

# Introductory Biology Laboratory

## BIOLOGY 2281

### Spring 2008

#### Class Information

**Lecture:** Friday: 1:30-2:20pm at MC 2.410

**Lab:** Monday or Tuesday at MP 2.202. See Table below:

Day of the Week	Section #	Time	Instructor
Monday	101	8:30 am – 11:20 am	Dr. Lin
Monday	102	11:30 am – 2:20 pm	Dr. Lin
Monday	103	2:30 pm – 5:20 pm	Dr. Zhou
Monday	104	5:30 pm – 8:20 pm	Dr. Zhou
Tuesday	105	8:30 am – 11:20 am	Dr. Lin

#### Instructors Contact Information

- Dr. Wenju Lin, [wenju@utdallas.edu](mailto:wenju@utdallas.edu)
- Dr. Alice Zhou, [zxz051000@utdallas.edu](mailto:zxz051000@utdallas.edu)

#### Instructor Office hours and location:

- Dr. Lin: Tuesday 11:20 am – 12:10pm at MP2.202
- Dr. Zhou: Monday 1:30 pm – 2:20 pm at MP2.202

#### Your Section's Teaching Assistants

Name	Email Address

#### COURSE PRE-REQUISITES: BIOL 2311

#### COURSE DESCRIPTION

The primary goal of this semester-long course is to provide you with opportunities to learn bioinformatics and various laboratory skills and techniques used in molecular biology. Lectures discuss the theoretical aspects of the experiments carried out in the laboratory. Each laboratory experience builds or interconnects with the others and seeks a balance between biological content and conceptual understanding. The curriculum is tailored to the mission and strengths of the Department of Molecular and Cell Biology at the University of Texas at Dallas.

#### STUDENT LEARNING OBJECTIVES/OUTCOMES

**Objectives:** The goal of this course is to give students opportunities for hands-on learning of biological principles. This course teaches students the basic concepts of bioinformatics; the microbiological concepts and techniques such as microscopy and aseptic handling of microorganisms; bacterial transformation; eukaryotic cell divisions; biochemical concepts and techniques such as properties and identification of macromolecules, determination of the rate of an enzyme-catalyzed reaction and protein gel electrophoresis; DNA-centered molecular biology principles and techniques including polymerase chain reaction, restriction digestion, plasmid mapping and DNA agarose gel electrophoresis. Each laboratory experience builds or interconnects with the others and seeks a balance between biological content and conceptual understanding.

**Outcomes:** Students will therefore:

1. Be able to define, explain, and give examples of the basic concepts in bioinformatics, structure and properties of biologically important macromolecules, enzyme kinetics, eukaryotic cell divisions and bacterial transformation, and polymerase chain reaction.
2. Be able to perform basic molecular biology techniques in DNA manipulation.
3. Be able to use common biological laboratory skills, techniques and instrumentations.
4. Learn how to properly present and process data, interpret data analytically and draw appropriate conclusions.

## REQUIRED COURSE MATERIAL

- Biology 2281 Lab Manual, 2008 by Dr. Lin and Dr. Zhou ( posted at WebCT6 ; Follow all the instructions on the sign-in page of WebCT to check your computer. Add “webct6.utdallas.edu” to your trusted sites)

1. Open Internet Explore. Select **Tools** then choose **Internet Options**. The *Internet Options* screen appears.
2. Select the **Security** tab.
3. Click the **Trusted Sites** button. Click on **Sites** button.
4. Type “webct6.utdallas.edu”.
5. Uncheck the option of **Require server verification....** Click **ADD** then **OK** to finish.

- **Printed Lab procedures are required for lab exercises**, Adobe reader needed.

