

# SAMPLE SYLLABUS: BIOSC 0157 FOUNDATIONS OF BIOLOGY RESEARCH LAB 1

## & 2

### INSTRUCTOR:

To be determined

### MEETING TIMES:

Lab meets once per week for 2 hours and 50 minutes; students are expected to complete 1 hour of asynchronous work outside of class to make progress on the research project.

### OVERVIEW

This course is designed to ground students in fundamental biological concepts and scientific reasoning through engagement in authentic hypothesis-driven research. Students will collaborate with a research lab in the Department of Biological Sciences for a one-semester-long research project. Data collected and analyzed by students will be used to support the research goals of the associated lab.

Upon completion of this course, students will be able to:

- Explain background information related to the course research project
- Critically evaluate research hypotheses
- Discuss the mechanism of action and proper application of the experimental techniques utilized in the research project
- Explain the importance of scientific ethics and employ ethical decision-making practices
- Keep an accurate record of experiments that other scientists can easily interpret and use to reproduce research results
- Read and present primary scientific data
- Successfully collaborate with a team of other students to conduct research
- Communicate scientific findings in oral and written format

### ATTENDANCE AND ENGAGEMENT POLICY

This course is a **real research experience**; the work that you do in this course is as close as possible to the work you would perform as an undergraduate researcher working in a Department of Biological Sciences Faculty lab. Attendance and engagement are crucial components of your research success; you cannot make reasonable progress on your project without regular lab attendance. Because you will be working in a Research Team this semester, being absent from lab affects not only your progress but also the progress of everyone in your Research Team. Attendance is mandatory for all course meetings.

In this course, attendance is counted as being present in-person at the start of lab AND remaining engaged throughout the lab period. We understand that students will most likely miss lab occasionally due to illness, quarantine, university business, or caregiving responsibilities. Remote options are mostly unavailable for this course.

Any absence must be properly excused by a healthcare provider OR Pitt Student Health for an illness, or a University official for University business. Excused absences are at the discretion of your instructor. However, most absences may count as excused if you keep in regular communication with your instructor and teammates

and demonstrate a reasonable effort to make progress in the course. **For an absence to count as excused, all of the following criteria must be met:**

1. Advance notice to instructor (if reasonably possible, no less than 24 hours prior to the start of lab)
2. Valid reason (illness, waiting on test results, family or personal emergency, bereavement, University business, caregiving responsibilities, inclement weather, etc)
3. Acceptable documentation (check with your instructor for examples of acceptable documentation for your specific situation; we can be very flexible with the types of documentation, and you do not need to provide specific medical information unless you choose to do so) provided to instructor via email no later than one week after missing lab

The penalties for each unexcused absence are as follows:

All three criteria met	Excused absence, no penalty applies
Two criteria met	Deduction of 1-5% from final grade
One criterion met	Deduction of 5-10% from final grade
No criteria met	Deduction of 10% from final grade

**Unexcused absences will result in grade deductions.** If you need to miss class on a regular basis for an excused reason, such as athletics, please speak with your section instructor right away to plan to move to another section that better meets your needs. You cannot make adequate progress on your research project so that all course milestones can be completed in a reasonable amount of time if you are not present in lab. **Students who miss three or more lab sessions for any reason, excused or unexcused, must take a G grade or withdraw from the course. The highest possible grade for missing three labs is a 70% (C-).**

Arriving to class late (more than 10 minutes after class has started) will result in a deduction of 2 points per late arrival from Lab Citizenship point category. Missing the start of a class (more than 30 minutes) counts as missing the entire class. If you arrive to class late, you will be allowed to participate in the day's experiments only at the discretion of the instructor. If your late arrival results in either a safety concern or an undue burden to the instructors/UTAs/classmates/prep staff, you will not be allowed to attend the class.

## REQUIRED MATERIALS

You do not need to purchase any textbooks or other materials prior to the start of the semester; all tools are provided with your university login credentials to my.pitt.edu. If you do not have access to a reliable internet connection and a PC/Mac/Chromebook that meets the recommended minimum standards, including a current operating system, a limited number of mobile hotspots and/or laptops are available for temporary loan. Please visit [technology.pitt.edu/remotedevices](http://technology.pitt.edu/remotedevices) for more information.

It is important that you know how to get on Canvas: <http://canvas.pitt.edu/>. You can access Canvas from my.pitt.edu Student Portal, or you can download the Canvas mobile app. You are expected to check Canvas regularly for lecture notes, assignments, announcements, and other material. Main communication with the class will be via Canvas announcements. All assignments will be submitted through Canvas, and grades/corresponding

rubrics will be posted to Canvas. If you need help accessing Canvas, contact computer help desk at 412-624-HELP or click on the Help icon on your Canvas dashboard. Assistance is available 24/7 by phone, email, or webchat.

