

BIOL 4520: Molecular Biophysics (Fall, 2017, CRN: 82101)

1. Course Information

- Course name, number, and section: Molecular Biophysics BIOL 4520 A
- Hours of credit: 3
- Pre-requisites or co-requisites as listed in university catalogue: Prerequisite: MATH 2261, BIOL 1107K, BIOL 1108K, BIOL 3200, BIOL 3250, CHEM 1211, CHEM 1212, and either PHYS 1111 or PHYS 2211, or consent of the instructor.
- Classroom location and room number: MW 03:30 pm-04:45 pm BC 2022

2. Instructor Information

- Instructor name: Dr. Jonghoon Kang
- Instructor contact: BC 2217, 229-333-7140, jkang@valdosta.edu
- Instructor office hours: M & W 2:00 pm - 3:00 pm (You may discuss course- or career-related issues)

3. Course Description

- Course description as printed in university catalogue: Introduction to thermodynamics, kinetics, and their applications to biological systems.
- Required texts, resources, and materials:
 - ✓ *A Life Scientist's Guide to Physical Chemistry*, 1st Edition by Marc R. Roussel from Cambridge University Press (ISBN-13: 978-0521186964)
 - ✓ Research articles or other reading assignments will be posted
 - ✓ Electronic calculator (not cell phone)

4. Standards, Goals, Objectives, or Outcomes

- outcomes:

The departmental educational outcomes

3. Demonstrate an understanding of the cellular basis of life.

- Course objectives or outcomes:
 - Describe basic terminology used in thermodynamics and kinetics
 - Perform basic mathematical manipulations of thermodynamic and kinetic equations
 - Interpret biochemical phenomena in terms of thermodynamics and kinetics
 - Enhance understanding of current biological literature that contains biophysical concepts covered in this course.
 - Recognize the importance of physics and chemistry in the biological sciences

5. Assignments

These are the six activities you need to do to obtain an A from this course:

- Attending class
- Taking note of whatever I write on the board
- Reading and studying your notebooks and textbook
- Working on the exercise problems in the textbook
- Reading any additional assignments (papers)
- Taking time to think of or imagine what you have learned in class

6. Policy

- Explanation of how much each assignment contributes to the overall grade for the class:

Total Score = 400 (In Class Exam) + 200 (Final) = 600

There may be opportunities of extra credits in class.

- Explanation of how grades are assigned:

Total score (%)	Grade
$\geq 90\%$	A
$\geq 80\%$	B
$\geq 70\%$	C
$\geq 60\%$	D
$< 60\%$	F

Attendance and tardiness: Any absence policy should conform to the university policy.

University Attendance Policy from the VSU catalogue:

"The University expects that all students shall regularly attend all scheduled class meetings held for instruction or examination. When students are to be absent from class, they should immediately contact the instructor. A student who misses more than 20% of the scheduled classes of a course will be subject to receive a failing grade in the course."

In the event that a student misses a class with an excuse, s/he should email the instructor within 24 hours of the missed class. Excused absences are usually given for medical emergencies and documentation must be provided.

7. Schedule of Activities or Assignments, including university -scheduled final exam time (all schedule is tentative and may be subject to change)

