Purpose of this course
This purpose of this course is to help you develop the foundational knowledge and skills to think about and study life at the molecular level.

Topics we'll cover
The content we'll cover includes the molecules that make life happen, what those molecules do, and some of the fundamental chemistry that life depends on. We'll also be focusing on skills like formulating and testing hypotheses, finding and digesting primary literature, collecting and analyzing data, communicating ideas, and thinking about the broader implications of science.

What we'll do
To develop these knowledge and skill sets in lecture there will be slides, in-class activities and discussions. On your own time there will also be reading and non-graded homework assignments. Your lab sections will also reinforce ideas from lecture.

How to be successful in this class:
- Know that biochemistry can be difficult (it was for me!) and that everyone can get better at it by working at it.
- Write questions that you have as you read and ask them in class, on canvas, or to a friend.
- Do homework questions with other people preferably in groups. Ask how others got to an answer.
- Come to class. Ask questions and engage in discussions.
- Ask me questions. Don't wait for class or office hours. Post questions on canvas or send me an email. I'm here to help!

Exams
We'll have two evening midterm exams and a final:
- Exam 1: Wed. Oct. 17th 7:00pm McKenzie 240C
- Exam 2: Wed. Nov. 7th 7:00pm McKenzie 240C
- Final: Mon. Dec. 3rd at 10:15 in McKenzie 229
I'll have an evening review session the evening before each exam. All exams are comprehensive for any material covered prior to the exam. Exams are closed book, but some information (equations etc.) will be provided as an exam appendix.

Class
Class period will consist of an interactive discussion of the material at hand. No clickers needed. Slides
and notes will be posted on the schedule in the "Slides" and "Notes" columns after each lecture.

Reading/Class Prep
The course schedule lists reading assignments associated with every lecture. This reading should be done prior to coming to lecture. Readings are selected from Essential Biochemistry or Machinery of Life.

Pre-Discussion Quiz
A two point quiz on the reading will be posted on canvas at 5pm the night before each lecture and will remain open until lecture starts. You get 1 point just for taking the quiz.

Homework
All homework for the term is posted on the course schedule. The homework is not turned in or graded, however, it is an integral part of the course. Some exam questions will be drawn directly from the homework sets. Due dates for each set are posted on the schedule so you can pace yourself. Answer keys for each each week will be posted on the "due date" for that homework. It is strongly recommended that you work the problems prior to looking at the key. These exercises are designed to help you learn/review the material, rather than simply answer a spew of random questions. You will be best served if you work through the questions in order, keeping their associated conceptual and skills goals in mind. Group work is encouraged. If you're struggling, working in a group will let you ask questions and learn interactively. If you already “get it,” explaining the answer to someone is a sure-fire way to solidify what you know.

Labs
The labs are designed to complement and extend the in-class discussion, homework, and reading. The labs will also begin to develop experimental and analytical skills for performing scientific research. Labs generally consist of a pre-lab (to be completed before coming to lab), a lab-quiz (covering the previous lab), and a lab-report (completed after a given lab and turned in at the next lab period).

Community
This class is governed by the UO community standards. Respect the dignity and essential worth of all individuals. Promote a culture of respect. Respect the privacy, property, and freedom of others. Reject bigotry, discrimination, violence, or intimidation of any kind. Practice personal and academic integrity and expect it from others.

Students with Disabilities
If you have a documented disability and anticipate needing accommodations in this course, please make arrangements to meet with Jeremy soon. Please bring a notification letter from the Accessible Education Center outlining your approved accommodations.

Cheating
TL;DR: Don’t do it.
You are expected to do your own work. Cheating, plagiarism and any other form of academic dishonesty will not be tolerated. Please refer to the University Of Oregon Student Conduct Code by which all students are expected to abide. Should you be found guilty of academic dishonesty, you will receive 0 points for the exam or assignment in question. A second infraction will result in an F and expulsion from the course.

Grading
There are five ways in which to earn points in the class. Grades will be assigned on the basis of the total number of points acquired over the course of the term.

