LS23L: INTRODUCTION TO LABORATORY & SCIENTIFIC METHODOLOGY (3 UNITS)

PRELIMINARY SUMMER SESSION A 2020 SYLLABUS

SPECIAL NOTE FOR SUMMER 2020:
Due to the ongoing situation with COVID-19, this syllabus is subject to change throughout the session. We will notify you via email of any changes. Please make sure to check in on email and our CCLE site every week to stay on track.

We are using Zoom for the synchronous scheduled laboratory sections and lecture.
To participate fully in the remote offering of LS23L you must have Zoom functional on your laptop/PC and be available online for your 1 ½-hour dedicated section time by Zoom.

We are using Labster Remote Virtual Laboratory Simulations. For Labster you need to have a PC with the following minimum specifications:
- Processor: Dual core 2GHz or higher
- Memory: 4 GB or more
- Graphic card: Intel HD 3000 / GeForce 6800 GT / Radeon X700 or higher
- OS: Windows or Mac OS
Supported browsers: Latest version of Firefox, Chrome or Safari

LECTURE
M 8-8:50am. Will be recorded and available online by end of the day.

LAB
Remote synchronous laboratory sections, scheduled at your section time. You will be assigned a set of online activities each week, including virtual lab simulations that will guide you through lab techniques and concepts. There will be two sets of lab activities per week M/T and W/R.

INSTRUCTOR
Dr. Gaston Pfluegl
EMAIL: drpfluegl@gmail.com
OFFICE: 2875 Slichter Hall (office hours by appointment)
*The best way to contact me is by email, and we can set up a time to meet via Zoom.*

IMPORTANT NOTICE: Although we are working remotely this summer session, I still expect students to complete their work each week to stay on track in the course. See my “missed work” policy here.

LAB STAFF
Brittany Ottoson bottoson@lifesci.ucla.edu
Contact lab staff with questions about course administration, CCLE access issues, final exam sign ups, etc. Please be aware that the lab staff will respond to emails during business hours only. If we are receiving a high volume of email there may be some delay but we generally respond within one business day (Monday – Friday 8am – 5pm, excluding holidays).

SCIENTIFIC WRITING & PEER REVIEW ASSIGNMENT COORDINATOR
Zahra Aboukhalil LS23LPR@gmail.com
If you have a question about the scientific writing homework assignments, or are experiencing technical difficulties, please email the writing coordinator at this address.
TEACHING ASSISTANTS
TA names and email addresses will be posted on our CCLE site. Your TA will contact you directly with information on how to access their office hours.

COURSE MATERIALS
- LAB WEBSITE http://ls23l.lscore.ucla.edu/
- ONLINE QUIZZES AND RESOURCES http://www.ccle.ucla.edu/
- TEXTBOOK There is no required textbook in Summer Session A 2020. We will provide all materials online.

WHAT IS LS23L?
Welcome to LS23L! This course is an introductory life sciences laboratory designed for undergraduate students. In Summer Session A 2020 the course will be remote in order to follow UCLA guidelines in the face of the COVID-19 outbreak. In addition to our own remote materials, we will be using Labster’s collection of high quality online lab simulations to give you a lab experience from home. We understand that not having an in-person lab experience may be disappointing to many students, but we hope that the simulations will provide you with the closest possible experience, given the current circumstances.

LS23L TIME COMMITMENT IN SUMMER SESSIONS
Summer session runs at an accelerated pace, so I want you to be aware of the substantial time commitment and plan accordingly. Each synchronous remote lab session will take 1.5 hours twice a week, so please accordingly! You are expected to spend approximately 1.5 hours twice a week on the virtual Labster simulations and six additional hours per week watching my online lectures, doing your pre-lab reading, taking online quizzes and doing the worksheets assignments. LS23L has a significant scientific writing component, and you will learn to write a scientific style research paper and participate in a peer review process with your peers. You should expect to spend an additional six hours per week, every week, working on your scientific writing/peer review assignments. In total, you should plan to spend eighteen hours per week on this course. There are lots of deadlines, but I provide resources to keep you on track, such as the week by week assignment grid attached to the end of this syllabus. Please make sure to be aware of all deadlines. Lab order will vary in summer sessions!

