SEA-PHAGES 1 Lab Syllabus

Course ID: BIOSC 0058 CRN: 31719

Section 1004: MW 2:30 PM – 4:10 PM Classroom: Clapp Hall G16

INSTRUCTOR INFORMATION

Dr. Kristen Butela

The best way to contact me is via email at kab340@pitt.edu. I typically check email on a regular basis during Mondays-Fridays, 7 AM until 7 PM EST. You are welcome to send emails outside of these hours, and I will respond to them during my normal email checking hours. You can respond to emails at any time that is best for you.

About me: Most students address me as Kristen, although you can also use Dr. Butela or Professor Butela if you prefer. This is my 9th year of teaching the SEA-PHAGES lab course.

I have a PhD in molecular, cellular, and developmental biology with a research specialization in microbial genome evolution, which is a long way of describing that I'm interested in finding out why viruses and bacteria have the genes that they do. My dissertation research focused on examining the role of diversifying selection resulting from protozoan predation on genetic diversity at the *rfb* locus in *Salmonella*. My current research involves identification and characterization of the genes responsible for controlling host range in bacteriophages infecting *Gordonia* sp.

I am a first-generation college graduate who participated in the TRIO Upward Bound Program at California University of Pennsylvania when I was in high school. I originally wanted to be a doctor before I entered college, but that's mostly because I really didn't understand what I could do with a biology degree at the time and that research was an attractive career option for me (tuition-free graduate school definitely helped!). I'm always happy to talk with any first-generation students to help them navigate college.

UNDERGRADUATE TEACHING ASSISTANTS

Regina Thomas rmt45@pitt.edu
Anna Sorrentino aes178@pitt.edu

PRE-REQUISITE

There are no pre-requisites for this course.

COURSE DESCRIPTION

This course is designed to ground students in fundamental biological concepts and scientific reasoning through engagement in authentic hypothesis driven research. Students will discover, propagate, and characterize their own bacteriophage isolated from soil while honing their scientific communication skills through the keeping of a laboratory notebook and presenting their findings in a final poster project. Students will be introduced to concepts in microbiology, evolution, and molecular biology through hands-on experiments. If you need to take a Foundations of Biology Lab 2 course, you can join us for the second half of the course by taking BIOSC 0068, or you can choose any other BIOSC 0067 option.

STUDENT HELP HOURS

Student help hours are unstructured times when SEA-PHAGES instructors are available to meet with students. Topics for discussion are mostly chosen by students on an informal basis, although students are welcome to propose specific scheduled topics at student help hours announced in advance (for example, a student help hour might be specifically focused on making good figures and announced in advance to all students in the course if requested).

You may attend any instructor's scheduled student help hours, which will be held virtually on Zoom. These meetings are not recorded, and they also will be attended by multiple students from different sections. If you want to discuss something of a personal nature or prefer dedicated one-on-one time, you can request a private Zoom or in-person appointment by emailing me with a few different dates/times that best fit your schedule. In-person meeting availability is dependent upon the changing conditions of the coronavirus pandemic.

When should you stop by student office hours?

- You have a question about course material or want specific feedback on your lab notebook
- You have questions about biology or scientific research in general, including research as a career, graduate school, or the biology major at Pitt
- You don't have a specific question, but you want to participate in the meeting to find out what other students are discussing
- You just want an opportunity to get to know other students and instructors outside of class meeting times

Important note about getting help with technology: if you have a question about technology (how to use Canvas/LabArchives/Microsoft Word/etc., accessing the internet, or an issue with a program), you will be able to access help faster by contacting the Pitt Help Desk at 412-624-HELP, stopping by an in-person help desk, starting an online chat, or getting virtual help on

Zoom. Technicians are available by live chat and phone on a 24/7 basis. If you have an urgent technology question, you are more likely to get immediate help by contacting the Pitt Help Desk by telephone or live chat, especially if you need help outside of my normal working hours.

