CHEM 366 Biochemistry II
Fall 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
Office Hours: Each office hour will be held in person (mask required, one student at a time) in my office and via Zoom. I will post Zoom links on Canvas for all office hours.

Monday: 10 – 11 a.m.
Tuesday: 11 a.m. – noon
Wednesday: 10 – 11 a.m.
Thursday: 11 a.m. – noon
Friday: 11 a.m. – noon

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 366 CBB 131		Chem 366 CBB 131	Chem 366 CBB 131
9:00		*Prep*		*Prep*	*Prep*
10:00	***Office Hour***	Chem 333 CBB 131	***Office Hour***	Chem 333 CBB 131	Chem 333 CBB 131
11:00	Chem 101 Lab 01L4 CBB 220	***Office Hour***		***Office Hour***	***Office Hour***
12:00					
1:00					
2:00		Chem 105 Lab 02L1 CBB 226		Chem 105 Lab 02L2 CBB 226	Meetings
3:00	Meeting				
4:00					

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

Meeting Times

Lecture: Tuesday, Thursday, Friday 8 – 8:50 a.m. in room 131 of the Chemistry Biology Building (CBB)

Course Description: Principles of carbohydrate, lipid and nitrogen metabolism, integration of metabolic pathways, photosynthesis, cell signaling and modern biochemical techniques. 3 credits, *Prerequisites:* CHEM 365

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 be not be on campus. Please see the University Store and Text Rental webpage for more information.

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.

Course Learning Outcomes

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

1. Explain how information is transferred in living systems through interactions of biomolecules.
2. Explain the chemical logic behind the steps in each metabolic pathway discussed.
3. Describe how metabolic pathways are connected to each other, including location of metabolites and enzymes within living systems and pathway regulation.
4. Understand the importance of studying metabolic pathways, including the consequences of changes or deletions in these pathways.
5. Describe how modern biochemical techniques are used to study metabolic pathways.

Attendance

Attendance at all class sessions is expected. Participation is not mandatory, but not attending or participating in classes will make this course much harder than it needs to be. If you miss a class session you should get notes from a fellow student, read the relevant sections from the textbook, look at and/or complete any handouts/worksheets and then contact me with questions you may have about the material.

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.

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.

Exams, 50%: There will be three lecture exams throughout the semester (see tentative schedule on the last page of the syllabus). The material in this class builds on previous topics, so consider each exam to be cumulative.

Activities, 25%: These activities will include reading and analyzing articles from the scientific literature, as well as activities focused on preparing a scientific presentation. Additional activities may include problems associated with lecture material. Some activities will be (partially) completed in class while others will be assigned as homework.

Final Project, 25%: This project will (likely) consist of a final presentation (given during the final exam period), along with written assignments. The goal of this project is for you to research a topic you are interested in that is related to material we covered in class. You will be using different types of sources, including the primary scientific literature, secondary literature (for example, review articles), and tertiary sources (reputable news or encyclopedias) to research your topic and report your findings to the class.

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

Sept. 14th	Last day to drop without a W grade reported
Nov. 5th	Last day to drop a 16-week course
Final Exam	Monday, December 13, 2021, 8:00 – 10:00 a.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.
- ***Engage with provided material*** – read sections of the textbook, try problems, watch videos, etc.
- Take detailed notes and ask questions 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, suggested problems, etc.).

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

Tentative **Lecture Schedule**

12.1 refers to section 12.1 from chapter 12 in the textbook. **The information below is tentative and will likely change! See Canvas for updated information!**

Week	Dates	Tuesday	Thursday	Friday
1	8/31 – 9/3	***No Class***	Syllabus and Course Introduction	12.1 – 12.2: Biosignaling and GPCRs
2	9/7 – 9/10	12.2 – 12.3: GPCRs continued	12.4 – 12.7: RTKs and Ion Channels	12.8 – 12.11: NHRs and Cell Regulation
3	9/14 – 9/17	13.1 – 13.3: Thermo. review and common reactions	13.4: Redox reactions	*In-Class Activity #1*
4	9/21 – 9/24	14.1 – 14.3: Glycolytic reactions, fate of pyruvate	14.4 – 14.5: Gluconeogenesis and PPP	15.1 – 15.2: Regulation and metabolic control
5	9/28 – 10/1	**Exam #1**	15.3: Coordinated regulation of glycolysis and GNG	15.4 – 15.5: Glycogen regulation
6	10/5 – 10/8	16.1 – 16.2: Citric acid cycle reactions	16.3: Citric acid cycle regulation	*In-Class Activity #2*
7	10/12 – 10/15	17.1 – 17.2: Digestion and oxidation of fatty acids	17.2 – 17.3: Oxidation of fatty acids and ketone bodies	18.1 – 18.2: Amino groups and urea cycle
8	10/19 – 10/22	18:3: Amino acid degradation	19.1 – 19.2: ETC, ATP synthesis	19.2 – 19.3: ATP synthesis and regulation of oxidative phosphorylation
9	10/26 – 10/29	19.4 – 19.5: Mitochondrial functions and mutations	**Exam #2**	20.1 – 20.1: Light absorption and photochemical reactions
10	11/2 – 11/5	20.3 – 20.5: ATP synthesis, carbon assimilated reactions	20.6 – 20.7: Biosynthesis of starch, sucrose, and cellulose	*In-Class Activity #3*
11	11/9 – 11/12	21.1: Biosynthesis of fatty acids	21.2: Biosynthesis of triacylglycerols	21.3 – 21.4: Membrane phospholipids and sterols
12	11/16 – 11/19	22.1 – 22.2: Nitrogen metabolism and biosynthesis of amino acids	22.3 – 22.4: Molecules derived from amino acids and metabolism of nucleotides	23.1: Hormones
13	11/23 – 11/26	23.2: Tissue-specific metabolism	***No Class***	***No Class***
14	11/30 – 12/3	23.3: Hormonal regulation of fuel metabolism	23.4 – 23.5: Obesity and metabolic diseases	**Exam #3**
15	12/7 – 12/10	*In-Class Activity #4*	Work Day	Work Day
Final Exam Period		Monday, December 13, 2021 from 8:00 – 10:00 a.m.		