

Bi214 General Biology IV: Mechanisms (Summer 2021)

This course is about how stuff works: the mechanisms by which biological processes, practiced by all cellular life, operate. Through a combination of lectures, problem solving, and laboratory exercises we will explore amino acid chemistry, the structures and functions of proteins, the genetics of biochemical pathways, the structure and regulation of prokaryotic and eukaryotic genes, and the genetics and molecular biology underlying development. Bi211 and Bi212, or the equivalent, and a full year of General Chemistry are prerequisites.

Contact Info

Instructors

BTUs/BULAs

Dr. Connolly (Lecture)
amyc@uoregon.edu

Starla Chambrise
starlac@uoregon.edu

Heather Perillat
hperill4@uoregon.edu

Emily Gustin
(Lab Assistant)
egustin@uoregon.edu

Rose Hoang
roseh@uoregon.edu

Filadelfia Tadjibaeva
fbt@uoregon.edu

Henry Hochstatter
hhochsta@uoregon.edu

Class Modules

You will have modules that correspond to each day of your summer class (Monday-Thursday), with the exception of Labor Day and exam days which are on the second and fourth Fridays. Please see schedule on the last page. Modules will consist of the learning objectives, video lectures, practice problems, suggested problems sets, suggested reading assignments, and a for-credit quiz. **You are allowed to work with your peers on quizzes, but you should still understand why you are choosing the answer you are so as to be prepared for exam day.**

Labs

The labs that you would normally have completed in person have been converted to virtual activities you will walk through in Canvas. These activities are structured in a quiz on Canvas so that you can answer questions as you go. The quizzes have due dates, but no time limits. So you may open them whenever you wish and begin working on them right away. We will have some special office hour times for you to ask questions just about the labs. You are allowed to work with your peers on labs, but your work should still be your own.

Exams

There will be two exams in this class **Friday August 27 from 10-12:00** and **Friday September 10 from 10:00-12:00**. You must make sure you are present for these times. These times are reserved for us by the Registrar's office, and were known at the time of enrollment. See policy below for missed exams and scheduling conflicts.

Academic Integrity for Exams:

Due to these atypical circumstances, you will be taking your quizzes and exams on Canvas unproctored. Therefore you are being asked to follow an honor system for the exams and quizzes. Please take this seriously and know that an incredible level of trust is being given to you to take the exam/quiz from home unmonitored.

We ask that you

- do your own work; work alone and do not receive help from others

- do not share information (screenshots, verbatim words, answers, types of questions) to your peers or other individuals.
- do not receive information from your peers about the quiz.

You may

- use whatever resources that are at your disposal APART from other people! This means, you may use your notes, your textbook, Canvas material, google searches. But be warned, the exams are timed so you will want to make sure you are prepared and are not searching for answers. Additionally, the exams require critical thinking, so you will again not want to depend upon these resources. The best way to prepare for the exam is to practice problems ahead of time.

Policy on Missed Exams and Scheduling Conflicts:

- The exam times of **Friday August 27 from 10-12:00** and **Friday September 10 from 10:00-12:00** were reserved for us by the Registrar’s office last Spring, and were known at the time of enrollment. Please make every effort to make this work. No make up exams except in rare instances.
- **Academic Conflict:** Because the exam times were recorded with Registrar’s, if you have a conflict with another class, I ask that you first ask the instructor of that class for permission to reschedule. Registrar’s office holds this spot only for us, which is why I ask for priority for this class. If for some reason you run into scheduling difficulty after contacting the other instructor, then you may email me, Dr. Connolly, and we can work something out.
- **Case of Emergency:** I understand that situations comes up and people run into time conflicts, but with a large class I really need your help in showing up to the exam (on Canvas) at the time noted both on DuckWeb and in the syllabus here. This is why no make up exams will be offered unless you have an emergency arise. If you find yourself in this situation you should contact me ASAP before the exam.
- **Night time Time Zone:** If the time of these exams would occur at night or early morning for where you are at (9 pm -8 am), you may email me to request a reschedule.
- **Other category:** All other requests are subject to the following policy: Exam 1: No make up exam will be given, instead student will need to be graded by Method 2 (see below). For the final, either a 0 will be given or a flat penalty of 15%.

