BIOL109L- YEAST MOLECULAR GENETICS

UC Santa Cruz
Summer 2019 (5-week, session II), Course Syllabus

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Labs: Wednesday, Thursday & Friday 10:00am- 2:00pm, Thimann Lab 285

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Prerequisites: BIOL 100 or BIOC 100A; and BIOL 100K or BIOL 20L or BIOL 101L, and BIOL 105 (Genetics).

BIOL109L is an upper division laboratory course designed for biology majors with an interest in laboratory genetics and molecular biology, and yeast as a eukaryotic model organism in genetics and epigenetics. Laboratory modules will experimentally reinforce fundamental genetic principles (Mendel's laws of segregation and independent assortment, gene mapping and linkage and complementation), and provide experience in common and advanced molecular biology techniques (DNA extraction, PCR, Agarose gel electrophoresis, gene replacement, quantitative PCR and chromatin immunoprecipitation data analysis). Several experiments build toward a final paper where students explore the nature of epigenetics in *Saccharomyces cerevisiae*. The development of strong scientific writing skills will be stressed in this course by way of multiple writing assignments targeted to develop specific aspects of scientific writing.

The prerequisites indicate the level of preparation that is assumed and expected of students enrolling in this course.

Course Materials:

There is no textbook for this course, and there is no reader/lab manual that can be purchased as a text ahead of time. The online course management program Canvas will be used, and all course materials (Power Point slides, handouts, lab manual, problem sets, etc.) will be made available in Canvas. Students are expected to know how to use and navigate Canvas, as well as check it regularly.

The "lab manual" (inclusive of background information, instructions, protocols, etc.) will be provided online through Canvas. Students are expected to download, print,

read, bring and keep the provided laboratory handouts for the duration of the quarter. Electronic devices are not allowed as a substitute for hard copy materials.

Students are expected to obtain a binder, binder paper, and tabbed dividers for use as their lab notebook. On occasion there may be binders/dividers available for reuse from previous quarters.

Canvas and Email: The site for BIOL109L is up on Canvas, where students can find all posted course materials. Announcements and/or email notifications may be posted to Canvas and sent out by the instructor or teaching assistants (resource access, schedule changes, corrections etc.), *students are expected to check Canvas and their email regularly*.

Course Format:

This course will go through 4 Modules (named Modules A-D). All modules will involve working with the budding yeast *Saccharomyces cerevisiae*, thus getting technically familiar with the organism in a laboratory setting. Experiments and reinforce fundamental genetic and epigenetic principles, incorporate commonly used molecular biology techniques, and more advanced biological assays. All modules have associated assignments (e.g. activities, worksheets and write-ups) to build data collection and analysis skills and assess students' understanding while strengthening scientific communication and writing skills. Laboratory notebooks will be checked during the quarter and be handed in and graded at the end of the quarter. There will be one journal club style reading/presentation of a relevant scientific research publication.

Oftentimes activities for multiple modules will be occurring simultaneously in a given week. Students are expected to keep a well-organized lab notebook (see details in handout Lab Notebook Guidelines) with all relevant material for each Module, in addition to notes, protocols, assigned papers etc., and be prepared to multitask.

Attendance:

Attendance is mandatory, and only excused in the case of a proven emergency or legitimate excuse, as approved by the instructor at the time of occurrence.

If a student arrives more than 30 minutes late to lab it will be considered an unexcused absence (see below). 5% of the total points in the class will be deducted from the final grade *for each* unexcused absence (including those earned by excessive tardiness). If a student misses 3 or more lab meeting for *any reason (excused or not)*, they will fail or receive an incomplete in the course, as determined by the instructor. Up to 10% of the total points in the class will be deducted from a student's final grade for consistent tardiness to lab and/or lack of preparedness for lab. Parking and transportation issues are the responsibility of the student and not

considered excusable in terms of tardiness or absence. Similarly, it is not appropriate or acceptable to deal with parking issues during lab.

Students are expected to arrive to lab **prepared** (having read the material provided for the day, done calculations etc.). Failure to do so will affect a student's participation score.

Students should also expect that lab may occasionally run overtime due to unforeseen circumstances (this does not excuse students from having to complete lab, so plan accordingly).

There are *no make-up labs*.

If a student is experiencing extreme circumstances that are severely impacting their academic performance, they should notify the instructor immediately, and seek the guidance of the Disability Resource Center (see below).

Grading:

Assignments:

- 30 points (3 worksheets x 10pts each)
- 10 points (Module D Figure/Worksheet)
- 20 points Module B Writeup
- 40 points Module C Writeup
- 60 points Module D Writeup
- 20 points Journal Club
- 20 points Lab Notebook
- 20 points Participation (1 pt per lab meeting, 5 overall)

Total Points- 220 points

Final course grades will be assigned based on a modified curve. Typically, achievement of the mean would be reflected in a C grade. Grading disputes must be brought to the attention of the instructor within 7 days of the assignment or exam being handed back.

