



## **BISC 485: Advanced Seminar in Bacterial Survival and Evolution**

Last update 11-7-2024

**Units: 4**

**Spring—Monday—1-3:50**

**Location:** RRI 221

### **Instructor: Steven Finkel, PhD**

**Office:** RRI 319B

**Office Hours:** By appointment

**Contact Info:** [sfinkel@usc.edu](mailto:sfinkel@usc.edu) Will reply to emails within 24 h (weekday), or 48 h (weekend) unless otherwise noted.

### **Instructor: Julia Schwartzman, PhD**

**Office:** AHF 334

**Office Hours:** By appointment

**Contact Info:** [julias21@usc.edu](mailto:julias21@usc.edu) Will reply to emails within 24 h (weekday), or 48 h (weekend) unless otherwise noted.

### **Guest Instructor: Ken Neelson, PhD**

### **Course Description**

This is a literature-based seminar course designed to introduce graduate students and advanced undergraduates to current topics in microbial evolution and adaptation. The class will meet weekly with lectures by the instructor(s) alternating with student-lead discussions of papers chosen by the presenting students in consultation with the faculty. Individual topics will be covered approximately every two weeks. This course is designed to bring together students with diverse backgrounds including, but not limited to: Microbiology, Molecular Biology, Marine Biology, Geobiology, Earth Sciences, and Ecology.

### **Learning Objectives**

By the end of this course, students will be able to:

1. Read and critically evaluate papers from the scientific literature.
2. Lead a discussion of a scientific paper from the primary literature.
3. Explain how scientific data is used to support or disprove hypotheses.
4. Prepare a term paper providing a critical analysis of a scientific topic

**Prerequisite(s):** 1 from ([BISC 120](#) or [BISC 121](#)) and 1 from ([BISC 220](#) or [BISC 221](#)) and 1 from ([BISC 312](#) or [BISC 320](#) or [CHEM 350](#)) and 1 from ([CHEM 322A](#) or [CHEM 325A](#)) Or by permission of instructor.

### **Course Notes**

- The final grade in this course is a letter grade A-F (see below for conversion of points to letter)
- This course meets in person, although to accommodate an excused absence we may offer a remote option (Zoom) on an as-needed basis.

### **Required Readings and Supplementary Materials**

Readings and supplementary materials for this course are available on Brightspace. No textbook is required.

## Description and Assessment of Assignments

This section provides an overview of the assessment types for this course. Note that there are no exams in the course. More details will be provided on the first day of the course and with assessments.

- **Reflections** are meant to help guide your reading to prepare for class. You will submit answers to short prompts on Brightspace prior to joining us in class. As part of your reflection, you'll be asked to come up with questions for class discussion.
- **Peer evaluations** are meant to help each student leading class reflect on what worked and what didn't work when they lead discussion. The instructors and students in the class will use a rubric to evaluate the student teacher and answer short prompts. The purpose of evaluations is to provide constructive and actionable feedback from everyone in the class to help improve presentation skills. Reflecting on how others present is a great way to think about what you find effective/not effective tools for communicating and discussing science.
- **Student led learning** a core part of this class is for you to deeply engage with one of the 7 topics we'll cover over the semester, by leading a class discussion centered on a research paper. As part of this exercise, you'll work with the instructor for the module related to your student led learning topic to come up a learning plan and presentation for the class.
- **Final paper**

## Grading Breakdown

Assessment Tool (assignments)	Points	% of Grade
Presentation	40	40
Term paper	40	40
Critical Evaluation	20	20
<b>TOTAL</b>	<b>100</b>	<b>100</b>

## Grading Scale

Course final grades will be determined using the following scale:

Letter grade	Corresponding numerical point range
A	95-100
A-	90-94
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	73-76
C-	70-72
D+	67-69
D	63-66
D-	60-62
F	59 and below

## Assignment Submission Policy

Submit pre-class reflection assignments, student feedback and the final paper on Brightspace. Student presentations should be submitted directly to the instructor for that week.

## Grading Timeline

Our goal is to return feedback to you within a week of submission. Although we don't anticipate that there will be any delays, if something does happen to delay returning feedback, we will communicate a new date to receive grades on Brightspace.

## Course Specific Policies

- No special assignments for extra credit are permitted.
- It may be necessary to adjust the syllabus during the semester. Check Brightspace for updates. Instructors will also make announcements at the beginning of class.
- The final paper will not be returned but will be retained for one semester by the faculty.
- Instructors reserve the right to generate Turnitin reports to maintain academic integrity. Please note that reports will be evaluated by assessing similarity matches, not by an absolute score.

