Bi214 General Biology IV: Mechanisms: Spring 2022

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	GEs	BTUs/BULAs	
Dr. Connolly (Lecture) amyc@uoregon.edu	Hengameh Habibi Soufi hengameh@uoregon.edu	Henry Hochstatter hhochsta@uoregon.edu	Dana Zaidan dzaidan@uoregon.edu
Katie Pérez (Lab Preparator) kperez@uoregon.edu	Rachel Hopton rhopton@uoregon.edu	Tiana Pham tianap@uoregon.edu	
	Peter Newstein pnewstei@uoregon.edu	Ciarra Thomas ciarrat@uoregon.edu	
	Clara Rehmann crehmann@uoregon.edu	Tyler Ramos tramos@uoregon.edu	
	Tim Wheeler twheele3@uoregon.edu	Peter Weisel pweisel@uoregon.edu	

Lecture: (Remote- Follow Class Modules)

The lecture portion will be held asychronously, meaning there is no required time for you to be present in class or on zoom. You will have modules that correspond to a Mon/Wed class, unless otherwise noted. **Module quizzes are due at 11:59 PM on these Mondays and Wednesday, unless otherwise noted. Modules for the following week will be released each week by Tuesday at 11:59 PM.** 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 (In-person Wednesday-Friday in Klamath 13)

We consider the labs to be an integral part of the course. We have designed active learning experiences that will broaden your understanding of the mechanisms you will be hearing about in lecture. There will be labs dealing with the properties of amino acids, protein and DNA structure/function relationships, gene regulation, genetic complementation, and cooperativity using Hemoglobin as a model (see schedule). Most labs cannot be made up because they involve special material or equipment.

Labs begin week two. A pdf of the lab handout for the week will be posted to Canvas at least one week in advance. Among the pages are a series of preparation questions meant to prime you for the upcoming lab. These questions will be mirrored in an associated Canvas quiz that will be due **Wednesday at noon**. Beginning week 3 (after you've completed your first lab), these **pre-lab assignments** will also contain some follow-up questions from the previous week's lab to puzzle through. You are welcome to ask for help during our office hours and work with your peers on this assignment. As we are providing the pdf's (and not requiring you to buy a lab manual at the bookstore), you must come to lab with a printed version of this pdf to fill out during our time together (printers are available to use with your Duck ID in all residence halls and the UO libraries). These **lab reports** will usually be turned in at the end of each lab. Associated with your lab grade is an attendance, courtesy, and active **participation** component. If you

attend lab regularly (and on time), actively participate, and clean-up after yourself you should expect full credit. *Note: There is one lab that will require you to return to the lab two times during week six, see schedule.*

Lab Times	GE(s)	BULA
Wednesday 9:00-11:50 PM	Tim	Peter W
Wednesday 12:00-2:50 PM	Tim	TBD
Wednesday 3:00-5:50 PM	Peter	Peter W
Thursday 9:00-11:50 AM	Hengameh, Clara	
Thursday 12:00-2:50 PM	Hengameh	Tiana
Thursday 3:00-5:50 PM	Clara	Dana
Friday 9:00-11:50 PM	Rachel	Ciara
Friday 12:00-2:50 PM	Rachel	Tyler
Friday 3:00-5:50 PM	Peter	Henry

Exams

Time and Place:

There will be three exams in this class (two midterms and a final). They will be proctored by UO Exam Testing Center. Exams will be taken on campus, in **Room 19 at the Knight Library.**

Exam 1 Window: Monday Apr 25- Thursday Apr 28
Exam 2 Window: Monday May 23- Thursday May 26
Final Exam Window: Monday June 6- Thursday June 9

Registration Procedure with UO Testing Services:

You will need to register for a time to take the exam at UO Testing Services, an in-person facility that proctors exams for online and remote classes. Please register here:
https://online.uoregon.edu/examcenter

A **reservation is required** to take the exam. Plan ahead, as **slots are limited and often fill** during the busiest times of the term. Slots are often not available if you are looking for one within the next day or two. You can sign up for a slot up to 2 weeks in advance.