## COURSE EVALUATION/GRADING SCHEMES

Students may earn a maximum of 500 points. The following table lists the details of assessment items and the point distributions. The final grades for the course will be assigned as follows: (note partial grades such as A- or B+ etc will be issued and each letter grade listed below includes these partial grades)

A:	450-500;
B:	400-449;
C:	350-399;
D:	300-349;
F:	0-299

Assessment Activity	Points
Mid-term Exam including lab practical	120
Final Exam including lab practical	130
10 out of 11 Post-Lab Reports (@20 pts each)	200
5 out of 6 quizzes (@10 pts each)	50
<b>Total</b>	<b>500</b>

- **Post-Lab Reports:** Although lab exercises will be done in groups of two or more students, each student must turn in his or her own typed report for grading. Your report should reflect your independent processing and presentation of data and answering related questions. Do not copy material from other students. Do not allow any other student to see or copy your work. Any form of scholastic dishonesty will not be accepted. Your work will be graded based on neatness, accuracy and completeness. **If you are not physically present during a particular lab, you are not entitled to turn in a post-lab report for credit.** One of the lowest report grades will be dropped.
- **Lab Exams:** Exams will be given during the scheduled lab periods. Each exam will be composed of two parts: a lab practical part and a written test. The lab practical part will carry approximately 1/3 of the total exam grade and will focus on important laboratory techniques. The format of the written test will be primarily short answers and may include diagrams and illustrations. They are designed to evaluate your understanding of the basic biological concepts and laboratory methodologies. **You are responsible to study the contents of the lab sessions that you fail to attend.**

- **Quizzes:** The quizzes will be pre-announced and administered at the beginning of the scheduled lab sessions. Students arriving late will not be given extra time to complete the quiz. One of the lowest quiz grades will be dropped.
- **WebCT:** All course related lecture notes and other material including announcements, photos of the lab results, quiz and exam grades will be promptly posted at WebCT. Please check it regularly.

## COURSE POLICIES

- Attendance and Class Participation: Attendance of all lecture and laboratory sessions **ON TIME** is extremely important and thus mandatory, and will be recorded for each lab period. Your performance in the course is dependent on your attendance, so please make every effort to attend all classes as scheduled. Moreover, you are also expected to actively participate in all class activities.

Switching lab sessions after your scheduled lab is over is strictly prohibited. Switching is only allowed if you have a valid reason such as a medical/graduate school interview or a planned medical treatment. To get approval for any section switch, you must inform your instructor at least three days before your planned absence.

- Late work:  
Any post-lab reports that are late will be assessed a 3-point penalty for each **DAY** they are late.
- Missed Exam/Quiz  
No make-up exam or quiz will be administered.
- Lab Safety: See a separate handout

## COURSE OUTLINE/CALENDAR

- **THE FIRST FRIDAY MEETING STARTS ON Jan 11 IN MC 2.410.**
- **There is no lecture on Jan 18 and are no labs on Jan 21, 22.**

Dates	Monday or Tuesday Lab Exercises and Exams	Reports Due	Friday Lecture Topic
Jan 11, Friday	No labs on Jan 7 ,8		E1 (Dr. Lin)
Jan 14-18	E1: Bioinformatics		No lecture
Jan 21-25	No labs on Jan 21,22		E2 (Dr. Lin)
Jan 28-Feb 1	E2: Microscopy	R1	E3 (Dr. Zhou)
Feb 4-8	E3: Eukaryotic Cell Divisions	R2	E4 (Dr. Lin)
Feb 11-15	E4: Microbial Techniques (Lab practical- Microscopy)	R3	E5 (Dr. Lin)
Feb 18-22	E5: Restriction Enzyme Digest and Plasmid Mapping (Lab practical- Microbial)		<b>Mid-term Review</b> (Dr. Lin)
Feb 25-Feb29	<b>Mid-term Exam (E1-E5)</b>	R4, R5	E6 (Dr. Lin)
Mar 3-7	E6: Bacterial Transformation		E7 (Dr. Lin)
Mar 10-14	Spring break		No lecture
March 17-21	No labs on March 17,18		E8 (Dr. Zhou)
Mar 24-28	E7: Extracting and Amplifying mtDNA Day 1 E8: Spectrophotometry		E9 (Dr. Zhou)
Mar 31-Apr 4	E9: Biochemical Testing of Macromolecules Extracting and Amplifying mtDNA Day 2	R6,R8	E10 (Dr. Zhou)
Apr 7-11	E10: Enzyme Assay	R7, R9	E11 (Dr. Zhou)
Apr 14-18	E11: Protein Separation by Gel Electrophoresis	R10	<b>Final Review</b> (Dr. Zhou)
Apr 21-22	<b>Final Lab Exam/Lab Practical (E6-E11)</b>	R11	

