

Course Offering

Fall 2008

3650:488:001

3650:698:001

Special Topics: **Biological Physics**

Biological physics is a rapidly growing interdisciplinary field of research. In recent years, exciting new approaches have appeared to address the old question “what is the difference between live and dead matter?” Local conversion of energy is a hallmark of many “active processes” in cells and larger biological systems. In this course, we will investigate how structural properties and transport processes of “active” matter differ from those of “passive” materials. In class sessions and homework, we will work on the necessary background and investigate a few model systems and problems in detail. In a journal club and term projects, we will consider a broader range of topics. The goal of this course is to lay the foundation for you to pursue your own interests in this field.

Audience: Interested graduate and advanced undergraduate students in the natural sciences and engineering.

Instructor: Jutta Luettmmer-Strathmann
*8029, room 201 Ayer, jutta@uakron.edu

Class time: The class is tentatively scheduled for
Tuesday/Thursday 3:15-4:30 pm, CBA 143
we will have a brief meeting on the first day of classes,
Monday, August 25, at 6 pm in Ayer Hall, room 256
to discuss scheduling conflicts and find suitable class times

Format: Lectures and discussions, homework, seminar style presentations by students, journal club

Text: Philip Nelson, “Biological Physics – Energy, Information, Life”, Updated Edition, W. H. Freeman, New York, 2007

Topics (please let me know your interests!):

Review of key ideas from physics and chemistry
Introduction to cell physiology
Brownian motion, diffusion, and friction
Molecular motors
Transport across artificial and cell membranes
Cooperative transitions in macromolecules
Energy landscapes

Please contact me (jutta@uakron.edu) if you would like further information.