Important note: Please familiarize yourselves with new campus and departmental policies on letter grades, particularly the C- grade, and how that affects your major and graduation. In addition, familiarize yourselves with application requirements to graduate programs of interest, so you are aware of minimum grade requirements. Final grades will not be adjusted for any other reason than grading errors. It is assumed that you know the policies and that your final grade in this course is as important to you on the first day of class as the last.

Satisfaction of the Disciplinary Communication (DC) Requirement for Biology Majors

Successful completion of BIOL109L satisfies the Disciplinary Communications requirement for certain Biology Majors. The goal of the DC requirement at the University of California is to ensure that students acquire the appropriate skills in writing and/or other modes of communication deemed appropriate for their chosen field of study.

Please see https://senate.ucsc.edu/committees/cep-committee-on-educational-policy/ge-requirements/disciplinary%20-communication.html for more information on the University's DC requirement and guidelines for DC courses.

Disability Accommodations:

UC Santa Cruz is committed to creating an academic environment that supports its diverse student body. If you are a student with a disability who requires accommodations to achieve equal access in this course, please submit your Accommodation Authorization Letter from the Disability Resource Center (DRC) to the instructor privately, during office hours or by appointment, within the first two weeks of the quarter. At that time we can discuss ways to ensure your full participation in the course. Authorizations must be submitted prior to receiving accommodations. We encourage all students who may benefit from learning more about DRC services to contact DRC by phone at 831-459-2089 or by email at drc@ucsc.edu.

Academic Honesty & Integrity:

Students are expected to be familiar with UCSC Undergraduate Academic Misconduct Policy (see https://ue.ucsc.edu/academic-misconduct.html). Academic misconduct includes but is not limited to cheating, fabrication, plagiarism, or facilitating academic dishonesty or as further specified in the Student Policies and Regulations Handbook (see https://deanofstudents.ucsc.edu/student-conduct/student-handbook/index.html, sections 102.01-102.016 and 105.15).

In the event of academic misconduct, a student may face both academic sanctions imposed by the instructor of record and disciplinary sanctions imposed either by the provost of his or her college or the Academic Tribunal convened to hear the case.

Academic misconduct of any form will NOT be tolerated in this course. The instructor is responsible for determining the academic sanctions to be imposed in the event of misconduct, and submitting an academic misconduct report to the college provost who is responsible for determining disciplinary sanctions. Academic sanctions may include reduced scores on assignment(s), a reduced grade in the course or failure of the course for all students involved.

Specific to BIOL109L:

Students will be collecting data in groups and are permitted to perform "number crunching" as a group. However, once a student has finished these tasks, all subsequent work must be competed independently. All thinking and writing must be done independently, collaboration with anyone when writing the paper is not allowed and violates the academic integrity policy. Therefore, students should NOT talk about the information that should be included in papers with their friends in the class, lab partners or previous students. Students are not allowed to ask friends, parents or anyone else to edit their work. Students are not allowed to use a current or former student's work as a model for their own. Students are not allowed to share electronic files of their work. Treat written assignments as take home exams. ***If a student needs help the ONLY appropriate resources are the TA or the instructor, and students are expected to seek their help only.***

Everything written in a student's assignment must be in his or her own words. *Students should not copy or paraphrase passages from the lab manual or other texts, including the internet, even if it is cited.*

In addition, all references used must be appropriately cited.

Students will not receive credit for an assignment that have submitted in a previous quarter- all work must be original even if you have taken the class before.

Submission of Assignments and Turnitin.com:

To assist in enforcing this policy, students will be submitting all writing assignments through the plagiarism checker Turnitin.com. Registration information is available in Canvas.

All assignments are to be submitted hard copy in class for grading purposes. In addition, all assignments are required to be submitted to Turnitin.com within 24 hours of the in-class due date. The electronic file submitted to Turnitin.com must be identical in content and formatting to the one a student has submitted for grading, or a zero score will be logged for that assignment. Students will not receive credit for an assignment, or have the assignment returned to them until they have submitted the assignment to Turnitin.com. Late submissions to Turnitin.com will be assessed a penalty of 1% of total point value for every calendar day they are late passed the 24 hour grace period. Students will not receive credit for an assignment that has been submitted in a previous quarter- all work must be original even if you have taken the class before.

Late papers will be assessed a penalty of 5% of the total point value of the assignment for every calendar day they are late, including weekends, and a day ends at 11:59pm. If a paper is turned in on the due date, but after the in-class due time, it will incur a late penalty of 2.5%. Late penalties are waived only in the case of a

proven emergency or legitimate excuse, as approved by the instructor only by the time the paper is due.

Teaching assistants are not authorized to make exceptions for any rules applying to the writing, submission or late penalties associated with assignments in this course.