

## Chemistry F104X (online): A Survey of Organic Chemistry and Biochemistry Fall 2020 Course Syllabus

Instructor: Dr. Maegan Weltzin  
Office: Murie 113E Phone: (907) 474-6527  
Email: [mmweltzin@alaska.edu](mailto:mmweltzin@alaska.edu) Office Hours: F 1:15 – 3:15 am or by appointment

**Course information:** Chemistry F104X UX1 -- Intro Organic Chem & Biochem (3 credits) and lab (1 credit) (CRN 77011 & 77010) online course.

### Course materials

The following materials are *required* for the course and can be purchased in the UAF bookstore or elsewhere:

- **Book:** Introduction to General, Organic, and Biochemistry 12th Ed. by Bettelheim, Brown, Campbell, Farrell and Torres (ISBN-13: 978-1-337-57135-7)  
*The book 11<sup>th</sup> ed will work as well (but not for OWLv2)*
- **Homework:** OWLv2 Cengage Learning access for Introduction to General, Organic, and Biochemistry 12th Ed by Bettelheim.
- **Discussion Board:** PackBack license (<https://questions.packback.co/sign-up/create-account>)
- **Quick communication:** Slack account (click on the link in Blackboard to connect to our course channel)
- **Laboratory:** Experiments in Survey of Org Chem & Biochem Chemistry 104X: A Laboratory Manual  
(free! Handouts can be printed from Blackboard, updated weekly)
- **Laboratory Investigations Kit** (order from <https://www.carolina.com/catalog/detail.jsp?prodId=581607>)
- **Slower but necessary communication:** A University of Alaska email address is required for all communication in the class. This also provides access to the Blackboard system for individual scores and grades.

The following materials are *optional* and may assist the student in their studies:

- Student Solutions Manual for Introduction to General, Organic, and Biochemistry 12th Ed

### Who should take this course?

The course is intended for students who are interested in enriching their lives with chemistry and biochemistry. 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.

**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
<ul style="list-style-type: none"> <li>Learn how to write structural formulas to understand the structure of molecules.</li> <li>Be able to identify functional groups as sites for reactions to occur.</li> <li>Be able to name simple organic molecules so that you can accurately interpret the names of chemicals.</li> <li>Chemical isomers can be therapeutic but also life threatening. We will learn how to identify chemical isomers.</li> </ul>	I. Intro to organic chemistry
<ul style="list-style-type: none"> <li>Learn how to describe and identify carbohydrates to better understand where we obtain some of our energy and material to build our bodies.</li> </ul>	II. Carbohydrates
<ul style="list-style-type: none"> <li>Be able to describe and identify lipids to learn how our body stores and uses this source of energy and building material.</li> </ul>	III. Classification and functional roles of lipids
<ul style="list-style-type: none"> <li>Proteins are critical to life.</li> <li>Be able to describe protein shape and how proteins function to better understand our metabolic pathways.</li> </ul>	IV. Structure and function of proteins
<ul style="list-style-type: none"> <li>Learn how cells communicate by molecules to better understand how hormones and neurotransmitters work.</li> </ul>	V. Neurotransmitters and hormones
<ul style="list-style-type: none"> <li>DNA is the building block of life. You will be able to describe nucleotide synthesis and the structure of DNA.</li> <li>Proteins are critical to life. We will learn how proteins are made and how they fold into their shapes to better understand metabolic pathways.</li> </ul>	VI. Nucleic acids, gene expression, and protein synthesis
<ul style="list-style-type: none"> <li>Learn how the body converts food to energy via several metabolic pathways.</li> </ul>	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

nucleic acids) and their particular functional roles. Armed with an understanding of the biochemical principles of living systems, students will be more informed consumers and be better prepared to contemplate the relationship between public science policy and human health.

**Prerequisites:** Chem F103X, placement in ENGL F111X of higher, placement in DEVM F105 or higher, or permission of instructor.

### Course expectations and outcomes

Students are expected to attend class; attendance will be monitored from in class clicker responses. Each day *before* class the student should read and digest the portion of the textbook appropriate as per the class schedule. *Active learning* involves the student using their sensory motor cortex (sight, smell, sound, taste and touch) in addition to their intelligence, to solidify through practice a concept the student has just read or heard about. Supplementing the course catalog, the course goals are to continue build the student's skills solving biochemistry problems, reading critically, formulating questions, completing laboratory experiments and communicating information assimilated throughout the course by completing exams. Class conduct should be professional as well as respectful of the rights other students to constructive learning experience.

