BMB 495: Senior Seminar, Spring 2026
Course Syllabus

Class Times and Locations

Tuesdays, 10:20am - 12:20pm. (Except finals week: Friday, 5/1/26 from 10 AM to noon)

Class sessions will be in-person. For the first 2 sessions, all 3 sections meet in BCH Room 101 for the whole class. Starting with the third session, all 3 sections meet for the first hour in BCH Room 101; sections will then split for the oral presentations. Section 1 remains in BCH Room 101; *Section 2 will move to Biochemistry Room 111 (BCH 111)*; *Section 3 will move to Biochemistry Room 208 (BCH 208)*.

Course Instructors and Teaching Assistant

Prof. Carol Wilkins
Section 1
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Prof. Kaillathe (Pappan) Padmanabhan
Section 3
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Prof. Seun Ogunwobi
Section 2
212 Biochemistry Building
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Teaching Assistant (for writing assignments):

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Objectives

This 2-credit seminar course is designed to acquaint senior biochemistry majors with a range of current topics in biochemistry research. Students will become familiar with the scientific method through reading, explaining, and evaluating original research topics via written reports and oral and poster presentations. In addition, students will gain experience in invaluable career and public relation skills such as clear and compelling scientific writing, public speaking, career preparation and interviewing.

Prerequisites

BMB 462 taken previously or concurrently with BMB 495. Open only to biochemistry majors.

Required Text

None. Materials for the course will be posted on http://d2l.msu.edu; Log in using your MSU netID and select BMB495 to access the materials.

Course Summary

The course begins with workshops on biochemistry career development, identifying well-validated biochemical information online, and communicating effectively in reports and talks. The following weeks of the course are organized as mini symposia on current research topics spanning the breadth of biochemistry. The first week on each research topic will feature a short (~20 minute) introductory talk by a professor who is an expert in that research field, placing the topic into context. Students who choose to write a report on that topic may email the professor to ask further questions about the report paper (provided under the professor's folder on the D2L website). Students who will present talks on the professor's topic the next week are also encouraged to email the professor to ask further questions about the papers they will present the following week and/or request a time to practice their talk with the professor. Each student will partner with another student and present a 20-minute talk on their topic, followed by five minutes of questions and discussion. Later in the semester, students will pair up and have an opportunity to prepare and present a poster covering alternative sides to a controversial societal topic involving biochemistry.

Grade Components

1. **An oral presentation** (25% of grade)
   As a team of 2 students on a research topic each student selects during the first class; or as a single presenter prepared on the student's own research for the undergraduate research forum, UURAF; if so, sign up to present during the last week of class.
2. **A poster presentation** (25% of grade)
   In which each student works with another student to cover both sides of a controversial topic in biochemistry
3. **Resume/cover letter** (8% of grade)
4. **3 written reports** (10% of grade for each report; 30% total to course grade)
   On professors' topics *other than the topic of your oral presentation*. There are 9 topics from which to choose.
5. **Class participation** 12% of grade
   a. 6% of grade: Turning in 10 evaluations of student oral presentations (one per week) and evaluating 2 posters during the poster session other than the one in which you are presenting for a total of 12 evaluations.
   b. 6% of grade: Ask at least 6 questions following professor talks and following student talks throughout the semester.
6. **Peer-review and report improvement bonus:** up to 1 point bonus (3 points maximum) per report for having up to 3 of your reports pre-reviewed by peers or Writing Center personnel, **and** followed by your using that feedback to revise and improve your report **prior to** submitting it in class. Prof. Wilkins will cover the details in class. Learn how to benefit from the Writing Center at http://writing.msu.edu.

Course Grading Scale

The course grading at the end of the semester will be roughly as follows: **90% or better, 4.0; 85-89%, 3.5; 80-84% 3.0; 75-79%, 2.5;** etc. We may do some curving to make grade divisions at natural points in the grade distribution and to reflect that the material varies slightly in difficulty from year to year. We will also normalize scores between the sections of the class, if needed, to ensure that the grading scales are consistent. The highlighted ranges above are a good guide to what you can expect.