Day	Time	Instructor	Zoom Link
Monday	5:00 – 6:00 PM	Kristen Butela	https://pitt.zoom.us/j/99058396957
Tuesday	10:30 – 11:30 AM	Kyle Parks	https://pitt.zoom.us/j/98292453532
	1:00 – 2:00 PM	Scott Stuckman	https://pitt.zoom.us/j/91746455743
	4:00 – 5:00 PM	Kyle Parks	https://pitt.zoom.us/j/98292453532
Thursday	1:00 – 2:00 PM	Scott Stuckman	https://pitt.zoom.us/j/91746455743
Friday	10:00 – 11:00 AM	Kristen Butela	https://pitt.zoom.us/j/99058396957

COURSE OBJECTIVES

Upon completion of this course, the student will be able to:

- Explain the structure, abundance, and life cycles of bacteriophages
- Outline the reasons for isolating phages of *Gordonia terrae* and how this aids our understanding of viral evolution
- Identify the broader impacts of studying bacteriophages on other areas of medical and basic science
- Discuss the mechanism of action and proper application of the experimental techniques utilized in phage isolation, amplification, and DNA extraction.
- Keep an accurate record of experiments that can be easily interpreted by other scientists
- Read and present primary scientific data
- Successfully collaborate with a team of other students to complete the phage discovery process

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 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.

- To participate in this laboratory, you will need to wear closed-toed shoes and a mask/face covering that covers the entire mouth and nose for the duration of each in-person lab session. Disinfectant and gloves are provided in the lab.
- 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.
- Phage Discovery Guide
    - You can find this manual in the "Welcome and Getting Started" module on Canvas; we recommend bookmarking it on your web browser.
    - Pitt-specific protocol modifications are found in LabArchives (you may use these as templates to build your notebook entries, but you will need to read the full protocol to gain an adequate understanding of the purpose and rationale of the experiments).
    - Before performing an experiment, always consult this document first!
- Laboratory Notebook Guidelines
    - You can find this document in the "Welcome and Getting Started" module on Canvas.
    - Detailed information on how to construct a quality and thorough notebook entry.
- 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.

- Actinobacteriophage database
    - You will need to create an account with phagesdb.org
    - You will create and maintain a phage page on this site

COURSE EVALUATION

See **Assignments** in the Canvas course navigation menu for detailed instructions for each individual assignment.

EVALUATION

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 Meetings and Poster	Team	100
Scientific Participation	Lab Citizenship	Individual	20
	Total		**350**

To calculate your grade in this course, divide the number of points you earned by the total points possible at any given time in the course. A detailed **Assignment Due Date and Points Tracker** document is posted to Canvas in the Welcome and Getting Started module.

Quizzes: each student has three attempts to take the Canvas Quizzes; only the highest score for each quiz will count towards your final grade. Quizzes are untimed and open note/book; they are meant to be completed outside of lab. The two lowest quiz scores will be dropped.

GRADING SCALE

Percentages are rounded to the nearest number, so 97.4% = 97% and 97.5% = 98%.

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

GRADING POLICY

Assignments are due at the beginning of lab at the date noted for each assignment posting on Canvas unless otherwise noted. Being absent from lab does not change assignment due dates, although extensions can be granted at the instructor's discretion. We understand that "life happens," especially as we resume in-person learning during an ongoing viral pandemic. We are providing all students with **two Flex Days**, which allow you to submit certain assignments up to 2 days late without any grading penalty. If you would like to use one or both Flex Days for any assignment, you will need to email me the following in advance of the assignment due date:

- The assignment on which you want to use your Flex Day(s)
- The number of Flex Days you would like to use for the assignment

You do not need a reason to use your Flex Days and you do not need to tell us why you are using your Flex Days unless you choose to do so. Flex Days may be used for:

- Lab notebook checks
- Quizzes
- Poster presentation DRAFT assignments only
- Peer review of other posters

Flex Days cannot be used for:

