

2022SP - CELL MEMBRANES 56:121:562:01

Hours and Location. Classes will be held Wednesday evenings from 6:00 - 8:50, in JHSC-100C.

Remote Classes. If the class cannot be held in-person, due to weather or COVID-19 restrictions, the class will be held synchronously over zoom. For full participation credit, you will need to keep your camera on for most of the class.

If you prefer to keep your camera off because you don't like looking at yourself, you can hide your image from your own view in zoom: google search for "hide self view zoom". If you have another reason that you need to keep your camera off for any significant time, please discuss with me before class.

Slack Channel. The slack channel for this class is #membranes2022 on the CCIB slack site. If you don't have access to the CCIB slack site, please email me and I will add you.

Office Hours. Office hours are Wednesday 2:00-3:00 pm, or you can DM me with questions over slack or request an appointment.

For questions that could be of interest to multiple students, please ask them in the slack channel for the



Text.

Primary: Buehler, Lukas K, "*Cell Membranes*", (2015)

Supplementary Text : Yeagle, Philip L, "*The Membranes of Cells*", 3rd Edition (2016)

Articles For Discussion: Files -> Cell Membranes Reading Binder

Typical Class Schedule.

- Discussion of homework questions
- Student Presentation 1 & Discussion of student-submitted questions
- Student Presentation 2 & Discussion of student-submitted questions

Homework.

- Answers to homework questions should be submitted to canvas no later than **4pm** on the day of class. I request this because I think it makes the discussion better, and it gives me a chance to adjust my own preparation in response.

- Each week you will also need to submit a discussion question (go to the "Discussions" tab and choose the Discussion for that assignment. If an assignment tells you to do it differently, those are just outdated instructions and you can ignore them. This is how we'll do it this semester.
- You can miss one assignment over the semester with no loss of credit, no questions asked.
- For any other reasonable situation please talk to me *before the deadline*, and we'll work something out. If I don't hear from you, you won't get credit for that assignment.

Participation in Discussions.

To get full participation credit for a given session, you will need to:

- Keep your camera on (remote classes)
- Speak up at least twice during each class session, whether you are asking a question or answering one or just providing some thoughts

Presentations.

- You will each give two presentations on papers assigned in class. Presentations should be about 20 minutes long, and follow this [template](https://branniganlab.files.wordpress.com/2016/02/sample_seminar_presentation_v2.pdf).
(https://branniganlab.files.wordpress.com/2016/02/sample_seminar_presentation_v2.pdf)
- You will give a final presentation on your simulation results, which will be about 10-15 minutes long.



Project.

- The final project will require MD simulations of a membrane of interest to you, including mitochondrial, red blood cell, neuronal, bacterial, cardiac, soybean, "average" mammalian, "average" insect, assembly of synthetic vesicles, etc. One full class session will be devoted to working on these projects, with the remainder to be done outside of class (but with lots of help via slack and office/drop-in hours). In the final class, you'll present your results (with a movie!)

Grading.

15% Presentation 1

15% Presentation 2

25% Project & Presentation 3

25% Homework Questions


20% Participation in Discussion

Academic Integrity. Each student in this course is expected to abide by the University Code of Academic Integrity. Any work submitted by a student in this course for academic credit will be the student's own work. Please see the academic integrity policy at

<https://fas.camden.rutgers.edu/faculty/faculty-resources/academic-integrity-policy/>








[\(https://fas.camden.rutgers.edu/faculty/faculty-resources/academic-integrity-policy/\)](https://fas.camden.rutgers.edu/faculty/faculty-resources/academic-integrity-policy/).














Additional Syllabus Material. Please see the [Syllabus Addendum for information on College Resources and Policies](#). Although I am not duplicating this material into this syllabus, it is important, I have read it carefully – and you should too.

