BIOS 4460 E – Spring 2022

Communicating Biological Research

## **Course mode and collective responsibility for learning and health**

Welcome to BIOS 4460! As one of the final courses in the Biology major, this course is one of your last opportunities to interact with peers and faculty who will remain part of your professional network throughout your career. I hope we can all agree that the best way grow relationships and learn is face-to-face. Unfortunately, infection rates could necessitate a change in delivery mode at any time. Whether we meet in-person versus remotely could change depending upon health status of individuals in classroom. You have a definite stake in your personal health and the community’s health and taking a layered approach has been shown to be effective in mitigating spread.

Layered approach:

1. Everyone who is eligible should be vaccinated and boosted; vaccination significantly reduces likelihood of severe disease, including from the omicron variant of SARS-CoV-2.
2. Because the omicron variant can be spread by vaccinated individuals, I also expect that everyone who should wear a mask, correctly covering mouth and nose, when in the classroom.
3. Georgia Tech has improved airflow and filtration in classroom buildings.
4. As of the writing of this syllabus, our enrollment numbers are low enough to spread out in our classroom.
5. Weekly asymptomatic surveillance testing should be part of everyone's regular routine, regardless of vaccination status. Pick a time each week to get tested, and book it into your calendar. Details are here: <https://health.gatech.edu/coronavirus/testing>.

**Format**: **BIOS 4460 E meets on Tuesdays from 5-5:50 pm in CULC 129**

***Instructor****:*

Jennifer Leavey

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Pronouns: she/her/hers

Office hours: I’m available on BlueJeans Tuesday 2-4 pm and by appointment (email for a meeting link).

***Course summary:*** Biology students present seminars on recent research topics based on their own research experience and literature research. This course will be structured similarly to an academic lab meeting, where effective participation and the ability to provide constructive criticism to your colleagues are fundamental. The objectives for the course are for students to:

* develop oral and poster presentation skills on your own research
* learn to engage an audience in a scientific topic through presentation
* critically present and discuss your research results
* put your biological findings in a broader scientific context

These skills can be applied in a variety of possible future careers including: business (convincing supervisors of a new project idea, delivering results from a pilot project or clinical trial), medicine (informing colleagues about a medical case, teaching colleagues about a new treatment), government (testifying before elected officials about the importance of a research area, negotiating with bureaucrats about funding for science or education), and academia (presenting your own research in a faculty seminar or job interview, delivering a presentation at an international conference). We will also discuss strategies and techniques for scientific writing and interacting with other scientists in formal and informal meetings and conferences.

**Pre- and Co-requisites**: BIOS 4460 is a co-requisite for BIOS 4590 (Research Project Lab) because students will present their research from BIOS 4590 in the Communicating Biological Research course. Students who have chosen to take BIOS 4690 (Independent Research Project) as their Senior Research Experience will present their research from BIOS 4690 in Communicating Biological Science, and may enroll in BIOS 4460 concurrently or after completion of BIOS 4690.

This course meets in person. Because this is a presentation- and discussion-based course, attendance and active participation are required. Given that we are working collaboratively to evaluate each other's presentations, there is no mechanism to “make-up” a class. While we expect each student to attend every class and to be present for the entire class, we are in a pandemic. If you are sick, in isolation for covid, or in quarantine for possible covid exposure, we ask that you NOT come to class. Instead, email the instructor immediately to communicate that you will not be in class and plan to participate remotely on a bluejeans session for that class, if you are well enough to do so. While far from ideal, this is the safest solution we can implement in the current circumstances.

For non-illness related reasons, if you must miss a class, notify the instructor by email as soon as possible, preferably before the missed hour. There will be no make-ups. Vacation, work commitments, and social events are not acceptable reasons to miss class. Examples of legitimate reasons to miss a lab include serious illness, illness or death in your immediate family, participation in official university activities, and grad school/med school/job interviews arranged ahead of time with the instructor. You will be required to provide documentation for excused absences. Each unexcused absence will lower the final grade by 5%.

**Optional text:** Writing Papers in the Biological Sciences by Victoria E. McMillan (5th or 6th edition), Bedford/St.Martin’s, Boston/NY.

