S. T. Nicholl (2008) 2. Assigned journal literatures
Course Objectives/ Student Learning Outcomes:	This course will provide students with the recent knowledge of genetic engineering. At the end of the course, a successful student will be able to 1.) understand and explain the concept of genetic engineering including the techniques, applications and limitations. 2.) demonstrate the ability to design recombinant molecules and apply information extracted from a variety of sources including journal articles, technical bulletins, product manuals, and drug information sheet to solve problems. 3.) apply learned knowledge to their future research. Learning Outcomes will be assessed through exams, assignments, and classroom discussion
Program Learning Outcomes:	
Prerequisites by Topic:	BIO 002, CHEM 002 and CHEM 010
Course Policies:	Grading: 30 % Midterm exam 40 % Final exam 30 % Assignments, Classroom discussion ---------- 100% Total Academic Dishonesty Statement: Each student in this course is expected to abide by the University of California, Merced's Academic Honesty Policy. Disability Statement: Accommodations for Students with Disabilities: The University of California Merced is committed to ensuring equal academic opportunities and inclusion for students with disabilities based on the principles of independent living, accessible universal design and diversity. Requests for academic accommodations are to be made during the first three weeks of the semester, except for unusual circumstances. Students are encouraged to register with Disability Services Center to verify their eligibility for appropriate accommodations.

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Academic Dishonesty Statement:	a. Each student in this course is expected to abide by the University of California, Merced's Academic Honesty Policy. Any work submitted by a student in this course for academic credit will be the student's own work. b. You are encouraged to study together and to discuss information and concepts covered in lecture and the sections with other students. You can give "consulting" help to or receive "consulting" help from such students. However, this permissible cooperation should never involve one student having possession of a copy of all or part of work done by someone else, in the form of an e mail, an e mail attachment file, a diskette, or a hard copy. Should copying occur, both the student who copied work from another student and the student who gave material to be copied will both automatically receive a zero for the assignment. Penalty for violation of this Policy can also be extended to include failure of the course and University disciplinary action. c. During examinations, you must do your own work. Talking or discussion is not permitted during the examinations, nor may you compare papers, copy from others, or collaborate in any way. Any collaborative behavior during the examinations will result in failure of the exam, and may lead to failure of the course and University disciplinary action.
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Topics:	Part I: The basic of genetic engineering 1.Review of molecular biology 2. Working with nucleic acids 3. The tools of the trade Part II: The methodology of gene manipulation 1. Host cells and vectors 2. Cloning strategies 3. The polymerase chain reaction Part III: Genetic engineering in action 1. Genes, Genomes, and otheromes 2. Genetic engineering and biotechnology-I 3. Genetic engineering and biotechnology-II 4. Transgenic plants and animals 5. Medical and forensic applications of gene manipulation 6. New World or Nightmare
Class/laboratory Schedule:	
Midterm/Final Exam Schedule:	Final exam: May/06/2017, 3-6pm, COB 272
Course Calendar:	
Professional Component:	

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Coordinator:	
Contact Information:	Instructor office SE1 326
Office Hours:	1300-1400, TR, SE1 326