

BB 483/583 Advanced Biochemistry and Biophysics: Capstone Spring 2020

Professor: Dr. Andrew Karplus, 2133 ALS (737-3200; karplusp@oregonstate.edu)

Required Text: None; readings will be from the literature and additional sources

Course Hours: MWF 1:00 - 1:50 p.m. via Zoom and Canvas **Office Hours:** By appointment

Catalog Description: Covers applications of advanced biophysical techniques and how these fit within the larger context of biochemistry, biology and society. Explores techniques and their applications to macromolecules as well as the scientific process. Techniques discussed include in vitro, in vivo and in silico methods with an emphasis on biomolecular interactions.

Course purpose: To provide an interactive capstone experience of applying and synthesizing knowledge from previous Biochemistry & Biophysics courses both through directly engaging with the primary literature and through a cooperative open-ended research project. The course will utilize a “flipped” classroom model, where most information gain occurs via reading and writing and research done outside the classroom, with class time largely used for discussions.

Targeted learning outcomes: The intention of the course is that by its end students will ...

1. add to their knowledge of biochemistry and biophysics the skill of critical reading of the primary literature in this discipline to assimilate information; this includes recognizing, understanding, and critically evaluating the key content of primary publications especially distinguishing results from interpretations;
2. expand their technical vocabulary and understand the concepts behind the analyses in the specific papers discussed;
3. be familiar with the processes involved in manuscript preparation and publication in disciplinary relevant journals;
4. have worked in a team to investigate a real research problem and synthesize and communicate key results both orally and in writing.
5. BB583 students will further have experience leading a research team and helping coordinate the work of multiple teams.

Learning expectations: Students in this course will ...

1. come prepared for class time having carried out assigned readings, written responses, and exercises;
2. attend class sessions and actively participate in small and large group discussions;
3. participate with teammates to carry out the cooperative capstone term project

Grading: Students fully attending, actively participating, and completing each assignment will receive a grade of B- or higher. Final grades based on:

- 50 % - Attendance, preparation for and participation in class (up to 2 absences w/o penalty)
- 40% - Cooperative project
- 10 % - Exercises

Course Outline:

Week 1 – Overview; Term project introduction;
Peptide Planarity paper

Week 2 – Classic “Hot Spots” paper
Exercise: Instructions to authors

Week 3 – Term project work
Exercise: Manuscript cover letter

Week 4 – Stage 1 Term project presentations
Exercise: Referee’s reports

Week 5 – Covid19-protease inhibition paper
Exercise: Responding to Referees

Week 6 – Covid19 receptor paper (CryoEM)
Exercise: Proofs

Week 7 – Stage 2 Term project presentations
Exercise: Appeals

Week 8 – Term project work
Exercise: Abstract for term project ms

Week 9 – Term project work
Exercise: Cover letter for Term project ms

Week 10 – Stage 3 Term project presentations;
Exercise: Reflection and debrief

POLICY ON INCOMPLETES

A grade of I is appropriate when 1) a course requirement has not been completed due to circumstances beyond the control of the student and 2) at least half of the work for the course has been completed at a level of C- or better.

REACH OUT FOR SUCCESS - University students encounter setbacks from time to time. If you encounter difficulties and need assistance, it's important to reach out. Consider discussing the situation with an instructor or academic advisor. Learn about resources that assist with wellness and academic success at oregonstate.edu/ReachOut. If you are in immediate crisis, please contact the Crisis Text Line by texting OREGON to 741-741 or call the National Suicide Prevention Lifeline at 1-800-273-TALK (8255)

GENERAL OSU POLICIES

Statement Regarding Students with Disabilities: Accommodations for students with disabilities are determined and approved by Disability Access Services (DAS). If you, as a student, believe you are eligible for accommodations but have not obtained approval please contact DAS immediately at 541-737-4098 or at <http://ds.oregonstate.edu>. DAS notifies students and faculty members of approved academic accommodations and coordinates implementation of those accommodations. While not required, students and faculty members are encouraged to discuss details of the implementation of individual accommodations.

Student Conduct Expectations link: <http://studentlife.oregonstate.edu/code>

Cheating or plagiarism by students is subject to the disciplinary process outlined in the Student Conduct Regulations. Students are expected to be honest and ethical in their academic work. "Academic dishonesty" is defined as an intentional act of deception in one of the following areas:

- ◆ Cheating-use or attempted use of unauthorized materials, information or study aids
- ◆ Fabrication-falsification or invention of any information
- ◆ Assisting-helping another commit an act of academic dishonesty
- ◆ Tampering-altering or interfering with evaluation instruments and documents
- ◆ Plagiarism-representing the words or ideas of another person as one's own

Behaviors disruptive to the learning environment will not be tolerated and will be referred to the Office of Student Conduct for disciplinary action.

"The goal of Oregon State University is to provide students with the knowledge, skill and wisdom they need to contribute to society. Our rules are formulated to guarantee each student's freedom to learn and to protect the fundamental rights of others. People must treat each other with dignity and respect in order for scholarship to thrive. Behaviors that are disruptive to teaching and learning will not be tolerated, and will be referred to the Student Conduct Program for disciplinary action. Behaviors that create a hostile, offensive or intimidating environment based on gender, race, ethnicity, color, religion, age, disability, marital status or sexual orientation will be referred to the Affirmative Action Office."

Oregon State University strives to respect all religious practices. If you have religious holidays that are in conflict with any of the requirements of this class, please see me immediately so that we can make alternative arrangements.