**Office hours:** By appointment on BlueJeans. Please email or consult with instructor during class to set up a meeting. Students are also welcome to visit the instructor to talk about issues other than course material (e.g., career plans, research interests).

**Assessment:**

One mini oral presentation 10%

Two major oral presentations 40%

Self-assessment of presentation 10%

Poster presentation 25%

Class participation 15%

**Oral presentations** should include use of PowerPoint (or similar), should be practiced ahead of time, and will be peer-reviewed and graded by the instructor according to the rubric included with this syllabus. Mini oral presentations (6 min: 5 min talk + 1 min Q&A) may be on a scientific topic of your choosing or framed around a recent primary literature journal article. Major oral presentations (12 min: 10 min talk + 2 min Q&A) will be based on your research from BIOS 4590 or 4690.

**Self assessment:** Students complete an evaluation of their own major oral presentations, due one week after the presentation. This provides an opportunity for students to reflect on how they could have prepared for, practiced, and structured their talks differently, and what they would change for their next presentation.

**Poster presentation:** Each student will create a poster to present their research (from BIOS 4590 or 4690) in a poster session held at the end of the semester. The poster format is described at the end of this syllabus and will be further discussed in class. The grading rubric is provided with this syllabus and in Canvas.

**Class participation:** Studentswill be judged by the extent to which they participate in class discussions (by asking questions, answering questions, offering ideas, opinions, and critiques of student presentations). **Students are expected to ask a question or offer a comment at least once every class.**

**Academic Integrity**: Academic dishonesty will not be tolerated. This includes cheating, lying about course matters, plagiarism, stealing classroom materials, or helping others commit a violation of the Honor Code. Students are reminded of the obligations and expectations associated with the Georgia Tech Academic Honor Code and Student Code of Conduct, available online at<http://osi.gatech.edu/content/honor-code>. Plagiarism is the unattributed use of the words of ideas of others and includes reprinting the words of others without the use of quotation marks and citation. As direct quotes are seldom used in scientific writing, you are expected to rephrase the words of others and provide the citation. If this is unclear, please ask your instructor for help.

**Learning Accommodations**: If needed, we will make classroom accommodations for students with disabilities. These accommodations must be arranged in advance and in accordance with the Office of Disability Services (<http://disabilityservices.gatech.edu>)

## **Academic Support**

Georgia Tech offers a variety of free learning and communications support options. Learn about free tutoring resources at [success.gatech.edu](http://www.success.gatech.edu/) or at the Center for Academic Success’s tutoring desk in Clough Commons 273. For assistance with oral presentations, poster content and format, and academic writing, please consult the Communications Center (Clough Commons 447 or [commlab.gatech.edu](http://commlab.gatech.edu)).

Additional resources for academic support include:

* Center for Academic Success (success.gatech.edu)
  + 1-to-1 tutoring ([success.gatech.edu/1-1-tutoring](http://success.gatech.edu/1-1-tutoring))
  + Peer-Led Undergraduate Study (PLUS) ([success.gatech.edu/tutoring/plus](http://success.gatech.edu/plus-sessions))
  + Academic coaching ([success.gatech.edu/coaching](http://www.success.gatech.edu/academic-coaching))
* Residence Life's Learning Assistance Program
  + ([housing.gatech.edu/learning-assistance-program](https://housing.gatech.edu/learning-assistance-program))
  + Drop-in tutoring for many 1000 level courses
* OMED: Educational Services ([omed.gatech.edu/programs/academic-support](http://omed.gatech.edu/programs/academic-support))
  + Group study sessions and tutoring programs
* Communication Center ([communicationcenter.gatech.edu](http://www.communicationcenter.gatech.edu))
  + Individualized help with writing and multimedia projects
* Academic advisors for your major ([advising.gatech.edu](https://advising.gatech.edu/))

## **Personal Support**

In your time at Georgia Tech, you may find yourself in need of support. Below are some resources available on campus.