Date	Chapter	Class	Date	Chapter	Class
8/14	App. D 4	The SI System of Units Thermodynamic Preliminaries	10/11	11	Basics of Chemical Kinetics
8/16	5	The First Law of Thermodynamics	10/16	12	Initial Rate Experiments and Simple Empirical Rate Laws
8/21	5	The First Law of Thermodynamics	10/18	13	Integrated Rate Laws
8/23	5	The First Law of Thermodynamics	10/23	13	Integrated Rate Laws
8/28	6	The Second Law of Thermodynamics	10/25	14	Complex Reactions
8/30	6	The Second Law of Thermodynamics	10/30		Test III (100 pt)
9/4		Labor Day Holiday	11/1	15	Enzyme Kinetics
9/6		Test I (100 pt)	11/6	15	Enzyme Kinetics
9/11	7	Free Energy	11/8	17	Factors that Affect the Rate Constant
9/13	7	Free Energy	11/13	17	Factors that Affect the Rate Constant
9/18	8	Chemical Equilibrium and Coupled Reactions	11/15	18	Diffusion and Reactions in Solution
9/20	8	Chemical Equilibrium and Coupled Reactions	11/20		Test IV (100 pt)
9/25	9	Non-ideal Behavior	11/22		Thanksgiving – No Class
9/27		Test II (100 pt)	11/27	Sp. Topic	Biophysics in Drug Discovery (Nature Reviews)
10/2	10	Electrochemistry	11/29		Grad Student Presentation
10/4	10	Electrochemistry	12/4		Review
10/9		Fall Break – No Class	12/7		Final (200 pt) 2:45 pm - 4:45 pm

Thurs, Oct 5 Midterm

Record your scores in the table.

Exam	I (100)	II (100)	III (100)	IV (100)	Final (200)	Sum (600)	Class (your sum/6)
Score							

8. Classroom Policies

- **Accommodations Statement:**
From VSU's Access Office <http://www.valdosta.edu/access/facresources.shtml>):
"Students requesting classroom accommodations or modifications due to a documented disability must contact the Access Office for Students with Disabilities located in Farber Hall. The phone numbers are 245-2498 (V/VP) and 219-1348 (TTY)."
- **Academic Integrity:** You know that cheating is a bad thing to do. Students caught cheating will receive a grade of F for the test in question and will be reported to the Dean of Students. You are expected to follow VSU's Academic Integrity Code.
From VSU's Academic Integrity Code (the full code is available at <http://www.valdosta.edu/academic/AcademicHonestyPoliciesandProcedures.shtml> :
"Academic integrity is the responsibility of all VSU faculty and students. Faculty members should promote academic integrity by including clear instruction on the components of academic integrity and clearly defining the penalties for cheating and plagiarism in their course syllabi. Students are responsible for knowing and abiding by the Academic Integrity Policy as set forth in the Student Code of Conduct and the faculty members' syllabi. All students are expected to do their own work and to uphold a high standard of academic ethics. "
- **Classroom demeanor or conduct:** Every student should make the lecture a comfortable and enjoyable learning experience. Late entry to the class room or leaving early is bad behavior. Common sense should be practiced and expected.
- **Communication:** All VSU-related correspondence should be conducted via VSU email addresses for both student and instructor and via the Blazeview.
- **Title IX Statement**
Valdosta State University (VSU) is committed to creating a diverse and inclusive work and learning environment free from discrimination and harassment. VSU is dedicated to creating an environment where all campus community members feel valued, respected, and included. Valdosta State University prohibits discrimination on the basis of race, color, ethnicity, national origin, sex (including sexual harassment and sexual violence), sexual orientation, gender identity, religion, age, disability, genetic information, or veteran status, in the University's programs and activities as required by applicable laws and regulations such as Title IX. The individual designated with responsibility for coordination of compliance efforts and receipt of inquiries concerning nondiscrimination policies is the University's Title IX Coordinator: the Director of the Office of Social Equity, titleix@valdosta.edu, 1208 N. Patterson St., Valdosta State University, Valdosta, Georgia 31698, 229-333-5463.

9. Additional Information (at instructor's discretion)

- **Expectations for competencies such as writing, technology skills, or performance:** Students should be able to describe biological phenomena at the molecular and cellular level in terms of physics and chemistry.
- **Instructional philosophy:** I believe reading one book ten times is better than reading ten books one time each. This is the case for this course. Students are encouraged to practice all the exercise and examples in the textbook ten times.
- **Strategies used to support learning:** Students should take advantage of my office hours. Studying as a group (study group) should be a good idea.
- ***After all, I teach and you learn. Let's see how much we can accomplish together!***