**Blackboard:** <https://classes.uaf.edu>. Course information, supporting documents and grades for this course will be maintained on the UAF Blackboard website. Time sensitive information and reminders will be sent occasionally to all students enrolled in the course using blackboard, so it is important that you verify that your email address is correct and current.

**Preparation:** It is ***strongly*** recommended that each student reads the portion of the textbook that corresponds to each unit before watching lecture videos, performing lab experiments, attempting OWL, or answering the PackBack curiosity questions (see course calendar).

**Cell phones/Computers:** Mobile devices are not allowed during exams.

### Grading:

Grades will be posted to Blackboard, which can be accessed from the UAF homepage. Class grades may be adjusted (curved) from the following schedule only in the students' favor.

Evaluation Type	Points
Examination 1	100
Examination 2	100
Examination 3	100
Examination 4	100
Lab	250
Homework (15 HWs, 10pts each)	150
Pack Back Discussion Board Responses (10 pts each; 12 total)	120
Final Project	80
Peer Evaluation and Question Responses of Final Presentations	20
<b>Total</b>	<b>1000</b>

<b>Grade:</b>	<b>Percentage:</b>
<b>A+</b>	<b>97-100</b>
<b>A</b>	<b>90-96</b>
<b>A-</b>	<b>88-89</b>
<b>B+</b>	<b>86-87</b>
<b>B</b>	<b>80-85</b>
<b>B-</b>	<b>78-79</b>
<b>C+</b>	<b>76-77</b>
<b>C</b>	<b>70-75</b>
<b>C-</b>	<b>68-69</b>
<b>D+</b>	<b>66-67</b>
<b>D</b>	<b>60-65</b>
<b>D-</b>	<b>58-59</b>
<b>F</b>	<b>0-57</b>

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 Registrar's Office by Monday, October 5, 2020. The last day for instructor initiated withdrawal is Friday, October 30, 2020 (W grade appears on academic record). An incomplete grade will only be assigned if a student misses the final exam for an outstanding reason, such as a medical problem, a death in the family, etc.

### **Work Ethic**

It is expected that all work turned in by each student is work completed by the student. Feel free to work together on homework, labs, and discussion questions, but a student's submitted work must be conducted and written by that student. Any copying or plagiarism will earn a zero for that assignment and will be reported to the University. For exams, all work must be that of the student and not homework help sites, peers, tutors, etc. Anyone caught using these resources during an exam will earn a zero for the assignment and will be reported to the University.

### **Homework**

Homework problems will be assigned using questions from the textbook in coordination with the OWLv2 Cengage Learning program. Students should expect between 2 - 3 hours of homework to be assigned each week. Each homework assignment will have a link (or links) in the homework folder for that week on Blackboard. Each link contains a different problem set, so you must complete the exercises in all the links to get full credit. Each problem set is a "Mastery" question where you have to answer correctly two out of three similar types of questions to earn full points. You have a total of seven attempts to currently answer each Mastery question. Homework assignments for the week will be due according to the course schedule below no later than 11pm. It is recommended that students promptly register and log in to OWLv2 Cengage Learning as homework will be assigned during the first week (Unit 1). You will need your access code that came with your book. If you do not have one anymore, please contact me.

\* Occasionally, students experience problems using OWLv2. For example, students may type in a right answer, but OWLv2 will count their answer as wrong. Or, perhaps a student cannot open OWLv2 on his or her particular laptop for some unknown reason. If a student experiences any "electronic" problems using OWLv2, the student must contact Cengage at **1-800-354-9706** or email **support.cengage.com** for help. The Cengage technicians are usually able to resolve the problem. However, if the problem is still not resolved, then the student should contact Dr. Weltzin with the case number given by the Cengage technician. Dr. Weltzin will then notify the Cengage sales team of the problem and give them the case number so that the problem can be resolved.

**PackBack Discussion Board Responses:** We will use **PackBack** as our class discussion board to connect course content to the everyday life. Students are expected to participate actively in the course via responses to discussion questions. Each week Dr. Weltzin will post a question pertaining to an existing application of the course material. Students are expected to provide a thoughtful response to the instructor's question and respond at least once to a peer's response. To earn full points, you also need to ask one question in response to your peer's responses or the original posted question. Responses will be grade on the quality and detail of the response and sources cited. To earn full points, you must achieve a score of 40 (or great) curiosity points (CP). You can see your score when you post. Any time before the deadline, you

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!

