

# CHEM 365 Biochemistry I

## Spring 2022 Syllabus

---

**Important Note:** This syllabus, along with course assignments and due dates, are subject to change. It is the student's responsibility to check Canvas for corrections or updates to the syllabus. Any changes will be clearly noted in a course announcement or through email.

**Instructor:** Dr. Amanda Jonsson

**Office:** CBB 400

**Office Hours:** Monday 10 – 10:50 a.m.; Wednesday 1 – 1:50 p.m.; Friday 9 – 9:50 a.m.; **Email me to set up a time outside of office hours to meet**

**E-mail:** [ajonsson@uwsp.edu](mailto:ajonsson@uwsp.edu)

**\*\*\*The best way to contact me is by email\*\*\***

### Instructor Schedule

	Monday	Tuesday	Wednesday	Thursday	Friday
8:00		Chem 365 CBB 261	Chem 365 Lab 01L1 CBB 336	Chem 365 CBB 261	Chem 365 CBB 261
9:00					Office Hour
10:00	Office Hour				
11:00	Chem 106 Lab 03L1 CBB 236	<b>Chem 363**</b> <b>CBB 265</b>		<b>Chem 363**</b> <b>CBB 265</b>	
12:00					
1:00		<i>Lab Prep</i>		Office Hour	
2:00		Chem 365 Lab 01L2 CBB 336			Dept. Meeting*
3:00	UAC*				
4:00					

\*Does not meet every week

\*\*Chem 363 Lecture ends at 12:15 p.m.

### Meeting Times

*Lecture:* Tuesday, Thursday, Friday 8 – 8:50 a.m. in room 261 of the Chemistry Biology Building (CBB)

*Lab:*

Section 01L2 Tuesday 2 – 4:50 p.m. in CBB 336

Section 02L1 Wednesday 8 – 10:50 a.m. in CBB 36

**Course Description:** Structure and function of principal biomolecules, biological thermodynamics, enzyme kinetics and modern biochemical techniques. 4 credits, *Prerequisites:* At least a C- in CHEM 248 and CHEM 326

## **Textbook & Course Materials**

**Lecture Text:** Lehninger Principles of Biochemistry by Nelson & Cox, 7<sup>th</sup> Edition, W.H. Freeman Macmillan Learning, 2017. This book is available for rental at the University Bookstore. Textbooks can be picked up in person or shipped to your home if you will be not be on campus. Please see the [University Store and Text Rental webpage](#) for more information.

**Labs:** Lab handouts will be posted to Canvas. You are required to print the lab handout and bring them with you to lab.

**Lab Notebook:** A non-spiral bound notebook (like a composition notebook) is preferred. You will be expected to record all data collected in lab in your notebook before leaving.

**Scientific Calculator** must be able to do logarithms

## **Course Learning Outcomes (CLOs)**

By the end of this course students should be able to:

- CLO 1: Explain the importance of water and its role in living systems.
- CLO 2: Describe the properties, structures, and functions of each type of biomolecule (proteins, carbohydrates, lipids, and nucleic acids).
- CLO 3: Explain how enzymes work and understand different types of enzyme mechanisms.
- CLO 4: Apply the theory and equations of enzyme kinetics to solve problems and describe enzyme inhibition.
- CLO 5: Interpret data collected from common biochemistry laboratory experiments.
- CLO 6: Communicate the purpose and results of biochemistry laboratory experiments.

You will meet the outcomes listed above through a combination of the following activities in this course:

- Completing pre-lecture assignments.
- Attending and participating in lecture.
- Working on homework/projects and suggested problems from your textbook.

- Completing exams and laboratory exercises.
- Completing writing assignments related to biochemistry experiments.

## **Attendance**

Attendance to all lectures and laboratory sessions is expected. Attendance will not directly impact your grade but it will be very difficult to succeed if you skip lectures. You are responsible for all missed material. I encourage you to get class notes from a classmate if you miss a lecture. **Notify me in advance if you will miss a lab or an exam.** Lab make-ups likely will not be possible. Exam make-ups may be scheduled at my discretion and only either the business day before or after the original midterm exam date. Please contact me for more information.

I do expect students to arrive on time for both lecture and laboratory sessions. I will use the start of lecture for important announcements and/or quizzes. Electronic devices (cell phones, tablets, etc) should be placed on silent and/or turned off during lecture and lab periods and the devices should NOT be used during class. I expect students to pay attention and participate during class. Disruptions in class will not be tolerated and students may be asked to leave, if necessary.

