BIOL101L- MOLECULAR BIOLOGY LABORATORY
Course Syllabus
UC Santa Cruz
Summer Session I- 2018

Instructor: Giulia J Gurun M.S. Ph.D.
Office: Sinsheimer 227
Office Hours: Thursday 1:00-3:00pm in Sinsheimer 227
Email: ggurun@ucsc.edu
Lecture: Wednesday & Friday 1:30-2:45pm Physical Sciences 136

Teaching Assistant, Office Hours* and Laboratory Sections:

Sydney Okumura, sokumur2@ucsc.edu, Sections 01A and 01B Thimann Lab 285,
Office Hours: Tuesday 1:30-3:30pm Location: TBA

* Please see the the BIOL101L Canvas site for up to date office hour time and location information.

Prep Lab Staff:

Suki Arnold and Colin Dailey
222 Thimann Labs

Enrollment Co/Prerequisite: BIOL 100 or BIOC 100A

Course Format:

Lab Lecture:

Twice a week- ATTENDANCE REQUIRED. Please be prepared with the Canvas app on your mobile device (ie. phone, tablet or laptop) as it will be used during lectures to take attendance.

Lab:

Two 4-hour lab sections per week: 285 Thimann Lab- ATTENDANCE REQUIRED.
Course Goals:

1. Increase proficiency in basic laboratory skills, including solution making, sterile technique, safe handling of hazardous materials, as well as in the proper use of basic lab tools and equipment, including micropipettes, balances, and centrifuges.
2. Gain experience with fundamental molecular biology techniques, including PCR, gel electrophoresis, restriction digest, DNA cloning, Western blotting, affinity chromatography, and spectrophotometry. Understand the basic concepts underlying these techniques.
3. Learn to keep a well-organized and maintained laboratory notebook.
4. Learn and use a proper format for scientific reports and improve technical writing skills.
5. Learn to organize and present data in an appropriate format.
6. Become familiar with basic bioinformatics tools.
7. Learn and apply techniques for effective group work. Develop teamwork and leadership skills by 1) working in teams of two or more to conduct experiments and 2) coordinating and cooperating with other teams in the lab in the use of equipment and supplies.

Course Materials:

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

Students are expected to obtain a bound composition notebook for use as a laboratory notebook (see Lab Notebook Guidelines for more information).

Students are required to download and print the lab manual/protocol for each week prior to arriving in lab. No electronic devices allowed in lab for viewing the lab manual/protocol (hard copy lab manual/protocol only). Students are encouraged to keep their lab protocols in a folder or small binder.

Grading and Assessment:

Grades for BIOL101L will be based on pre-lab assignments, a lab notebook, a solutions and dilutions quiz and 2 papers (see below for weighted grade breakdown). Final course grades may be based on a modified curve, where typically, achievement of the class mean would be reflected in a C grade. The instructor takes many considerations into applying a curve, if deemed necessary, and will do so at their discretion and as they feel appropriate. 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.

2 Lab Papers: 60%
- DNA Research Paper: 25%
- Protein Research Paper: 35%
Lab Notebook: 20%
Solutions/Dilutions Quiz: 10%
Pre-lab assignments (due at beginning of each lab:) 10%

**Attendance and Participation**

Attendance in lecture and lab is mandatory.

Each unexcused absence from lecture will result in a deduction of 2.5% of the total points for the course. Each unexcused absence from lab will result in a deduction of 10% of the total points for the course. As student who misses more than 2 labs, unexcused will not pass the course. To be excused, absences must be approved by the instructor (Dr. Gurun), and are limited to emergencies or extremely important circumstances. TAs cannot and will not excuse absences. To have an absence considered for approval as an excused absence, you must contact Dr. Gurun (NOT your TA) as soon as possible and/or at the time of occurrence. NO EXCEPTIONS.

Tardiness to lab will result in a loss of 1% of a student’s final grade each time you are late. Students who are more than 30 minutes late to lab will incur an unexcused absence and may not be allowed to participate in lab that day and will be required to attend a make up lab.

Students are expected to be prepared for lab, follow all safety rules and lab rules, and behave respectfully and appropriately in the lab at all times. As such, inappropriate conduct in the lab will be brought to the attention of Dr. Gurun, and the student involved, and may result in a loss of up to 5% of a student’s final grade for each occurrence and/or in a student being dismissed from lab.

**Late Submission of Assignments:**

Unless otherwise indicated, assignments and/or notebooks are *due at the beginning of lab on the day of the student's registered lab section on their due date.*

Assignments or notebooks submitted late will have points deducted according to the following:
- Submitted the same day as due but after the time deadline (for papers- until 11:59pm that day, for lab notebooks until 5:00pm that day): 5% deduction of total points possible for that assignment.
- Submitted the day after due date or afterward: 10% deduction of total points possible for that assignment per day late (including weekends).

It is the student’s responsibility to arrange for the turn in of late assignments or notebooks with the TA and/or the instructor in order to limit the late penalties incurred on late assignments.

Failure to submit your work to Turnitin.com (see below) by the stated deadline will be penalized by a loss of 5 points per day after the due date. Failure to submit your work to Turnitin.com at all will result in a 0 on the assignment, and an incomplete grade for the course.

**Turnitin.com:**

To assist in enforcing the academic integrity policy in this class (read below), and to ensure that students aren’t plagiarizing papers from other students (including from previous quarters), papers previously submitted in another quarter (by a student retaking the course), or from other sources on the web or other publications, students will be submitting written assignments to the plagiarism checker Turnitin.com.