* The Dean of Students [studentlife.gatech.edu](https://studentlife.gatech.edu/)  404-894-6367
  + Select “request assistance” to communicate with the Dean’s office
  + Located in Smithgall Student Services Building on the 2nd floor
* Counseling Center: [counseling.gatech.edu](http://counseling.gatech.edu/content/home-page) 404-894-2575
  + Located in Smithgall Student Services Building on the 2nd floor
  + Services include short-term individual counseling, group counseling, couples counseling, testing and assessment, referral services, and crisis intervention. Their website also includes links to state and national resources.
  + Students in crisis may walk in during business hours (8am-5pm, Monday through Friday) or contact the counselor on call after hours at 404-894-2204.
* Students’ Temporary Assistance and Resources (STAR):
  + [studentlife.gatech.edu/content/star-services](https://studentlife.gatech.edu/content/star-services)
  + Can assist with food, housing needs, interest-free emergency loans, and interview attire when you are on the job market.
* Stamps Health Services: [health.gatech.edu](https://health.gatech.edu/) 404-894-1420
  + Primary care, pharmacy, women’s health, psychiatry, immunization and allergy, health promotion, and nutrition
* OMED Educational Services: [omed.gatech.edu](https://omed.gatech.edu/)
* Women’s Resource Center:  [www.womenscenter.gatech.edu](http://www.womenscenter.gatech.edu) 404-385-0230
* LGBTQIA Resource Center: [lgbtqia.gatech.edu](https://lgbtqia.gatech.edu/) 404-385-2679
* Veteran’s Resource Center: [veterans.gatech.edu](http://www.veterans.gatech.edu/) 404-385-2067
* Georgia Tech Police: 404-894-2500

**Classroom Community Goals**

I strive to create a classroom in which all students can flourish and learn. Our differences in terms of gender, race, sexuality, religion, ability, and age broaden and enrich our collective understanding, and our backgrounds and identities influence our individual experiences and our interactions with others. I am committed to minimizing bias in course policies and procedures and my own words and actions, and welcome feedback should you notice that any aspect of this course is inhibiting your ability to participate and learn.

**Tentative course schedule (subject to change)**

|  |  |  |
| --- | --- | --- |
| Week | Date | Topics |
| 1 | 11 Jan | Course overview and introductions  • What to expect from this course  • Instructor and student introductions  Establishment of community norms  Class discussion: what makes an effective oral presentation?  • Rubric creation |
| 2 | 18 Jan | Student mini oral presentations and discussion for improvement |
| 3 | 25 Jan | Student mini oral presentations and discussion for improvement |
| 4 | 1 Feb | Class discussion: How to write an effective manuscript |
| 5 | 8 Feb | Student major oral presentations: research proposal |
| 6 | 15 Feb | Student major oral presentations: research proposal |
| 7 | 22 Feb | Student major oral presentations: research proposal |
| 8 | 1 Mar | Student major oral presentations: research proposal |
| 9 | 8 Mar | Class discussion: who is your audience? Science communication for a general audience |
| 10 | 15 Mar | Class discussion: how to create an effective poster |
| 11 | 29 Mar | Student major oral presentations: research results |
| 12 | 5 Apr | Student major oral presentations: research results |
| 13 | 12 Apr | Student major oral presentations: research results |
| 14 | 19 Apr | Student major oral presentations: research results |
| 15 | 26 Apr | Tuesday 4:30-6 pm Poster presentations and end of semester celebration with other sections of Biol 4460 |

ORAL PRESENTATION GRADING RUBRIC - DRAFT

BIOS 4460

The scoring system is as follows: 4 - excellent, 3 - good, 2 - fair, 1 - needs considerable improvement.

1. The talk was well presented because the speaker: (28 pts)

a. projected enthusiasm and interest in the topic \_\_\_\_\_\_\_

b. effectively controlled distracting behaviors \_\_\_\_\_\_\_

c. used adequate speaking volume \_\_\_\_\_\_\_

d. maintained eye contact with audience \_\_\_\_\_\_\_

e. used visual aids effectively, incl. appropriate balance of text, graphics, data \_\_\_\_\_\_\_

f. used notes sparingly \_\_\_\_\_\_\_

g. answered questions adequately \_\_\_\_\_\_\_

h. used appropriate pacing throughout talk & appropriate length \_\_\_\_\_\_\_

1. The content was well-organized and clearly explained because the speaker: (32 pts)

a. was aimed at an appropriate level for the audience \_\_\_\_\_\_\_

b. presented adequate background to understand the topic \_\_\_\_\_\_\_

c. conceptualized and explained hypotheses and research objectives \_\_\_\_\_\_\_

d. explained the methodology clearly \_\_\_\_\_\_\_

e. presented persuasive evidence \_\_\_\_\_\_\_

f. related own data to other studies, incl. to findings in the published literature \_\_\_\_\_\_\_

g. included within-talk citations and a literature cited slide \_\_\_\_\_\_\_

TOTAL: \_\_\_\_\_\_\_ / 60 points

COMMENTS:

**Poster Guidelines**

Content and layout will be discussed in class.