- Journal article questions and discussion (journal clubs)
- In-class lab meetings and presentations
- Final poster submission and presentation

Once you have used your Flex Days, point deductions will occur for any assignment submitted after the deadline as follows:

- 24 hours late: 10% deduction
- 48 hours late: 25% deduction

- 72 hours late: 50% deduction
- More than 72 hours late: no credit for any assignment other than quizzes; a flat 5 point late penalty applies to quizzes more than 72 hours late but points can still be earned

If you experience extenuating circumstances (health issues, family emergencies, food/financial insecurity, etc.) that interfere with your ability to submit assignments on time, please let us know. We will be as flexible as possible to accommodate your needs while balancing the research-based nature of this course and the need to maintain data integrity.

COURSE SCHEDULE

Refer to the course **Schedule** posted on Canvas**.** We will try our best to adhere to the schedule outlined at the beginning of the semester. Authentic science research with living organisms can sometimes be unpredictable, so we may need to make changes to the schedule to accommodate experimental progress and the needs of everyone in the class. Any changes made to the schedule will be posted to Canvas and sent out to the class in an announcement.

TEACHING METHODS

BIOSC 0058 is an authentic, research-based lab course in which students will work in Research Teams to isolate, purify, amplify, and characterize novel bacteriophages that infect *Gordonia terrae*. 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 and in open labs, effectively working with your Research Team (meeting deadlines, clear communication, and adherence to the teamwork contract). Lab Citizenship guidelines are posted on Canvas.

Students will view **Pre-Lab Theory and Demonstration Videos** and complete **Quizzes** asynchronously to prepare for each lab's activities and experiments. We have designed these materials to prepare you for successfully performing hands-on experiments in the lab. This way, you can spend class time performing experiments and writing in your lab notebook when you have instant access to help and feedback from course instructors, your peers, and UTAs. Scientific understanding will also be assessed in **Journal Club** activities that include answering questions about journal articles and authentic data and discussing what you've learned with your peers.

Phage discovery experiments will be conducted synchronously in-person during the scheduled lab period by students working in Research Teams of two students per team. Each team member will have a designated role to play on the team that rotates each class period. We will provide ample time for teams to complete **LabArchives notebook entries** during lab. At the end of each experiment, Research Team members will discuss results and next steps with each other, UTAs, and instructors, and complete any pre-lab entries for future experiments. You will communicate your scientific findings with your peers during in-class **Lab Meetings** and a **Final Poster Presentation.**

RESEARCH TEAM MEMBER ROLES AND RESPONSIBILITIES

Students will work in teams of two students throughout the semester and will rotate between two distinct roles within the team. Each teammate will spend approximately equal amounts of time in each role. For example, if you are assigned to serve as the Experimenter on Mondays, you will rotate to the Recordkeeper role on Wednesdays. Your instructor will assign groups and will designate which days each student will perform a particular role. All teammates are expected to:

- Develop team-specific ground rules and standards for the Research Team and adhere to them throughout the research project
- Review all phage discovery protocols (reading the lab manual, watching videos, asking questions) before coming to lab
- Complete all pre-lab protocol and methods flow diagram assignments in the shared lab notebook
- Discuss results, conclusions, and next steps with teammates
- Answer the Experimental Theory questions in the shared lab notebook
- Ensure the integrity of data and information recorded in the lab notebook
- Accurately curate the PhagesDB entry for your team's phage

The Experimenter is responsible for physically performing phage discovery experiments on their assigned day. Responsibilities include:

- Cleaning the work area before and after lab
- Properly and safely conducting the day's experiments
- Consulting with the Recordkeeper during the experiment to ensure accurate understanding of the protocols being performed and interpretation of data gathered from the previous experiment

The Recordkeeper is responsible for recording information in the team lab notebook and informally communicating team progress to UTAs and instructors on their assigned day. Responsibilities include:

- Recording all information in the team lab notebook for each experiment during lab
- Providing help and feedback to the Experimenter as they perform the day's experiments
- Photographing experimental results and uploading them into the shared lab notebook
- Checking in with UTAs to ensure the lab notebook has been completed before leaving lab
- Completing daily Exit Tickets (materials requests, equipment issues, experimental plans)

E-MAIL COMMUNICATION POLICY

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.)

