

**Senior Capstone Research Project**  
**BIO/CH 498A**  
**Course description & Syllabus Fall 2024**

**COURSE OBJECTIVES:**

1. Develop innovative ideas using knowledge in chemical/biological sciences for societal impact.
2. Work effectively as a leader or member of a multidisciplinary team creating an inclusive and supportive environment.
3. Conduct basic and applied scientific research in an ethical and professional manner.

**COURSE LEARNING OUTCOMES:**

After the successful completion of the course students will be able to

1. Define a research problem, design, and execute experiments in the laboratory with the help of research advisor.
2. Perform literature search to propose a hypothesis to address the research problem/study.
3. Learn to conduct experiments both independently and collaboratively in the laboratory to validate the proposed hypothesis. Understand the scientific ethics and professional conduct.
4. Analyze the data obtained from the experiments using various laboratory techniques and methods. Interpret the data and draw conclusions.
5. Present research as a poster/video presentation to peers/ faculty/Stevens community.
6. Write a final report following ACS guidelines

**COURSE FORMAT**

The main goal of this course is for students to work in a research lab on a project with an advisor. Students should be spending approximately 8-10 hours a week in the lab. Students will submit Biweekly progress reports on canvas. All the students will meet the instructor/class bi-weekly or as scheduled in the syllabus to update on the progress of their research and for presentations. Students will be required to prepare a midsemester research report as a 1page newsletter and present in class. Course deliverables also include video presentation and end of the semester presentation and a final research report in the ACS format.

**CLASS MEETINGS**

**All the class meetings will be held in-person ONLY**

Formal class meeting/Discussion Date & Time: Friday 12:00PM – 12:50PM

Classroom location: CH/BIO 498A: Burchard 715

## **INSTRUCTOR/COURSE COORDINATOR**

Dr. Sessa Alluri

Email: [salluri@stevens.edu](mailto:salluri@stevens.edu)

Office hours: Thu 10:00 AM – 11:00 AM or by appointment

Office Location: McLean 315

## **COURSE REQUIREMENTS**

**Application for Research:** This is a contract for research. All the students should submit the application for research (posted on canvas) with necessary signatures and brief project details. This is required for all the students and is due 09/20/24 at the latest. Failure to submit this form will result in an automatic zero in all the course activities after the due date.

**Attendance:** Students will meet with the instructor as scheduled and report on the progress of the research.

**BiWeekly Progress Reports:** Students will submit Biweekly progress reports (starting Week 2) through Canvas to keep track of their research progress throughout the semester.

**Mid-semester Research Report:** Students will present progress of their research to their peers in a 1 page Newsletter format during the class time.

**Final Research Presentation:** Students will present their research at the end of the semester to their peers/faculty.

**Video presentation:** Recorded on zoom or using any other tools 5-minute video presentation with the speaker view will have to be submitted on canvas. Each student would have to peer review one other student's video presentation.

**Final Research Report:** End of the semester research report following ACS guidelines submitted on canvas. The research report should have the following format/sequence and have a cover sheet signed by the advisor. Final research report will not be accepted without the signature of the research advisor.

Title

Abstract

Introduction

Experimental Details or Theoretical Analysis

Results

Discussion

Conclusions

References (APA format)

Page Limit: 8-10 pages, Font: Times New Roman/Arial Font size (12 point), Paragraph: Single space.

**Note: Midsemester Newsletter Research Report, Final research presentation, Video presentation and Final research report, all must be submitted on canvas only after the review/approval by your research advisor.**

**GRADING**

<b>Course Activities</b>	<b>Percentages</b>
Attendance/Weekly Progress Reports/student self-evaluation	<b>15%</b>
Mid-semester Research Report (Newsletter presentation)	<b>15%</b>
Final Research presentation	<b>20%</b>
Final Research report (Research Advisor 20%+ Course coordinator 10%)	<b>30%</b>
Video presentation	<b>20%</b>

**TENTATIVE SYLLABUS & MEETING DATES**

<b>Week/Date</b>	<b>Meeting days/Topics</b>	<b>Notes</b>
wk1 (09/06)	Introduction/course activities	<b>Bi-Weekly research reports due Thursday midnight starting from wk 2</b>
wk3 (09/20)	Research update/discussion	<b>Application for Research due 09/20 upload on Canvas</b>
Wk5 (10/04)	Guest lecture – Dr. Kenny Wong	
Wk7 (10/18)	Mid-semester Research Report (Newsletter Presentation)-1	Students will present during class time
Wk8 (10/25)	Mid-semester Research Report (Newsletter Presentation)-2  *11/01 reserved for presentations that could not be covered in wk8	Students will present during class time <b>(All mid-semester Newsletter report presentations due on canvas 10/25)</b>
wk11 (11/15)	Research update/discussion	<b>Final Video Presentation due</b> for peer review on canvas 12/06
Wk14 (12/06)	Final Research Presentation-1	<b>Faculty Invited</b>
wk15 (12/13)	Final Research Presentation-2 <b>Final Presentations will be due on canvas</b>	<b>Faculty Invited</b> Final Video Presentations after Peer review due on canvas 12/13
	<b>Final Research report due with advisor's signature due Friday 12/13</b>	

**MAKE UP FOR COURSE ACTIVITIES**

Make up for course activities available for *approved excused absences*. To receive an excused absence, you need to e-mail your Instructor ASAP. **Approved excused absences include:** illness,

deaths in the immediate family and other documented crises, call to active military duty, court-imposed legal obligations (jury duty, subpoenas), religious days, special requirements of other courses and university sponsored event. **NOTE:** employment schedules, oversleeping and athletic training/practice schedules are not valid excuse for absences.