**Abbreviations: E= Experiment; R=Report**

## **Student Conduct & Discipline**

The University of Texas System and The University of Texas at Dallas have rules and regulations for the orderly and efficient conduct of their business. It is the responsibility of each student and each student organization to be knowledgeable about the rules and regulations which govern student conduct and activities. General information on student conduct and discipline is contained in the UTD publication, *A to Z Guide*, which is provided to all registered students each academic year.

The University of Texas at Dallas administers student discipline within the procedures of recognized and established due process. Procedures are defined and described in the *Rules and Regulations, Board of Regents, The University of Texas System, Part 1, Chapter VI, Section 3*, and in Title V, Rules on Student Services and Activities of the university's *Handbook of Operating Procedures*. Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations (SU 1.602, 972/883-6391).

A student at the university neither loses the rights nor escapes the responsibilities of citizenship. He or she is expected to obey federal, state, and local laws as well as the Regents' Rules, university regulations, and administrative rules. Students are subject to discipline for violating the standards of conduct whether such conduct takes place on or off campus, or whether civil or criminal penalties are also imposed for such conduct.

## **Academic Integrity**

The faculty expects from its students a high level of responsibility and academic honesty. Because the value of an academic degree depends upon the absolute integrity of the work done by the student for that degree, it is imperative that a student demonstrate a high standard of individual honor in his or her scholastic work.

Scholastic dishonesty includes, but is not limited to, statements, acts or omissions related to applications for enrollment or the award of a degree, and/or the submission as one's own work or material that is not one's own. As a general rule, scholastic dishonesty involves one of the following acts: cheating, plagiarism, collusion and/or falsifying academic records. Students suspected of academic dishonesty are subject to disciplinary proceedings.

Plagiarism, especially from the web, from portions of papers for other classes, and from any other source is unacceptable and will be dealt with under the university's policy on plagiarism (see general catalog for details). This course will use the resources of turnitin.com, which searches the web for possible plagiarism and is over 90% effective.

## **Email Use**

The University of Texas at Dallas recognizes the value and efficiency of communication between faculty/staff and students through electronic mail. At the same time, email raises some issues concerning security and the identity of each individual in an email exchange. The university encourages all official student email correspondence be sent only to a student's U.T. Dallas email address and that faculty and staff consider email from students official only if it originates from a UTD student account. This allows the university to maintain a high degree of confidence in the identity of all individual corresponding and the security of the transmitted information. UTD furnishes each student with a free email account that is to be used in all communication with university personnel. The Department of Information Resources at U.T. Dallas provides a method for students to have their U.T. Dallas mail forwarded to other accounts.

## **Withdrawal from Class**

The administration of this institution has set deadlines for withdrawal of any college-level courses. These dates and times are published in that semester's course catalog. Administration procedures must be followed. It is the student's responsibility to handle withdrawal requirements from any class. In other words, I cannot drop or withdraw any student. You must do the proper paperwork to ensure that you will not receive a final grade of "F" in a course if you choose not to attend the class once you are enrolled.

## **Student Grievance Procedures**

Procedures for student grievances are found in Title V, Rules on Student Services and Activities, of the university's *Handbook of Operating Procedures*.