Students will be emailed detailed instructions for submission to Turnitin.com. Electronic submission deadlines are the same as the hardcopy turn-in deadline-meaning a student must submit their final paper to Turnitin.com before handing their hardcopy in at the start of their lab section. The digital receipt from Turnitin.com is required to be printed and attached to the hardcopy submission at the time of hardcopy turn-in. The electronic submission of written assignments must be identical to the hardcopy turned in or a student will receive a 0 on the assignment.

Failure to submit your work to Turnitin.com by the stated deadline will be penalized by a loss of 5 points per day after the due date. Failure to submit your work to Turnitin.com at all will result in a 0 on the assignment, and an incomplete grade for the course.

There are NO EXCEPTIONS to Turnitin.com requirements and late penalties.

**Academic Integrity**

All assignments you submit must be *entirely* your own work. This means you and your lab partner are not allowed to submit copies of the same graphs and tables even if you collected the same data together. Also, you are not allowed to collaborate with another student when actually writing your papers, unless explicitly allowed
by the instructor. You may not use any other student’s paper as a template for your own. You may not fabricate data under any circumstances, and you may not use anyone else’s data. Any sharing of data or papers is allowed only with prior approval of the instructor. Sources of information used in your paper must be cited appropriately. Everything you turn in must be stated in your own words even if you cite the source. Changing just a few words or rearranging the words in a sentence from a book, journal article, or internet website is not saying it in your own words; that constitutes plagiarism. Additionally, if you have taken this course before and are retaking it, you may not submit your own old work for credit. If you break any of these rules, you will automatically receive a grade of 0 for the entire assignment, will automatically earn a grade of "F" in the course, and will be subject to disciplinary action by your college provost. If you allow another student to copy your work or you help another student write his/her paper, you will also be violating the University's academic integrity policy and will be subject to disciplinary action. These penalties will apply even if you say you did not understand the rules, so be sure to ask Dr. Gurun if you have any questions about this policy.

Also, please note: you will not receive credit for ideas that are quoted directly from any source, even if you place the passage in quotation marks and cite the source. While this is not committing plagiarism, long direct quotes are used only when a passage is highly unique or profound, or there is no other possible way to say the same thing. In general, if you are not able to state a concept in your own words, you don’t understand it, and therefore cannot receive credit for that passage (though, in this case, no disciplinary action will apply, so long as the quote is cited correctly.)

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.

Students who receive accommodations that extend further than time extensions for assessments must make arrangements to meet with the instructor to discuss those accommodations. Authorizations must be submitted prior to receiving any 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.

Credits: Course development by Jeremy Lee, Course materials adapted by Giulia Gurun.
<table>
<thead>
<tr>
<th>LAB</th>
<th>DATES</th>
<th>LABORATORY/PAPERS DUE/EXAMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6/26 &amp; 6/27</td>
<td>Introduction to Course, Enrollment Use of Micropipetters/Balances/Centrifuges Solution Making, Lab Safety</td>
</tr>
<tr>
<td>2</td>
<td>6/28 &amp; 6/29</td>
<td>Ligation of EGFP into Expression Vector Agarose Gel Electrophoresis of Ligation Transformation of Recombinant Plasmid into <em>E. coli</em></td>
</tr>
<tr>
<td></td>
<td>7/3* &amp; 7/4*</td>
<td><strong>No class held on 7/3 and 7/4- Independence Day.</strong></td>
</tr>
<tr>
<td>3</td>
<td>7/5 &amp; 7/6</td>
<td>Miniprep (plasmid isolation) from Transformants Quantitation of isolated plasmid DNA Restriction Digest of Recombinant Plasmids</td>
</tr>
<tr>
<td>4</td>
<td>7/10 &amp; 7/11</td>
<td>&quot;MAKING SOLUTIONS&quot; QUIZ (in lab) Agarose Gel Electrophoresis of Restriction Digest PCR Screening of Transformants</td>
</tr>
<tr>
<td>5</td>
<td>7/12 &amp; 7/13</td>
<td>Agarose Gel Electrophoresis of PCR Products Bioinformatics Exercise</td>
</tr>
<tr>
<td>6</td>
<td>7/17 &amp; 7/18</td>
<td>Protein Immunoblot (Western Blot) 1: SDS/PAGE Electrophoresis &amp; Transfer (blotting) DNA RESEARCH PAPER DUE (beginning of lab) NOTEBOOKS DUE IN LAB (Grading Labs 1-5)</td>
</tr>
<tr>
<td>7</td>
<td>7/19 &amp; 7/20</td>
<td>Protein Immunoblot (Western Blot) 2: Antibody Detection of EGFP Purification of EGFP-GST Fusion Protein by Affinity Chromatography 1: Preparation of Cell Lysate</td>
</tr>
<tr>
<td>8</td>
<td>7/24 &amp; 7/25</td>
<td>Purification of EGFP-GST Fusion Protein by Affinity Chromatography 2: Purification of GST-EGFP with Affinity Column Protein Quantification of EGFP Levels by Bradford</td>
</tr>
<tr>
<td>9</td>
<td>7/26 &amp; 7/27</td>
<td><strong>PROTEIN PAPER DUE (4:30pm in Thimann 285) LAB NOTEBOOKS DUE (Grading labs 6-8)</strong></td>
</tr>
</tbody>
</table>