

Biology 5421: Methods in Molecular Microbiology (Graduate level) Fall 2015

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Office Hours	Monday and Tuesday 10:30 - 11:50 am
Course Number, Section Number, and Course Title	Biology 5421, Methods in Molecular Microbiology
Course Location and Time	LS 330, Monday 1:00 - 4:50 pm

Description of Course Content: This course is intended to provide students with an overview of different techniques used during manipulation of microorganisms. It will allow students to gain a historical perspective of techniques used in microbiology (e.g., Winogradsky column) as well as learn state of the art molecular characterization of microorganisms and their genetic manipulation.

Student Learning Outcomes: Upon completion of this course, students should be able to isolate and characterize microorganisms, to design an experiment, and to report its findings. Students are also expected to know about genomic DNA isolation, polymerase chain reaction (PCR), gel electrophoresis, and DNA sequence analysis.

Required Textbooks and Other Course Materials: I Microbiologist: A discovery-based course in Microbial Ecology and Molecular Evolution. Erin R. Sanders and Jeffrey H. Miller. ASM Press, ISBN 978-1-55581-470-0. I will also often supplement the book with material from other sources.

Descriptions of major assignments and examinations: Reading of assigned chapters is mandatory. Laboratory quizzes will be based on assigned book chapter and lab experiments. Date for quizzes will be announced or they will be given randomly without announcement. Two reports are expected: **Report 1 (Oct. 26) and Report 2 (Dec. 14)**. Reports should be submitted on instructor's laboratory desk at 1:00 pm. Late submission will cause deduction of points from your report. There will be no examinations.

Attendance: Attendance is not checked or tracked. However, if you miss a class, this will certainly reflect on your grade. You could miss a quiz and/or your lab notebook will not be up to date.

Grading: Your performance in this course will be assessed through quizzes, two reports, laboratory notebook, and participation. The following grading scale will be used to determine your final grade.

<u>Source</u>	<u>Portion</u>	<u>Grade</u>	<u>Percentile</u>
Quizzes	15%	A	> 90%
Report 1	25%	B	80 - 89%
Report 2	30%	C	70 - 79%
Lab. notebook	10%	D	60 - 69%
Presentations	20%	F	< 60%
Total	100%		

Grades, final lab grades, and final course grades will be available on blackboard.

Lab Materials: At the beginning of the semester, your group will receive a container with all the materials that will be used throughout the course. You are responsible for it !!! If laboratory materials disappear, the entire group will lose points on final grade.

Graduate student presentation (participation): Graduate students will be required to give **2 presentations** of 15 min each to the Lab. Presentation will be evaluated based on the following topics:

- *Delivery:* Does the speaker make a favorable impression? Voice, eye contact?
- *Organization:* Does the presentation follow a logical organization?
- *Visual Aid:* What visual aids were used?
- *Familiarity with the subject:* Does the author have sufficient knowledge?
- *Results:* Has the author presented the results clearly and in sufficient detail?
- *Time:* Did the speaker use the allowed time for presentation?

During the presentation, the following questions will be given to the audience for evaluation.

- i) Did the presentation enhance your understanding of the topic?
- ii) Was the presentation clearly organized and easy to follow?
- iii) Did speaker begin and finish without rambling and rushing?
- iv) Was the response to questions friendly and knowledgeable?
- v) Overall rating of talk.

Make-up Exams: You are required to be present on report submitting dates. Absences will be excused only with written request by a physician, other responsible professional, or with written proof of jury duty. No exceptions. If you miss it, you will be given a report score of zero.

Drop Policy: Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. Last day to drop the class is November 4, 2015 at 4:00 pm. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. **Students will not be automatically dropped for non-attendance.** Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (<http://www.uta.edu/aao/fao/>).

