

School of Mathematics and Natural Sciences
The University of Texas at Dallas

Lab SLC 2.216:

Thursday	8:30 am – 12:30 pm
	1:30 am – 5:30 pm
Friday	8:30 am - 12:30 pm
	1:30 pm - 5:30 pm,

Office hours: Wednesday 9 am – noon or by appointment

Course Start/End Date: August 26th – December 11th

Current techniques that are utilized in a modern Molecular Biology research laboratory. Practical skills taught include monitoring bacterial growth, phenotype testing of bacterial strains, plasmid DNA isolation, restriction digest analysis, DNA cloning, and DNA fingerprinting using the polymerase chain reaction (PCR). Advanced techniques include fundamental microscopy, DNA transfection and general characterization of animal cell cultures, sub-cellular fractionation using differential centrifugation, chemical mutagen testing and fluorescent microscopy.

1. Satisfactory completion of Classical and Molecular Genetics (BIO3301).
2. Satisfactory completion of Eukaryotic Molecular and Cell Biology (BIO3302).
3. Satisfactory completion of Biochemistry Laboratory (BIO3380) – no exceptions.

Apply understanding of scientific concepts instead of simply memorizing facts.
Master fundamental math required in the modern Molecular Biology Lab.
Be able to make and interpret figures, charts, and graphs.
Express scientific ideas by writing them in a clear, concise, logical, and accurate manner.
Gain solid experience in basic bacterial techniques, restriction digests analysis, cloning, and PCR/DNA fingerprinting.
Become familiar with basic animal cell culturing, centrifugation, and microscopy techniques.

Required Materials The Turning Technologies “ResponseCard RF LCD” clickers

Course Materials

The lectures and laboratory procedures with report questions will be posted on eLearning. Printed lab protocols are required for each laboratory. Laboratory schedule will be posted on eLearning in the beginning of the semester.

Recommended readings: Current protocols: Essential Laboratory techniques. Wiley publishing, ISBN987-0-470-08993-4

Course Policy.

To perform the laboratory procedure properly, you need to be familiar with the protocol. Lab protocols and report questions will be posted on eLearning at least 2 days before the lab.

Printed laboratory protocol is required during the lab.

Most of the labs will have a pre-lab assignment, such as experimental flow-chart. To see if you need to prepare a flow-chart, read the report questions before the lab.

You need to have an idea of the goal and expectations of the procedure performed. To ensure you understand it, you will have a quiz before the lab based on the lecture material.

You will write a report on the experiment performed and submit it in the beginning of the next lab. There will be 3 points taken off for each day of late submission for the regular reports and 5 points per day for 100 points report.

The reports will be graded and returned in a week. You have a week after receiving the reportback to dispute the grade. After that, I will discuss the problem with you but there will be no grade change except for the calculating error.

Outside of schedule assignments. For some labs, you will need either to come after the lab to check the results before writing a report, or before the lab to prepare materials for the lab. Such instances are indicated in the laboratory schedule. If you are not able to come, you need to inform the instructor to make an arrangements for the task to be performed. If you miss the event and no arrangement were made, you can either drop the lab or have 50% of the grade taken off the report.

You will have two exams and two lab practicals during the semester.

Clickers. You will have the opportunity to earn points based on your participation in the lecture class as documented via use of your clicker. Participation points will NOT be awarded if you fail to either bring or properly utilize your clicker during lecture. Students who earn between 70%-100%, 60-69%, 50-59%, 0-49% of the total possible clicker points (percent of correct answers) will receive 15, 10, 5, or 0 course points

Attendance. You will have an opportunity to earn points for on time lab attendance. All labs will start on time and you will lose 1 pt for each 5 minutes late.

Clean-up. The lab should be left clean and in order after you done. You will have an opportunity to earn points for the lab clean-up. This will not be an individual assignment but you will need to work as a team. If the lab is left not in order, all section will lose 3 points for that lab.

When multiple sections of the course exist - Attendance at a different lab section time is not allowed without prior approval from the instructor. Instructor should be notified **a week before the desired lab switch** by e-mail.

“Excused Absences” – There are no make-ups for missed labs. You are not allowed to submit a report for a missed lab. In the event that you are unable to attend a different lab section because of either being admitted at a hospital or attending a medical/graduate school interview, then you will receive a "NG" (no grade) for that experiment with proper documentation (the first occurrence will “use up” your “drop the lowest 25 point lab report grade”). A "NG" does not count for or against your course grade. You can get only one NG for the semester.

Mid-term Exam – The mid-term exam will cover the material presented through and including lab just prior to the midterm exam.