In attempting to resolve any student grievance regarding grades, evaluations, or other fulfillments of academic responsibility, it is the obligation of the student first to make a serious effort to resolve the matter with the instructor, supervisor, administrator, or committee with whom the grievance originates (hereafter called “the respondent”). Individual faculty members retain primary responsibility for assigning grades and evaluations. If the matter cannot be resolved at that level, the grievance must be submitted in writing to the respondent with a copy of the respondent’s School Dean. If the matter is not resolved by the written response provided by the respondent, the student may submit a written appeal to the School Dean. If the grievance is not resolved by the School Dean’s decision, the student may make a written appeal to the Dean of Graduate or Undergraduate Education, and the dean will appoint and convene an Academic Appeals Panel. The decision of the Academic Appeals Panel is final. The results of the academic appeals process will be distributed to all involved parties.

Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations.

### **Incomplete Grade Policy**

As per university policy, incomplete grades will be granted only for work unavoidably missed at the semester’s end and only if 70% of the course work has been completed. An incomplete grade must be resolved within eight (8) weeks from the first day of the subsequent long semester. If the required work to complete the course and to remove the incomplete grade is not submitted by the specified deadline, the incomplete grade is changed automatically to a grade of **F**.

### **Disability Services**

The goal of Disability Services is to provide students with disabilities educational opportunities equal to those of their non-disabled peers. Disability Services is located in room 1.610 in the Student Union. Office hours are Monday and Thursday, 8:30 a.m. to 6:30 p.m.; Tuesday and Wednesday, 8:30 a.m. to 7:30 p.m.; and Friday, 8:30 a.m. to 5:30 p.m.

The contact information for the Office of Disability Services is:  
The University of Texas at Dallas, SU 22  
PO Box 830688  
Richardson, Texas 75083-0688  
(972) 883-2098 (voice or TTY)

Essentially, the law requires that colleges and universities make those reasonable adjustments necessary to eliminate discrimination on the basis of disability. For example, it may be necessary to remove classroom prohibitions against tape recorders or animals (in the case of dog guides) for students who are blind. Occasionally an assignment requirement may be substituted (for example, a research paper versus an oral presentation for a student who is hearing impaired). Classes enrolled students with mobility impairments may have to be rescheduled in accessible facilities. The college or university may need to provide special services such as registration, note-taking, or mobility assistance.

It is the student’s responsibility to notify his or her professors of the need for such an accommodation. Disability Services provides students with letters to present to faculty members to verify that the student has a disability and needs accommodations. Individuals requiring special accommodation should contact the professor after class or during office hours.

### **Religious Holy Days**

The University of Texas at Dallas will excuse a student from class or other required activities for the travel to and observance of a religious holy day for a religion whose places of worship are exempt from property tax under Section 11.20, Tax Code, Texas Code Annotated.

The student is encouraged to notify the instructor or activity sponsor as soon as possible regarding the absence, preferably in advance of the assignment. The student, so excused, will be allowed to take the exam or complete the assignment within a reasonable time after the absence: a period equal to the length of the absence, up to a maximum of one week. A student who notifies the instructor and completes any missed exam or assignment may not be penalized for the absence. A student who fails to complete the exam or assignment within the prescribed period may receive a failing grade for that exam or assignment.

If a student or an instructor disagrees about the nature of the absence [i.e., for the purpose of observing a religious holy day] or if there is similar disagreement about whether the student has been given a reasonable time to complete any missed assignments or examinations, either the student or the instructor may request a ruling from the chief executive officer of the institution, or his or her designee. The chief executive officer or designee must take into account the legislative intent of TEC 51.911(b), and the student and instructor will abide by the decision of the chief executive officer or designee.

### **Off-Campus Instruction and Course Activities**

Off-campus, out-of-state, and foreign instruction and activities are subject to state law and University policies and procedures regarding travel and risk-related activities. Information regarding these rules and regulations may be found at the website address given below. Additional information is available from the office of the school dean. ([http://www.utdallas.edu/BusinessAffairs/Travel\\_Risk\\_Activities.htm](http://www.utdallas.edu/BusinessAffairs/Travel_Risk_Activities.htm))

*These descriptions and timelines are subject to change at the discretion of the Professor.*