

Course Description: Fundamentals of chemistry as applied to biological systems. This course bridges the gap between a general chemistry course and biochemical concepts of health-related sciences. The course is recommended for health-science degree candidates and non-science majors interested in the central role of biochemistry in life.

Learning Outcomes	Specific Coverage
Learn how to write structural formulas to understand the structure of molecules. Be able to identify functional groups as sites for reactions to occur. Be able to name simple organic molecules so that you can accurately interpret the names of chemicals. Chemical isomers can be therapeutic but also life threatening. We will learn how to identify chemical isomers.	I. Intro to organic chemistry
Learn how to describe and identify carbohydrates to better understand where we obtain some of our energy and material to build our bodies.	II. Carbohydrates
Be able to describe and identify lipids to learn how our body stores and uses this source of energy and building material.	III. Classification and functional roles of lipids
Proteins are critical to life. Be able to describe protein shape and how proteins function to better understand our metabolic pathways.	IV. Structure and function of proteins
Learn how cells communicate by molecules to better understand how hormones and neurotransmitters work.	V. Neurotransmitters and hormones
DNA is the building block of life. You will be able to describe nucleotide synthesis and the structure of DNA. Proteins are critical to life. We will learn how proteins are made and how they fold into their shapes to better understand metabolic pathways.	VI. Nucleic acids, gene expression, and protein synthesis
Learn how the body converts food to energy via several metabolic pathways.	VII. Nutrition and Digestion
	VIII. Bioenergetics: Metabolism, electron transport chain, citric acid cycle, and oxidative phosphorylation
	IX. Catabolic pathways: carbohydrate, lipid, and protein metabolism (glycolysis and urea cycle)

Course Goals: Structure and function is a recurrent theme in the course; molecular shape determines function. Students who successfully complete this course will have an understanding of the structure and function of molecules that are the building blocks of living systems. Students will develop an appreciation for the relationship between the unique physical and chemical properties of the major classes of biological macromolecules (proteins, lipids, carbohydrates and

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Fall 2020
Weltzin

The instructor reserves the right to drop any student from class if that student has missed an exam without an excused absence, has missed more than two labs, appears to be failing as of Friday, October 30, 2020. Students will be notified once via email before the drop; if the student corrects the deficiency, the student may remain in this class. Progress reports for freshman students are due to the Office by Monday,

can improve upon your post to increase your CP score. Additionally, student responses will be checked for plagiarism and originality. If your response has been plagiarized or is very similar to an already posted response, your response will be sent back to you and you will have the opportunity to revise your response so you can earn full points. Students should feel free and are encouraged to ask questions to each other about responses. Students will need to purchase a license (<https://questions.packback.co/sign-up/create-account>).

Slack lab group meetings and office hours: Slack will be used for lab groups to communicate with each other and the instructor. The instructor will also host her office hours in Slack.

Final Project: At the end of the semester, students will prepare an infographic of a disease that is caused by an issue with one of the biochemistry topics we have covered in this course. These projects are intended to provide a personal connection to the core concepts learned in class. Students will upload their presentation infographics to PackBack for peer and instructor evaluation. You will be responsible for grading and answering the assigned questions for **three** infographics made by your peers. These projects are intended to spur your creativity so have fun with it!

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can be fearlessly curious and ask open-ended questions to build on top of what we are covering in class and relate topics to real-world applications.

Packback Requirements:

Your participation on Packback will count toward 12% of your overall course grade.

There will be a Weekly Friday at 11:00PM AHST deadline for submissions. In order to receive your points per week, you should submit the following per each deadline period:

- 1 open-ended Question per week each worth 3pts of each assignment grade
- 2 Responses per week with a minimum Curiosity Score of 40, each worth 7pts of each assignment grade
- Half credit will be provided for responses that do not meet the minimum curiosity score.

How to Register on Packback:

An email invitation will be sent to you from help@packback.co prompting you to finish following the instructions below:

1. Create an account by navigat

Note: If you already have an account on Packback you can log in with your credentials.

2. Then enter our class
don't s
Community Lookup Key: **9bbe998d-e148-41c9-a0a3-de8db9468c6d**
3. Follow the instructions on your screen to finish your registration.
Packback may require a paid subscription. Refer to www.packback.co/product/pricing for more information.

How to Get Help from the Packback Team:

If you have any questions or concerns about Packback throughout the semester, please read their FAQ at help.packback.co. If you need more help, contact their customer support team directly at help@packback.co.

For a brief introduction to Packback Questions and why we are using it in class, watch this video: vimeo.com/packback/Welcome-to-Packback-Questions

- doing homework or taking an exam
- Using another student
Using homework help sites, a tutor, or similar while taking an exam.
Plagiarism

Students must also adhere to UAF policies, the student code of conduct as well as the University of Alaska *Honor Code*, which states:

Students will not collaborate on any quizzes, in-class exams, or take-home exams that will contribute to their grade in a course, unless permission is granted by the instructor of the course.

Only those materials permitted by the instructor may be used to assist in quizzes and examinations. Students will not reuse

exchange of ideas. However, students must adhere to the rules set forth by the University and the instructor. Failure to comply with classroom rules may result in dismissal from the class and/or the University. Faculty have the authority to manage their classrooms to ensure an environment conducive to learning. The University of Alaska Student Code of Conduct (the Code), part of the Board of Regents Policy 09.02, is available at <https://www.alaska.edu/bor/policy/09-02.pdf>. You should be familiar with the Code as you will be held accountable to maintain the standards stated within. The Code includes the following statements:

P09.02.020.A As with all members of the university community, the university requires students to conduct themselves honestly and responsibly and to respect the rights of others. Students may not engage in behavior that disrupts the learning environment, violates the rights of others or otherwise violates the Student Code of Conduct (Code), university rules, regulations, or procedures. Students and student organizations will be responsible for ensuring that they and their guests comply with the Code while on property owned or controlled by the university or at activities authorized or sponsored by the university.

P09.02.030.B Behavior that occurs on property owned or controlled by the university, in university online environments and classes, or at activities sponsored by or authorized by the university, is subject to university student conduct review and disciplinary action by the university. The Student Code of Conduct may also apply to behavior that occurs off campus when it may present a potential danger or threat to the health and safety of others or may reasonably lead to a hostile environment on campus.

	○ No Lab Experiment- <i>Have you ordered your kit?</i>	
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Gene Expression and Protein Synthesis

Reading:

- Ch. 25
- Lecture notes

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(Ch 25)
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