Mid-term Lab Practical – In order to objectively test your laboratory technique, we will conduct a lab practical during your scheduled lab time. The intent is to test your ability to perform at the bench. The mid-term lab practical will be composed of several stations where you will be asked to perform a routine laboratory procedure that we have either previously discussed or actually performed in this course. It will also include a written calculations test.

Final Exam - The final exam will be a comprehensive exam that will focus primarily on experiments conducted after the midterm exam.

Final lab practical will include short answer bench test and the calculations test

Course Access and Navigation

The information about the course will be communicated through eLearning.

If you have any problems with your UTD account or with the UTD eLearning.server, you may send an email to: assist@utdallas.edu or call the UTD Computer Helpdesk at: **972-883-2911**.

Interaction with Instructor: The instructor will communicate with students using the Announcements tool on eLearning and Z-mail account. Please, do not send me e-mails through eLearning.

Students may send personal concerns or questions to the instructor using UTD e-mail address provided. The instructor will reply to student emails within 3 working days under normal circumstances. Students need to use their UTD account e-mail to receive an answer. Unsigned e-mails will not be answered.

Grade criteria for the course

You will write 10 reports on the laboratories performed worth 30 points each (one lowest can be dropped). To see if you have pre-lab assignment such as a flowchart, read the report questions before the laboratory.

There will be 10 quizzes worth 10 points each (two lowest can be dropped).

There will be two exams 100 points each and two lab practicals 100 points each.

You will write one 100 points report on the cloning experiment.

There will be attendance and clean-up points included in the total points for the course.

You can earn up to 15points by using clickers at the lecture

Total maximum points earned for the course will be 925 (subject to change).

A break down is presented below:

Lab Reports	300 (30 dropped)	270 points
Quizzes	10 (20 dropped)	80 points
Mid-term Exam		100 points
Mid-term Lab Practical		100 points
Final Exam		100 points
Final lab practical		100 points
100 points report		100 points
Clickers		up to 15 points
Attendance	3 ptsx10 =30	up to 30 points
Clean-up	3 ptsx10 =30	up to 30 points

Points	Letter	Points	Letter
<u>Earned Grade</u>		<u>Earned Grade</u>	
97-100%	A+	76-78%	C+
92-96% A		72-75%	C
89-91% A-		69-71%	C-
86-88% B+		66-68%	D+
82-85% B		62-65%	D
79-81% B-		59-61%	D-

Course Outline/Schedule

Experiment	Assignment	Max Grade
1a, 1b	Basic Bacterial Techniques	30
2	Gel electrophoresis of pre-digested DNA	30
3	Cloning I – Restriction digest and ligation	30
4	Cloning II - Bacterial transformation	30
5	Cloning III – Isolation of plasmid DNA, restriction digest	30
Exam	Midterm Exam on Experiments #1-#5	100
Practical	Midterm Lab Practical	100
6, 7	Plasmid analysis; DNA fingerprinting using PCR	30
8	Basic cell culture techniques	30
	100 points report writing on Exp. 3-6, 8	100
9	Fluorescent microscopy	30
10	Ames test	30

11	Cell fractionation	30
Practical	Final Lab Practical (comprehensive)	100
Exam	Final exam (comprehensive)	100
----	Quizzes 10, 10 pts each, two dropped	80
----	Extra Credit (may or may not be offered)	--
----	Subtract one lowest lab reports(or one drop)	Minus (30)
----	Labs	300 -30=270
	Exams	500
	Attendance and clean-up	60 pts
	Clickers	15 pts
	Total points	925

Subject to change

Scholastic Dishonesty

Scholastic Dishonesty will be taken very seriously. Though you will be working in pairs for some of the labs, the reports should be written individually and should not copy someone else's report.

The University has policies and discipline procedures regarding scholastic dishonesty. Detailed information is available on the [Scholastic Dishonesty](#) web page. All students are expected to maintain a high level of responsibility with respect to academic honesty. Students who violate University rules on scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and/or dismissal from the University. Since such dishonesty harms the individual, all students and the integrity of the University, policies on scholastic dishonesty will be strictly enforced.

Examples of unacceptable collaboration are:

1. Copying another person's lab report
2. Copying answers out of the lab manual or other source (textbook/website)
3. Copying another person's answers to homework problems
4. Copying another person's answers during a quiz or exam
5. Changing a graded paper and requesting that it be regarded
6. Failing to turn in an assignment and then suggesting that TA/Instructor lost it
7. Falsification of data
8. Copying 100 point reports from previous year students
9. Copying from internet or other sources without references

Syllabus Addendum

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 I, 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.

Students need to be on time for lectures and especially for laboratory. Students that are late for more than 15 minutes will not be allowed to the lab.

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.