### **ACADEMIC HONESTY**

Students are responsible for being honest and ethical for their academic work at all times. Cheating and/or plagiarism will not be tolerated. **The minimum penalty will be an automatic zero on the assignment in question and could result in honor board disciplinary penalties.**

The following pledge shall be written in full and signed by every student on all submitted work (including, but not limited to, homework, projects, lab reports, code, quizzes and exams) that is assigned by the course instructor. No work shall be graded unless the pledge is written in full and signed.

"I pledge my honor that I have abided by the Stevens Honor System."

### **LEARNING ACCOMMODATIONS**

Stevens Institute of Technology is dedicated to providing appropriate accommodations to students with documented disabilities. The Office of Disability Services (ODS) works with undergraduate and graduate students with learning disabilities, attention deficit-hyperactivity disorders, physical disabilities, sensory impairments, psychiatric disorders, and other such disabilities to help students achieve their academic and personal potential. They facilitate equal access to the educational programs and opportunities offered at Stevens and coordinate reasonable accommodations for eligible students. These services are designed to encourage independence and self-advocacy with support from the ODS staff. The ODS staff will facilitate the provision of accommodations on a case-by-case basis.

For more information about Disability Services and the process to receive accommodations, visit <https://www.stevens.edu/student-diversity-and-inclusion/disability-services> [Links to an external site.](#) If you have any questions please contact the Office of Disability Services at [disabilityservices@stevens.edu](mailto:disabilityservices@stevens.edu) or by phone: 201.216.3748.

### **Disability Services Confidentiality Policy**

Student Disability Files are kept separate from academic files and are stored in a secure location within the Office of Disability Services. The Family Educational Rights Privacy Act (FERPA, 20 U.S.C. 1232g; 34CFR, Part 99) regulates disclosure of disability documentation and records maintained by Stevens Disability Services. According to this act, prior written consent by the student is required before our Disability Services office may release disability documentation or records to anyone. An exception is made in unusual circumstances, such as the case of health and safety emergencies.

### **INCLUSIVITY**

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### **Name and Pronoun Usage**

As this course includes group work and class discussion, it is vitally important for us to create an educational environment of inclusion and mutual respect. This includes the ability for all students to have their chosen gender pronoun(s) and chosen name affirmed. If the class roster does not align with your pronouns and/or name, please inform the instructor of the necessary changes.

### **Religious Holidays**

Stevens is a diverse community that is committed to providing equitable educational opportunities and supporting students of all ethnicities and belief systems. Religious observance is an essential reflection of that rich diversity. Students will not be subject to any grade penalties for missing a class, examination, or any other course requirement due to religious observance. In addition, students will not be asked to choose between religious observance and academic work. Therefore, students should inform the instructor at the beginning of the semester if a requirement for this course conflicts with religious observance so that accommodations can be made for students to observe religious practices and complete the requirements for the course.

### **MENTAL HEALTH RESOURCES**

Part of being successful in the classroom involves a focus on your whole self, including your mental health. While you are at Stevens, there are many resources to promote and support mental health. The Office of Counseling and Psychological Services (CAPS) offers free and confidential services to all enrolled students who are struggling to cope with personal issues (e.g., difficulty adjusting to college or trouble managing stress) or psychological difficulties (e.g., anxiety and depression). Appointments can be made by phone (201-216-5177), online at <https://stevensportal.pointnclick.com/confirm.aspx> Links to an external site., or in person on the 2<sup>nd</sup> Floor of the Student Wellness Center.

### **EMERGENCY INFORMATION**

In the event of an urgent or emergent concern about your own safety or the safety of someone else in the Stevens community, please immediately call the Stevens Campus Police at 201-216-5105 or on their emergency line at 201-216-3911. These phone lines are staffed 24/7, year-round. For students who do not reside near the campus and require emergency support, please contact your local emergency response providers at 911 or via your local police precinct. Other 24/7 national resources for students dealing with mental health crises include the National Suicide Prevention Lifeline (1-800-273-8255) and the Crisis Text Line (text “Home” to 741-741). If you are concerned about the wellbeing of another Stevens student, and the matter is *not* urgent or time sensitive, please email the CARE Team at [care@stevens.edu](mailto:care@stevens.edu). A member of the CARE Team will respond to your concern as soon as possible.

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