

**Chem. 333 Biophysical Chemistry
Fall 2020 Syllabus**

Instructor: Dr. Amanda Jonsson
Office: CBB 400

Email: ajonsson@uwsp.edu

Instructor Schedule

	Monday	Tuesday	Wednesday	Thursday	Friday
8:00					
9:00	<i>Office Hour</i>	Chem 105		Chem 105	Chem 105
10:00		Chem 333		Chem 333	Chem 333
11:00	Chem 105 Lab 02L1	<i>Office Hour</i>			
12:00					
1:00				<i>Office Hour</i>	<i>Office Hour</i>
2:00	Chem 105 Lab 02L2		Chem 105 Disc	Meetings	Department Meetings
3:00		Meeting	Chem 105 Disc	Meetings	
4:00		Meeting	<i>Office Hour</i>	Meetings	

Meeting Times

Lecture: Tuesday, Thursday, Friday 10 – 10:50 a.m. via zoom

Zoom links can be found in our Canvas course for office hours and lectures

***Can also email me to set up a zoom appointment*

Course Description

Examine physiochemical principles underlying structure and chemical properties of macromolecules of biological importance, including principles of thermodynamics, equilibrium, kinetics, and dynamics. Includes methods for separation and isolation of macromolecules and their spectroscopic characterization.

Required Materials

Textbook

Physical Chemistry Principles and Applications in Biological Sciences, 5th Edition, Pearson, 2014. This book is available for rental at the University Bookstore.

Scientific Calculator

Your calculator must be able to do logarithms and exponents. You will not be allowed graphing calculators or any calculator with a QWERTY keyboard. Calculators that meet these requirements can be purchased at the University Bookstore, office supply stores such as Staples or Office Depot, or at other stores such as Target, Walmart, etc. for around \$10.

Optional Materials

3-Ring Binder

In order to better keep track of course materials, some students may find that using a 3 ring binder is beneficial as it allows you to more easily incorporate handouts or figures into your notes.

Course Learning Outcomes

1. Be able to explain the theory behind several spectroscopy techniques that are important in the biosciences.
2. Be able to interpret spectra/data from several experimental techniques that are important in the biosciences to provide molecular-level information about biochemical systems.
3. Be able to explain the fundamental laws of thermodynamics.
4. Be able to apply the theories and equations of thermodynamics to solve problems of chemical and biological interest.
5. Be able to apply knowledge of thermodynamics to explain phenomenon of chemical and biological interest.
6. Be able to explain how NMR is used to determine macromolecular structure.

Preparation/Participation

Before coming to class each day, you should read through the assigned reading (rarely more than 10 pages and often with many pictures/tables). I do not expect that you understand all the material before coming to class, however, I do expect that you are familiar enough with the material that we can discuss it without having to stop to define each new word. **Reading physical chemistry texts is really, really hard! Chances are, things won't make much sense until after lecture, but skimming the material before class is a good way to figure out what we will be talking about in class.**

During class I expect that you pay attention (to the best of your abilities), refrain from using other technology (phones, tablets, laptops, etc.) in a disruptive way, and participate in class discussions and activities. Participation is not awarded its own grade, but in my experience students who participate in class tend to do better than those who do not.

Make-Up policies

I do not have a formal attendance policy for this course, however in my experience, students who do not come to class do not do well in the course. **Late assignments will be accepted with a 10% late penalty per business day it is late. In the event of a pop quiz, no make-ups will be provided, no matter how "good" the reason for missing class is.**

Recommended study habits and tips

Physical chemistry (at its worst) takes everything you hated about physics, calculus, and general chemistry and combines it into one course. At its best, it allows you to predict and rationalize the behavior of molecules, understand physicochemical phenomenon, and determine structure and function for macromolecules. Many students find physical chemistry to be one of the most challenging courses they take as an undergraduate. Fortunately, there are things you can do to help make your experience a good one.

- Before coming to class each day, review your notes from the previous day. You don't need to spend much time on this (5 – 10 minutes), but it will remind you of

what we have covered and of any questions you would like cleared up before we move on to new material.

- When taking notes in class leave white space so you can go back and fill in gaps later. After class, sit down with a friend and compare notes. Fill in the things you are missing. When you are done read through your notes and see if they make sense. If not, talk to a friend, reread sections of the book, or talk to the professor to keep filling in the gaps until things make sense.
- Do as many problems as possible! On assignments and exams I won't be asking you how you feel about chemistry, I'll be asking you to answer/solve chemistry problems. In order to do that you need to know how to answer/solve chemistry problems. The best way to learn this, or any other skill, is practice, practice, and more practice!
- Work with others, but make sure you can do the problems on your own. Working together is a great way to learn. It allows you to talk over your ideas with others and come to conclusions you may not have reached on your own. Despite the benefits working with others can be harmful if you are allowing the others in the group to carry you. Unless you understand how to do the problems on your own you will fail the exams and you will likely fail the course.

Grading

Your grade in this course will come from the following components (**WE WILL DISCUSS THIS IN OUR FIRST LECTURE!!!!**)

Journal Clubs (30%)
Review and Quizzes (10%)
Projects (20%)
Research Paper and Presentation (40%)

Your final grade in the course will be determined using the following scale (please note that the instructor reserves the right to lower these cut-offs, but will never raise them)

$93 \leq A \leq 100$ $90 \leq A- < 93$
 $87 \leq B+ < 90$ $83 \leq B < 87$ $83 \leq B- < 80$
 $77 \leq C+ < 80$ $73 \leq C < 77$ $70 \leq C- < 73$
 $67 \leq D+ < 70$ $63 \leq D < 67$
F < 63

Pop Quizzes: The instructor reserves the right to offer pop quizzes if it becomes clear that students are not coming to class prepared or not keeping up with work outside of class.

Homework: No graded homework will be given out in this class; however suggested problems will be given out with each study guide to aid in understanding. Final answers to all numeric problems will be given so you can check your work. Detailed solutions will be posted on Canvas.

Rights and Responsibilities

UWSP values a safe, honest, respectful, and inviting learning environment. In order to ensure that each student has the opportunity to succeed, we have developed a set of expectations for all students and instructors. This set of expectations is known as the *Rights and*

Responsibilities documents, and it is intended to help establish a positive living and learning environment at UWSP. Click here for more information:

<http://www.uwsp.edu/stuaffairs/Pages/rightsandresponsibilities.aspx>

Academic Misconduct

The definition of academic misconduct can be found at

<http://www.uwsp.edu/admin/stuaffairs/rights/rightsChap14.pdf>

Disability Services

The Americans with Disabilities Act (ADA) is a federal law requiring educational institutions to provide reasonable accommodations for students with disabilities. For more information about UWSP's policies, check here:

<http://www.uwsp.edu/stuaffairs/Documents/RightsRespons/ADA/rightsADAPolicyInfo.pdf>.

If you have a disability and require classroom or exam accommodation, please register with the Disabilities Services offer and then contact me. Complete information on the disability services offered at the university may be found at <http://www.uwsp.edu/special/disability/> In order to receive accommodations you must have documentation of your disability on file with the Office of Disability Services. In addition, you must provide me with an Accommodations Request Form (available at the website). You must have me sign the form and return it to the Office of Disability Services.