**Late assignments** are not accepted. Students are given up to a week to complete assignments, which are scheduled to coordinate with lectures and exams.

**Laboratory:** The purpose of lab is to perform hands-on investigation of chemical principles and theories. Students will gain skills in scientific reasoning, experimental design, and use of chemicals as well as laboratory apparatus. Laboratory procedures will be available on blackboard each week. Lab reports must be turned in the following week to be graded by the instructor. The laboratory portion of the student's grade will be based upon the average of the student's **best 9 lab reports**. Students may drop one lab miss one lab with no impact on their lab grade but lack of attendance or **failure to complete 9 laboratories will result in a failing grade** for the course. Late reports will not be accepted.

**Exams:** The student is responsible for all information from text, lecture, homework, quizzes and assigned study questions. Any of these sources will be used to construct exam questions. Three one-hour exams and a final exam covering the last section of the course will be given as per the course schedule. The final exam must be taken by Dec 9 by 5pm (Alaska time zone). The final exam will cover Units 12-15.

**Absences:** Makeup examinations will be allowed for legitimate absences only, an unexplained absence from an exam will result in a zero. If the student anticipates an absence (intercollegiate sports, travel for military or university business), the student must talk to Dr. Weltzin **before** the exam or assignment is due. If the absence is unexpected (illness, family or personal calamity), contact the professor at the earliest possible opportunity. Please note that makeup exams require the student to have *no* knowledge of the original exam. No extensions, makeup or late work will be accepted otherwise. For other course work, makeup work and extensions may be granted for legitimate absences only.

### Packback Questions

Participation is a requirement for this course, and the Packback Questions platform will be used for online discussion about class topics. Packback Questions is an online community where you

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](mailto:help@packback.co) prompting you to finish registration. If you don't receive an email (be sure to check your spam), you may register by following the instructions below:

1. Create an account by navigating to <https://questions.packback.co> and clicking "Sign up for an Account"  
Note: If you already have an account on Packback you can log in with your credentials.
2. Then enter our class community's lookup key into the "Looking to join a community you don't see here?" section in Packback at the bottom of the homepage.  
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](http://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](http://help.packback.co). If you need more help, contact their customer support team directly at [help@packback.co](mailto: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](https://vimeo.com/packback/Welcome-to-Packback-Questions)

**Ethical considerations:** The Chemistry and Biochemistry Department *Policy on Cheating* states:

**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.**

Examples of cheating include, but are not limited to:

- Copying another student's answer while doing homework or taking an exam
- Using another student's work while writing lab reports
- Using homework help sites, a tutor, or similar while taking an exam.
- Plagerism

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 represent the work of others as their own. A student will attribute the source of information not original with himself or herself (direct quotes or paraphrases) in compositions, theses, and other reports. No work submitted for one course may be submitted for credit in another course with- out the explicit approval of both instructors. Violations of the Honor Code will result in a failing grade for the assignment and, ordinarily, for the course in which the violation occurred. Moreover, violation of the Honor Code may result in suspension or expulsion.

Plagiarism is defined as the use of "other" intellectual property without proper reference to the original author. Intellectual property includes all electronic, spoken or print media ***thus any information taken of the web is included under this statement.*** Students are expected to cite all sources used in oral and written presentations. Cases of plagiarism will be taken seriously with a grade 0 for the particular assignment. Severe cases may be referred to the Department Chair or Dean or class failing considered.

### **Student success**

There are a large number of resources to help students who would like to perform at their best. The student may make an appointment to see the instructor for help. (The instructor will attempt to reply to email questions within 24 hours during the school week.)

### **Disabilities**

Students with a physical or learning disability are required to identify themselves to the Disability Services office, 474-7043, located in the Center for Health and Counseling. The student must provide documentation of the disability. Disability Services will then notify the instructor of special arrangements for taking tests, working homework assignments, and doing lab work.

**Computer Access:** Currently Department of Computing and Communications (DCC) maintains two open labs on campus: the Bunnell Lab, and the Node (Rasmussen library). The Node has 24-hour access.

