

Course Information

PHYS 359 (3 credit hours)

Spring 2019.

Class meets once weekly (time TBD)

Instructor Information

Professor: Laurence Lurio (753-6470) (llurio@niu.edu)

Office location: La Tourette 202 (back of physics office)

Office Hours: Monday, Wed: 10:00 – 11:00.

Course Description: This is a one semester special topics course in physics on the subject of “physics of biomembranes”. Students will read a selections from books and research articles on the topic of biomembrane physics. Students will also perform computational simulations.

Topics:

1. Introduction to phospholipids and the cell membrane
2. Survey of basic principles needed from thermodynamics
3. Survey of basic principles needed from statistical mechanics
4. Survey of physical chemistry of solutions
5. Introduction to physics of lipid membranes
6. Selected readings on lipid membranes
7. Introduction to molecular dynamics simulations
8. Selected readings on molecular dynamics of membranes
9. Computational simulations of lipid membranes

Intended Learning Outcomes: Students taking this course will learn how principles from physics can be applied towards understanding biomembranes and their role in biological systems. Students will gain experience reading articles from the primary scientific literature and relating them to basic concepts in physics. Students will also obtain experience using computer code to simulate the physics of biomembranes.

Student Assessment:

Student grades will be based on discussions of readings (10%), homework problems (20%) (3) research papers (20% each) and computer simulations (10%).

Academic Integrity: Students are expected to hand in their own work.

Students with disabilities:

If you need an accommodation for this class, please contact the Disability Resource Center as soon as possible. The DRC coordinates accommodations for students with disabilities. It is located on the 4th floor of the Health Services Building, and can be reached at 815-753-1303 or drc@niu.edu.

Also, please contact me privately as soon as possible so we can discuss your accommodations. Please note that you will not be required to disclose your disability, only your accommodations. The sooner you let me know your needs, the sooner I can assist you in achieving your learning goals in this course.