WHO SHOULD TAKE THIS COURSE?
You should take this course if you have already taken LS7B. We recommend that you take LS23L concurrently with LS7C. If you are not concurrently enrolled in LS7C and haven’t taken it in the past, you can still take LS23L. However, you should be aware that LS23L contains physiology labs and there will be some physiology content on the final. If you haven’t taken LS7C you could be at a disadvantage and will have to spend more time learning the background concepts.

COURSE GOALS AND STUDENT LEARNING OUTCOMES
Goal 1. To promote critical thinking skills by employing the scientific method.
   Outcome 1.1 Students will be able to formulate testable scientific hypotheses.
   Outcome 1.2 Students will be able to propose a well-designed experiment.
   Outcome 1.3 Students will be able to analyze and evaluate data in order to draw conclusions.
   Outcome 1.4 Students will relate conclusions to key biological concepts.

Goal 2. To perform basic laboratory techniques.
Outcome 2.1 Students will understand how to correctly use basic tools and laboratory equipment, such as micropipettes, spectrophotometer, gel electrophoresis equipment, light compound microscope, dissecting microscope.

Outcome 2.2 Students will understand how to appropriately handle live research specimens (goldfish).

Outcome 2.3 Students will understand how to perform basic lab techniques such as loading gels, handling histology slides, performing a dissection, swabbing bacterial plates.

Outcome 2.4 Students will be able to collect and record accurate laboratory data and properly enter and access data in a shared online database.

Goal 3. To promote scientific communication skills.

Outcome 3.1 Students will communicate with their peers online.

Outcome 3.2 Students will draft a scientific style research paper.

Outcome 3.3 Students will practice giving appropriate and useful feedback to their peers.

<table>
<thead>
<tr>
<th>Laboratory Quarter Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LS 23L.2 2020</strong></td>
</tr>
<tr>
<td><strong>Week</strong></td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td><strong>LAB 1 - Scientific Method</strong></td>
</tr>
<tr>
<td><strong>LAB 3 - PCR and Primer Design</strong></td>
</tr>
<tr>
<td><strong>LAB 5 - Metabolism in Goldfish</strong></td>
</tr>
<tr>
<td><strong>LAB 7 - Epidemiology and Disease Modeling</strong></td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td><strong>LAB 9 - Human Physiology</strong></td>
</tr>
<tr>
<td>6</td>
</tr>
<tr>
<td><strong>No Lab</strong></td>
</tr>
</tbody>
</table>

**Lab Grading Overview** - I assign LS23L grades on a straight scale (no curve). I provide a detailed explanation of the grading, along with the grade cutoffs in the “Lab Grading Details”.
The following table gives an overview of my grading scheme for this course (lab order may vary).

<table>
<thead>
<tr>
<th>Category</th>
<th>Pre-Lab Quiz</th>
<th>In-Zoom Quiz</th>
<th>Lab Activities</th>
<th>Post-Lab Quiz</th>
<th>Scientific Writing &amp; Peer Review assignments*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent of overall course grade</td>
<td>8%</td>
<td>2%</td>
<td>31%</td>
<td>10%</td>
<td>32%</td>
</tr>
<tr>
<td>Maximum category points</td>
<td>40</td>
<td>10</td>
<td>155</td>
<td>50</td>
<td>160</td>
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</tbody>
</table>

- **Lab 1 - Introduction to Scientific Methodology**
  - 4 points
  - 1 point
  - 20 points
  - 5 points

- **Lab 2 - Lab Safety & Pipetting**
  - 4 points
  - 1 point
  - 10 points
  - 5 points

- **Lab 3 - PCR and Primer Design**
  - 4 points
  - 1 point
  - 15 points
  - 5 points

- **Lab 4 - Sequence Analysis**
  - 4 points
  - 1 point
  - 15 points
  - 5 points

- **Lab 5 - Metabolism in Goldfish**
  - 4 points
  - 1 point
  - 20 points
  - 5 points

- **Lab 6 - Proteins and Gel Electrophoresis**
  - 4 points
  - 1 point
  - 10 points
  - 5 points