- Pitt Environmental Health and Safety requires that everyone wear close-toed shoes while working in the lab. This is non-negotiable. Students wearing inappropriate footwear will be asked to leave the lab and not return until they have obtained acceptable footwear.
- All course materials and links will be provided using **Canvas**. Be sure to check Canvas daily for announcements.
- You will use **LabArchives** (an electronic notebook service) to maintain your lab notebook.
  - You will receive an invitation to join the course notebook when the semester starts.
  - You will use your Pitt credentials to sign on to this service.
  - LabArchives can be accessed through the menu on the “my.pitt.edu” site. We recommend favoriting the LabArchives access tab on my.pitt.edu so that you can quickly navigate to the site.
- Supplemental Powerpoint slides, pre-lab demonstration and lecture videos, and other resources will be uploaded to Canvas under each weekly module throughout the semester.
- **Assignment instructions** will be posted in Canvas.

#### CALENDAR (SUBJECT TO CHANGE DUE TO THE UNPREDICTABLE NATURE OF SCIENTIFIC RESEARCH)

Week	Topics
1	Introduction to course research project, lab safety, and LabArchives orientation
2	<i>No lab-MLK Day</i>
3	Journal club 1; bacteriophage isolation
4	Bacteriophage isolation and purification
5	Bacteriophage purification
6	Bacteriophage purification and creation of webbed plates
7	Flood and harvest webbed plates; Lab meeting-share your research findings
8	<i>No lab-Spring Break</i>
9	Titer lysate and create webbed plates if needed
10	DNA extraction
11	DNA extraction and restriction digest setup
12	Agarose gel electrophoresis; prepare phages for archiving; prepare DNA for sequencing
13	Analyze restriction digests; prepare DNA for sequencing; work on poster
14	Final poster presentation and celebration of research

#### ASSESSMENT

In this class, students can earn up to 350 points (individual and team-based) from the following activities:

Evaluation Category	Item Evaluated	Method of Completion	Point Value
Scientific Understanding	Quizzes	Individual	100 (two lowest scores dropped)
	Journal clubs	Individual	30
Scientific Recordkeeping	LabArchives Notebook	Team	100
Scientific Communication	Lab Meeting and Poster	Team	100

Scientific Participation	Lab Citizenship	Individual	20
	<b>Total</b>		<b>350</b>

### *QUIZZES*

Weekly quizzes will be completed asynchronously on Canvas or TopHat. Each quiz is worth 10 points, and the lowest two quiz scores are dropped. Quizzes can be taken three times, and only the highest score counts towards your grade. Quizzes are designed to help you prepare for each week's lab and to assess your understanding of our course project. You are encouraged to use your notes and lab materials when taking the quizzes. You can expect quiz questions on scientific language, data interpretation, calculations, and experimental setup and design.

### *JOURNAL CLUBS*

We will discuss two primary peer-reviewed research articles related to our course project during the semester. Students will complete Figure Facts assignments to help them break down the main points of the paper

### *LAB ARCHIVES NOTEBOOK*

Research teams are expected to keep their lab notebook up-to-date. Notebook entries will be periodically assessed throughout the term.

### *LAB MEETING AND POSTER*

Research teams will orally present their "research in progress" to peers during one mid-semester lab meeting and create a poster detailing their research findings at the end of the term. Several draft poster assignments will be assigned throughout the semester to help teams structure their poster.

### *LAB CITIZENSHIP*

A variety of ways will be used to assess **Lab Citizenship**, including following all experimental guidelines and lab safety policies when working in person during class, properly handling shared equipment and supplies, leaving your workspace ready for others at the end of lab, staying engaged during the lab, and effectively working with your Research Team (meeting deadlines, clear communication, and adherence to the teamwork contract). All students start the term with 20 Lab Citizenship points, which can be lost, gained, or earned back, depending on the circumstances.

### *GRADING SCALE*

Grade	Points
A+	98-100
A	93-97
A-	90-92
B+	87-89
B	83-86
B-	80-82
C+	77-79

Grade	Points
C	73-76
C-	70-72
D+	67-69
D	63-66
D-	60-62
F	Less than 60

## UNIVERSITY POLICIES

### COMMUNICATION

Each student is issued a University e-mail address (username@pitt.edu) upon admittance. This e-mail address may be used by the University for official communication with students. Students are expected to read e-mail sent to this account on a regular basis. Failure to read and react to University communications in a timely manner does not absolve the student from knowing and complying with the content of the communications. The University provides an e-mail forwarding service that allows students to read their e-mail via other service providers (e.g., Hotmail, AOL, Yahoo). Students that choose to forward their e-mail from their pitt.edu address to another address do so at their own risk. If e-mail is lost as a result of forwarding, it does not absolve the student from responding to official communications sent to their University e-mail address. To forward e-mail sent to your University account, go to <http://accounts.pitt.edu>, log into your account, click on *Edit Forwarding Addresses*, and follow the instructions on the page. Be sure to log out of your account when you have finished. For the full E-mail Communication Policy, go to [www.bc.pitt.edu/policies/policy/09/09-10-01.html](http://www.bc.pitt.edu/policies/policy/09/09-10-01.html).)

