

Chem 104x Organic and Biochemistry
Spring Session, 2020
A Survey of Organic Chemistry and Biochemistry

Instructor: Dr. Lawrence Duffy
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(WRRB)
Phone: 474-7525
Email: lkduffy@alaska.edu
Office hours: 4:30 Monday, Reich 184

Lecture: 201 Reichardt Building 3:30pm
Lab: Reichardt Bldg, TBA

Prerequisites: Placement in ENGL F111X or higher, placement in DEVM F105 or higher, or permission of instructor

Required Course Material: Text book, *Introduction to General, Organic, and Biochemistry* 11th edition (authors Bettelheim, Brown, March). A calculator capable of scientific notation is also required for this course and should be brought to both class and lab.

Course Description: Fundamentals of organic chemistry and biochemistry 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. At UAF, it is a General Education course.

Learning Goals and Outcomes:

- A. Build knowledge of human institutions, sociocultural processes, and the physical natural world through the study of natural and social sciences.
 - Write organic molecular structures
 - Identify functional groups
 - Identify isomer types
 - Describe functions of proteins, carbohydrates and lipids
 - Define glycolysis, TCA cycle and oxidative phosphorylation
 - Define nucleotide synthesis and DNA structure
 - Understand the process of protein synthesis and enzyme function
- B. Develop intellectual and practical skills across the curriculum including inquiry and analysis, critical and creative thinking and problem solving.
 - Observe the complexity of the biochemical and physiological systems and compare to other holistic systems
 - Understand the relationships between individual health and the environment to current issues in society to allow for civic engagement.
 - Understand One Health

Laboratory Projects: Any projects are intended to explain a core research concept to the class. Projects are intended to spur your creativity.

UAF Attendance Policy:

You are expected to attend classes regularly; unexcused absences may result in a failing grade. You are responsible for conferring with your instructor concerning absences and the possibility of arranging to make up missed work.

Support Services: Support can be obtained through the University of Alaska Library System, online resources, and the instructor. Additional services are available through Student Support Services (<http://www.uaf.edu/sssp/>) at UAF. See page 5.

Disabilities Services:

We will work with the Office of Disabilities Services (<http://www.uaf.edu/disability/>) to provide accommodations for students with disabilities. If you have a disability and require special assistance, please contact the instructor as soon as possible. Students with disabilities must provide a written statement indicating any needed accommodations.

Cheating/Academic Dishonesty: The Chemistry & Biochemistry Department Policy on Cheating is: *"Any student caught cheating will be assigned a course grade of F. The student's academic advisor will be notified of this failing grade and the student will not be allowed to drop the course."* The Department considers performing unauthorized "dry labs" as cheating. Partnering during the lab is acceptable but lab reports must show your own calculations and ideas.

Amending this Syllabus: The instructor may make changes to this syllabus. Any changes will be clearly communicated via email sent to your UAF e-mail account and posted on Blackboard.

Grading:

Lab	100 points
Exams (4)	400 points (100 points each)
Final Exam	100 points
Total	600 points

Course percent grade: (points earned/max total points) x 100

Letter Grade	Percentage Grade
A+	95 - 100
A	90 - 94
A-	89
B+	85 - 88
B	80 - 84
B-	79
C+	75 - 78
C	70 - 74
C-	69
D+	65 - 68
D	60 - 64

Course Plan and Calendar:

Week	Chapter	Topic/Reading Assignment
1	10	Syllabus
1	10	Organic Chemistry-Structural formulas/ isomers
1	10	Organic Chemistry- Functional groups
2	11/12/13	Organic Chemistry- Alkanes, Alkenes, Alkynes, Benzenes
2/3	14/15	Alcohols, and stereoisomers
		Exam 1
4	16/18	Amines and Esters
5	20	Carbohydrates
6	21	Lipids
		Exam 2
7	22	Proteins – Structure & Function
8	23	Enzymes
		Exam 3
9	24	Chemical Communication
10	25	Nucleic Acids, Heredity
11	26	Gene Expression and Protein Synthesis
12	26	Mutations and epigenetics
		Exam 4
13	27	Metabolism
13	27	Bioenergetics/ATP production
13	28	Catabolic Pathways/Gluconeogenesis
14	18	Specific Pathways/ beta oxidation, ketone bodies, carbon skeletons
14	28	Urea cycle and processing of nitrogen
15	29	Biosynthetic pathways
15	29	Fatty Acid Biosynthesis
15	29	Essential Amino Acids and biosynthesis
15	30	Nutrition
16	25	Final Exam in MAY (EXAM 5)

Title IX Protection

University of Alaska Board of Regents has clearly stated in BOR Policy that discrimination, harassment and violence will not be tolerated on any campus of the University of Alaska. If you believe you are experiencing discrimination or any form of harassment including sexual harassment /misconduct/assault, you are encouraged to report that behavior. If you disclose sexual harassment or sexual violence to a faculty member or any university employee, they must notify the UAF Title IX Coordinator about the basic facts of the incident.

You may confidentially disclose and access confidential counseling by contacting the UAF Health and Counseling Center at 474-7043.

You may access support and file a Title IX report by contacting the UAF Title IX Coordinator at 474-7599.

You may file a criminal complaint by contacting the University Police Department at 474-7721.

Student Protection and Services Statement:

Every qualified student is welcome in my classroom. As needed, I am happy to work with you, disability services, veterans' services, rural student services, etc. to find reasonable accommodations. Students at this university are protected against sexual harassment and discrimination (Title IX), and minors have additional protections. As required, if I notice or am informed of certain types of misconduct, then I am required to report it to the appropriate authorities. For more information on your rights as a student and the resources available to you to resolve problems, please go to the following site www.uaf.edu/handbook/

Rural Student Services: <https://uaf.edu/ruralss/>

Military and Veteran Services: <https://uaf.edu/veterans/>

UAF Writing Center: <http://uaf.edu/english/writing-center/>

Office of Diversity and Equal Opportunity

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