- Exams (two midterms and the final) (60.0% of points)
- Labs (34.4% of points)
  - Pre-labs (3.2% of points)
  - Lab reports (18% of points)
  - Submitted quiz questions (0.8%)
  - Lab quizzes (12% of points)
  - Assessment (0.4%)
- Pre-discussion quizzes (5.6% of points)

Exams
Your exam component will be calculated using Method #1 or Method #2—whichever gives a higher score. The second method is designed to help in the event that you do poorly on one of the midterms by
dropping that exam and placing higher weight on the other midterm and final. We will automatically select the better score for you.

<table>
<thead>
<tr>
<th>Method #1</th>
<th>Method #2</th>
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<tbody>
<tr>
<td>Midterm #1</td>
<td>Best Midterm x 1.33</td>
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<tr>
<td>150</td>
<td>200</td>
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<tr>
<td>Midterm #2</td>
<td>Final x 1.33</td>
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<td>150</td>
<td>400</td>
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<tr>
<td>Final Exam</td>
<td>Total</td>
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<td>300</td>
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Non-exam Points

<table>
<thead>
<tr>
<th>Component</th>
<th>Number</th>
<th>Points Possible</th>
<th>Total Possible</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-labs</td>
<td>8</td>
<td>4</td>
<td>32</td>
</tr>
<tr>
<td>Lab Reports</td>
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<td>20</td>
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<tr>
<td>Quiz</td>
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<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Lab Quiz</td>
<td>7*</td>
<td>20</td>
<td>120*</td>
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<tr>
<td>Assessment</td>
<td>1</td>
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<td>4</td>
</tr>
<tr>
<td>Pre-discuss Quiz</td>
<td>28</td>
<td>2</td>
<td>56</td>
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</tbody>
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*Low quiz score will be dropped (6*20 = 120)

Re-grading
Exams will be returned to you during your lab period. If you wish to have an exam answer re-graded, you must write out why your answer merits a higher score, attach it to the exam, and submit both the explanation and the exam to the course instructors. Well thought-out arguments will be carefully considered, but other questions on the exam may be re-graded as well. To be considered for re-grading, your exam and explanation must be submitted by the deadline announced in class and posted on canvas.

Missed exams
No make-up exams will be given. If you miss an exam for a valid (usually medical) reason, you should provide written documentation of that reason, and your grade will be based on the other exams you have taken. In the event of a major flu outbreak, the kind of documentation required may change and we will communicate this to you.

Letter grades
Letter grades will be determined based on total points, not on individual exams and assignments.

Getting:
- >90% of the points (900) guarantees an A;
- >80% (800), B;
- >70% (700), C;
- and >60% (600), D

In the event that scores are skewed downward, the final scores will be curved with breaks between each bin determined by “jumps” in the grade data that separate groups of students. This curve is designed so that it can only help you. If the entire class receives >90%, every student would receive an A.

Late assignments
No assignments will be accepted late except for lab reports. On lab reports, the points will be docked 10% per day late.
BI 281H Biochemistry and Cell Physiology
Fall 2018 Lab Syllabus and Schedule, University of Oregon

Course Personnel
Lab Instructor: Dr. Laurel Pfeifer-Meister
lpfeife1@uoregon.edu
Lecture Instructor: Dr. Jeremy Anderson
jander13@uoregon.edu
GEs: Sarah Beyeler
sbeyeler@uoregon.edu
Jordan Munroe
jmunroe@uoregon.edu
Kona Orlandi
konao@uoregon.edu
BULAs: Rachael Allison
rallison@uoregon.edu
Elizabeth Bryan,
ebryan4@uoregon.edu
Anna Kulawiec
akulawie@uoregon.edu

Learning Outcomes
Upon successful completion of this course, you should:

- Understand the key molecular and cellular features shared by all organisms on earth, revealing how life can be understood in physical and chemical terms.
- Begin to develop intuition and analytical tools to think about life quantitatively and molecularly.
- Understand some common lab techniques used to study biochemistry.
- Apply quantitative reasoning and analysis to biological science problems.