COURSE PARTICIPATION AND DELIVERY

This course is delivered with the expectation that students will be attending all labs in-person and synchronously; fully remote course completion options are not available due to the practical nature of authentic research labs. Open labs staffed by UTAs will be held on most Friday afternoons during the semester; schedules will be posted to Canvas. Attendance is mandatory for all regularly scheduled class meetings and optional for open labs.

Be sure to check coronavirus.pitt.edu daily for updated information on the University operating status; changes to modes of instruction and course adjustments will be posted to Canvas if needed. All course material will be delivered using Canvas.

Under normal circumstances, an instructor will be physically present in the lab classroom. In the event of instructor illness, personal emergency, or self-quarantine, the instructor will either be available via Zoom when teaching remotely or another faculty member or teaching assistant will be present.

In this course we will be using Canvas as the Learning Management System. Asynchronous pre-lab lectures and demonstration videos are recorded using Panopto, and these will be posted to Canvas. Synchronous course meetings will be held in person and will not be recorded. Assignments will be administered using Canvas, and lab notebooks will be maintained using LabArchives. Student help hours will be held via Zoom, but in-person appointments are available. You will be able to access all of these platforms for the course through Canvas or my.pitt.edu.

You will be organized into research teams of two students per team. Students will rotate group roles each day. We have designed this course to allow you to work on the most challenging

coursework during your scheduled lab session, but you should expect to complete about 1-2 hours of asynchronous work to prepare for lab (viewing pre-lab videos, completing quizzes, reviewing protocols, etc.) each week.

COURSE ATTENDANCE POLICY

BIOSC 0058 is an authentic, research-based course, so making regular progress on your research project is dependent upon 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.

If you are unable to attend class for any reason, please contact both your section instructor and your Research Teammate as soon as possible, preferably prior to the start of class. Given that we are holding in-person meetings for class in the middle of a pandemic, we expect that students will most likely need to miss lab on occasion due to illness, quarantine, or caregiving responsibilities. Remote options are mostly unavailable for this course, although some missed labs can be made up through additional asynchronous online work (lab notebook entries) and synchronous in person experiment work during open labs.

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, although most absences may count as excused if you keep in regular communication with your instructor and demonstrate a reasonable effort to make progress in the course. Acceptable documentation should be submitted to your instructor via email within one week of the missed class or it will not be accepted. The penalties for unexcused absences are as follows:

1 unexcused absence	No additional penalty
2 unexcused absences	Deduction of ½ letter grade from final grade
3-4 unexcused absences	Deduction of one full letter grade from final grade
More than 5 unexcused absences	Failure for class (if withdrawal option or G grade not taken)

Please note that while one unexcused absence does not result in an overall grading penalty for the course, it will most likely affect your Research Team peer evaluation participation scores since unexcused absences have a negative impact on the progress of your entire Research Team. Points may also be lost on individual assignments if you are not present to complete them.

If you need to miss class on a regular basis for an excused reason, 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 more than five lab sessions for any reason, excused or unexcused, should take a G grade or**

withdraw from the course. Remaining coursework can be completed, or the course can be taken during another semester in which their circumstances allow for regular attendance.

Arriving to class late (more than 5 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 and you are the Experimenter for your Research Team, 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.

Being absent from lab does not change assignment due dates, although extensions can be granted at the instructor's discretion.

PLAGIARISM & 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, (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.

