Syllabus
Molecular Biology-BISC 320
Fall, 2007

Lectures are in THH 101: MWF 11:00AM-11:50 a.m., and MWF 12:00 PM-12:50 p.m.

Instructors: Oscar Aparicio, Ph.D., Associate Professor (oaparici@usc.edu), will give the lectures during the first half of the semester.
Robert Baker, Ph.D., Professor (baker@usc.edu), will lecture during the remainder of the semester.
Shelley Cao, Ph.D., is the Lab Coordinator (sxcao@usc.edu)

Office hours: (Aparicio): Fridays 2:00-3:50 p.m. in RRI 219B.
(Baker): Mondays from 2:00-3:45 p.m. in RRI 104A

Please communicate brief questions via email

Textbook: Molecular Biology of the Gene, Watson et al., 5th ed.
Readings from these texts are assigned on the lecture schedule. It is important to read the assignments prior to the corresponding lectures.

The course grade will be based upon 700 possible points:

100 pts	midterm #1
100 pts	midterm #2
100 pts	midterm #3
200 pts	lab
200 pts	final exam (cumulative)

There will be no make-up exams. In case a midterm exam must be missed for legitimate reasons, discuss the situation with the course instructor at least one week **prior** to the exam. Rules governing exams are given in more detail in your Student Contract that you can read and sign in lab; the contract will be posted on the class website: https:// blackboard.usc.edu

Lab Sections: Please see separate syllabus and lab manual. There will be no lab meetings the first week of classes.

Course Objectives: Molecular biology is a vibrant, experimental science that attempts to explain the living world at the level of molecules. The goal of this course is for each student to gain a fundamental understanding of the molecular nature of the living organisms that have evolved on this planet. In addition, we wish the student to learn how experimental research in molecular biology is performed and to appreciate the complexity of living organisms. Through a billion years of trial and error, nature produced an organism with the capability to not only alter its own environment, but even to begin to understand its own origins and makeup. Only a half-century ago, molecular biology entered a golden age of discovery that allowed the genetic code to be deciphered and the discipline of molecular biology to advance. Now, we are witnessing discoveries in genomics, proteomics and epigenetics, that are allowing us to better understand and improve the quality of human life.

Students with disabilities: Students requesting academic accommodations based on a disability are required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP when adequate documentation is filed. Please be sure the letter is delivered to Dr. Cao as early in the semester as possible. DSP is open Monday-Friday, 8:30 to 5:00, (213) 740-0776.

Lectures: It is important to attend all of the lectures during the course and to take good notes for study. Prior to attending each lecture, it is important to have read the appropriate portions of the textbook. However, many of the lectures will contain new and additional information that is not in the textbook. Examinations will be based mainly on information given in the lectures. In studying for examinations, complete and accurate lecture notes are of prime importance.

The lecture slides (Aparicio) and summaries (Baker), posted on the course Blackboard internet site (https://blackboard.usc.edu, may contain material that is not in the lectures—and the lectures may contain information that is not conveyed in the Blackboard lecture summaries. The lecture summaries, as posted on Blackboard, and the textbook are intended to be helpful, but auxiliary to the lectures.

Week	Reading assignment	Topics covered
1	Chaps 1-3. 21	Review and introduction: Mendelian genetics; classic experiments that revealed the nature of genes. Chemical bonds and interactions.
2	Chaps 4-5.	Amino acids and Protein structures.
3	Chap 6	Structures of DNA, RNA, DNA binding proteins, DNA topology,
4	Chaps 20 and 8.	DNA sequencing, PCR, DNA replication
5	Midterm 1 (9/24). **You must take each midterm in the lecture series in which you are registered.**	RNA structure, Genome organization, Chromatin, Cell cycle
6	Chap 7	Chromatin structure, regulation, replication, and analysis; Regulation of DNA replication
7	Chap 9-10.	DNA mutations and DNA repair. Homologous recombination
8	Chap 11. and Midterm 2 (10/17)	Molecular Genetics
9	Chap 12	Mechanisms of transcription.
10	Chap 13.	RNA splicing.
11	Chap 14.	Translation.
12	Chap 15 and Midterm 3 (11/14)	Translation and the genetic code.
13	Chap 16.	Gene regulation in prokaryotes.
14	Chap 17 (Friday 11/23 is a holiday).	Gene regulation in eukaryotes.
15	Chap 17.	Gene regulation in eukaryotes. Epigenetics. Applications to medicine and biotechnology.
16	**Final Exam-Wednesday, 12/12, 11am-1pm for 11am lecture series; Friday 12/14, 11am-1pm for noon lecture series. You must take the final exam at the time scheduled for the lecture series in which you are registered.**	Cumulative, with emphasis on material not covered on the midterms.

BISC 320L
Laboratory Syllabus
Fall, 2007

Lecturer:
Prof. Oscar Aparicio
Office Hours: Fridays 2:00-3:50 p.m. in RRI 219B
e-mail: oaparici@usc.edu

Prof. Robert Baker
Office Hours: Mondays from 2:00-3:45 p.m. in RRI 104A
e-mail: baker@usc.edu

Lab Director:
Shelley Cao, Ph.D.
Office: ZHS 353
Tel: (213) 740-6079
e-mail: sxcao@usc.edu (preferred method of communication)
Office Hour: Open door policy or by appointment.

Online Course Materials:
Supplemental course materials will be posted on the Blackboard website. Your USC e-mail username and password will allow you to access the secure site: https://blackbaord.usc.edu. If you have trouble with Blackboard, please direct all your questions to: learn@usc.edu.

