

Description of Protein Engineering Class Assignments and Schedule

Grades:

Grades will be determined as such:

10% Literature Presentation and Discussion/Participation in Discussion

15% Individual Mini-Design Presentation (1)

50% Literature Reviews (3) and Thought Problems (2)

25% Peptide design and EPP Module (EPP + Kickoff (10%), Final Report and Presentation (10%), Project Updates 5%)

Lectures/Literature Presentations: The class will be organized such that topics will be introduced by the instructor and the following lecture period will be spent discussing literature that incorporates the use of the topic introduced previously. For the literature discussion portion, students will be asked to read papers and participate in the discussion by providing questions/comments. Students will also be asked to pick a relevant paper and present it to the class as part of their grade as well.

Thought Problems: Students are assigned thermodynamics and kinetics thought problems. They are set up such that you can take what you learned in undergrad classes and apply it to proteins. Looking up references to support discussion and conclusions is highly encouraged.

Literature Review: Students will critically review assigned papers. Students will be asked to submit ~1-2-pages commenting on the experiments and whether the data supports the authors' conclusions. Guidelines will be distributed later in the semester. This will sharpen your critical analysis skill set, and help you to become familiar with the protein engineering field and language.

Mini-Design Presentations: Students will work in groups or individually to develop an original research idea based on topics being covered in class. These proposals will be presented in class and may also involve a written proposal. These proposals might include proposed modifications to the techniques presented in class or application of the technique to address a new problem. More details will be given later in the semester. This will help the student learn how to apply what they have learned in class to their own field, and to new problems.

EPP Module: Students will work in groups to explore their own research idea in an industry-relevant context. Students will be brought through the project planning process, and get a chance to design real peptides to test on campus. More details will be given in the semester. This will help the student gain practical experience testing peptides, managing project goals and a budget.

Tentative Schedule of Topics - Schedule subject to change.

Week	Dates	Topic (Assignments Due)	Assignments Distributed
1	1/13 1/15	<i>Introduction to protein engineering</i> <i>Overview of protein and biochemistry</i>	
2	1/20 1/22	No Class <i>Protein structures and folding</i>	Literature Review 1 Distributed (Due 1/29)
3	1/27 1/29	<i>Protein structures and folding cont.</i> <i>Paper Discussion</i> (Literature Review 1 Due)	
4	2/3 2/5	<i>Overview of EPP module and short peptides</i> <i>Characterization techniques 1</i>	Thought Problem 1 Distributed (Due 2/10)
5	2/10 2/12	<i>Overview of thought problem</i> (Thought Problem 1 Due) <i>Characterization techniques 2</i> (EPP Module Project Update 1 Due)	Thought Problem 2 Distributed (Due 2/17)
6	2/17 2/19	<i>Overview of thought problem</i> (Thought Problem 2 Due) <i>Meetings about EPP modules</i>	
7	2/24 2/26	Kick off Presentations <i>(EPP Report Due)</i> <i>Overview of modular proteins</i> (EPP Module Project Update 2 Due)	Individual Mini-Design Assignment Distributed Literature Review 2 Distributed (due 3/2)
8	3/2 3/4	<i>Paper Discussion</i> (Literature Review 2 Due) <i>Mechanical domains</i>	Literature Presentation Team 1 Distributed (Due 3/16)
9	3/9 3/11	Spring Break Spring Break	
10	3/16 3/18	<i>No class</i> <i>Biochemical domains</i>	

		<i>(EPP Module Project Update 3 Due)</i>	
11	3/23	<i>Paper discussion</i> <i>(Literature Presentation Team 1 Due)</i>	
	3/25	<i>Biochemical domains</i>	
12	3/30	<i>Paper discussion</i> <i>(Literature Presentation Team 2 Due)</i>	
	4/1	<i>Emerging applications</i> <i>(EPP Module Project Update 4 Due)</i>	Literature Review 3 Distributed (Due 4/6)
13	4/6	<i>Paper discussion</i> <i>(Literature Review 3 Due)</i>	
	4/8	<i>Emerging applications</i>	
14	4/13	Project Meetings (Mini and EPP)	
	4/15	<i>Paper discussion</i> <i>(EPP Module Project Update 5 Due)</i>	
15	4/20	Final Individual Design Presentations	
	4/22	Final Individual Design Presentations	
16	4/27	Final EPP Module Presentation	