Exam Requirements with UO Testing Services:

1. Schedule an appointment (see above)

2. Bring your photo ID, DuckID credentials, and DUO Authentication Device

   You may not begin an exam without proper ID. Exams are delivered through Canvas, so you must know your login credentials (i.e. your UOregon email and password) and be able to acquire a DUO Authentication code. Exams cannot be administered without DuckID credentials and DUO Authentication.

3. Arrive 10 minutes before your exam appointment to Knight Library, Room 19.

Exams may not begin later than 10 minutes after your scheduled appointment. If you arrive more than 10 minutes after your exam's scheduled start time, you may forfeit your appointment and need to create a new one.

Off Campus Testing:
UO Testing Center can sometimes accomodate off-campus testing if you are out of town and not in the Eugene/Springfield area. If an emergency arises that takes you out of town, you are welcome to arrange off-campus testing with UO Testing Service (see contact below). Sometimes the outside service charges a fee. Please work with them (see contact below) if something comes up.

Questions?
For questions regarding registration, location, exam enviornment, etc, please direct them here:

UO Testing Center
Email: proctor@uoregon.edu
Office Location: Room 31 Knight Library
Testing Location: Room 19 of Knight Library
UO Online Call Center Phone: 541-346-1900
Online Exam Manager Phone: 541-346-0324

Exam Policies:

- Exam do-not-discuss Policy:
  Since the exams are not being held synchronously, there will be a period of time where some students will have taken the exam before others. Out of fairness for the students who take the exam early, we will have a "no-discuss policy" during that window of time. We ask that all of your questions about the exam are asked prior to the exam window opening. Please respect this policy in office hours and do not ask us questions about material covered on the exam. We also ask that you uphold a code of honesty, if you are an earlier exam taker, and not share information about the test with those who haven't taken it yet.

- Materials:
  Exams will be closed book, closed notes. Because the exam dates are flexible (subject to the requirement that they meet the deadline), it is not possible for you to obtain a copy of an exam after completing the exam until everyone has completed it. Final exams will not be made available. You will need a scientific calculator for at least exam 1 and the final.

- Time Conflict:
  Hopefully since there's an exam window, as opposed to an exact time, students will be able to find a time that works with their schedule and other academic obligations. But if some unforeseen event comes up, you should first try to rearrange your exam time within the exam window through UO Testing Center (see contact above).

- Make up exams after the Exam Window:
  Academic conflicts and cases of emergency may be considered. But otherwise a missed exam will simply be the exam that is dropped (see grading scheme where lowest exam score is dropped).

Office Hours/Help Sessions

Office Hours	Instructor/TA	Location
Monday 10:00-11:00	Dr. Connolly	140 Allen
Monday 2:00-3:00	Ciarra Thomas	B009 Science Library
Monday 4:00-5:00	Peter Newstein	Klamath 13
Monday 5:00-6:00	Tyler Ramos	B009 Science Library
Tuesday 9:00-10:00	Peter Weisel	B009 Science Library
Tuesday 11:00-12:00	Rachel Hopton	Klamath 13
Tuesday 12:00-1:00	Tim Wheeler	Klamath 13
Tuesday 1:00-2:30	Henry Hochstatter	B009 Science Library
Wednesday 10:00-11:00	Dr. Connolly	140 Allen
Wednesday 11:00-12:30 pm	Henry Hochstatter	B009 Science Library
Thursday 11:00-11:50	Tiana Pham	B009 Science Library
Thursday 12:00-1:00	Tyler Ramos	B009 Science Library
Thursday 3:30-4:30	Hengameh Habibi Soufi	258 Struab
Friday 10:00-10:50	Tiana Pham	B009 Science Library
Friday 2:00-3:00	Clara Rehmann	TBD

Communication Guidelines to Help Streamline Getting You Help

This is a very large class, so we need some guidelines for how you can get help.