Lecture Information and Policies:
Please see separate lecture syllabus provided by Drs. Aparico and Baker.

Course Grade:
Final Grades will be given out of 700 points total for the course.
- 100 pts midterm #1
- 100 pts midterm #2
- 100 pts midterm #3
- 200 pts final exam (cumulative)
- 200 pts lab

Required Laboratory Supplies:
1. BISC 320 Lab manual, available at the bookstore.
2. Lab Notebook with carbon or carbonless duplicate pages.
3. Very fine-point permanent marker.

Recommended Laboratory Supplies:
Lab coat or apron.

BISC 320L - Laboratory Guidelines

Mandatory Attendance of Laboratory Session

You are required to attend the weekly laboratory session in your registered section. You are also to remain for the entire lab session or until excused by your TAs. Please do not schedule any appointments during your regular lab periods.

Policy on lab make-up or substitution:

If you missed your regular lab due to a serious illness or emergency which prevented you from attending school, you may attend another open lab within the same week. No make-up lab is allowed once the week is over. Please send an e-mail request to the administrative TA **Jan Liu** <jiajuanl@usc.edu> within 24 hours to acquire approval. Proof is required.

If you need to make a lab substitution due to university sponsored events (e.g. athletic events, class fieldtrips) or religious holidays, send an e-mail request to the administrative TA **Jan Liu** <jiajuanl@usc.edu> at least 48 hours in advance to acquire approval. Proof is required.

If you are approved for lab make-up or substitution, it is your responsibility to make sure your quiz and lab write-up scores are properly recorded.

Laboratory Point Distribution

The laboratory session will count for ~30% (200 points) of your final grade distributed as follows:

Comprehensive Lab Exam	45 points
Lab Write-ups	80 points
Lab Quizzes	40 points
Group Oral Presentation	20 points
Lab Participation	15 points

Lab Exam: The comprehensive lab exam will be based on exercises and topics covered in the laboratory throughout the semester. Exam will consist of short answers, data interpretation and calculations.

Missed Lab Exam: ***No make-up lab exam will be given after the exam week.*** You can take the exam in another lab session if you missed the exam due to a serious illness or emergency which prevents you from attending school. You will be required to present proof. You must notify the Lab Director at least 24 hours prior or subsequent to the missed exam. If you do not have a valid excuse or fail to provide it within the allotted time, you will receive a zero for the exam.

Lab Write-Ups: For each experiment there will be one lab write-up worth 10 points. A lab write-up consists of two parts, a ***pre-lab write-up*** and a ***post-lab write-up***. See Lab Write-up Guideline in the **Laboratory Manual** for details.

Lab Quizzes: Each student will take a quiz during the FIRST 5 MINUTES of each lab session. Each quiz is worth 5 points. There is no make-up for the quiz. To prepare, make sure your read the lab manual, know the purpose of the lab, and have a general idea of the procedure(s).

Oral Presentation: Student will make a group oral presentation in the lab session. Specific requirements for the presentation will be provided.

Lab Participation: All lab exercises will be conducted by groups of two students. It is important to remember that each student will be graded individually on his or her lab participation. Lack of participation or failure of proper clean-up will result in point deduction.

Online Posting of Grades

Blackboard (https://blackbaord.usc.edu) lists BISC 320 lecture and lab sections as "separate courses" for easy record keeping. All lecture exam scores are posted in LECTURE SECTION. All lab grades are posted in your LAB SECTION**.** Be sure to check for additional postings on a weekly basis. In the event of any mistakes, it is the student's responsibility to notify the Lab Director or TA ASAP.

*** In the interest of fairness, your total lab points may be normalized to account for any systemic TA grading biases at the end of the semester.*

Students with Disabilities

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BISC 320L - Laboratory Schedule
Fall, 2007

Week	Week Beginning	Experiment, Exam, or Assignment Due
1	Aug 27	No Labs
2	Sep 3	Lab Orientation and Check-in (mandatory attendance, no lab write-up, no quiz)
3	Sep 10 *Sep 14*	Lab 1: Spectrophotometric Analysis of Nucleic Acids *Last day to add and drop without "W"*
4	Sep 17	Lab 2: DNA Profiling—Polymerase Chain Reaction
5	Sep 24	Lab 3: DNA Agarose Gel Electrophoresis Sep 24: Lecture Midterm 1
6	Oct 1	Lab 4: Transformation of *Escherichia coli* with Foreign Plasmids *(pre-lab only)*
7	Oct 8	Lab 4, cont: Transformation of *Escherichia coli* with Foreign Plasmids *(post-lab only, no quiz)*
8	Oct 15	Lab 5: Plasmid DNA Isolation and Restriction Digest Oct 17: Lecture Midterm 2
9	Oct 22	Lab 6: Confirmation of Plasmid Identity using Restriction Mapping
10	Oct 29	Group Oral Presentation
11	Nov 5	Lab 7: SDS-PAGE Electrophoresis of Proteins
12	Nov 12	Lab 8: Western Blotting Nov 14: Lecture Midterm 3 *Nov 16: Last day to drop a class with a mark of "W"*
13	Nov 19	Thanksgiving Recess. No Labs
14	Nov 26	Lab Exam Review
15	Dec 3	Comprehensive Lab Exam
		Final Exam Schedule: Wednesday, Dec 12: 11a.m.-1:00 pm (11:00 class) Friday, Dec 14: 11 a.m.-1:00 pm (12:00 class)