- **Lab 7 - Epidemiology and Disease Modeling**
  - 4 points
  - 1 point
  - 15 points
  - 5 points

- **Lab 8 - Working with Bacteria**
  - 4 points
  - 1 point
  - 15 points
  - 5 points

- **Lab 9 - Human Physiology**
  - 4 points
  - 1 point
  - 15 points
  - 5 points

- **Lab 10 - Histology and Microscopy**
  - 4 points
  - 1 point
  - 15 points
  - 5 points

**Lab Participation (6% of grade, 30 points max)**
- Online participation: 2% (10 pts)
- Lab safety quiz: 1% (5 pts)
- Plagiarism module (week 4): 1% (5 pts)
- Scientific writing surveys (pre- and post-): 2% (10 pts)
- Evaluations: 1% (5 pts)

**Final exam**: 10% (50 pts)

*Lowest pre-lab, in-Zoom, lab activity and post-lab scores will be bumped up to full points - see syllabus for details.*
* The three scientific writing/peer review assignments are required. You must submit a text and complete all three assignments.

MISSED WORK POLICY
If you miss any lab activities, you will NOT be allowed to complete the work later for credit. However, I recognize that there will be times when missing work is unavoidable. In lieu of accepting notes for unexpected events (medical or other), I allow every student to miss some work during the session without losing any points so if you are sick or have a personal conflict you have some flexibility.

At the end of the session I will automatically adjust your lowest pre-lab quiz, lab activity, and post-lab quiz scores up to full credit. Essentially, you get one “freebie” in each of these categories. I hope this helps ease any stress you might experience over the course of the quarter. No additional missed work or deadline extensions will be granted. (Please note that scientific writing assignments do not fall under the missed work policy, and must be completed.)

TECHNICAL DIFFICULTIES?
We use CCLE for online quizzes and assignments, including the scientific writing assignments. If you are having trouble accessing or using CCLE and you might miss a deadline, you MUST email your TA and the lab administrator immediately and let them know. The email must be sent before the quiz/assignment closes. If you miss a deadline for any reason but do not email anyone regarding your issue before the deadline, you will lose points.

OUR INCLUSIVE LEARNING ENVIRONMENT
UCLA values diversity and inclusion. I expect everyone in this class to contribute to a respectful, welcoming, and inclusive environment to support the learning of all other members of the class. If there are aspects of the instruction or design of this course that result in barriers to your inclusion or accurate assessment or achievement, please notify me.

CENTER FOR ACCESSIBLE EDUCATION (CAE)
Students needing academic accommodations based on a disability should contact the Center for Accessible Education (CAE) at (310) 825-1501. CAE will assess all requested accommodations and communicate appropriately with me. When possible, students should contact CAE within the first two weeks of the quarter to allow reasonable time to coordinate accommodations. If you need any specific accommodations, please contact me and the Lab Administrators directly (via email) so that we can discuss your needs. This includes final exam accommodations.

COUNSELING & PSYCHOLOGICAL SERVICES (CAPS)
Resources are available to foster the well-being of all UCLA students as they pursue their academic goals. Any student who finds themselves in immediate distress, please call Counseling and Psychological Services (CAPS) to speak directly with a counselor 24/7 at (310) 825-0768, or please call 911. For more information, please visit the CAPS website: http://www.counseling.ucla.edu.

A list of additional campus-wide resources for support are included at the end of this syllabus.
LAB GRADING DETAILS

I am committed to making sure the assessment of your learning in this course is comprehensive, fair, and equitable. Your grade in this class will be based on the number of points you earn out of the total number of points possible and is not based on your rank relative to other students. Furthermore, grades are assigned without strict limits on the proportion of each letter grade given in the course. Grade cut offs are given below:

* F  <60%
* D  60% – 69.9%
* C-  70% – 72.9%
* C   73% – 76.9%
* C+  77% – 79.9%
* B-  80% – 82.9%
* B   83% – 86.9%
* B+  87% – 89.9%
* A-  90% – 92.9%
* A   93% – 96.9%
* A+  >97

Under no circumstances will grades be adjusted down. You can use the straight grading scale as an indicator of your minimum grade in the course at any time during the course. You should keep track of your own points so that at any time during the quarter you may calculate your minimum grade based on the total number of points possible at that particular time. If and when, for any reason, you have concerns about your grade in the course, please contact me so I can send you a summary of your current standing and we can discuss study techniques or alternative strategies to help you.

