

SYLLABUS –Spring 2018—MIBO4600L Experimental Microbiology Lab

Times & Locations: Tuesday & Thursday 2:00-4:55 pm in Room 328 Biological Sciences Building; Some classes may be held in the Microbiology Computer Lab (room 217) or Conference Room (201)

Instructors: Dr. Neidle (eneidle@uga.edu), room 529 BioSci, 542-2852;

Dr. Hoover (trhoover@uga.edu), room 548 BioSci, 542-2675

TA: Stacy Bedore (srb72494@uga.edu), room 529 BioSci, 542-3411

Course Objectives: The objectives of the course are (i) introduce students to modern genetic and molecular tools used to analyze microorganisms; (ii) acquaint students with aspects of experimental design; (iii) train students in the proper method for recording scientific data; and (iv) help students develop skills in the critical analysis of data and research literature.

Course Design: Original research will be conducted to characterize predicted LysR-type transcriptional regulators (LTTRs) in *Acinetobacter baylyi* ADP1. Students will work in groups of three, and each group will have a research project that dovetails with the projects of the other groups. We will start the course with everyone working on the regulon of AalR, an LTTR that controls expression of the aspartate ammonia lyase gene (*aspA*). The class will also compare AalR to a similar LTTR that is also involved in aspartate metabolism, DarR. As this course progresses, some groups may start to work on characterizing other LTTRs in *A. baylyi*. Ultimately, each group will work on different aspects of the larger class project. The experimental approaches may include bioinformatics, the isolation of directed and spontaneous mutations in LTTR genes and their target regulatory sequences, creating strains with reporter genes under the control of LTTR-regulated promoters, different types of PCR techniques, and DNA sequence analysis.

Preparation for this course: Students must be familiar with microbial genetics and metabolism. It will be very useful to review bacterial replication, gene structure, transcription, translation, and regulation of transcription and metabolism. Your textbook from MIBO3500 is a good resource. There are also many online resources. As needed, please contact the instructors and/or the TA for additional suggested resources (books, articles, websites, etc.).

Class Schedule: Check eLC site daily for details of the schedule and for assignments.

The academic calendar for UGA can be found at: <http://reg.uga.edu/academicCalendar2017-2018>

Dates for Exams are: Exam 1, Thurs, Feb. 8, 2018; Exam 2, Thurs, March 22, 2018; Final Exam, Tues, May 1, 2018, 3:30-6:30 pm.

Assignments: Check eLC site to find your assignments & deadlines

Protocols, reading assignments (journal articles, reviews, supplemental information for protocols), and worksheets will be posted on the eLC course page. You are required to read and complete any assigned material by the stated deadline; discussions will be held at the start of lab and each student must be prepared to perform the experimental protocols.

Lab notebooks: Lab notebooks must be up to date, including the protocols to be performed on the same day!! Protocols must be hand written and reflect that you understand them or include questions to ask during the pre-lab discussion. If the protocol includes questions, answer them in a file that will be uploaded to eLC by the designated date!! After each week in the lab, there will be an assignment due on Sunday (by midnight) to be submitted on eLC based on that week's lab work.

Group work: You will be assigned to a research group. As a research team you will work together to plan, perform, and interpret the experiments. Each research team will provide periodic **reports or presentations** and give a **final research presentation** to the class. For each assignment you will be told how the grades will be determined.

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Individual work: Each student is responsible for maintaining his or her own **laboratory notebook**. Instructions for keeping a good lab notebook will be given at the beginning of the course and are on eLC. Your lab notebook is **individual work**; do not copy classmates' interpretation of results, data, etc. You should discuss results as a group but your interpretation must be in your own words.

Worksheets will be assigned periodically. Unless you are given other instructions, these are to be worked on without consulting anyone in or outside of the class, i.e. they should reflect the individual's work and knowledge base. For all write-ups, presentations, and lab notebook, DO NOT plagiarize any material from the web, research literature, etc. You must indicate when you are quoting or paraphrasing another source and appropriately reference the source.

Grades: The total number of points that you can earn in the class is **1000** points. There will be 2 in-class exams, each worth 130 points, and a cumulative final exam, worth 160 points. The laboratory notebook is worth 200 points, and weekly assignments based on lab work are worth 120 points. Periodically, there will be worksheets, reports, presentations and/or quizzes. Combined, these assignments will be worth 100 points. Discussion and participation in class is 60 points. The final presentation is worth 100 points. A pre-course learning assessment will be worth up to 20 bonus points, depending on the number of correct answers; 10 bonus points if you get a score of 75% or more correct, and 20 bonus points if you get a score of 85% or more correct (note: at the end of the semester the bonus points are added to the final total number of points that you earned in the class).

Grade Scale: A 1000-930, A- 929-900, B+ 899-870, B 869-830, B- 829-800, C+ 799-770, C 769-730, C- 729-700, D 699-600, F <600.

Course Policy: You are allowed no unexcused absences; 100 points will be deducted from your final grade for every unexcused absence. Excused absences are only absences for which you have a University-approved excuse to miss a class (i.e. doctor's excuse that says you were too sick to attend class on the day that you missed or a University-approved activity such as competition in a UGA-sponsored event.) If you have professional school interviews, you must arrange in advance with Dr. Neidle or Dr. Hoover to miss any lab classes. There are NO make-up exams/quizzes...NO exceptions. If you miss an exam/quiz due to an excused absence you will need to meet with Dr. Neidle or Dr. Hoover to arrange how your missing exam/quiz grade will be handled. If you miss an exam without an approved excuse, then you will receive a grade of zero for the exam/quiz. You must use a pen to take the exams/quizzes or you cannot request a re-grade. Re-grading must be requested in writing with an explanation of the reason that re-grading is needed. You have 7 days after the exam is returned to the class to request a re-grade (turn in your request the TA).

There are no designated office hours for the Instructors or TA; you may set up appointments with the instructor or TA by e-mail (Please do not just drop by our offices or labs!)

All academic work must meet the standards contained in "A Culture of Honesty." Students are responsible for informing themselves about those standards before performing any academic work. http://www.uga.edu/ovpi/academic_honesty/academic_honesty.htm

The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary.

Experiential Learning: This course has been approved to satisfy the requirement for an experiential learning course for Franklin College.