HEALTH AND SAFETY STATEMENT

During this pandemic, it is extremely important that you abide by the public health regulations, the University of Pittsburgh's health standards and guidelines, and Pitt's Health Rules. These rules have been developed to protect the health and safety of all of us. Universal face covering is required in all classrooms and in every building on campus, without exceptions, regardless of vaccination status. This means you must wear a face covering that **properly covers your nose and mouth** when you are in the classroom. If you do not comply, you will be asked to leave class. It is your responsibility have the required face covering when entering a university building or classroom. **If you refuse to properly wear a mask/face covering after being asked**

to by an instructor, UTA, peer, or staff member, you must leave the lab immediately and will receive an unexcused absence. If you do not leave the lab, you will receive a one letter grade deduction from your final course grade. If you forget your mask, you can get one for free at the Concierge Station located in the Clapp Hall lobby.

For the most up-to-date information and guidance, please visit coronavirus.pitt.edu and check your Pitt email for updates before each class.

If you are required to isolate or quarantine, become sick, or are unable to come to class, contact me as soon as possible to discuss arrangements. While we will do our best to accommodate you, some experiments may not be able to be made up due to the nature of authentic research. We do expect that on occasion, students may need to do some extra work to continue experiments when a teammate is absent from class. When the teammate can return to class, we also expect the returning student to take on some additional work to ensure that everyone shares an equitable amount of teamwork.

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

In an ideal world, both the university and the field of science would be fully objective and free of personal bias. However, I acknowledge that science and the environment in which we perform science are built upon a system that has historically favored the input of a very small minority of privileged individuals, and that these systems do not reflect the diversity and experiences of students entering the field of science today. According to the BioSkills Guide, a set of core competencies required for the development of a wide range of transferrable biology skills, undergraduate biology courses should prepare students to identify and describe how systemic factors affect how science is done and who engages in the process of science, describe how scientists' personal identities and biases can influence science, and explain how science is enhanced through diversity and inclusion of people from multiple intersectional identities. For science to move forward, all members of the scientific community must work harder to ensure that people with diverse backgrounds and experiences are welcomed and included.

I am committed to supporting students in the process of learning how to do science in a way that honors their intersectional identities (race, ethnicity, socioeconomic status, ability, religion, gender, sexuality, etc.). To help me accomplish this, I would find it helpful for you to let me know about (if you choose to do so):

- your preferred pronouns and/or name (if they differ from official Pitt records)

- accommodations you may need to support your performance in the class in addition to those specified by the Office of Disability Services (religious observances, transportation issues, etc.)
- any other issues from your experiences outside of class that may impact your performance in this class and suggestions for how I can best support your needs as a learner
- ideas and feedback you may have on how to generally improve this course (these can be sent anonymously via Canvas).

I acknowledge that we are on the traditional homelands of the Osage and Shawandasse Tula peoples.

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. 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).

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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

BIOSC 0058 SEA-PHAGES 1 Course Schedule

Note: Weeks begin on **Monday** and end **Sunday** evening. All assignments are due by the specified due date in Canvas. Research Team assignments are designated as (TEAM); all other assignments are individual.

Module	Day	Date	Topic	Assignments / Activities
Isolation	M	8/30	Welcome and introduction to the course Overview of bacteriophages	• **Complete group surveys** • **Collect soil samples from diverse locations and bring to next class**
Isolation	W	9/1	Basic lab skills practice/lab orientation Set up first round of direct isolations	• **Collect soil samples from diverse locations and bring to next class**
	M	9/6	*No class-Labor Day*	• **Collect soil samples from diverse locations and bring to next class**
Isolation	W	9/8	Process direct isolations and plating Set up second round of direct isolations	• **Quiz #1 Due (INDIVIDUAL)** • **Collect soil samples from diverse locations and bring to next class**
Isolation	M	9/13	Collect data on first round of direct isolations Process second round of direct isolations Set up third round of direct isolations	
Isolation	W	9/15	Collect data on second round of direct isolations Process third round of direct isolations	• **Lab Notebook Check #1 Due (TEAM)** • **Quiz #2 Due (INDIVIDUAL)**
Isolation	M	9/20	Collect data on third round of direct isolations Final choice of bacteriophage Journal figure discussion	• **Journal figure assignment due (INDIVIDUAL) and class discussion**
Purification	W	9/22	Pick a plaque for purification round #1	• **Quiz #3 Due (INDIVIDUAL)**

