

Introductory Biology Laboratory

BIOLOGY 2281

Spring 2009

Class Information

Lecture: Friday: 12:30-1:20 P.M. at JO 3.516

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. Lin
Monday	104	5:30 pm – 8:20 pm	Dr. Lin
Tuesday	105	8:30 am – 11:20 am	Dr. Lin

Instructor Contact Information

- Dr. Wenju Lin, wenju@utdallas.edu

Instructor Office hours and location:

- Monday 10 A.M.-11 A.M. and Tuesday 11 A.M. – 12:00 P.M at MP2.202 (by appointment)

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. Alice Zhou (posted weekly at WebCT6 ; To download files of lab procedures and lecture slides, follow 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.
- Reference books:
Biology, Raven et al., 8th Edition, McGraw-Hill, 2007. ISBN: 0-07-291845-4

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	100
Final Exam including lab practical	110
10 out of 11 Post-Lab Reports (@20 pts each)	200
9 out of 10 Pre-lab/ quizzes (@10 pts each)	90
Total	500

Post-Lab Reports: The format of lab reports will vary from week to week depending upon the type of experiment that was performed. 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 except report E11 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.**
- **Pre-Lab Assignments/Quizzes:** Most of the lab exercises will have either pre-lab assignments or pre-lab quizzes to make sure that you are prepared for the experiment before you come to the lab. You must turn in the completed "Pre-lab Sheet" at the beginning of the scheduled lab. Pre-lab quizzes will also be administered at the beginning of lab. 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, review questions and all of the 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.

- Pre-read: Before you come to each lab, read the procedural handout for background information and procedures for the experiment you will be doing. This helps you not only do well on the pre-lab quizzes or pre-lab assignments, but also to **save you time** and avoid unnecessary mistakes during the lab. Part of the lab procedures can include assignments that are due at the beginning of the lab session or the report pages that will be completed in the lab session.
- Late work:

You must turn in the post-lab reports at the beginning of the scheduled lab. Make a complete copy of your lab report before turning it into the TA. Any post-lab reports that are late will be assessed a **3-point** penalty for each **DAY** they are late. Arrange the time and location with the graduate TA to turn in your reports. It is your responsibility to confirm that your TA actually received your late reports.
- 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 16 IN JO 3.516.**
- **There is no lecture on Jan 23 and are no labs on Jan 12,13,19,20.**

Week of	Monday or Tuesday Lab Exercises and Exams	Pre-Lab or Quiz	Report Due	Friday Lecture Topic
Jan 12-16	No labs on Jan 12 or 13			Jan 16: E1
Jan 19-23	No labs on Jan 19 or 20			Jan 23: No lecture
Jan 26-30	E1: Bioinformatics			Jan 30: E2
Feb 2-6	E2: Microscopy	Pre-Lab- E2	R1	Feb 6: E3
Feb 9-13	E3: Microbial Techniques	Quiz- E3	R2	Feb 13: E4
Feb 16-20	E4: Eukaryotic Cell Divisions	Quiz- E4		Feb 20 E5
Feb 23-Feb27	E5: Restriction Enzyme Digest and Plasmid Mapping	Pre-lab E5	R3, R4	Feb 27: E6
Mar 2-6	Mid-term Exam/ lab practical (E1-E5)		R5	Mar 6: E7
Mar 9-13	E6: Biochemical Testing of Macromolecules E7: Extracting and Amplifying mtDNA Day 1	Pre-lab E6 Quiz -E7		Mar 13: No lecture
March 16-20	Spring break			
Mar 23-27	No labs on March 23,24			Mar 27: E8
Mar 30-Apr 3	E8: Spectrophotometry E7: Extracting and Amplifying mtDNA Day 2	Pre-lab- E8	R6	Apr 3: E9
Apr 6-10	E9: Bacterial Transformation	Quiz- E9	R7, R8	Apr 10: E10
Apr 13-17	E10: Enzyme Assay	Quiz- E10		Apr 17: E11
Apr 20-24	E11: Protein Separation by Gel Electrophoresis	Pre-lab- E11	R9, R10	
Apr 27-May 1	Final Lab Exam/Lab Practical (E6-E11)		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/Business Affairs/Travel_Risk_Activities.htm)

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