### PLAGIARISM AND ACADEMIC INTEGRITY

Students in this course will be expected to comply with the [University of Pittsburgh's Policy on Academic Integrity](#). Any student suspected of violating this obligation for any reason during the semester will be required to participate in the procedural process, initiated at the instructor level, as outlined in the University Guidelines on Academic Integrity. This may include, but is not limited to, the confiscation of the examination of any individual suspected of violating University Policy. Furthermore, no student may bring any unauthorized materials to an exam, including dictionaries and programmable calculators.

To learn more about Academic Integrity, visit the [Academic Integrity Guide](#) for an overview of the topic. For hands-on practice, complete the [Understanding and Avoiding Plagiarism tutorial](#).

### DISABILITY SERVICES

If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and [Disability Resources and Services \(DRS\)](#), 140 William Pitt Union, (412) 648- 7890, [drsrecep@pitt.edu](mailto:drsrecep@pitt.edu), (412) 228-5347 for P3 ASL users, as early as possible in the term. DRS will verify your disability and determine reasonable accommodations for this course.

### ACCESSIBILITY

The Canvas LMS platform was built using the most modern HTML and CSS technologies, and is committed to W3C's Web Accessibility Initiative and [Section 508](#) guidelines. Specific details regarding individual [feature compliance](#) are documented and updated regularly.

### DIVERSITY AND INCLUSION

The University of Pittsburgh does not tolerate any form of discrimination, harassment, or retaliation based on disability, race, color, religion, national origin, ancestry, genetic information, marital status, familial status, sex, age, sexual orientation, veteran status or gender identity or other factors as stated in the University's Title IX policy. The University is committed to taking prompt action to end a hostile environment that interferes with the

University's mission. For more information about policies, procedures, and practices, see:

<http://diversity.pitt.edu/affirmativeaction/policies-procedures-and-practices>.

I ask that everyone in the class strive to help ensure that other members of this class can learn in a supportive and respectful environment. If there are instances of the aforementioned issues, please contact the Title IX Coordinator, by calling 412-648-7860, or e-mailing [titleixcoordinator@pitt.edu](mailto:titleixcoordinator@pitt.edu). Reports can also be filed online: <https://www.diversity.pitt.edu/make-report/report-form>. You may also choose to report this to a faculty/staff member; they are required to communicate this to the University's Office of Diversity and Inclusion. If you wish to maintain complete confidentiality, you may also contact the University Counseling Center (412-648-7930).

## COPYRIGHT NOTICE

These materials may be protected by copyright. United States copyright law, 17 USC section 101, et seq., in addition to University policy and procedures, prohibit unauthorized duplication or retransmission of course materials. [See Library of Congress Copyright Office](#) and the [University Copyright Policy](#).

## GENDER INCLUSIVE LANGUAGE STATEMENT

Language is gender-inclusive and non-sexist when we use words that affirm and respect how people describe, express, and experience their gender. Just as sexist language excludes women's experiences, non-gender-inclusive language excludes the experiences of individuals whose identities may not fit the gender binary, and/or who may not identify with the sex they were assigned at birth. Identities including trans, intersex, and genderqueer reflect personal descriptions, expressions, and experiences. Gender-inclusive/non-sexist language acknowledges people of any gender (for example, first year student versus freshman, chair versus chairman, humankind versus mankind, etc.). It also affirms non-binary gender identifications, and recognizes the difference between biological sex and gender expression. Students, faculty, and staff may share their preferred pronouns and names, and these gender identities and gender expressions should be honored.

## TAKE CARE OF YOURSELF

Do your best to maintain a healthy lifestyle this semester by eating well, exercising, avoiding drugs and alcohol, getting enough sleep, and taking time to relax. Despite what you might hear, using your time to take care of yourself will actually help you achieve your academic goals more than spending too much time studying. All of us benefit from support and guidance during times of struggle. There are many helpful resources available at Pitt. An important part of the college experience is learning how to ask for help. Take the time to learn about all that's available and take advantage of it. Ask for support sooner rather than later – this always helps. If you or anyone you know experiences any academic stress, difficult life events, or difficult feelings like anxiety or depression, we strongly encourage you to seek support. Consider reaching out to a friend, faculty or family member you trust for assistance connecting to the support that can help.

The University Counseling Center is here for you: call 412-648-7930 and visit their website.

If you or someone you know is feeling suicidal, call someone immediately, day or night: University Counseling Center (UCC): 412 648-7930

University Counseling Center Mental Health Crisis Response: 412-648-7930 x1

Resolve Crisis Network: 888-796-8226 (888-7-YOU-CAN)

If the situation is life threatening, call the Police:

On-campus: Pitt Police: 412-268-2121

Off-campus: 911