**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.

**Classroom Etiquette:** The purpose of this information is to assist students in understanding proper classroom behavior. The classroom should be a learning centered environment in which faculty and students are unhindered by disruptive behavior. Students are expected to maintain proper decorum in the online classroom including during lab and when responding on the discussion board. Students are expected to be honest, professional, and courteous at all times. The University of Alaska Fairbanks is an institution of higher education that promotes the free

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. The Student Code of Conduct may also apply to behavior exhibited online or electronically via email, social media, text messaging, or other electronic means.

**Student protections 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 the following site: [www.uaf.edu/handbook/](http://www.uaf.edu/handbook/).

**COVID-19 Awareness:** Students should keep up-to-date on the university's policies, practices, and mandates related to COVID-19 by regularly checking this website:  
<https://sites.google.com/alaska.edu/coronavirus/uaf/uaf-students?authuser=0>

Further, students are expected to adhere to the university's policies, practices, and mandates and are subject to disciplinary actions if they do not comply.

**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.

## Tips for Success in Chem 104X

The course will move quickly and material is cumulative – i.e., new concepts build upon previous ones. Thus, it is important to keep up with the course on a daily basis. Some strategies for success:

- Watch the course videos and read the lecture notes!
- Read the material before watching the videos or viewing the lecture notes. Videos and readings are listed in the syllabus.

- Read actively, not passively – after each page, look away and recall main concepts.
- Take notes.
- Ask questions – don't understand something? Ask! Your instructor is here to help.
- Start homework early.
- Practice every day – biochemistry is not merely about memorization of facts, but synthesizing and applying concepts. Cramming is not a good idea.
- Work out a variety of problems. Seeing differently worded problems helps solidify concepts.
- Study together – practice explaining concepts to others and how to work through problems.
- Contact me. Send me an email or make an appointment to meet with me.

## Class Schedule

Unit (Chapter) [Monday date]	Topic and Activities	Assignment Due date
1 (Ch 10) [8/24]	<b>Welcome and intro organic chemistry: Alkanes</b> <ul style="list-style-type: none"> <li>• <b>Reading:</b> <ul style="list-style-type: none"> <li>○ Welcome letter</li> <li>○ Ch. 10</li> <li>○ Review Ch 3</li> <li>○ Read "How to draw a Lewis dot structure" handout</li> <li>○ Lecture Notes</li> </ul> </li> <li>• <b>Watch:</b> <ul style="list-style-type: none"> <li>○ Welcome video</li> <li>○ Video 1.1: Intro to Organic Chemistry</li> <li>○ Video 1.2: How to Draw Structural Formulas</li> <li>○ Video 1.3: Example: Drawing Structural Formulas</li> <li>○ Video 1.4: Building functional groups</li> </ul> </li> <li>• <b>Simulations and Exercises:</b> <ul style="list-style-type: none"> <li>○ On your own or with a buddy, <b>draw and build functional groups</b> covered in chapter 10, table 10-3</li> <li>○ Go to <a href="https://www.easynotecards.com/notecard_set/6736">Functional Groups Matching Game</a> (<a href="https://www.easynotecards.com/notecard_set/6736">https://www.easynotecards.com/notecard_set/6736</a>)</li> <li>○ Review functional groups</li> <li>○ Play <b>Functional Groups Matching Games</b></li> <li>○ <i>Optional:</i> Play <a href="#">Functional Groups Bingo</a></li> </ul> </li> <li>• <b>Lab Investigation:</b></li> </ul>	<ul style="list-style-type: none"> <li>• PackBack Curiosity Question #1: Who are you? (Introduce yourself to the class using PackBack (Friday, 9/4)</li> <li>• OWL HW #1 (Monday, 8/31)- do all 3 parts</li> <li>• Find a time for us to meet using this google sheet link (due 9/4): <a href="https://docs.google.com/spreadsheets/d/1NO3_e3G-t8BsZWu9mMe6hJ8pCB_jA5cNgjeehNjEPZY/edit?usp=sharing">https://docs.google.com/spreadsheets/d/1NO3_e3G-t8BsZWu9mMe6hJ8pCB_jA5cNgjeehNjEPZY/edit?usp=sharing</a></li> </ul>