Lab Format
Though the exercises in this manual are called “labs,” they involve not only measurements and analyses of biological materials, but models, computer simulations, computer-based problem analysis, and hypothetical data. In this way, some of the sessions will be “tutorials.” Lab handouts describe the exercises for each week, give some conceptual background relevant to the exercises, and pose questions pertaining to the problems being addressed. We expect that you will have read and have tried to understand the material in the lab handout when you arrive at your session each week. Short pre-lab homework assignments are designed to motivate you to read and think about the lab exercises for that day. Following a 20-minute quiz (see below) the laboratory will be introduced, and key concepts and practical issues will be stressed. Students will then perform the activities with assistance from the faculty and TAs. Generally, students work together in pairs, but collaborations involving larger groups sometimes occur.
How to succeed in this class

- Attend and participate actively in all labs.
- Ask questions and seek help when you need it (that’s what we are here for).
- Prior to coming to lab, read the lab handout in its entirety (as well as any other assigned reading). Don’t try to answer the pre-lab questions 5-minutes before class starts.
- As you proceed with the exercises, complete the written questions as you go. This is advantageous for two reasons: you’ll understand what you are doing, as you do it, and your lab report will be nearly complete when you finish the session. The idea is to avoid having to reconstruct the important concepts from a bunch of incomprehensible data the night before the lab report is due.
- Get together in small study groups regularly to go over key concepts (this will also help you with the midterms and final). Try to do this without referring to the lab, book or your notes. This will let you know where the gaps in your knowledge are. There is no better way to learn than teaching others.
- Don’t get bogged down in the details, but instead ask yourself what is the big picture and how can I apply these concepts.

Assignments, Grading Policy, and Academic Integrity

Lab exercises, most of which include a pre-lab assignment, a lab report, writing quiz questions, and a quiz based upon the exercises and concepts of the previous week will account for 34.4% of your overall BI281H grade; the remaining 65.6% comes from pre-lecture quizzes, midterms and the final exam. Pre-labs are worth 4 points (3.2% of overall grade) and are due at the beginning of your lab session. These will not be accepted late. Lab reports are worth 20 points each (18% of overall grade) and are usually due at the beginning of the lab session the following week. See the Lab schedule for those deadlines. Reports must be complete, legible, and written in your own words. Even though lab reports are graded and submitted individually, we expect and encourage you to cooperate with your partner and colleagues in preparing your reports. In addition, you should consult with your instructors during the lab session and at office hours if you have questions. 10% will be deducted each day an assignment is late, except in cases of approved emergencies. Each week particular groups of students (see schedule) will be asked to submit 2 Quiz questions to canvas twice over the course of the term (4 points each, 0.8% of grade) by 3:00 pm Friday. This purpose of these questions is to serve as a ‘testbank’ to help you study for the lab quiz the following week (some of these questions may even appear on the weekly quizzes). Each week I will give specific instructions on the format of the questions you should submit as well as which lab sections are required to submit. Lab quizzes are worth 20 points each and are graded on a continuous scale (12% of your grade). The lowest quiz score will be dropped. These will be open on Canvas after class on Monday and will be due by 9 am the next day (Tuesday). Once you begin your quiz you will have 30 minutes to complete it. You should not discuss the quiz questions with your fellow classmates. Finally, the first week of class I will also ask you to take an Assessment that will be worth 4 points for completeness but not correctness (0.4% of your grade). The purpose is to gauge the knowledge level of the class at the start of the term. I will not be able to associate individual student scores, but instead will be given a class average. Please answer these questions to the best of your ability without looking up answers. Point values (note this class is out of 1000 points) and due dates are listed in the Lab Schedule table for each assignment.

