

CHEM 365 Biochemistry I

Spring 2021 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 (Note: I will rarely be on campus other than for labs)

Virtual Office Hours: Zoom links will be provided in Canvas.

Monday 9 – 10 a.m., Wednesday 2 – 3 p.m., Thursday 1 – 2 p.m.

E-mail: ajonsson@uwsp.edu

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

Instructor Schedule

Time	Monday	Tuesday	Wednesday	Thursday	Friday
8:00		Chem 365 *online*	Chem 365 Lab 01L1 CBB 336	Chem 365 *online*	Chem 365 *online*
9:00	Office Hour *online*	Prep			
10:00					
11:00		Chem 365 Lab 01L2 CBB 336	Prep		
12:00					
1:00					Office Hour *online*
2:00		Prep	Office Hour *online*	Chem 101 Lab 01L3 *online*	Meetings
3:00					
4:00	Chem 363 3:30 – 4:45 *online*		Chem 363 3:30 – 4:45 *online*		

***Email me to set up a time outside of office hours to meet!**

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

Expected Instructor Response Times

- I will attempt to respond to student emails within 1 business day. I cannot guarantee email response on the weekend or on holidays.
- I will attempt to grade written work within 72 hours, however longer assignments or exams may take longer.

Textbook & Course Materials

Lecture Text: Lehninger Principles of Biochemistry by Nelson & Cox, 7th 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 not be on campus. Please see the [University Store and Text Rental webpage](#) for more information.

Labs: Lab handouts will be posted to Canvas. For in-person labs you are required to print out lab handouts and bring them with you to class.

Lab Notebook: A lab notebook is needed for in-person labs (and highly encouraged for all labs). 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. Data will be analyzed and submitted in an online format.

Scientific Calculator

Computer/Tablet (including a webcam and microphone) and Internet Connection: Consistent access to the internet to view lecture materials and participate in online class sessions is necessary to succeed in this class. The university has resources to help students, for example: [COVID Student FAQ](#) and [UWSP Online Student Support](#). Please let me know if you face challenges connecting to class resources and meetings. We will be using a OneNote Class Notebook in this course. OneNote is part of Office 365 and free for all UWSP students. Find more information at [UWSP IT](#), including how to download Office 365 desktop and/or mobile apps (including OneNote).

Course Learning Outcomes

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

- Explain the importance of water and its role in living systems.
- Describe the properties, structures, and functions of each type of biomolecule (proteins, carbohydrates, lipids, and nucleic acids).
- Explain how enzymes work and understand different types of enzyme mechanisms.
- Apply the theory and equations of enzyme kinetics to solve problems and describe enzyme inhibition.
- Interpret data collected from common biochemistry laboratory experiments.
- 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 and suggested problems from your textbook.
- Completing regular quizzes and exams.
- Completing laboratory exercises either virtually or in-person.
- Completing writing assignments related to biochemistry experiments.

Course Structure

Lecture: We will be using Canvas, a OneNote Class Notebook, and Zoom in this class. I will not be using class time for lecture. Instead, I will assign videos and/or readings for you to complete before attending a lecture session.

- Canvas will be updated each week with a list of required readings and videos. Canvas will also have all information related to course grades.
- **Tuesdays and Thursdays:** we will meet at our designated lecture time (8 – 8:50 a.m.) on Zoom (link in Canvas). These class sessions will consist of group work and discussions to fully understand the material.
- **Fridays:** I will host a Zoom session (link in Canvas) during our normal designated lecture time (8 – 8:50 a.m.), but is an **optional help session** and will not cover any new material. This is a great time to ask questions about any assignments/concepts!
- **Due in a typical week:** Quiz or homework assignment, in-class activities

Laboratory: This class is designed for an in-person lab experience. We cannot all safely be in the laboratory at once right now so I will be splitting the class into two cohorts (A and B). During a week when cohort A is doing an in-person lab, cohort B will be doing a different online lab activity, and *vice versa*.

- For anyone who does not feel comfortable or able to attend labs in person, I will do my best to provide good alternatives to any in-person labs. These alternatives will mostly consist of analyzing example data and not replicate the in-person lab skills you will be missing out on.
- If you cannot attend an in-person lab for your cohort, you must contact me to receive relevant data/information to complete the in-person lab alternative assignment.
- **Due in a typical week:** Lab report or assignment.

Attendance

Attendance at all Zoom lecture sessions is expected. All required Zoom lecture sessions will be recorded and available on Canvas. Participation is not mandatory, but not attending or participating in classes will make this course much harder than it needs to be. See above for details on lab attendance.

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.*

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%: Lab consists of both in-person (if applicable) and online activities. Each student will be assigned to a lab cohort (A or B). Each cohort will have its own schedule of lab activities, but each student will complete the same set of labs over the course of the semester. More information about lab activities, including how grades will be assigned, will be provided in class, on Canvas, and in OneNote.

In-Class Activities, 5%: These are activities you will complete during class Zoom sessions where you will have time to discuss the questions with your classmates before submitting answers. These activities will be designed to help you understand the lecture materials (videos, readings, etc.).

Homework, 15%: Homework will be due most weeks when there is not a scheduled quiz or exam and will be completed outside of scheduled Zoom class sessions. Homework assignments will typically consist of a few problems or a short project.

