BIOTECHNOLOGY - SPRING 2007 (MBBE401 / BIOL401)

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Text book : Molecular Biotechnology by Bernard R. Glick and Jack J. Pasternak.

Section I: Introduction and Basic Concepts.

1.	Jan 8	DC	Biotechnology: definition, history, commercialization of biology (ch. 1,)
2.	Jan 10	DC	Molecular Biotechnology Systems and Perspectives (ch. 2,3)
3.	Jan 12	DC	Recombinant DNA technology, restriction enzymes, vectors I (ch. 4)
4.	Jan 17	DC	Recombinant DNA technology, restriction enzymes, vectors II (ch. 4)
5.	Jan 19	DC	DNA synthesis, sequencing, PCR, oligonucleotides (ch. 5)
6.	Jan 22	DC	Manipulation of gene expression in prokaryotes I (ch. 6)
7.	Jan 24	DC	Manipulation of gene expression in prokaryotes II (ch. 6)
8.	Jan 26	DC	Heterologous protein production in eukaryotes (ch. 7)
9.	Jan 29	DC	Principles of protein engineering I (ch. 8)
10.	Jan 31	DC	Principles of protein engineering II (ch. 8)
****	**Feb 2**	****	**EXAM 1 ******
11.	Feb 5	DC	Antibody-based diagnostics, ELISA (ch. 9)
12.	Feb 7	DC	DNA-based diagnostic systems, forensics , (ch. 9)
13.	Feb 9	DC	Molecular Diagnosis of Disease genes (ch. 9)
14.	Feb 12	DC	Microarrays, genomics, bioinformatics
15.	Feb 14	DC	Preimplant genetic diagnosis (ch. 9)
16.	Feb 16	DC	Cloning and genetic engineering animals: Transgenic MICE (ch. 19)
17.	Feb 21	DC	Screening transgenic mice (ch. 19)
18.	Feb 23	DC	Genetic engineering other animals (ch. 19)
19.	Feb 26	DC	Human Genome project : Mapping & cloning of human genes (ch. 20)
20.	Feb 28	DC	Human Gene Therapy (ch. 21)

******** **Mar 2** ***** EXAM 2 *****

21. Mar 5 DB Microbial production of pharmaceuticals (ch. 10)

22. Mar 7 DB Production of antibodies in *E. coli* (ch. 10)

Biotechnology 401, Lecture Schedule (continued).

23. Mar 9 DB Vector vaccines (ch. 11)

24. Mar 12 DB Vaccines, subunit and attenuated (ch. 11)

25. Mar 14 DB Using recombinant DNA methods to make commercial products in microbes (ch. 12)

26. Mar 16 DB Microbial synthesis of antibiotics, biopolymers. (ch. 12)

27. Mar 19 DB Nitrogen fixation & plant growth-promoting bacteria, part 1 (ch. 14)

28. Mar 21 DB Nitrogen fixation & plant growth-promoting bacteria, part 2 (ch. 14)

28. Mar 23 DB Microbial insecticides. (ch. 15)

******* **SPRING BREAK MARCH 26-30** *******

29. Apr 2 DB Genetic engineering plants ; Agrobacterium, biolistics (ch. 17)

******** **IMPACT NOTEBOOKS DUE April 2** ********

30. Apr 4 DB Manipulation of gene expression in plants (ch.17)

31. Apr 9 DB Creating herbicide resistant plants (ch. 18)

32. Apr 11 DB Creating pest -resistant plants. Bt toxin (ch. 18)

33. Apr 13 DB Altering other properties of plants, disease, stress, flowering. (ch. 18)

********* **Apr 16** ***** EXAM 3 *****

34. Apr 18 DB Bioremediation I : Use of microbes and plants to degrade toxins and unnatural chemicals, xenobiotics (ch. 13)

35. Apr 20 DB Bioremediation II : Genetic engineering of degradation pathways (ch. 13)

36. Apr 23 DB Bioutilization of starch and cellulose I. (Ch. 13)

37. Apr 25 DB Bioutilization of starch and cellulose II. (Ch. 13)

38. Apr 27 DB Large scale fermentation (ch. 16)

39. Apr 30 DB Regulation of recombinant DNA, GMOs Concerns (ch. 21)

40. May 2 DB Patenting biotechnology inventions . (ch. 22) Review and
FINAL EXAM DISTRIBUTED (due date specified on exam)

Grading: **The exams (including final) and the impact notebook are worth an equal percentage (20%) of the final course grade, totaling 100%.**

Make-up exams will not be given except for illness or death in family (note from a doctor with doctor's address and phone number required for make-up). 5% penalty per day for assignments turned in late.