**Formatting:** The poster boards provided for the poster session are 42"x48". Font sizes can vary, but a rule of thumb is title at 60 pt, Headers at 46 pt, text at 30-36 pt. Images should be mid- to high-resolution so they don't pixelate when printed.

The School of Biological Sciences has partnered with the Multimedia Studio (<https://www.library.gatech.edu/services/multimedia.php>) in the basement of the main library for poster printing. The Multimedia Studio offers walk-in access to several new poster printers, including options for paper size 24", 36", and 42". The Studio is open every day the main library is open. The School will pay for poster printing for Biological Sciences faculty, affiliates, and students through Interdepartmental Sales.

**Poster Submission:** You must submit an electronic copy to the instructor by the time the poster session begins for grading purposes. If you're planning on printing a poster at the Multimedia Studio, please request a pre-approved Interdepartmental Sales from the instructor at least a week ahead of time. The School of Biological Sciences will not pay to have your poster printed elsewhere.

**Poster Session:** You are expected to arrive ~5-10 minutes early to set up your poster and to attend the entire session unless you have a scheduled class during part of the time (in which case, please consult with the instructor PRIOR to the day of the poster session). For most of that time you will need to stand near your poster to answer questions, but you should take the opportunity to circulate and support your classmates by asking about their work. The School of Biological Sciences will provide refreshments and the faculty will visit you to hear about your research!

**Presentation:** Be prepared to tell a poster viewer your research story including the salient points of your poster (focusing especially on your results and their implications) by practicing a 1-2 minute summary ahead of time. However, allow viewers who would prefer to read the content of your poster quietly to do so, and then ask them if they have any questions for you to answer.

**Grading:** Your poster will be graded for content, formatting, and presentation by your instructor.

**Co-authorship:** If you have student co-authors who are all registered in BIOS 4460 during the same semester, you may share a single poster, but each of you should be able to present independently. Each student will be graded using the rubric and standards of his or her instructor.

**Poster Symposium Rubric**

|  |  |
| --- | --- |
| *The scoring system is as follows: 4 - excellent, 3 - good, 2 - fair, or 1 - needs considerable improvement - Total Points (Sections A, B & C; Maximum 60 pts)* |  |
| **(A) The poster was well presented because the poster (20 pts):** |  |
| a. Was aesthetically pleasing, with a balance of text & graphics, etc. |  |
| b. Presenter effectively explained the poster’s key points |  |
| c. Presenter successfully answered questions. |  |
| d. Tailored structure and content of a presentation to the probable audience (e.g., scientific vs. public). |  |
| e. Displayed findings with a representation that is effective in summarizing trends or major findings, including illustrating contrasts among groups where relevant. |  |
| **(B) The content was well organized & clearly explained the research & experiment design because the poster (24 pts):** |  |
| a. Developed novel, relevant, and testable research questions based on patterns or properties of components observed in biological systems or described in primary literature. |  |
| b. Chose the most appropriate design approach to answer the research question(s). |  |
| c. Proposed measurable outcomes that would support or refute hypotheses. |  |
| d. Methodology presented was adequate to understand the results. |  |
| e. Found appropriate sources of relevant scientific information. |  |
| f. Synthesized and applied current knowledge to generate a contextual foundation for the research problem. |  |
| **(C) The content was well organized and clearly explained the research and experimental findings because the poster (16 pts):** |  |
| a. Connected analysis of results with valid claims or conclusion in a logical way. |  |
| b. Aligned conclusion with analyses, hypotheses, research question(s), and existing knowledge. |  |
| c. Determined and articulated whether data supported or refuted hypotheses and predictions. |  |
| d. Evaluated limitations of the findings and limitations that determined the scope of inference. |  |