Introductory Biology Laboratory
BIOLOGY 2281
FALL 2013

Class Information

Lecture: Monday: 12:00-12:50 P.M. at SLC 1.102
Lab: at SLC 2.215 See Table below:

Day of the Week	Section #	Time	Instructor
Monday	102	1:00 PM – 3:45 PM	Dr. Lin
Monday	109	4:00 PM – 6:45 PM	Dr. Pickett
Tuesday	103	10:00 AM –12:45 PM	Dr. Lin
Tuesday	104	1:00 PM – 3:45 PM	Dr. Pickett
Tuesday	101	4:00 PM – 6:45 PM	Dr. Pickett
Wednesday	105	10:00 AM –12:45 PM	Dr. Lin
Wednesday	106	1:00 PM – 3:45 PM	Dr. Lin
Thursday	107	10:00 AM –12:45 PM	Dr.Lin
Thursday	108	1:00 PM – 3:45 PM	Dr.Lin

Instructor Contact Information

- Dr. Wenju Lin wenju@utdallas.edu
- Dr. Elizabeth Pickett beth.pickett@utdallas.edu

Instructor Office hours and locations: (announced on Aug 26)

- **THE FIRST MONDAY MEETING STARTS ON Aug 26 IN SLC 1.102**
- **THE FIRST LAB STARTS ON Aug 26, 27, 28, 29. IN SLC 2.215.**
- **There are no labs on Sep 2, 3, 4, 5.**

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.

COURSE MATERIAL

- Biology 2281 Lab Manual, 2013 by Dr. Wenju Lin, Dr. Beth Pickett and Dr. Alice Zhou: Files of lab procedures and lecture slides will be posted at http://elearning.utdallas.edu on Aug 23, no purchase required. Printed Lab procedures are **required** for each lab exercise. Several topics include pre-lab, graph paper and report pages that need to be printed on letter or A4 size paper **single-sided**. Adobe reader needed.
- Turning Technologies ResponseCard RF LCD ("clicker") can be purchased at the University Bookstore and at the Off Campus Bookstore. Students are expected to have a clicker by lecture #2 and bring it to every lecture session for the duration of the semester.
- Suggested reference books: Textbook for BIOL2311 or 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 partial grades)

A (A-, A, A+): 450-505;
B (B-, B, B+): 400-449;
C(C-, C, C+): 350-399;
D(D-, D, D+): 300-349;
F :0-299

Assessment Activity	Points	Your points
Mid-term Exam including lab practicals	92	
Final Exam (including lab practicals)	118 (110+8)	
10 out of 11 Post-Lab Reports (@20 pts each)	200	
9 out of 10 Pre-lab/ quizzes (@10 pts each)	90	
Clicker points	5	
Total	505	

- **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:** Midterm and final 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. 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 pre-lab/quiz grades will be dropped.

- **eLEARNING**: 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 on eLEARNING. Please check it regularly. Contact your instructor with concerns regarding grades as soon as possible. Grades regarding E1-E5 will be finalized on **Oct 10**, grades regarding E6-E10 will be finalized on **Nov 21**.

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.

  You will have the opportunity to earn points based on your participation in the lecture class as documented via use of your clicker. You will not be able to earn participation points if you fail to bring your personally registered clicker to the lecture. Additionally, you will not earn participation points if you fail to properly utilize your clicker during lecture (i.e., turning it on, electronically registering in class, responding to questions, etc.). Each question is worth 1 point – 0.5 points for responding and 0.5 points for correct answers. Students who earn between 70%-100%, 60-69%, 50-59%, or 0-49% of the total possible clicker points will receive 5, 3, 1, or 0 course points respectively. Clicker points will be awarded during lectures #2-11. Practice questions designed to accustom you to using the clicker will be presented during lecture #1, but will not contribute to your clicker score.

  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: **Pre-labs** are due at the beginning of your lab session. No late pre-labs will be accepted. **Post-lab reports** are due at the beginning of the next scheduled lab unless otherwise noted (Report 4 and Report 11 are due at the end of lab session). 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 your graduate TA to turn in your late reports. It is your responsibility to confirm that your TA actually received your late reports.

- Missed Exam/Quiz

No make-up exams or quizzes will be administered.

- Lab Safety: See a separate handout. Safety glasses will be provided in the laboratory.

COURSE OUTLINE/CALENDAR

- **THE FIRST MONDAY MEETING STARTS ON Aug 26 IN SLC 1.102**
- **THE FIRST LAB STARTS ON Aug 26, 27, 28, 29. IN SLC 2.215.**
- **There are no labs on Sep 2, 3, 4, 5.**

Week of	Monday through Thursday Lab Exercises and Exams	Pre-Lab or Quiz	Report Due (in lab)	Monday Lecture Topic
Aug 26-30	E1: Bioinformatics			Aug 26: E1
Sep 2-6	No labs on Sep 2, 3, 4, 5			**Sep 2:No lecture**
Sep 9-13	E2: Microscopy	Pre-Lab E2	R1	Sep 9: E2
Sep 16-20	E3: Microbial Techniques	Quiz - E3	R2	Sep 16: E3
Sep 23-27	E4: Eukaryotic Cell Divisions Analysis of E3 results	Quiz - E4	**R4**	Sep 23: E4
Sep 30-Oct 1-4	E5: Restriction Enzyme Digest and Plasmid Mapping	Pre-lab E5	R3	Sep 30: E5
Oct 7-11	**Mid-term Exam (E1-E5) / lab practical**		R5	Oct 7: E6
Oct 14-18	E6: Biochemical Testing of Macromolecules E7: Extracting and Amplifying mtDNA Day 1	Pre-lab E6 Quiz - E7		Oct 14**:** E7
Oct 21-25	E7: Extracting and Amplifying mtDNA Day 2 E8: Bacterial Transformation **/ lab practical**	Quiz - E8	R6	Oct 21: E8
Oct 28-31	E9: Spectrophotometry Analysis of E8 results	Pre-lab E9	R7	Oct 28: E9
Nov 4-8	E10: Enzyme Assay	Quiz - E10	R8, R9	Nov4: E10
Nov 11-15	E11: Protein Separation by Gel Electrophoresis	Pre-lab E11	R10, **R11**	Nov11: E11
Nov 18-22	**Final Lab Exam/Lab Practical (E6-E11)**			Nov 18: No lecture

Abbreviations: E= Experiment; R=Report

Lab practical regarding E2 will be assessed before the end of lab period E8.
Lab practical regarding E3 will be assessed during Midterm in the assigned lab period.
Report 4 and Report 11 are due at the end of assigned lab hours.
The lowest report grade from E1-E10 will be dropped.

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 (SSB 4.400, 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, using another student's clicker in an attempt to earn points for that student or allowing another student to use your clicker in an attempt to earn points for you, plagiarism, collusion and/or falsifying academic records. Students suspected of academic dishonesty are subject to disciplinary proceedings.

Plagiarism from the web, from portions of papers for other classes, or from any other source is unacceptable and will be dealt with under the university's policy on plagiarism.

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 deal 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 contact information for the Office of Disability Services is:
The University of Texas at Dallas, Office: SSB 3.200
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.