Reports and Oral Presentations on Research Topics

Each research topic led by a professor will have a *particular style* specified for the oral presentation (**which should be 20 minutes long with PowerPoint slides plus 5 minutes for questions**) and report writing (no more than 3 pages in length and typed with double spacing). The professor will provide literature for you to review in his or her folder on D2L, with one document designated as the basis for report writing (for debate-style reports, this will involve several documents covering the pro/con sides), along with three additional documents designated for further coverage by different students giving oral presentations. Carefully follow each professor's instructions in his or her folder. Students giving oral presentations on the same professor's topic in each class section (Dr. Padmanabhan's, Dr. Ogunwobi's, or Dr. Wilkins') should coordinate with one another on which student team will cover each paper so that no paper is presented twice in the same classroom. Your presentation grade from Dr. Wilkins, Dr. Padmanabhan, or Dr. Ogunwobi will reflect your ability to convey the scientific information accurately and clearly, as well as the logical flow, grammar, formatting, and correct citation of the images/data shown in your slides. When formatting your slides, please include the slide number on the bottom or lower-right corner of each slide after your title slide.

The style to use for each professor for his or her reports and the (possibly different) style to use for presentations is defined in the professor's folder on D2L. Which paper to use for reports as well as presentations is also noted in the folder. Reports are due at the beginning of class one week after the professor's introductory talk on that subject.

Citing Your Sources

Whether you are submitting a report or presenting a talk, your primary reference should be cited in full detail, including the title, *at the beginning or your report/talk*, using a format such as:

Rasmussen, S.G., Devree, B.T., Zou, Y., Kruse, A.C., Chung, K.Y., Kobilka, T.S., Thian, F.S., Chae, P.S., Pardon, E., Calinski, D., Mathiesen, J.M., Shah, S.T., Lyons, J.A., Caffrey, M., Gellman, S.H., Steyaert, J., Skiniotis, G., Weis, W.I., Sunahara, R.K., and Kobilka, B.K., Crystal structure of the beta2 adrenergic receptor-Gs protein complex. *Nature* 477**,** 549-555 (2011).

When you cite any other references in your talk (for a figure or data), include the full reference on the slide where you show the figure or data (e.g., as a footnote at the bottom of the slide) rather than putting all the references at the end of your talk. This helps the audience understand who made those contributions.

Overview of Styles for Reports and Presentations

The three report styles are Debate, Layperson, and Technical, as described below**. Talks will either be in Debate or Technical style. For technical talks and papers, keep in mind that your audience consists of your peers, and what you say should be fully comprehensible to them.** Unfamiliar terms (jargon and abbreviations) should be kept to a

minimum and fully explained. **Copying the wording of the author of a paper or other work should never be done in reports or presentations nor should artificial intelligence (AI) be used for writing your reports**; that is plagiarism (making it seem like someone else's work or AI writing is your own). Our goal is for you to understand and be able to explain the work clearly in your own words. Quotes are also frowned upon in scientific writing, even direct quotes that mention the person who made the statement. For both reasons, including quotes or the use of AI will be penalized in your reports. For instance, instead of saying " 'Obese mice consumed, on average, 43.2% more calories than normal mice,' stated by Dr. Jones [reference]," describe this finding in your own words.

Poster Presentation

During the second week of class, you will sign up with a partner of your choice to present a poster on two sides of a current controversial topic in biochemistry later in the course. The details of this assignment will be discussed further in class and will follow the debate format listed above. The information should be presented in debate style while being formatted as a 36" tall X 48" wide conference poster using PowerPoint or a similar tool, with the presenters' names listed on the poster along with the side of the debate each student presents (pro or con). Use large fonts so the poster will be easy to read from a few feet away when printed in full size. An example template with good font sizes is provided online.

Point Scales for Reports and Presentations

The point scale for the 10 point written reports is below. For poster and oral presentations, the scale is approximately doubled, with 25 points reflecting excellent work, 20 points very good work, etc. Grading is weighted on logical, clear presentation of the scientific content and for quality of writing (grammar, organization, and format):

10 excellent
8-9 very good
6-7 good
5 acceptable
3-4 needs a lot of work
1-2 poor
0 = nothing submitted or evidence of plagiarism

Submitting Class Assignments

Reports: Reports are due to be uploaded to the dropbox for the given topic one week after the professor's overview presentation on this topic **by 11 AM**.

Oral presentations: ***Please email your presentation to*** *Dr. Wilkins* ***(for section 1) or*** *Dr. Ogunwobi* ***(for section 2) or*** *Dr. Padmanabhan* ***(for section 3) by 5 PM the afternoon BEFORE you are to present.*** While you will be presenting in-person, reviewing the PowerPoint helps the faculty in grading the presentation. You are strongly encouraged to do several practice talks, including once with the session professor (schedule this in advance), to ensure it is 20 minutes in length without rushing and that it flows well. Working with the professor to review and practice your talk will significantly enhance its quality! This is a great opportunity to practice speaking to others about science, which will help with job or graduate school interviews, too.