Paper Set	Scheduled Date (Subject to change)	Topic	Classic Paper Presenter	Modern Paper Presenter
	1/19/2022	Introduction		
1	1/26/2022	Models of the cell membrane	Noureen	Lindsey
	2/2/2022	Lipid diversity	Jahmal	Connor
3	2/9/2022	Membrane Fluidity	Chioma	Regina
4	2/16/2022	Membrane Domain Formation	Connor	Noureen
	2/23/2022	Membrane Simulations		
5	3/2/2022	Membrane Elasticity	Josh	Jesse
6	3/9/2022	Lipid-protein Interactions	Mariadelia	Truman
	3/16/2022	Spring Break		
7	3/23/2022	Mitochondrial Membranes	Lindsey	Brendan
8	3/30/2022	Bacterial Membranes	Truman	Josh

9	4/6/2022	Ion Channels	Regina	Mariadelia
10	4/13/2022	Lipid and membrane-based Disease	Brendan	Chioma
11	4/20/2022	Membranes in Biotechnology		Jahmal
	4/27/2022	Presentation of Simulation Results I – Students With Computational Experience		
	5/11/2022	Presentation of Simulation Results – Beginners		

Course Summary:

Date	Details	Due
 Wed Jan 19, 2022	 2022SP - CELL MEMBRANES 56:121:562:01 (https://rutgers.instructure.com/calendar?event_id=670797&include_contexts=course_175894)	6pm to 9pm
Wed Jan 26, 2022	 Reading Questions 1 (https://rutgers.instructure.com/courses/175894/assignments/1884752)	due by 4pm
 Wed Jan 26, 2022	 2022SP - CELL MEMBRANES 56:121:562:01 (https://rutgers.instructure.com/calendar?event_id=670798&include_contexts=course_175894)	6pm to 9pm
Wed Feb 2, 2022	 Reading Questions 2 (https://rutgers.instructure.com/courses/175894/assignments/1884788)	due by 4pm
Wed Feb 9, 2022	 Reading Questions 3 (https://rutgers.instructure.com/courses/175894/assignments/1884802)	due by 4pm

Date	Details	Due
Wed Feb 16, 2022	 Reading Questions 4 (https://rutgers.instructure.com/courses/175894/assignments/1919042)	due by 4pm
Wed Feb 23, 2022	 Tutorial: Coarse-Grained Simulations of Lipid Membranes (https://rutgers.instructure.com/courses/175894/assignments/1921597)	due by 6pm
Wed Mar 2, 2022	 Reading Questions 5 (https://rutgers.instructure.com/courses/175894/assignments/1928952)	due by 4pm
Wed Mar 9, 2022	 Dictionary Review (https://rutgers.instructure.com/courses/175894/assignments/1935106)	due by 4pm
Wed Mar 30, 2022	 Reading Questions 6 (https://rutgers.instructure.com/courses/175894/assignments/1931637)	due by 4pm
Wed Mar 30, 2022	 Reading Questions 7 (https://rutgers.instructure.com/courses/175894/assignments/1931639)	due by 4pm
Wed Apr 6, 2022	 Reading Questions 8 (https://rutgers.instructure.com/courses/175894/assignments/1931638)	due by 4pm
Wed Apr 13, 2022	 Reading Questions 9 (https://rutgers.instructure.com/courses/175894/assignments/1931673)	due by 4pm
Wed Apr 20, 2022	 Reading Questions 10 (https://rutgers.instructure.com/courses/175894/assignments/1931679)	due by 4pm
Wed Apr 27, 2022	 Reading Questions 11 (https://rutgers.instructure.com/courses/175894/assignments/1931684)	due by 4pm
Wed May 11, 2022	 Final Project (https://rutgers.instructure.com/courses/175894/assignments/1948208)	due by 11:59pm
Wed May 18, 2022	 Presentation 2 (https://rutgers.instructure.com/courses/175894/assignments/1904289)	due by 11:59pm
Wed May 18, 2022	 Presentation 1 (https://rutgers.instructure.com/courses/175894/assignments/1904288)	due by 11:59pm