

BIOL 4460-B: Communicating Biological Research

Course Summary: Students learn to convey the importance of research findings in the biological sciences and to critically evaluate research results through discussions and scientific presentations.

Term: Spring 2016 (1 credit)

Location: Cherry-Emerson Building, room 204.

Time: Mondays 5:05 pm - 6:25 PM; Jan 11, 2016 - May 05, 2016

Instructor: Dr. Michael Goodisman (michael.goodisman@biology.gatech.edu) 404-385-6311; Cherry Emerson #A110. Office hours: By appointment.

Course overview: Biology students present on research topics based on their own research experience and/or literature research. This course will be structured similar 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: BIOL 4460 is a co-requisite for BIOL 4590 (Research Project Lab) because students will present their research from BIOL 4590 in BIOL 4460. Students who have chosen to take BIOL 4690 (Independent Research Project) or BIOL 4910 (Honors Research Thesis) as their Senior Research Experience will present their research from BIOL 4690/4910 in BIOL 4460, and may enroll in BIOL 4460 concurrently or after completion of BIOL 4690/4910.

Format: Because this is a presentation and discussion-based course, attendance and active participation are required. Thus you must have a legitimately excusable absence if you miss class. Examples of excusable absences include documented illness, death in the family, accident, and sanctioned Institute events. If you know that you are going to be absent from a class, you must let the instructor know ahead of time. Each unexcused absence will lower the final grade by 5%.

Optional text: Writing Papers in the Biological Sciences by Victoria E. McMillan (4th or 5th edition), Bedford/St.Martin's, Boston/NY, 2006 or 2011. Approx. \$30.

Assessment:

Mini oral presentation	10%
Research proposal presentation	20%
Research results presentation	20%
Self-assessment of research proposal presentation	5%
Self-assessment of research results presentation	5%
Poster presentation	25%
Class participation	15%

Oral presentations should be formatted as PowerPoint presentations, rehearsed, and will be peer-reviewed and graded by the instructor following the rubric below. Mini oral presentations (~6 min) may be on a scientific topic of your choosing or framed around a recent primary literature journal article. Major oral presentations (~12 min) will be based on your research from BIOL 4590, 4690, or 4910.

Self Assessment: Students complete an evaluation of their own major oral presentations, due 1 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 in a poster session held at the end of the semester. Guidelines and rubric are given below.

Class participation: Students will 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 www.honor.gatech.edu. Plagiarism includes reprinting the words of others without both 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 documented disabilities. These accommodations must be arranged in advance and in accordance with the Office of Disability Services (<http://disabilityservices.gatech.edu/>).

SCHEDULE

Week	Date	Topic
1	Jan 11	Intro to the course – details regarding Senior Research Experience as well as what you can expect from this course; Class discussion: How to give an effective oral presentation
2	Jan 18	NO CLASS-MLK Day
3	Jan 25	Student mini oral presentations & discussion for improvement; Elements of a research proposal
4	Feb 1	Student mini oral presentations & discussion for improvement Class discussion: How to write an effective manuscript
5	Feb 8	Student oral presentations: research proposal
6	Feb 15	Student oral presentations: research proposal
7	Feb 22	Student oral presentations: research proposal
8	Feb 29	Student oral presentations: research proposal
9	Mar 7	Class discussion: How to construct an effective poster
10	Mar 14	Class discussion: Peer review of scientific manuscripts, presenting at international conferences, and other things that you get used to as a scientist
11	Mar 21	NO CLASS-Spring Break
12	Mar 28	Student oral presentations: research results
13	Apr 4	Student oral presentations: research results
14	Apr 11	Student oral presentations: research results
15	Apr 18	Student oral presentations: research results
	<i>Apr 21 4-6 pm</i>	<i>Poster presentations and end of semester celebration, jointly with other sections of BIOL 4460</i>
16	Apr 25	NO CLASS-Apr 21 poster session instead

ORAL PRESENTATION

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: (32 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 _____
 - f. used notes sparingly _____
 - g. answered questions appropriately _____
 - h. had rehearsed the presentation adequately _____

2. The talk content was well-organized and explained because the speaker: (36 pts)
 - a. was easy to follow _____
 - b. presented adequate background to understand the topic _____
 - c. explained the methodology clearly _____
 - d. presented persuasive scientific data (graphs/tables/etc) _____
 - e. related data to other studies/published literature _____
 - f. included high-quality and relevant images _____
 - g. covered the topic adequately, considering time limitations. _____
 - h. had appropriate pacing throughout the talk _____
 - i. made the talk an appropriate length _____

TOTAL: _____ / 68 points

COMMENTS:

Poster Guidelines

Content and layout will be discussed in class.

Formatting: To print in Biology, format your poster for 40" X 48" or smaller (36" X 48" is a nice working size). 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.

Poster Submission: If you would like the School of Biology to print your poster, then your poster is due as a pdf, ppt, or pptx document by the date that will be announced in class. If you plan to print your own poster, then you must still submit an electronic copy by April 17th for grading purposes. Note that BIOL 4460 posters are printed at no cost to the student when using the Biology printer. However, the School of Biology 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. For most of that time you will need to stand with your poster to answer questions, but you should take the opportunity circulate and support your classmates by asking about their work. The School of Biology will provide refreshments and the faculty will circulate through to hear about your research!

Presentation: Be prepared to walk a poster viewer through the salient points of your poster in a rehearsed ~1–2 minute spiel.

Grading: Your poster will be graded for content, formatting, and presentation by each author's senior seminar instructor.

Co-authorship: If you have student co-authors, 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 BIOL 4460 instructor.

Drafts: If you'd like feedback on your poster before you print, email your instructor a pdf draft of your poster and give 48 hours to provide comments.

POSTER

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

1. The poster was well presented because the poster: (24 pts)
 - a. was aesthetically pleasing, with a balance of text & graphics, etc. _____
 - b. title was clear & inviting for a general biology audience _____
 - c. referenced and acknowledged appropriate sources. _____
 - d. presenter effectively explained the poster's key points. _____
 - e. presenter encouraged discussion and questions. _____
 - f. presenter successfully answered questions. _____

2. The content was well organized and clearly explained because the poster: (28 pts)
 - a. made the science easy to follow. _____
 - b. presented adequate background to understand the topic. _____
 - c. hypotheses, questions, or goals were clearly stated. _____
 - d. methodology presented was adequate to understand the results. _____
 - e. presented data clearly in a readily understandable format. _____
 - f. summarized and generalized the results. _____
 - g. related the conclusions to the goals & hypotheses of the study _____

TOTAL: _____ / 52 points