Lecture and Lab Office Hours

| Lecture Office Hours | Instructor |
|-----------------------------|-------------------|
| Monday: 8:00-9:00 | Henry |
| Monday: 12:00-1:00 | Heather |
| Monday 4:00-5:00 | Starla |
| Tuesday: 10:00-11:00 | Dr. Connolly |
| Tuesday 1:00-2:00 | Rose |
| Wednesday: 10:00-11:00 | Dr. Connolly |
| Wednesday: 1:00-12:00 | Rose |
| Wednesday 4:00-5:00 | Starla |
| Thursday: 12:00-1:00 | Henry |
| Thursday 1:00-2:00 | Rose |
| Thursday 5:00-6:00 | Heather |
| Friday: 8:00-9:00 | Heather |
| Friday: 11:00-12:00 | Filadelfia |

| Lab Office Hours Come to the office hour having already worked the lab. This is not a lab, but a question and answer session. | BULA |
|---|-----------------------|
| Lab 1: Thursday August 19 at 11:00 am | Filadelfia |
| Lab 1: Thursday August 19 at 4:00 pm | Rose Starla |
| Lab 2: Tuesday August 24 at 11:00 am | Filadelfia Heather |
| Lab 2: Tuesday August 24 at 4:00 pm | Henry Heather |
| Lab 3: Thursday August 26 at 11:00 am | Filadelfia Heather |
| Lab 3: Thursday August 26 at 4:00 pm | Henry Heather |
| Lab 4: Thursday Sept 2 at 11:00 am | Filadelfia |
| Lab 4: Thursday Sept 2 at 4:00 pm | Henry Starla |
| Lab 5: Thursday Sept 9 at 11:00 am | Filadelfia |
| Lab 5: Thursday Sept 9 at 4:00 pm | Henry Starla |

| KING Set Up with Emily |
|--------------------------------|
| Thursday August 19 at 11:00 am |
| Monday August 23 at 11:00 am |

Communication Guidelines to Help Streamline Getting You Help

This is a large class, so we need some organization around how students should seek help.

Content Questions: If you have questions about module quizzes, or problem sets, labs, and content in general, please do the following in the following order.

1. Come to office hours. Lecture office hours for lecture content and lab office hours for lab content.
2. Use the discussion board to ask a question. (The BTUs will be monitoring it frequently)
3. Email a BTU whose office hours you've been attending and have gotten to know
4. Email Dr. Connolly

While you are always welcome to contact me (Dr. Connolly) with content questions, I ask you please follow the above rules. It not only will be helpful for me, your question will probably be answered faster! Besides we have some amazing teaching assistants, many of whom are veteran teachers for this class and can help you out!

Finally, I will also communicate with you through our Canvas site. Announcements can be automatically forwarded to your UO email, and can even reach you by text. Check and adjust your settings under Account > Notifications.

Grading Questions:

1. **Module quiz** or **lab assignment** grading questions and errors should be sent to Dr. Connolly within one week.
2. Questions about **exam grades** should be sent directly to Dr. Connolly. Requests for regrades on problems that required hand grading must occur with in one week of receiving the grade.

Grades

Grading Breakdown

| Lecture Content | Method 1 | Method 2 |
|--|----------|----------|
| 16 Modules (one a day except exam days) with lowest two dropped. | 20% | 20% |
| Exam 1 | 30% | Dropped |
| Final Exam | 35% | 65% |
| Lab Assignments (lowest one dropped) | 15% | 15% |

Canvas will be set up to follow Method 1 grading, but at the end of the term I will calculate everyone's grade using both methods, and select the numerical score that is higher to make a grade determination. These two methods are in place, so that if you don't do as well on Exam 1 you have a chance to recover at the final.