## **Academic Responsibility & Integrity**

I encourage students to work and study in groups. However, any work submitted for a grade must reflect your own work and understanding of the material. Academic dishonesty will be dealt with following the rules on academic misconduct in the current [UWSP student handbook](#) (UWSP Chapter 14) and, at a minimum, a score of 0 on the assignment. Egregious and/or repeated problems will result in an F in the course. Each student is expected to act with honesty and integrity, and must respect the rights of others to learn in a safe, respectful and inviting environment. *Please do not hesitate to contact me if you have any questions or concerns.*

## **Inclusivity Statement**

It is my intent that students from all diverse backgrounds and perspectives be well-served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that the students bring to this class be viewed as a resource, strength and benefit. It is my intent to present materials and activities that are respectful of diversity: gender identity, sexuality, disability, age, socioeconomic status, ethnicity, race, nationality, religion, and culture. Your suggestions are encouraged and appreciated. Please let me know ways to improve the effectiveness of the course for you personally, or for other students or student groups.

If you have experienced a bias incident (an act of conduct, speech, or expression to which a bias motive is evident as a contributing factor regardless of whether the act is criminal) at UWSP, you have the right to report it using this [link](#). You may also contact the Dean of Students office directly at [dos@uwsp.edu](mailto:dos@uwsp.edu).

I commit to doing my part as well by keeping myself informed on the most recent research and practices that best support inclusive learning. I last completed UWSP's SafeZone training in April 2020.

## **Equal Access for Students with Disabilities**

UWSP will modify academic program requirements as necessary to ensure that they do not discriminate against qualified applicants or students with disabilities. The modifications should not affect the substance of educational programs or compromise academic standards; nor should they intrude upon academic freedom. Examinations or other procedures used for evaluating students' academic achievements may be adapted. The results of such evaluation must demonstrate the student's achievement in the academic activity, rather than describe his/her disability.

*If modifications are required due to a disability, please inform the instructor and contact the [Disability and Assistive Technology Center](#) to complete an Accommodations Request form.*

## **Grade Policy**

Your grade in this class will consist of the following components (with percentage of course grade listed for each component). Any changes to this scheme will be announced in class, through email, and/or on Canvas.

**Laboratory Exercises, 25%:** A typical lab will consist of recording data in your lab notebook and completing a short report based on your data. More information about short reports will be provided in lab. At the end of the semester, there will be a lab quiz to assess your ability to correctly interpret and analyze experimental data.

**Homework, 15%:** Homework assignments will be completed outside of class periods and given throughout the semester. Assignments will typically consist of a few problems or a short project.

**Lecture Exams, 40%:** Each of the four lecture exams will be worth 10% of your course grade, for a total of 40% for this category. These exams will be 50 minutes and consist of a mixture of question types: multiple choice, true/false, short answer, worked problems, long answer, etc.

**Final Exam, 20%:** There will be a cumulative final exam given during our designated final exam time: Tuesday, May 17<sup>th</sup>, 2022 starting at 10:15 a.m.

Due dates will be announced in class, through email, and/or on Canvas. Unexcused late material will result in a grade penalty or a 0 for that assignment. If you need extra time on an assignment, please ask for an extension.

Letter grades will be assigned according to this scale:

Percent	Grade	Percent	Grade
≥ 93 %	A	73 – 76 %	C
90 – 92 %	A-	70 – 72 %	C-
87 – 89 %	B+	67 – 69 %	D+
83 – 86 %	B	63 – 66 %	D
80 – 82 %	B-	< 63 %	F
77 – 79 %	C+		

I reserve the right to alter this scale depending on the overall performance of the class. Under no circumstances will you require a higher percentage to achieve a letter grade than what is listed in the above table. Questions regarding grades on any assignment should be addressed as soon as possible after the return of graded material to you.

### **Important Dates**

February 2 <sup>nd</sup>	Last day to drop without a W grade reported
April 8 <sup>th</sup>	Last day to drop a 16-week course
May 13 <sup>th</sup>	Last day of classes
May 16 <sup>th</sup>	Final Exam Period: Tuesday, May 17 <sup>th</sup> 10:15 – 12:15 p.m.

### **Tips for Success**

One of the most challenging parts of this class will be keeping up with the material. We will cover a large number of topics. Past experience shows that students who do not keep up with the material struggle to achieve the grade they want/need in this class.

To succeed I suggest that you:

- **Attend all classes** – there is no substitute for being present and engaged in class.
- **Consistently review** the material. Skim the textbook before lecture, then review your lecture notes by going back over the relevant sections in the textbook to fill in any gaps in your knowledge.
- Go back over your notes frequently, highlighting areas where you do not fully understand the material.

