BIOLOGY 510: RECOMBINANT DNA TECHNIQUES LABORATORY

Laboratory hours: Mon., Wed. 2:00 - 5:00 p.m., 226 T.H. Morgan Bldg.

Lecture: Fri. 2:00 - 3:00 p.m. 108 (or 226) T.H. Morgan Bldg.

INSTRUCTORS: Dr. Grace Jones, 304 T.H. Morgan Bldg.
Office Hours: Friday, 3:00 - 5:00 p.m.
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COURSE WEBSITE: http://www.uky.edu/~jrawls/bio510/index.htm
The syllabus, schedule and protocols for the labs are posted at this site.

COURSE CONTENT: This is a 4-credit course designed to teach advanced undergraduates and beginning graduate students with both the theory and application of recombinant DNA technology. The course is designed around student learning through hands-on exercise of recombinant DNA techniques, in a broader context of achieving a recombinant DNA goal. The techniques and skills in which the students will be trained include handling recombinant organisms, preparing and handling oligonucleotides and radiolabeled DNA, restriction and Southern blot analysis of DNA, preparing and cloning PCR fragments, DNA sequencing and bioinformatic analysis. Also covered will be annealing and cloning of oligonucleotides, preparation of cloned DNA, cell transfection and luciferase reporter assay. The acquisition of these skills will provide the student with expertise needed for employment in medical, industrial and basic biological research.

PREREQUISITES: BCH 401G (or BCH 501) and BIO 304 or equivalents, or by consent of the instructor.

REQUIRED TEXTBOOK: *Route Maps in Gene Technology* by M.R. Walker and R. Rapley, 1997, Blackwell Science Press. You can find these other sources of recombinant DNA protocols in the UK Library and a copy on file in the laboratory room: *Methods in Enzymology, Volume 152, Guide to Molecular Cloning Techniques* (eds., S.L. Berger and A.R. Kimmel; Academic Press, 1987) and *Molecular Cloning, A Laboratory Manual* (J. Sambrook, E. Fritsch, and T. Maniatis; Cold Spring Harbor Laboratory Press, 1989).

ADDITIONAL MATERIALS: Each student will receive a free copy of the New England Biolabs product and resource catalog, which contains information on the application of many of the enzymes and reagents used in a molecular biology laboratory. The catalog also contains multiple appendices with practical information and techniques and is well referenced with supporting citations from the published literature.

Students must purchase lab coat. The lab coat must be worn at all times in the laboratory, and gloves must be worn at all times that any experimental material is handled. Shields must be used at any time that radioactivity is being used.

Grading policy: The final grade will be assigned on the basis of the student's performance in:

Midterm exam	30%
Final exam	30%
Quizzes	30 % (combined section 1 & 2)
Notebook	10% (combined section 1 & 2)
Total	100%

The grade scale will be:

Numerical Grade	Letter Grade
100-90	A
89-80	B
79-70	C
69-60	D (E for graduate students)
<60	E

EXAMS will be composed primarily of essay and short-answer questions derived from the laboratory and lecture notes. The final exam will focus on the work done in the second half of the semester. However, since the techniques used in the second half of the semester are in part based on concepts and techniques learned in the first half, the final exam should be considered in that sense as a comprehensive (cumulative) final exam.

QUIZZES will be given in the lab period or in the lecture period and be based on the assigned reading, the laboratory protocols, and the lab & lecture presentations.

NOTEBOOK: All students are expected to purchase a bound notebook for the laboratory and to accurately record and analyze in it the methods and results of the laboratory exercises. Details on the lab notebook format will be given in class.

ATTENDANCE POLICY: Attendance is mandatory as most laboratory exercises require group participation and depend upon the results of the previous week's efforts. The instructor should be informed in advance of a planned excused absence or consulted upon return of an unexpected absence. ***Multiple (2 or more) unexcused absences will lower the final grade by one letter***.