The following sections explain how each component contributes to your overall course grade.

PRE-LAB QUIZZES (10 QUIZZES, 8% OF YOUR OVERALL GRADE)

Each week you will take a pre-lab quiz before beginning the synchronous lab activities. These quizzes are meant to prepare and familiarize you with the lab topic. If you miss a quiz there are no make ups, but I will adjust your lowest pre-lab quiz score up to full credit at the end of the quarter, so you can miss one quiz without impacting your grade.

IN-ZOOM QUIZZES (10 QUIZZES, 2% OF YOUR OVERALL GRADE)

Each week you will take an in-Zoom quiz before at the beginning of the synchronous lab activities. These quizzes are meant to indicate your preparedness to the current synchronous sessions. So all students start on a similar footing in regard to the lab topic. If you miss a quiz there are no make ups, but I will adjust your lowest in-zoom quiz score up to full credit at the end of the quarter, so you can miss one quiz without impacting your grade.

WEEKLY LAB ACTIVITIES (10 LABS, 31% OF YOUR OVERALL GRADE)

Actively participating in lab, whether we are online or in person, is critical. Each week I will assign you a set of online activities and simulations, which will vary from lab to lab. Please check CCLE to see what is required for each lab. Each lab’s activities will be worth 24 points total. If you miss a lab activity there are no make ups, but I will adjust your lowest lab activity score up to full credit at the end of the session, so you can miss one set of lab activities without impacting your grade.

POST-LAB QUIZZES (10 QUIZZES, 10% OF YOUR OVERALL GRADE)
After completing the activities for the lab topic you will take a post-lab quiz, which will have similar questions to the pre-lab quiz. Post-lab quizzes are intended to assess your learning for that lab and to help you prepare for the final exam over the course of the session. These quizzes are graded. You will not be able to move on to the pre-lab quiz for the next lab until you complete the post-lab quiz for the last lab. There are no make ups, but I will adjust your lowest post-lab quiz score up to full credit at the end of the quarter.

**Scientific Writing & Peer Review (3 assignments, 32% of your overall grade)**

We will be using the Workshop interface on CCLE for our three scientific writing assignments. In weeks 1, 3 and 5 you will be given writing prompts based on the lab. These writing assignments will help teach you about scientific writing format, scientific thinking, and experimental design. You will upload your text first (exact deadlines are provided on CCLE). For each assignment you’ll then be trained on the peer review process using example assessments and asked to evaluate and provide useful input on texts from your peers as well as your own text (assessments). Peer review is a critical part of the scientific publishing process, and these assignments are a great way to develop your scientific writing and editing skills. **These assignments are a large part of your grade and you should expect to spend at least six hours per week working on them throughout the summer session.**

<table>
<thead>
<tr>
<th>Week</th>
<th>MON</th>
<th>TUES</th>
<th>WED</th>
<th>THU</th>
<th>FRI</th>
<th>SAT</th>
<th>SUN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ATTEND LAB</td>
<td>WRITE AND UPLOAD TEXT</td>
<td>COMPLETE ASSESSMENT</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Scientific writing assignment timeline:** There are three scientific writing and peer review assignments during the session, all three will follow the same general timeline (shown above). This cycle will repeat for the second and third assignments.

**HOW SCIENTIFIC WRITING & PEER REVIEW ASSIGNMENT SCORES ARE CALCULATED**

Each Workshop assignment consists of two stages – text submission and assessments. You will receive a separate score for each stage. During the text submission window you will write a text and submit it into the system. During the assessment stage you will read and review six texts written by your peers and then finally read and review your own text. Meanwhile, your text will be reviewed and rated by your peers. The assignments increase in value, with the first assignment being worth 30 points, the second is worth 50 points and the third is worth 80 points. Half of your points on the assignments are earned by the work you do reviewing and providing feedback on other texts, so even if you are struggling with learning to write scientifically, you can still earn most of the points if you work carefully on your reviews.