Quizzes, 25%: Each student will complete quizzes, typically once every 2 or 3 weeks. These quizzes will contain a variety of question types including, but not limited to, short answer questions and worked problems. Quizzes will be completed online, outside of scheduled Zoom class sessions. These quizzes will be open-book/open-note but no other help may be used, including help from other people or help from online sources.

- If it becomes clear that students are not completing lecture videos/readings before attending classes, then the above grade categories may be modified, such as to include mandatory daily Canvas reading quizzes.

Cumulative Exams, 30%: There will be a cumulative **midterm exam** (15%) and a cumulative **final exam** (15%) in this course. These exams will have a time limit, one attempt on each exam, and be closed-noted/closed-book. The exams are designed to evaluate your understanding of concepts and will be proctored over Zoom. Exams are **tentatively** scheduled for:

- Midterm Exam: Tuesday, March 30, 2021, 8 – 8:50 a.m.
- Final Exam: Thursday, May 20, 2021, 2:45 – 4:45 p.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 3 rd	Last day to drop without a W grade reported
April 23 rd	Last day to drop a 16-week course
Final Exam	Thursday, May 20 th , 2:45 p.m. – 4:45 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:

- ***Engage with provided lecture material*** – watch videos, read sections of the textbook, etc. Complete the assigned tasks before the designated class session.
- Take detailed notes and ask questions in class.
- ***Attend all classes*** – there is no substitute for being present and engaged in class.
- ***Consistently review*** the material.
- 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*** (in-class activities, homework, suggested problems, etc.).

Please ask for assistance and I will do my best to help!

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.**

Week	Dates	Lecture Topics	Assignments
1	1/25 – 1/29	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 – 2/13	Chapter 3: Amino Acids, Peptides, and Proteins	Quiz #1
4	2/15 – 2/19	Chapter 4: The Three-Dimensional Structure of Proteins	Homework #2
5	2/22 – 2/26	Chapter 4: The Three-Dimensional Structure of Proteins & Chapter 5: Protein Function	Homework #3
6	3/1 – 3/5	Chapter 5: Protein Function & Chapter 6: Enzymes	Quiz #2
7	3/8 – 3/12	Chapter 6: Enzymes	Homework #4
8	3/15 – 3/19	Chapter 6: Enzymes	Homework #5
<i>Spring Break!</i>			
9	3/29 – 4/2	Chapter 7: Carbohydrates and Glycobiology	Midterm Exam
10	4/5 – 4/9	Chapter 7: Carbohydrates and Glycobiology & Chapter 8: Nucleotides and Nucleic Acids	Homework #6
11	4/12 – 4/16	Chapter 8: Nucleotides and Nucleic Acids	Homework #7
12	4/19 – 4/23	Chapter 9: DNA-Based Information Technologies OR Special Topics	Quiz #3
13	4/26 – 4/30	Chapter 10: Lipids	Homework #8
14	5/3 – 5/7	Chapter 11: Biological Membranes and Transport	Homework #9
15	5/10 – 5/14	Chapter 11: Biological Membranes and Transport	Quiz #4
Final Exam: Thursday, May 20, 2021, 2:45 – 4:45 p.m.			

TENTATIVE Lab Schedule

Each student will be assigned to a single lab cohort, either A or B.

Important Note: Refer to the Canvas course home page for pertinent information. Lab handouts and assignments 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.**

Week	Dates	Lab Cohort A	Lab Cohort B
1	1/25 – 1/29	<i>Zoom Meeting, cohorts assigned</i>	<i>Zoom Meeting, cohorts assigned</i>
2	2/1 – 2/5	Solution Preparation Lab *In-Person Lab*	Online Titration Activity Lab
3	2/8 – 2/13	Online Titration Activity Lab	Solution Preparation Lab *In-Person Lab*
4	2/15 – 2/19	Bradford Assay Lab *In-Person Lab*	Online Protein Structure Modeling Lab
5	2/22 – 2/26	Online Protein Structure Modeling Lab	Bradford Assay Lab *In-Person Lab*
6	3/1 – 3/5	Tyrosinase Kinetics Lab *In-Person Lab*	<i>No Lab</i>
7	3/8 – 3/12	<i>Finish Tyrosinase Lab Data Analysis and Write-Up</i>	Tyrosinase Kinetics Lab *In-Person Lab*
8	3/15 – 3/19	<i>No Lab</i>	<i>Finish Tyrosinase Lab Data Analysis and Write-Up</i>
<i>Spring Break</i>			
9	3/29 – 4/2	Invertase Lab Part 1 *In-Person Lab*	Online Protein Purification Lab
10	4/5 – 4/9	Invertase Lab Part 2 *In-Person Lab*	Online Protein Purification Lab
11	4/12 – 4/16	Invertase Lab Part 3 *In-Person Lab*	Online Protein Purification Lab
12	4/19 – 4/23	Online Protein Purification Lab	Invertase Lab Part 1 *In-Person Lab*
13	4/26 – 4/30	Online Protein Purification Lab	Invertase Lab Part 2 *In-Person Lab*
14	5/3 – 5/7	Online Protein Purification Lab	Invertase Lab Part 3 *In-Person Lab*
15	5/10 – 5/14	<i>No Lab</i>	<i>No Lab</i>