	<ul style="list-style-type: none"> <li>No Lab Experiment- <i>Have you ordered your kit?</i></li> </ul>	
<p>2 (Ch 11 &amp; 12.1-12.4) [8/31]</p>	<p><b>Intro organic chemistry: Identifying and Naming Alkanes, Alkenes, and Alkynes</b></p> <ul style="list-style-type: none"> <li><b>Reading:</b> <ul style="list-style-type: none"> <li>Ch. 11</li> <li>Ch 12.1-12.4</li> <li>Lecture Notes</li> </ul> </li> <li><b>Watch:</b> <ul style="list-style-type: none"> <li>Video 2.1: Alkane Introduction</li> <li>Video 2.2: Naming unbranched alkanes</li> <li>Video 2.3: Naming branched alkanes</li> <li>Video 2.4: Cycloalkane configurations</li> </ul> </li> <li><b>Lab Investigation:</b> <ul style="list-style-type: none"> <li>No Lab Experiment- <i>Has your kit arrived?</i></li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>PackBack Curiosity Question #2: PFAS and Your Health (Friday, 9/4)</li> <li>OWL HW #2 (Monday, 9/7)</li> <li>Find a time for us to meet using this google sheet link (due 9/4): <a href="https://docs.google.com/spreadsheets/d/1NO3_e3G-t8BsZWu9mMe6hJ8pCB_jA5cNgjeehNjEPZY/edit?usp=sharing">https://docs.google.com/spreadsheets/d/1NO3_e3G-t8BsZWu9mMe6hJ8pCB_jA5cNgjeehNjEPZY/edit?usp=sharing</a></li> </ul>
<p>3 (Ch 14) [9/7]</p>	<p><b>Chirality: The Handedness of Molecules</b></p> <ul style="list-style-type: none"> <li><b>Reading:</b> <ul style="list-style-type: none"> <li>Ch. 14</li> <li>Lecture Notes</li> </ul> </li> <li><b>Watch:</b> <ul style="list-style-type: none"> <li>Video 3.1: Learn to identify stereoisomers</li> <li>Video 3.2 Racemic mixtures</li> <li>Video 3.3: How to name enantiomers</li> <li>Video 3.4: Determining number of stereoisomers and identifying diastereomers</li> </ul> </li> <li><b>Lab Investigation:</b> <ul style="list-style-type: none"> <li>Safety lab, measurement and uncertainty, and graphing</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>PackBack Curiosity Question #3: Ibuprofen (Friday, 9/11)</li> <li>OWL HW #3 (Monday, 9/14)</li> <li>Lab Report- Safety lab (Tuesday, 9/15)</li> <li>First Student-Instructor Conference (9/8-9/9)</li> <li><b>Exam 1 due next week (covering units 1-3)</b></li> </ul>
<p>4 (Ch 29) [9/14]</p>	<p><b>Nutrition and Digestion</b></p> <ul style="list-style-type: none"> <li><b>Reading:</b> <ul style="list-style-type: none"> <li>Ch. 29</li> <li>Lecture Notes</li> </ul> </li> <li><b>Watch:</b> <ul style="list-style-type: none"> <li>Video 4.1: How does your digestive system work?</li> <li>Video 4.2: How your digestive system works (more in-depth)</li> <li>Video 4.3: Rwanda, Burundi- A story about nutrition</li> </ul> </li> <li><b>Exercise:</b> <ul style="list-style-type: none"> <li>Go to USDA choosemyplate.gov, explore each food group</li> <li>Take the quiz associated with each food group to test your knowledge</li> </ul> </li> <li><b>Lab Investigation:</b></li> </ul>	<ul style="list-style-type: none"> <li>PackBack Curiosity Question #4 (Friday, 9/18)</li> <li>OWL HW #4 (Monday, 9/21)</li> <li>Lab Report- Aspirin (Tuesday, 9/22)</li> <li><b>Exam 1: Units 1-3 THIS week (due by 5pm AK time Wed 9/16)</b></li> </ul>

