Fall 2020

# PHYS 350-001: Biophysics I

Slawomir Piatek

# Course Outline

Phys 350-001, Biophysics I
Fall 2020

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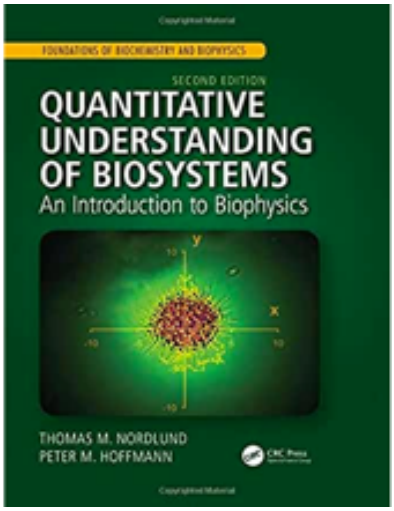
**Lecture:** Monday & Wednesday, 11:00 AM – 12:20 PM, Online
https://njit.webex.com/meet/piateknjit.edu

**Office Hour:** M & R, 9:00 AM – 10:00 AM, other times by appointment

**Course Website:** www.physics.rutgers.edu/~piatek/class/Phys350/F20/Syllabus.pdf

**Textbook:** *Quantitative Understanding of Biosystems: An Introduction to Biophysics, 2nd edition*, Thomas M. Nordlund & Peter M. Hoffmann, CRC Press, ISBN 978-1-138-63341-4




**Lecture Quizzes:** Staring on September 16, a lecture quiz will be given by the end of every Wednesday class. The quiz will contain 1 – 5 problems depending on the level of difficulty. The quiz will be graded and discussed in the following lecture. The quizzes will be "open textbook" but "closed notes."

**Midterm:** There will be a midterm exam on Wednesday, October 21, covering chapters 1 – 9.

**Homework:** No formal homework will be assigned; however, the syllabus lists suggested practice problems that a student should attempt to solve. Problems for the lecture quizzes, midterm, and final may be (but do not have to be) selected from the suggested problems.

**Grading:**

Lecture quizzes 40%
Midterm 30%
Final 30%

**Cutoffs for letter grades:**

85% − A
80% − B+
70% − B
65% − C+
50% − C
40% − D
Below 40% − F

**Students with disabilities:**

If you need accommodations due to a disability please contact Chantonette Lyles, Associate Director of Disability Support Services, Fenster Hall Room 260 to discuss your specific needs. A Letter of Accommodation Eligibility from the Disability Support Services office authorizing your accommodations will be required.

**Honor Code and Etiquette:**

NJIT has a zero-tolerance policy for cheating of any kind and for student behavior that disrupts learning by others. Violations will be reported to the Dean of Students. The penalties range from a minimum of failure in the course plus disciplinary probation up to expulsion from NJIT. Avoid situations where your own behavior could be misinterpreted as dishonorable. **Students are required to agree to the NJIT Honor Code on each exam, assignment, quiz, etc. for the course.**

Turn off all cellular phones, wireless devices, computers, and messaging devices of all kinds during classes and exams. Please do not eat, drink, or create noise in class that interferes with the work of other students or instructors. Creating noise or otherwise interfering with the work of the class will not be tolerated.

## Class Calendar

| Lecture | Topic | Reading Material | Suggested Problems |
|---|---|---|---|
| **1**. W, 9/2 | Introduction to biophysics | Ch. 1 & 2 | |
| **2**. T(M), 9/8 | Review of essential math | Ch. 3 | 3.1, 3.4 |
| **3**. W, 9/9 | Water | Ch. 4 | |
| **4**. M, 9/14 | Water | Ch. 4 | |
| **5**. W, 9/16 | Structures | Ch. 5 | |
| **6**. M, 9/21 | Structures | Ch. 5 | |
| **7**. W, 9/23 | Larger structures | Ch. 6 | |
| **8**. M, 9/28 | Larger structures | Ch. 6 | |
| **9**. W, 9/30 | Cells | Ch. 7 | |
| **10**. M, 10/5 | Cells | Ch. 7 | |
| **11**. W, 10/7 | Essential quantum mechanics | Ch. 8 | |
| **12**. M, 10/12 | Essential quantum mechanics | Ch. 8 | |
| **13**. W, 10/14 | Light, life, and measurement | Ch. 9 | |
| **14**. M, 10/19 | Light, life, and measurement | Ch. 9 | |
| **15**. W, 10/21 | Midterm | | |
| **16**. M, 10/26 | Photosynthesis | Ch. 10 | |
| **17**. W, 10/28 | Photosynthesis | Ch. 10 | |
| **18**. M, 11/1 | Biodynamics & biomechanics | Ch. 12 | |
| **19**. W, 11/4 | Biodynamics & biomechanics | Ch. 12 | |
| **20**. M, 11/9 | Random walk and diffusion | Ch. 13 | |
| **21**. W, 11/11 | Random walk and diffusion | Ch. 13 | |
| **22**. M, 11/16 | Review of statistical physics and thermodynamics | Ch. 14 | |
| **23**. W, 11/18 | Review of statistical physics and thermodynamics | Ch. 14 | |
| **24**. M, 11/23 | Reactions | Ch. 15 | |
| **25**.M,11/30 | Reactions | Ch. 15 | |
| **26**. W, 12/2 | Molecular machines | Ch. 16 | |
| **27**. M, 12/7 | Molecular machines | Ch. 16 | |
| **28**. W, 12/9 | Assembly | Ch. 17 | |