- ***Come to office hours with specific questions.***
- Hand in assignments on time.
- ***Practice doing problems*** (homework, suggested problems, etc.).
- **Communication is key**
  - If you are unsure about what an assignment or project is asking you to do, email me or ask in office hours.
  - If you need an extension or are feeling overwhelmed, email me or ask for help in office hours.
  - If you can't attend office hours one week but still have questions or concerns, email me and we will find a time that works for both of us to meet.
  - If your situation suddenly changes and you face new challenges in completing course work, email me and we can discuss options.
  - ***I can't help if I don't know there is an issue!***

## **Tentative Lecture Schedule**

**Important Note:** Refer to the Canvas course home page for pertinent information. Assignments will be explained in detail within each week's corresponding Module/Page. As tasks come due, they will appear in your "to do" list. If you have any questions, please contact me. **The information below is tentative and may change.**

<b>Week</b>	<b>Dates</b>	<b>Lecture Topics</b>	<b>Assignments</b>
1	1/25 – 1/ 28	Chapter 1: The Foundations of Biochemistry & Chapter 2: Water	Review Assignment
2	2/1 – 2/5	Chapter 2: Water & Chapter 13: Bioenergetics	Homework #1
3	2/8 – 2/11	Chapter 3: Amino Acids, Peptides, and Proteins	Homework #2
4	2/15 – 2/18	Chapter 4: The Three-Dimensional Structure of Proteins	Homework #3
5	2/22 – 2/25	Chapter 5: Protein Function	<b>Exam #1:</b> Thurs, Feb. 24 <sup>th</sup>
6	3/1 – 3/5	Chapter 5: Protein Function & Chapter 6: Enzymes	
7	3/8 – 3/11	Chapter 6: Enzymes	Homework #4
8	3/15 – 3/18	Chapter 6: Enzymes	<b>Exam #2:</b> Fri, March 18 <sup>th</sup>
<i>Spring Break!</i>			
9	3/29 – 4/1	Chapter 7: Carbohydrates and Glycobiology	
10	4/5 – 4/8	Chapter 8: Nucleotides and Nucleic Acids	Homework #5
11	4/12 – 4/15	Chapter 9: DNA-Based Information Technologies OR Special Topics & Chapter 10: Lipids	<b>Exam #3:</b> Fri, April 15 <sup>th</sup>
12	4/19 – 4/22	Chapter 10: Lipids	Homework #6
13	4/26 – 4/29	Chapter 10: Lipids & Chapter 11: Biological Membranes and Transport	Homework #7
14	5/3 – 5/6	Chapter 11: Biological Membranes and Transport	<b>Exam #4:</b> Fri May 6 <sup>th</sup>
15	5/10 – 5/13	Chapter 11: Biological Membranes and Transport	<b>Lab Quiz:</b> Thurs. May 12 <sup>th</sup>
<b>Final Exam:</b> Tuesday, May 17, 2022, 10:15 a.m. – 12:15 p.m.			

**TENTATIVE Lab Schedule**

**Important Note:** Refer to the Canvas course home page for pertinent information. Lab handouts will be available on Canvas. As tasks come due, they will appear in your "to do" list. If you have any questions, please contact me. **The information below is tentative and may change – including the order and type of labs.**

<b>Week</b>	<b>Dates</b>	<b>Lab</b>	<b>Assignment</b>
1	1/25 – 1/ 28	Lab Check-In/Safety & Lecture/Review	Review Activity
2	2/1 – 2/5	Lab 1: Preparation and Analysis of a Multi-component Solution	Report
3	2/8 – 2/11	Lab 2: Effect of Temperature on the pKa of the $\alpha$ -amino Group of Glycine	Report
4	2/15 – 2/18	Lab 3: Molecular Model Kits	Worksheet
5	2/22 – 2/25	Lab 4: Bradford Assay	Report
6	3/1 – 3/5	Lab 5: Tyrosinase Kinetics	
7	3/8 – 3/11	Continue Lab 5 Analysis	Report
8	3/15 – 3/18	To Be Determined	
9	3/29 – 4/1	Lab 6: Introduction to the Invertase Assay	Report
10	4/5 – 4/8	Lab 7: Isolation of Invertase	
11	4/12 – 4/15	Lab 7: Isolation of Invertase	Report
12	4/19 – 4/22	Lab 8: Characterization of Invertase	
13	4/26 – 4/29	Lab 8: Characterization of Invertase	
14	5/3 – 5/6	Continue Lab 8 Analysis	Report
15	5/10 – 5/13	Lab Check-Out	