## Attendance

- This class is discussion based, and the learner centered format is designed for in person attendance. For this reason, non-attendance can be the basis for lowering your grade. You must be an active participant in all discussions to get full credit, meaning you must read all assigned papers and be prepared to present and discuss any figures when called upon. Further, students are expected to bring their own questions and ideas on the given topic to the discussion. Therefore, you must attend all classes.
- Student athletes who present Travel Request Letters at least a week in advance of absences and students who give advance notice of religious observation will be accommodated.
- In the event of more than one absence, students are expected to write a one-page report on the week's discussion paper. An acceptable written excuse or documentation must be provided to the faculty. No special assignments for extra credit are permitted.

## Classroom norms

In this course you will be frequently engaging in discussion and giving feedback. These are learned skills, that the instructors will be helping everyone develop. To participate in this learning community, you are committing to contributing to our discussions and to providing constructive feedback, as outlined by the instructors.

## Zoom etiquette

If class needs to be held on zoom, or an individual member of our class needs to join via zoom, we'll observe the following netiquette:

- Zoom participants: please stay muted unless you want to talk but keep your camera on. Raise your hand to help us see that you want to contribute.
- In person participants: please help instructors keep an eye on the zoom to make sure remote participant(s) can seamlessly contribute to discussion.

## Academic Integrity

The University of Southern California is foremost a learning community committed to fostering successful scholars and researchers dedicated to the pursuit of knowledge and the transmission of ideas. Academic misconduct is in contrast to the university's mission to educate students through a broad array of first-rank academic, professional, and extracurricular programs and includes any act of dishonesty in the submission of academic work (either in draft or final form).

This course will follow the expectations for academic integrity as stated in the [USC Student Handbook](#). All students are expected to submit assignments that are original work and prepared specifically for the course/section in this academic term. You may not submit work written by others or "recycle" work prepared for other courses without obtaining written permission from the instructor(s). Students suspected of engaging in academic misconduct will be reported to the Office of Academic Integrity.

Other violations of academic misconduct include, but are not limited to, cheating, plagiarism, fabrication (e.g., falsifying data), knowingly assisting others in acts of academic dishonesty, and any act that gains or is intended to gain an unfair academic advantage.

Academic dishonesty has a far-reaching impact and is considered a serious offense against the university. Violations will result in a grade penalty, such as a failing grade on the assignment or in the course, and disciplinary action from the university itself, such as suspension or even expulsion.

For more information about academic integrity see the [student handbook](#) or the [Office of Academic Integrity's website](#), and university policies on [Research and Scholarship Misconduct](#).

Please ask your instructor if you are unsure what constitutes unauthorized assistance on an exam or assignment or what information requires citation and/or attribution.

#### **Policy for the use of AI Generators in this course**

This course aims to develop creative, analytical, and critical thinking skills. Therefore, all assignments should be prepared by the student working individually or in groups, as indicated for each assessment. Students may not have another person or entity complete any substantive portion of the assignment. Developing strong competencies in these areas will prepare you for a competitive workplace. Therefore, using AI-generated text, code, or other content is prohibited in this course, will be identified as plagiarism, and will be reported to the Office of Academic Integrity.

#### **Course Content Distribution and Synchronous Session Recordings Policies**

USC has policies that prohibit recording and distribution of any synchronous and asynchronous course content outside of the learning environment.

Recording a university class without the express permission of the instructor and announcement to the class, or unless conducted pursuant to an Office of Student Accessibility Services (OSAS) accommodation. Recording can inhibit free discussion in the future, and thus infringe on the academic freedom of other students as well as the instructor. ([Living our Unifying Values: The USC Student Handbook](#), page 13).

Distribution or use of notes, recordings, exams, or other intellectual property, based on university classes or lectures without the express permission of the instructor for purposes other than individual or group study. This includes but is not limited to providing materials for distribution by services publishing course materials. This restriction on unauthorized use also applies to all information, which had been distributed to students or in any way had been displayed for use in relation to the class, whether obtained in class, via email, on the internet, or via any other media. Distributing course material without the instructor's permission will be presumed to be an intentional act to facilitate or enable academic dishonesty and is strictly prohibited. ([Living our Unifying Values: The USC Student Handbook](#), page 13).

#### **Course Evaluations**

Course evaluation occurs at the end of the semester university wide. It is an important review of your experience in our class. During our last class period, we will take 10-15 minutes to allow you to fill our end-of semester evaluation forms.

[see course schedule on the next page!!!]