	<ul style="list-style-type: none"> <li>○ Qualitative Synthesis of Aspirin</li> </ul>	
5 (Ch 19) [9/21]	<b>Carbohydrates</b> <ul style="list-style-type: none"> <li>• <b>Reading:</b> <ul style="list-style-type: none"> <li>○ Ch. 19</li> <li>○ Lecture Notes</li> </ul> </li> <li>• <b>Watch:</b> <ul style="list-style-type: none"> <li>○ Video 5.1: How to draw Fischer projections</li> <li>○ Video 5.2: The biochemistry of sugars and carbohydrates</li> <li>○ Video 5.4: The deal with carbohydrates</li> </ul> </li> <li>• <b>Lab Investigation:</b> <ul style="list-style-type: none"> <li>○ Chemistry of Life: pH and Buffers</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>○ Discussion Board Question #5 (Friday, 9/25)</li> <li>○ OWL HW #5 (Monday, 9/28)</li> <li>○ Lab Report-Chemistry of Life (Tuesday, 9/29)</li> </ul>
6 (Ch 20) [9/28]	<b>Lipids</b> <ul style="list-style-type: none"> <li>• <b>Reading:</b> <ul style="list-style-type: none"> <li>○ Ch. 20</li> <li>○ Lecture Notes</li> </ul> </li> <li>• <b>Watch:</b> <ul style="list-style-type: none"> <li>○ Video 5.1: The role of lipids in organisms</li> <li>○ Video 5.2: What are simple lipids?</li> <li>○ Video 5.3: What are complex lipids?</li> <li>○ Video 5.4: What are steroids?</li> </ul> </li> <li>• <b>Lab Investigation:</b> <ul style="list-style-type: none"> <li>○ Blood Typing and Simulated Blood</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• PackBack Curiosity Question #6 (Friday, 10/2)</li> <li>• OWL HW #6 (Monday, 10/5)</li> <li>• Lab Report-Blood typing (Tuesday, 10/6)</li> </ul>
7 (Ch 21) [10/5]	<b>Proteins</b> <ul style="list-style-type: none"> <li>• <b>Reading:</b> <ul style="list-style-type: none"> <li>○ Ch. 21</li> <li>○ Lecture Notes</li> </ul> </li> <li>• <b>Watch:</b> <ul style="list-style-type: none"> <li>○ Video 7.1: What are proteins and amino acids?</li> <li>○ Video 7.2: The peptide bond, the bond that holds amino acids together</li> </ul> </li> <li>• <b>Lab Investigation:</b> <ul style="list-style-type: none"> <li>○ Fermentation of Sugar</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• PackBack Curiosity Question #7 (Friday, 10/9)</li> <li>• OWL HW #7 (Monday, 10/12)</li> <li>• Lab Report-Fermentation of sugar (Tuesday, 10/13)</li> </ul>

