PHYS3511-Biological Physics
Winter 2020

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Lecture Hours: T/Th 11:30 AM - 1:00 PM, RB 1047
Office Hours: M/W 1:30 PM – 4 PM; T/TH 2 PM - 5 PM
Textbook
There's no textbook for the course, but the following books are recommended:

i) *Biological Physics, Energy, Information, Life*, Phillip Nelson
ii) *Physical Models of Living System*, Phillip Nelson
iii) *Cell Biology by the Numbers*, Rob Milo and Rob Phillips
iv) *Physics for the Life Sciences*, Updated 2nd edition (available from me), Martin Zinke-Allmang, Ken Sills, Reza Nejat, and Eduardo Galiano-Riveros

Note: Versions or drafts of book i, ii, iii are available online. I have copies of book i, ii, and iv. Students may borrow the books for a short period.
Syllabus This course introduces students to biological physics, an interdisciplinary science that uses basic physics to investigate how biological systems work. Basic physics will be used to quantify complex biological processes. Topics that will be covered include: size and scale of biology (cell, DNA, RNA); force and energy in living systems (swimming E. Coli, protein folding, electrophoresis); randomness and diffusion. There will be selected topics such as the physics of signal propagation in nerves, or color vision. There will be application of statistic to medical problems.
Marking Scheme

Problem sets (about 10)	30%
Midterm	20%
Final Exam	50%
Total	100%

NOTE: There will be about 10 problem sets. Instead some of the questions from these assignments will be used for short 20-minute in-class quizzes.
Online Resources
Solutions to problem sets in PDF format will be posted on my webpage:
http://physics.lakeheadu.ca/facNstaff/api/P3511.htm
Other useful materials and information will also be posted on this webpage.
Accommodations: Lakehead University is committed to achieving full accessibility for persons with disabilities. Part of this commitment includes arranging academic accommodations for students with disabilities to ensure they have an equitable opportunity to participate in all of their academic activities. If you think you may need accommodations, you are strongly encouraged to contact Student Accessibility Services (SAS) and register as early as possible. For more information, please visit: http://studentaccessibility.lakeheadu.ca