Poster presentations: *The poster should be printed on paper the week before it is due* to be shown in class by making arrangements several days in advance with computer specialist Dr. Padmanabhan (Pappan) in room 202 Biochemistry (Dr. Kaillathe Padmanabhan; padmanab@msu.edu, 353-0814). Posters cannot be printed by Pappan on the Monday or Tuesday of your poster session week. Bring your poster to class the day you are scheduled to present. ***Please also email your poster PowerPoint presentation to Dr. Wilkins (for section 1), Dr. Ogunwobi (for section 2), or Dr. Padmanabhan (for section 3) by 5 PM the afternoon BEFORE you are to present.*** This serves as a back-up and is helpful for the faculty in grading the poster.

Late Work, Plagiarism, and AI policies

Late work is not accepted. Reports are due to be uploaded to the dropbox for the given topic one week after the professor's overview presentation on this topic **by 11 AM**. Once the dropbox for the topic is closed, the TA will not accept or grade late reports. Students turning in reports after hearing the student presentations would have an unfair advantage over students who turned in their reports on time, as well as we have one TA grading all the class reports. We need to be respectful of our TA's availability. Oral presentations will not be rescheduled unless an MSU physician-signed medical excuse has been provided *before* class. ***Points for class participation (asking questions) cannot be made up*** since they require interaction with other students, so plan to come to class each week and participate. Points received in class for filling out the weekly student presenter peer review form will only be allowed to be made up if an excused absence is provided. If a student has an excused absence or an appropriate RCPD Visa, the student will be allowed to make up the peer review by filling out an additional peer review at the next class. If the last class during finals week is missed due to an excused absence or Visa accommodation, the student will need to complete a short assignment in place of the peer review to be completed by **Monday, May 4 by 10 AM** (so the student's final grade can be calculated and submitted on time). ***Attendance at each class will be taken***.

Plagiarism. Copying sentences from a paper, website, or other source, or using another's writing as part of your report or presentation—**this includes the use of artificial intelligence (AI)**—is considered plagiarism and will result in a grade of zero for that assignment. In the real world, plagiarism is a crime, considered to be stealing another's writing/intellectual property. Short phrases (a few words) or quotes (within quotation marks and a full citation of the source) are not illegal; however, our course policy is for you to not include quotes. This is because it is highly unusual in scientific writing to quote others. **The goal is for you to explain others'**

work in your own words, which is important to convey that you understand and can explain the material. This is why AI-generated reports are NOT acceptable in this course. Please consult Dr. Wilkins' presentation to understand what constitutes plagiarism and how to avoid it. Health Sciences Librarian Jodi Coalter will discuss how to correctly cite others' work during her pre-recorded session, as well.

Student and Professor Evaluations of Presentations

All students, including the speakers, will provide anonymous written feedback for one of the student speakers each week, using an evaluation form provided in class. This counts towards the participation part of the course grade. Talks will be graded by the section instructors, to ensure grading consistency. Each speaker will receive an email from his or her instructor with feedback on strong points and areas that would benefit from improvement, typically a week after the presentation.

Credit for Class Discussion

Students are encouraged to ask questions after the professor and student presentations, as part of their participation points (6 pts for 6 questions). Much of what makes the class successful, and fun, is active participation by the audience through discussion. As we discuss each topic, consider the following implications:

What is the importance of this topic in biochemistry and technology? What are the ethical or political issues in this area? Are there parts that are confusing, contradictory, error-prone, or incomplete?

Participate vigorously! This makes the class experience much more interesting than being passive and encourages your neurons to keep up the good battle. Discussion strengthens your professional network and provides the speaker with thoughtful feedback and ideas. It is how scientists learn from each other!

Ensuring Effective Talks and Posters

Successful presentations emphasize data and figures from the paper (and other peer-reviewed/validated scientific sources), accompanied by clear explanations of how they address the research question. Minimize the number of words and the complexity of your panels/slides; one-line bullet points work well. Presenting the ramifications of those results for science, technology, health, or the environment will make your talk more interesting. Visual aids (images, data, schematic diagrams) are essential. PowerPoint slides shown by a video projector are the standard for professional presentations in all fields.

High quality writing and presentations are important in most scientific careers. For help with writing, make use of the resources on our D2L website, the MSU Writing Center (which will also help with PowerPoint presentations) and:

- Purdue OWL: an online writing resource helpful for all students:
  https://owl.english.purdue.edu/owl/
  OWL also has a specific ESL menu for students for whom English is a second language
- Another writing resource particularly useful for ESL students: http://www.eslcafe.com/