<p>8 (Ch 22) [10/12]</p>	<p><b>Enzymes</b></p> <ul style="list-style-type: none"> <li>• <b>Reading:</b> <ul style="list-style-type: none"> <li>○ Ch. 22</li> <li>○ Lecture Notes</li> </ul> </li> <li>• <b>Watch:</b> <ul style="list-style-type: none"> <li>○ 8.1: Basic summary of enzymes</li> <li>○ 8.2: How enzymes speed up chemical reactions</li> <li>○ 8.3: Enzyme function and inhibition</li> <li>○ 8.4: Enzymes in biochemical pathways</li> </ul> </li> <li>• <b>Simulations and Exercises:</b> <ul style="list-style-type: none"> <li>○ Play the Enzyme game</li> </ul> </li> <li>• <b>Lab Investigation:</b> <ul style="list-style-type: none"> <li>○ Isolation of Casein</li> </ul> </li> </ul> <p><b>REMINDER: Exam 2 (units 4-8) due NEXT WEEK (due 10/14 by 5pm AK time)</b></p>	<ul style="list-style-type: none"> <li>• PackBack Curiosity Question #8 (Friday, 10/16)</li> <li>• OWL HW #8 (Monday, 10/19)</li> <li>• Lab Report- Isolation of casein (Tuesday, 10/20)</li> <li>• Second Student-Instructor Meeting</li> </ul>
<p>9 (Ch 23) [10/19]</p>	<p><b>Chemical Communication: Neurotransmitters and Hormones</b></p> <ul style="list-style-type: none"> <li>• <b>Reading:</b> <ul style="list-style-type: none"> <li>○ Ch. 23</li> <li>○ Lecture Notes</li> </ul> </li> <li>• <b>Simulations and Exercises:</b> <ul style="list-style-type: none"> <li>○ Explore the insides of a cell</li> </ul> </li> <li>• <b>Watch:</b> <ul style="list-style-type: none"> <li>○ Video 9.1: Communication of neurons</li> <li>○ Video 9.2: Chemical messengers</li> <li>○ Video 9.3: Amino acid and adrenergic messengers</li> <li>○ Video 9.4: cAMP second messenger</li> <li>○ Video 9.5: Peptidergic and steroid messengers</li> </ul> </li> <li>• <b>Lab Investigation:</b> <ul style="list-style-type: none"> <li>○ Enzyme Catalysis</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• PackBack Curiosity Question #9 (Friday, 10/23)</li> <li>• OWL HW #9 (Monday, 10/26)</li> <li>• Lab Report- Enzyme Catalysis (Tuesday, 10/27)</li> <li>• <b>Exam 2 (covering units 4-8) due <u>THIS</u> week (due 10/14 by 5pm AK time)</b></li> </ul>
<p>10 (Ch 24) [10/26]</p>	<p><b>Nucleotides, Nucleic Acids, and Heredity</b></p> <ul style="list-style-type: none"> <li>• <b>Reading:</b> <ul style="list-style-type: none"> <li>○ Ch. 24</li> <li>○ Lecture Notes</li> </ul> </li> <li>• <b>Simulations and Exercises:</b> <ul style="list-style-type: none"> <li>○ Work though “the DNA molecule is a twisted ladder” site</li> <li>○ Play “Base Invaders”</li> </ul> </li> <li>• <b>Watch:</b> <ul style="list-style-type: none"> <li>○ Video 10.1: How is DNA replicated?</li> <li>○ Video 10.2: What are genes?</li> </ul> </li> <li>• <b>Lab Investigation:</b> <ul style="list-style-type: none"> <li>○ DNA Extraction (cheek cell)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• PackBack Curiosity Question #10 (Friday, 10/30)</li> <li>• OWL HW #10 (Monday, 11/2)</li> <li>• Lab Report-Biological Macromolecules and Enzymes (Tuesday, 11/3)</li> </ul>

<p>11 (Ch 25) [11/2]</p>	<p><b>Gene Expression and Protein Synthesis</b></p> <ul style="list-style-type: none"> <li>• <b>Reading:</b> <ul style="list-style-type: none"> <li>○ Ch. 25</li> <li>○ Lecture notes</li> </ul> </li> <li>• <b>Watch:</b> <ul style="list-style-type: none"> <li>○ Video 11.1: How is DNA transcribed into RNA?</li> <li>○ Video 11.2: How is mRNA translated into proteins?</li> <li>○ Video 11.3: Translation (more in depth)</li> <li>○ Video 11.4: How is gene expression regulated?</li> </ul> </li> <li>• <b>Lab Investigation:</b> <ul style="list-style-type: none"> <li>○ DNA Replication, RNA Transcription, and Protein Synthesis</li> <li>○ <b>REMINDER: Exam 3 (units 9-11) due NEXT week (due 11/11 by 5pm AK time)</b></li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• PackBack Curiosity Question #11 (Friday, 11/6)</li> <li>• OWL HW #11 (Monday, 11/9)</li> <li>• Lab Report- DNA extraction (Tuesday, 11/10)</li> <li>• Start working on Disease Infographic final project</li> </ul>
<p>12 (Ch 26) [11/9]</p>	<p><b>Bioenergetics: How the body converts food to energy</b></p> <ul style="list-style-type: none"> <li>• <b>Reading:</b> <ul style="list-style-type: none"> <li>○ Ch. 26</li> <li>○ Lecture PowerPoints and example problems</li> </ul> </li> <li>• <b>Watch:</b> <ul style="list-style-type: none"> <li>○ Video 11.1: What is metabolism?</li> <li>○ Video 11.2: What is cell respiration? (big picture ideas)</li> <li>○ Video 11.3a: How does the citric acid cycle work?</li> <li>○ Video 11.3b (optional): Citric acid cycle song</li> <li>○ Video 11.4: How does the electron transport chain work?</li> </ul> </li> <li>• <b>Simulations and Exercises:</b> <i>After reading the book and watching the videos:</i> <ul style="list-style-type: none"> <li>○ Play the citric acid cycle game (simple)</li> <li>○ Play citric acid cycle with enzymes game</li> <li>○ Play the electron transport chain game</li> </ul> </li> <li>• <b>Lab Investigation:</b> Biological Macromolecules and Enzymes</li> </ul>	<ul style="list-style-type: none"> <li>• PackBack Curiosity Question #12 (Friday, 11/13)</li> <li>• OWL HW #12 (Monday, 11/16)</li> <li>• Lab Report- DNA replication, RNA transcription, and protein synthesis (Tuesday, 11/17)</li> <li>• Continue working on Disease Infographic final project (draft due to me 11/19)</li> </ul> <p><b>REMINDER:</b> <b>Exam 3 (units 9-11) due <u>THIS</u> week (due 11/11 by 5pm AK time)</b></p>