Disability Accommodations: UT Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including *The Americans with Disabilities Act (ADA)*, *The Americans with Disabilities Amendments Act (ADAAA)*, and *Section 504 of the Rehabilitation Act*. All instructors at UT Arlington are required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of disability. Students are responsible for providing the instructor with official notification in the form of a letter certified by the **Office for Students with Disabilities (OSD)**. Students experiencing a range of conditions (Physical, Learning, Chronic Health, Mental Health, and Sensory) that may cause diminished academic performance or other barriers to learning may seek services and/or accommodations by contacting:

The Office for Students with Disabilities, (OSD) www.uta.edu/disability or calling 817-272-3364.
Counseling and Psychological Services, (CAPS) www.uta.edu/caps/ or calling 817-272-3671.

Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria and policies for obtaining disability-based

academic accommodations can be found at www.uta.edu/disability or by calling the Office for Students with Disabilities at (817) 272-3364.

Title IX: *The University of Texas at Arlington does not discriminate on the basis of race, color, national origin, religion, age, gender, sexual orientation, disabilities, genetic information, and/or veteran status in its educational programs or activities it operates. For more information, visit uta.edu/eos. For information regarding Title IX, visit www.uta.edu/titleIX.*

Academic Integrity: Students enrolled all UT Arlington courses are expected to adhere to the UT Arlington Honor Code:

I pledge, on my honor, to uphold UT Arlington's tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.

I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.

UT Arlington faculty members may employ the Honor Code as they see fit in their courses, including (but not limited to) having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System *Regents' Rule* 50101, §2.2, suspected violations of university's standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student's suspension or expulsion from the University. Additionally, violators will be given an F grade no matter how well academic performance has been achieved.

Lab Safety Training:

Students registered for this course must complete all required lab safety training prior to entering the lab and undertaking any activities. Once completed, Lab Safety Training is valid for the remainder of the same academic year (i.e., through the following August) and must be completed anew in subsequent years. There are no exceptions to this University policy. Failure to complete the required training will preclude participation in any lab activities, including those for which a grade is assigned.

Electronic Communication: UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at <http://www.uta.edu/oit/cs/email/mavmail.php>.

Student Feedback Survey: At the end of each term, students enrolled in classes categorized as "lecture," "seminar," or "laboratory" shall be directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student's feedback enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlington's effort to solicit, gather, tabulate, and publish student feedback is required by state law; students are strongly urged to participate. For more information, visit <http://www.uta.edu/sfs>.

Final Review Week: A period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week *unless specified in the class syllabus*. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination

during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

Emergency Exit Procedures: Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit, which is located at the east (heading to central stair on the 3rd floor) of Life Science Building. When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist individuals with disabilities.

Student Support Services: UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to resources@uta.edu, or view the information at <http://www.uta.edu/universitycollege/resources/index.php>

Tentative Course Schedule*

Fall 2015

Date	Subject	Required reading**
W1 (Aug. 31)	- Introduction - Making minimal and rich media	- Introduction (xix - xxx) - Unit 1 (pp. 1 - 19)
W2 (Sep. 7)	- No class	
W3 (Sep. 14)	- Winogradsky column - Enrichment technique - Inoculation	- Unit 2 (pp. 31 - 53)
W4 (Sep. 21)	- Isolating microorganisms	
W5 (Sep. 28)	- Description (Microscopy)	- Unit 4 (pp. 113 - 145)
W6 (Oct. 5)	- Growth of microorganisms	
W7 (Oct. 12)	- Genomic DNA extraction	- Unit 3 (pp. 69 - 111)
W8 (Oct. 19)	- Polymerase chain reaction (PCR) - Gel electrophoresis	
W9 (Oct. 26)	- Report 1 due date - Review - Graduate student presentation	
W10 (Nov. 2)	- Plasmid DNA extraction	
W11 (Nov. 9)	- Transformation	
W12 (Nov. 16)	- Sequencing	
W13 (Nov. 23)	- Total DNA extraction from soils	- Unit 5 (pp. 177 - 219)
W14 (Nov. 30)	- BLAST analysis and phylogenetic trees	- Unit 6 (pp. 257 - 300)
W15 (Dec. 7)	- Closing statements - Review - Graduate student presentation	
W16 (Dec. 14)	- Report 2 due date	

* This is **ONLY** an outline of lectures. It might change according to our progress. You **MUST** attend lectures to know when changes in the schedule will take place.

** Additional reading assignments will be provided according to class development.