**PURPOSE OF THE SCIENTIFIC WRITING & PEER REVIEW ASSIGNMENTS**

Scientific writing and peer review are skills that take time to develop. In this course, many of you are writing and reviewing scientific papers for the first time. I do not expect you to become an expert in one quarter, but many former LS23L students who have gone on into research labs have reported that the early exposure to scientific writing and reading helped lay the foundation for a better understanding later on.
The goal of the assignments is to give you this exposure to this critical skill, not to make it difficult for you to earn an A in the course. I want you to work hard on the assignments, but I will give you opportunities to improve your grade if you are putting in the effort.

Many students feel uncomfortable with their peers rating their texts. You will all be given instructions and practice in rating example texts before you review your peers’ texts. We check hundreds of peer reviews each quarter and on average we find that your peers leave helpful and accurate feedback, keeping in mind that we never expect all reviewers to have identical opinions on every aspect of a text. This is normal in peer review, even at higher levels.

**OPPORTUNITY TO IMPROVE YOUR WORKSHOP ASSIGNMENT SCORES**

The scientific writing and peer review assignments are an opportunity for you to learn scientific writing skills, and I understand that this may be the first time you are writing this type of text. Therefore, if you are disappointed in your score on the assignments, you will have the opportunity to improve your grade by submitting a post-assignment self-reflection survey.

We will send out an email explaining how to access the survey once it is available, and notify you of the exact deadline. You will be asked about your writing process and the feedback you received from your peers, and you will need to provide an explanation of how you would edit and improve your text if given the opportunity. Any student who fills out this self-reflection thoughtfully and completely will have their assignment score increased by up to 5 points (your total score with the bonus points added will not exceed the maximum number of points for that assignment). I hope this makes it clear that I do not expect you to be a perfect writer immediately, and that there is great value in reflecting on your writing process and how you can improve.

**You must write all three texts in order to participate in these assignments, you cannot drop a text.**

**ADDITIONAL COURSE POLICIES AND UCLA POLICIES**

**IMPACTED COURSE POLICY FOR ACADEMIC YEAR**

LS23L is an impacted course. Impacted courses may be dropped on or before Friday of the second week through MyUCLA with no transcript notation. Drops of impacted courses after the second week will carry a transcript notation of the week of the drop. Please be aware that if you need to drop after the deadline it will be more complicated and require both my approval and approval from your school or college.

**ACADEMIC INTEGRITY**

I want you to succeed in this course on your own merits, and to feel proud of the work you produce. Academic integrity is taken very seriously in the LS Core. Cheating, plagiarism or other kinds of academic dishonesty are considered unacceptable behavior and will result in formal disciplinary proceedings usually resulting in suspension or dismissal. Please review the UCLA Student Conduct Code: [http://www.deanofstudents.ucla.edu/Student-Conduct-Code](http://www.deanofstudents.ucla.edu/Student-Conduct-Code).

**TURN IT IN**

We will be using the TurnItIn feature on CCLE for all scientific writing assignments (Labs A, D and G). TurnItIn is a plagiarism prevention service that compares student submissions to a variety of sources: the internet, articles and essays in proprietary databases, and all student papers previously submitted at TurnItIn. It helps instructors to identify instances of plagiarism and improperly used sources. When you submit your text in the Workshop activity, it will automatically be checked by Turnitin as well.

**FORMS OF ACADEMIC DISHONESTY**
As specified in the UCLA Student Conduct Code, violations or attempted violations of academic dishonesty include, but are not limited to, cheating, fabrication, plagiarism, multiple submissions or facilitating academic dishonesty.

**Plagiarism and Scientific Writing**
Plagiarism is a serious issue and I know it can be confusing for students, especially when they first attempt to write a scientific paper. Although you will be working in groups and sharing some data in lab all your scientific writing assignments must be written individually. All your writing must be in your own words and have unique sentence structure and content. In short, your papers and assignments cannot resemble anyone else’s work from this quarter or any previous quarter.