<p>13 (Ch 27.1-27.3, 27.7) [11/16]</p>	<p><b>Specific Catabolic Pathways: Carbohydrate, Lipid, and Protein Metabolism</b></p> <ul style="list-style-type: none"> <li>• <b>Reading:</b> <ul style="list-style-type: none"> <li>○ Ch. 27.1-27.3, 27.7</li> <li>○ Lecture notes</li> </ul> </li> <li>• <b>Watch:</b> <ul style="list-style-type: none"> <li>○ Video 13.1: What is glycolysis?</li> <li>○ Video 13.2: What are the reactions of glycolysis?</li> <li>○ Video 13.3: Glycolysis summary</li> <li>○ Video 13.4: How does pyruvate enter the citric acid cycle?</li> </ul> </li> <li>• <b>Simulations and Exercises:</b> <ul style="list-style-type: none"> <li>○ Glycolysis game</li> </ul> </li> <li>• <b>Final Project:</b> <ul style="list-style-type: none"> <li>○ Disease Infographic (send draft to me 4/15)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• PackBack Curiosity Question #13 (Friday, 11/20)</li> <li>• OWL HW #13 (Monday, 11/23)</li> <li>• Disease Infographic (send draft to me 11/19)</li> <li>• Third Student-Instructor Telephone Conference</li> </ul>
<p>14 (Ch 27.4) [11/23] Happy Thanksgiving</p>	<p><b>Specific Catabolic Pathways: Carbohydrate, Lipid, and Protein Metabolism</b></p> <ul style="list-style-type: none"> <li>• <b>Reading:</b> <ul style="list-style-type: none"> <li>○ Ch. 27</li> <li>○ Lecture Notes</li> </ul> </li> <li>• <b>Watch:</b> <ul style="list-style-type: none"> <li>○ Video 14.1: Fat metabolism- glycerol catabolism</li> </ul> </li> <li>• <b>Simulations and Exercise:</b> <ul style="list-style-type: none"> <li>○ None</li> </ul> </li> <li>• <b>Final Project:</b> <ul style="list-style-type: none"> <li>○ Post infographic by 11/30</li> <li>○ Review and evaluate <u>3</u> peer infographics</li> <li>○ Answer questions</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• OWL HW #14 (Monday, 11/30)</li> <li>• Post infographic by 11/30 on PackBack</li> <li>• Grade and answer questions for <u>3</u> student projects by 12/7</li> <li>• Study for Final Exam</li> </ul>
<p>15 (Ch 27.5-27.10) [11/30]</p>	<p><b>Specific Catabolic Pathways: Carbohydrate, Lipid, and Protein Metabolism</b></p> <ul style="list-style-type: none"> <li>• <b>Reading:</b> <ul style="list-style-type: none"> <li>○ Ch. 27</li> <li>○ Lecture Notes</li> </ul> </li> <li>• <b>Watch:</b> <ul style="list-style-type: none"> <li>○ Video 15.1: Fat metabolism- Carnitine shuttle and beta-oxidation of fatty acids</li> <li>○ Video 15.2: Urea cycle</li> </ul> </li> <li>• <b>Simulations and Exercise:</b> <ul style="list-style-type: none"> <li>○ Play the urea cycle game</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• OWL HW #15 (Monday, 12/7)</li> <li>• Post infographic by 11/30 on PackBack</li> <li>• Grade and answer questions for <u>3</u> student projects by 12/7</li> <li>• Study for Final Exam</li> </ul>
<p>16 [12/7]</p>	<p><b>Exam 4 (units 12-15) due Dec 9 by 5pm (AK time)</b></p> <ul style="list-style-type: none"> <li>○ Have a great holiday break!</li> </ul>	<p><b>Exam 4 is due this week</b></p>