BIOSC 0058: Foundations of Biology Lab SEA-PHAGES 1 (2211 Fall 2020)
Course Schedule for Sections Meeting on Mondays and Wednesdays

Module	Day	Date	Topic	Assignments / Activities
Purification	M	9/27	Collect data on purification round #1 Pick a plaque for purification round #2	
Purification	W	9/29	Collect data on purification round #2 Pick a plaque for purification round #3	• **Quiz #4 Due (INDIVIDUAL)**
Purification	M	10/4	Collect data on purification round #3 Set up additional round of purification if necessary	• **Lab Notebook Check #1 Revision Due (TEAM)**
Purification	W	10/6	Lab meeting-share progress to date	• **Quiz #5 Due (INDIVIDUAL)** • **Lab meeting presentation (INDIVIDUAL and TEAM)**
Amplification	M	10/11	Flood best webbed plate from last round of purification Journal article discussion	• **Lab Notebook Check #2 Due (TEAM)** • **Journal article #2 questions and class discussion due (INDIVIDUAL)**
Amplification	W	10/13	Harvest lysate and perform full plate titer	• **Quiz #6 Due (INDIVIDUAL)**
Amplification	M	10/18	Examine results of full plate titer Set up optimum webbed plates	

Module	Day	Date	Topic	Assignments / Activities
Amplification	W	10/20	Examine webbed plates and flood Repeat web plate optimization	• **Quiz #7 Due (INDIVIDUAL)**
Amplification	M	10/25	Spot titer of high titer lysate Examine webbed plates and flood or repeat web plate optimization	
Amplification	W	10/27	Spot titer of high titer lysate Examine webbed plates and flood or repeat web plate optimization Begin work on final poster	• **Quiz #8 Due (INDIVIDUAL)**
Amplification	M	11/1	Spot titer of high titer lysate Examine webbed plates and flood or repeat web plate optimization Continue work on final poster	
Characterization	W	11/3	Phage archiving day Perform spot titer if needed Examine webbed plates and flood or repeat web plate optimization Continue work on final poster	• **Lab Notebook Check #3 Due (TEAM)** • **Quiz #9 Due (INDIVIDUAL)**
Characterization	M	11/8	Perform spot titer if needed Prepare DNA Continue work on final poster	• **Introduction draft due (TEAM)**
Characterization	W	11/10	Prepare DNA Continue work on final poster	• **Quiz #10 Due (INDIVIDUAL)**

BIOSC 0058: Foundations of Biology Lab SEA-PHAGES 1 (2211 Fall 2020)
Course Schedule for Sections Meeting on Mondays and Wednesdays

Module	Day	Date	Topic	Assignments / Activities
Characterization	M	11/15	Prepare DNA Continue work on final poster	• **Methods flow diagram draft due (TEAM)**
Characterization	W	11/17	Set up restriction digests Continue work on final poster	• **Quiz #11 Due (INDIVIDUAL)**
	M	11/22	*No class-Thanksgiving Break*	
	W	11/24	*No class-Thanksgiving Break*	
Characterization	M	11/29	Perform gel electrophoresis Continue work on final poster	• **Results draft due (TEAM)**
Phage Olympics	W	12/1	Interpret results of gels Continue work on final poster	• **Quiz #12 Due (INDIVIDUAL)**
Phage Olympics	M	12/6	Continue work on final poster	• **Lab Notebook Check #4 Due (TEAM)** • **Final poster due at the end of class (TEAM)**
Phage Olympics	W	12/8	Poster presentations and end of course celebration	• **Peer reviews of other posters due by Monday December 13th at 5 PM**