**Alternatives to Academic Dishonesty**
- *Seek out help* – meet with me if you need help, ask about resources.
- *Drop the course* – can you take it next quarter when you might feel more prepared?
- *Accept a late penalty* – if you need more time to work on your paper a late penalty could amount to just a few points off your grade, which is much better than the consequences for being caught plagiarizing.
- *See a counselor* at Student Psychological Services, and/or your school, college or department – UCLA has resources for students who are feeling the stresses of academic and personal pressures.

**Integrity of Course Content**
Please protect the integrity of all course materials and content. By enrolling in this course, you agree to honor this request. Be mindful of the hard work and time that our instructors and TAs in the LS Core put into creating course materials such as exam and quiz questions, worksheets, and lecture videos. Please do not upload course materials not created by you onto third-party websites or share content with anyone who is not enrolled in our course.

**Campus Wide Student Resources for Support and Learning**

UCLA has a multitude of resources available to *all* students. Many of these resources are listed below (alphabetized by name), and we encourage students to explore them as needed.

- **Academic Achievement Program (AAP):** This program advocates and facilitates the access, academic success, and graduation of students who have been historically underrepresented in higher education; informs and prepares students for graduate and professional schools; and develops the academic, scientific, political, economic, and community leadership necessary to transform society: [https://www.aap.ucla.edu](https://www.aap.ucla.edu)
- **Academics in the UCLA Residential Community:** Free workshops on a wide variety of issues relating to academic & personal success; (310) 825-9315; [https://reslife.ucla.edu](https://reslife.ucla.edu) (click on “academics”)
- **Bruin Resource Center:** Includes services for transfer students, undocumented students, veterans, and students with dependents; [http://www.brc.ucla.edu](http://www.brc.ucla.edu).
- **Career Center:** Don’t wait until your senior year – visit the career center today! [http://www.career.ucla.edu](http://www.career.ucla.edu)
- **Center for Accessible Education (Formerly Office for Students with Disabilities):** Located in A255 Murphy Hall: (310) 825-1501, TDD (310) 206-6083; [http://www.caе.ucla.edu](http://www.caе.ucla.edu).
- **Counseling and Psychological Services (CAP):** Located in Wooden Center West; students in distress may call to speak directly with a counselor 24/7 at (310) 825-0768, or may call 911; [http://www.counseling.ucla.edu](http://www.counseling.ucla.edu)

- **Dashew Center for International Students and Scholars:** Located in 106 Bradley Hall; (310) 825-1681; [http://www.internationalcenter.ucla.edu](http://www.internationalcenter.ucla.edu)

- **Dean of Students Office:** General resource for all Bruins. Learn about academic integrity issues and your first amendment rights. Get help if you’ve experienced rape or sexual assault. Report a bias incident, and much more. Located in 1206 Murphy Hall; (310) 825-3871; [http://www.deanofstudents.ucla.edu](http://www.deanofstudents.ucla.edu)

- **Lesbian, Gay, Bisexual and Transgender Resource Center:** Located in the Student Activities Center, B36; (310) 206-3628; [http://www.lgbt.ucla.edu](http://www.lgbt.ucla.edu)

- **Letters & Science Academic Counseling Service:** Located in A316 Murphy Hall; (310) 825-1965; [http://cac.ucla.edu](http://cac.ucla.edu).

- **Library:** Get help with your research, find study spaces, attend a workshop, rent a laptop, and more. Learn more at [http://www.library.ucla.edu](http://www.library.ucla.edu).

- **Student Legal Services:** Located in A239 Murphy Hall; (310) 825-9894; [http://www.studentlegal.ucla.edu](http://www.studentlegal.ucla.edu)

- **Undergraduate Writing Center:** Peer learning facilitators (PLFs) are undergraduates who understand the challenges of writing at UCLA. Scheduled appointment and walk-in options are available, see [http://wp.ucla.edu/wc](http://wp.ucla.edu/wc) for more information and to get assistance with your writing.

- **UCLA ONE:** This website ([https://uclaone.com/](https://uclaone.com/)) serves as UCLA’s interactive, online gateway for mentorship, professional networking, peer driven career advice, and exclusive job leads. (Similar to LinkedIn but for the UCLA community).