Crises happen. If you are having problems that are interfering with your ability to do the work in this class, please let me know promptly. I am willing to make arrangements when the need is real and when you have done your best to deal with the situation in a timely manner. If you must miss a lab session and cannot attend a different section for that week (valid reasons include verifiable medical emergencies, essential travel, or family emergencies), you may arrange to use data from another student in the class to complete the lab report on your own. Make this request in writing to me (lpfeife1@uoregon.edu) ahead of time.
Academic integrity and Diversity. We expect students to complete assignments and exams in a manner consistent with academic integrity. Students must produce original work and cite all relevant sources for ideas, quotations, etc. Academic dishonesty is a serious offense and will be treated according to the guidelines in the Student Conduct Code. Moreover, we expect students to adhere to the University’s commitment to freedom of thought and expression of all its members by encouraging open inquiry and respecting a diversity of opinions in this course. Please refer to the Student Conduct Code for more information on the University’s Academic Dishonesty Policy and Diversity Education: http://uodos.uoregon.edu/

Lab Schedule

Week 1 (9/25-27) The Molecular World
Due: Nothing.

Week 2 (10/2-4) Amino Acids
Due: Assessment online by 12 pm 10/1 (4 pts.)
Pre-lab questions in lab (4 pts.)
Lab Report 1 in lab (20 pts.)
NO quiz this week.
Tues/Thurs AM sections only; Quiz 2 questions submitted via Canvas by 3pm 10/5 (4 pts.)

Week 3 (10/9-11) Protein Structure
Due: Pre-lab questions (4 pts.)
Lab Report 2 (20 pts.)
Quiz on lab 2 (Canvas) by 9 am 10/9 (20 pts.)
Tues PM section; Quiz 3 questions submitted by 3pm 10/12 (4 pts.)

Week 4 (10/16-18) Enzyme Activity
Due: Pre-lab questions (4 pts.)
Lab Report 3 (20 pts.)
Quiz on lab 3 by 9 am 10/16 (20 pts.)
Wed PM section; Quiz 4 questions submitted by 3pm 10/19 (4 pts.)
Midterm 7 pm MCK 240C 10/17

Week 5 (10/23-25) Enzyme Kinetics
Due: Pre-lab questions (4 pts.)
Lab Report 4 (20 pts.)
Quiz on lab 4 by 9 am 10/23 (20 pts.)
Tues AM section; Quiz 5 questions submitted by 3pm 10/26 (4 pts.)

Week 6 (10/30-11/1) Cooperativity and Allostery
Due: Pre-lab questions (4 pts.)
Lab Report 5 (20 pts.)
Quiz on lab 5 by 9 am 10/30 (20 pts.)
Tues PM section; Quiz 6 questions submitted by 3pm 11/2 (4 pts.)

Week 7: (11/6-8) Intermediary Metabolism
Due: Pre-lab questions (4 pts.)
Lab Report 6 (20 pts.)
Quiz on lab 6 by 9 am 11/6 (20 pts.)
Wed PM section; Quiz 7 questions submitted by 3pm 11/9 (4 pts.)
Midterm 7 pm MCK 240C 11/7

Week 8 (11/13-15) Membrane Permeability
Due: Pre-lab questions (4 pts.)
Lab Report 7 (20 pts.)
Quiz on lab 7 by 9 am 11/13 (20 pts.)
Thurs AM section; Quiz 8 questions submitted by 3pm 11/16 (4 pts.)

Week 9 (11/20-22) No Lab
Lab Report 8 due in lecture 11/19 (20 pts.)
Quiz on lab 8 by 9 am 11/20 (Replace low score).

Week 10 (11/27-29) Yeast Respiration.
Due: Pre-lab questions (4 pts.)
Lab report 9 due in lecture 11/30 (20 pts.).

Week 11 Final Exam 10:15 Monday in McKenzie 229 12/3

Office Hours

All office hours will be held in Klamath 21. Please also feel free to email us for an appointment.

Monday 2:00-3:00 pm; Jeremy Anderson
5:00-6:00 pm; Anna Kulawiec

Tuesday 12:00-1:00 pm; Kona Orlandi
4:00-5:00 pm; Sarah Beyeler

Wednesday 11:00 am-12:00 pm; Rachael Allison

Thursday 1:00-2:00 pm; Laurel Pfeifer-Meister

Friday 11:00 am-12:00 pm; Jordan Munroe