**Course Schedule** Note 1=Literature review week, and 2=Student led presentation week

Pre-class reflection due before start of each class

	Topics/Daily Activities	Readings/Preparation	Deliverables
<b>Week 1</b> 1/13 KN (no JS)	Introduction to the course	Wolfe-Simon <i>et al.</i> Science (2011)	Sign up for student-led presentations
<b>Week 2</b> 1/20	<b>No Class</b>		
<b>Week 3</b> 1/27 KN (No SF)	1. Extremophiles	TBA	Critical evaluation
<b>Week 4</b> 2/3 JS	2. Extremophiles		Critical evaluation
<b>Week 5</b> 2/10 KN (no JS)	1. Intra- and inter-species interactions: Quorum sensing, symbiosis, commensalism, and parasitism	TBA	Critical evaluation
<b>Week 6</b> 2/17	<b>No Class</b>		
<b>Week 7</b> 2/24 SF	2. Intra- and inter-species interactions: Quorum sensing, symbiosis, commensalism, and parasitism	TBA	Critical evaluation
<b>Week 8</b> 3/3 SF	1. Generation of genetic diversity: DNA damage, repair, and adaptive mutation		Critical evaluation
<b>Week 9</b> 3/10 SF (No JS)	2. Generation of genetic diversity: DNA damage, repair, and adaptive mutation	TBA	Critical evaluation
3/17	<b>SPRING BREAK</b>	<b>SPRING BREAK</b>	<b>SPRING BREAK</b>
<b>Week 10</b> 3/24 JS	1. Biofilms and planktonic lifestyle		Critical evaluation
<b>Week 11</b> 3/31 JS	2. Biofilms and planktonic lifestyle	TBA	Critical evaluation
<b>Week 12</b> 4/07 SF	1. Model systems to study microbial evolution		Critical evaluation
<b>Week 13</b> 4/14 SF	2. Model systems to study microbial evolution	TBA	Critical evaluation
<b>Week 14</b> 4/21 JS	1. Mechanisms of horizontal transfer and genetic diversity		Critical evaluation
<b>Week 15</b> 4/28 JS	2. Mechanisms of horizontal transfer and genetic diversity	TBA	Critical evaluation
<b>FINAL</b>	<b>Turn in your final paper 5/7</b>		Turn in term paper

## Statement on University Academic and Support Systems

### **Students and Disability Accommodations:**

USC welcomes students with disabilities into all of the University's educational programs. [The Office of Student Accessibility Services](#) (OSAS) is responsible for the determination of appropriate accommodations for students who encounter disability-related barriers. Once a student has completed the OSAS process (registration, initial appointment, and submitted documentation) and accommodations are determined to be reasonable and appropriate, a Letter of Accommodation (LOA) will be available to generate for each course. The LOA must be given to each course instructor by the student and followed up with a discussion. This should be done as early in the semester as possible as accommodations are not retroactive. More information can be found at [osas.usc.edu](https://osas.usc.edu). You may contact OSAS at (213) 740-0776 or via email at [osasfrontdesk@usc.edu](mailto:osasfrontdesk@usc.edu).

### **Student Financial Aid and Satisfactory Academic Progress:**

To be eligible for certain kinds of financial aid, students are required to maintain Satisfactory Academic Progress (SAP) toward their degree objectives. Visit the [Financial Aid Office webpage](#) for [undergraduate-](#) and [graduate-level](#) SAP eligibility requirements and the appeals process.

### **Support Systems:**

[Counseling and Mental Health](#) - (213) 740-9355 – 24/7 on call

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

[988 Suicide and Crisis Lifeline](#) - 988 for both calls and text messages – 24/7 on call

The 988 Suicide and Crisis Lifeline (formerly known as the National Suicide Prevention Lifeline) provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week, across the United States. The Lifeline consists of a national network of over 200 local crisis centers, combining custom local care and resources with national standards and best practices. The new, shorter phone number makes it easier for people to remember and access mental health crisis services (though the previous 1 (800) 273-8255 number will continue to function indefinitely) and represents a continued commitment to those in crisis.

[Relationship and Sexual Violence Prevention Services \(RSVP\)](#) - (213) 740-9355(WELL) – 24/7 on call

Free and confidential therapy services, workshops, and training for situations related to gender- and power-based harm (including sexual assault, intimate partner violence, and stalking).

[Office for Equity, Equal Opportunity, and Title IX \(EEO-TIX\)](#) - (213) 740-5086

Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

[Reporting Incidents of Bias or Harassment](#) - (213) 740-2500

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office for Equity, Equal Opportunity, and Title for appropriate investigation, supportive measures, and response.

[The Office of Student Accessibility Services \(OSAS\)](#) - (213) 740-0776

OSAS ensures equal access for students with disabilities through providing academic accommodations and auxiliary aids in accordance with federal laws and university policy.

[USC Campus Support and Intervention](#) - (213) 740-0411

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

[Diversity, Equity and Inclusion](#) - (213) 740-2101

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

[USC Emergency](#) - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

[USC Department of Public Safety](#) - UPC: (213) 740-6000, HSC: (323) 442-1200 – 24/7 on call

Non-emergency assistance or information.

[Office of the Ombuds](#) - (213) 821-9556 (UPC) / (323-442-0382 (HSC)

A safe and confidential place to share your USC-related issues with a University Ombuds who will work with you to explore options or paths to manage your concern.

[Occupational Therapy Faculty Practice](#) - (323) 442-2850 or [otfp@med.usc.edu](mailto:otfp@med.usc.edu)

Confidential Lifestyle Redesign services for USC students to support health promoting habits and routines that enhance quality of life and academic performance.