Grading Scale

| A+ | A | A- | B+ | B | B- | C+ | C | C- | D | F |
|---------------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------------|
| 100 and above | 94-99 | 90-93 | 87-89 | 84-86 | 80-83 | 77-79 | 74-76 | 70-73 | 60- 69 | 59 and below |

Notes on Assigning Grades:

- The above grading scale will be used to determine your grades. I may draw any one of these cut offs lower than what's outlined above. I will never draw the cut offs higher than what's above.
- The exact cut offs for grades that are on the cusp (93.1-93.9) will vary by year. It depends upon where there are natural breaks in the grade line up. These cut offs won't be made public.
- A + grades are special and are rewarded in cases of outstanding performance. Like the first bullet point mentions, this cut off could be lower than stated above, but this will depend upon the particulars of the class and is up to instructor discretion.
- **At the end of the term do not ask for your grade to be bumped or for extra assignments or extra credit.** I endeavor to make the class fair for everyone, and cannot grant these kinds of requests.

Philosophy on Grading Structure:

- Module quizzes and lab assignments are good places for you to earn a good portion of the points. These are places where you can come and talk to instructors in office hours to make sure you are doing well and understand what you are doing prior to submission. These assignments typically have a very high average. Make every effort to grab these points.
- Exams on the other hand, are obviously going to be harder. That is why we have the module quizzes and lab assignments available, to help buffer exam scores.
- Exams are an important tool for instructors to gauge how well a student understands the material because 1) you must work them on your own and 2) you must show that you can grapple with the material in a timely manner that uses deep thinking.
- After the class has taken an exam, I take the time to evaluate the exam as a whole. I will look through and see if there was a/were problem/s that a number of people missed, and see if we can award some kind of partial or full credit there. If an average of at least 70% on the exam is not achieved by the class as a whole, the exam will be curved to at least 70%. Hopefully, you'll all work together and achieve scores as a class higher than that!

Grading Policies:

Module Quizzes: Assignments submitted any time after 11:59 PM of the day its due will **receive a flat 15% deduction** off the total points. Late policies are strict because answers to Canvas quizzes are made available at 12:00 AM the following day. There will be no module extensions. As much as I would like to help you out as situations arise, we are not offering extensions because a) the answers become available that night and b) with a

large class, these requests become hard to manage. So don't worry too much if you're having a bad day, because 1) you can turn it in late for a **15% deduction** and 2) your **lowest two scores are dropped**. Additionally, you have a **week to get the late quiz in before it becomes a 0**.

Exams: Requests to examine grading errors or to regrade quizzes and reports must be sent to your me **within one week** of your receiving the graded assignment for consideration, and must be accompanied by a written explanation.

Lab Assignments: All lab assignments will be due 11:59 PM the day they are due. Lab reports turn in late will be **also receive a flat 15% deduction. After one week, there will be no late lab reports accepted.**

Accommodations for Students with Disabilities:

If you have a documented disability and anticipate needing accommodations in this course, please provide both your GE and myself with a notification letter from the Accessible Education Center stating your approved accommodations. Note: Summer 2021, you will not have GEs, so just provide the documentation to Dr. Connolly. If you have flexibility on attendance or due dates, it is imperative that you reach out to me early on to discuss an arrangement with how you are going to handle missed days or late assignments.

Required Supplies

Scientific Calculator

There is no book this term. Instead we are providing links to open access (Free!) textbooks and other material where it's available in the modules to support your understanding. You can find these in the modules as "Supplemental reading." So if you want to read/learn about the same information from a different source, I'd encourage you to go check these pages out.

Class Conduct and Academic Honesty

With this class being conducted remotely, the time is more important than ever that you hold yourself to high ethical standards. All work submitted in this course must be your own. Instances of suspected cheating or plagiarism on exams, quizzes, and reports will be referred to the Office of Student Conduct and Community Standards. Your instructors take these cases seriously. Academic misconduct could result in a failing mark for quiz, exam, report or for the course. For definitions of violations, a description of the hearing process, and a summary of penalties for findings of academic misconduct, go to <http://policies.uoregon.edu/vol-3-administration-student-affairs/ch-1-conduct/student-conduct-code>

Resources for Remote Learning

Below you can find a variety of resources that may help you navigate the remote set up we will be in this Spring.

<https://remote.uoregon.edu/student>

<https://service.uoregon.edu/TDCClient/2030/Portal/Home/>

Mental Health Resources

This past year has presented a lot of new challenges. If you need someone to talk to or are struggling, there are mental health resources available to you as a UO student. Please follow the links here.

<https://counseling.uoregon.edu>

<https://counseling.uoregon.edu/mental-health-resources>

The topics below are open to change, but the exam times and lab and module due dates will stay constant unless some unforeseen event arises.

Class Schedule

| Date | Topic |
|-------------------------|--|
| Week 1 | |
| M Aug 16 | Module 1-1: <ul style="list-style-type: none"> • Introduction • Amino Acid Structure, Polarity and Solubility |
| T Aug 17 | Module 1-2: <ul style="list-style-type: none"> • Acid-Base Chemistry |
| W Aug 18 | Module 1-3: <ul style="list-style-type: none"> • Acid-Base Properties of Diprotic Amino Acids |
| H Aug 19 | Module 1-4: <ul style="list-style-type: none"> • Acid-Base Properties of Triprotic Amino Acids • Polypeptide Properties, Primary Structure |
| | Lab 1: Amino Acid Lab Due Thursday August 19 at 11:59 PM |
| Week 2 | |
| M Aug 23 | Module 2-1: <ul style="list-style-type: none"> • Secondary Structure (Alpha Helices and Beta-Pleated Sheets) |
| T Aug 24 | Module 2-2: <ul style="list-style-type: none"> • Tertiary and Quaternary Structure |
| | Lab 2: Protein Structure Lab Due Tuesday Aug 24 at 11:59 PM |
| W Aug 25 | Module 2-3: <ul style="list-style-type: none"> • Hemoglobin and Myoglobin: structure/function, binding curve and cooperativity; • Hemoglobin cooperativity, properties of heme |
| H Aug 26 | Module 2-4: <ul style="list-style-type: none"> • Hemoglobin Allostery REVIEW SESSION : Time TBD |
| | Lab 3: Hemoglobin Lab Due Thursday Aug 26 at 11:59 PM |
| FRIDAY Aug 27 | EXAM DAY 10:00-12:00 Modules 1-1 through 2-4 and Lab 1- Lab 3 |
| Week 3 | |
| M Aug 30 | Module 3-1: <ul style="list-style-type: none"> • DNA Structure, Synthesis • Mutations |
| T Aug 31 | Module 3-2: <ul style="list-style-type: none"> • Metabolic Pathways • Conditional Mutants |
| W Sept 1 | Module 3-3: <ul style="list-style-type: none"> • Complementation Tests |

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| H Sept 2 | Module 3-3: Complementation Tests II |
| | Lab 4: Complementation Lab Due Thursday September 2 at 11:59 PM |
| Week 4 | |
| M Sept 6 | Labor Day |
| T Sept 7 | Module 4-1: <ul style="list-style-type: none"> • Transcription in Prokaryotes |
| W Sept 8 | Module 4-2: <ul style="list-style-type: none"> • Lac Operon: Negative and Positive Regulation |
| H Sept 9 | Module 4-3: <ul style="list-style-type: none"> • Lac Operon: Positive Regulation REVIEW SESSION : Time TBD |
| | Lab 5: Lac Operon Lab Due Thursday September 9 at 11:59 PM |
| FRIDAY Sept 10 | EXAMDAY 10:00-12:00 Comprehensive: Module 1-1- Module 4-3 and Lab 1- Lab 5 |