I. Lecture Content:

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

1. Come to office hours or use slack to ask a question. (The teaching team will be monitoring it frequently). Slack Link for Spring 2022 class here: https://join.slack.com/t/bi214spring2022/shared_invite/zt-14xsuqz0n-yA6Bs0EMG2oJOeclDHm5iw
2. Email your GE
3. Email Dr. Connolly

II. Lab Content:

For lab questions specifically, please do the following in the following order

1. Questions about lab should first be resolved in lab during your required lab time.
2. After lab is over, any remaining questions can be asked on the slack, office hours (see lab office hours on the schedule) or should be directed to either your GE or your BULA.
3. Email 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 BTUs and GEs, many of whom are veteran teachers for this class and can help you out!

Finally, we 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.

III. Grading Questions

A. **Module quiz and exam** grading questions, errors, and requests should be sent to Dr. Connolly, within one week.
B. Questions about **lab report grades** and **pre/post-lab quizzes** should be directed to your GE. Requests for regrades must occur within one week of receiving the grade.

Grading Breakdown

Content	Percentage
Module Quizzes (one a day except exam weeks) with lowest two dropped.	15%
Exam 1, Exam 2 and Final (lowest dropped)	50%
Lab Attendance, Courtesy, & Participation (lowest dropped)	5%
Pre-Lab & Post-Lab (lowest score dropped)	15%
Lab Reports (lowest score dropped)	15%

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. we may draw any one of these cut offs lower than what's outlined above. We will never draw the cut offs higher that what's above.
- The exact cut offs for grades that are on the cusp (i.e. 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. Besides the fact that these assignments are valuable to your education, they serve as important grade boosters since exams are typically harder.
- 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, Dr. Connolly will take the time to evaluate the exam as a whole and look through and see if there were any problems 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, Pre/Post- Lab Quizzes and Lab Reports: Canvas quizzes 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 1) answers to

module quizzes are made available at 12:00 AM the following day, 2) answers for lab quizzes will be discussed in the labs and 3) for the labs it's essential that you have read and thought about the lab prior to coming. Unless otherwise noted, lab reports are turned in the following week at the start of lab. Late labs reports will also receive at flat 15% dedeuction. You have **one week to turn in a late assignment before it becomes a 0**.

Extensions: As much as I would like to help you out as situations arise, we are not offering extensions on assignments (unless a serious emergency arises) because a) the answers become available that night and b) with such a large class size, these requests become hard to manage. So don't worry too much if you're having a bad day and accrue a late penalty, because 1) you can turn it in late for a **15% deduction** and 2) your **lowest score (lab quiz and lab reports) or two lowest scores (module quizzes) are dropped**.

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

Lab Attendance: Labs are not easily made up because a great deal of prep goes into setting them up and taking them down each week. If you have to miss a lab for some reason, the grading structure is set up so you can drop the lowest grade for each component of the lab (attendance, lab quiz, report).

Accommodations for students with disabilities:

If you have a documented disability and anticipate needing accommodations in this course, please provide Dr. Connolly and your GE with a notification letter from the Accessible Education Center stating your approved accommodations. If you have flexibility on attendance or due dates, it is imperative that you reach out to your GE 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.
- We are providing pdf's of each lab exercise. You must print these out prior to coming to lab.

Class Conduct and Academic Honesty

With this lecture portion of the 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

Resoures 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 Fall.

https://remote.uoregon.edu/student
https://service.uoregon.edu/TDClient/2030/Portal/Home/

Mental Health Resoures

These past two years have 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

Academic Disruption

In the event of a campus emergency that disrupts academic activities, course requirements, deadlines, and grading percentages are subject to change. Information about changes in this course will be communicated as soon as possible by email, and on Canvas. If we are not able to meet face-to-face for labs, students should immediately log onto Canvas and read any announcements and/or access alternative assignments. Students are also expected to continue coursework as outlined in this syllabus or other instructions on Canvas.

Class Schedule

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.

Week	Dates	Topic
1 Amino Acid Introduction and Acid Base Chemistry	**MODULE QUIZ DUE** Thurs Mar 31 at 11:59PM (Normally due Mondays)	Module 1-1: • Introduction • Amino Acid Structure, Polarity and Solubility
	MODULE QUIZ DUE Due Fri Apr 1 at 11:59PM (Normally due Wednesdays)	Module 1-2: • Acid-Base Chemistry
	Mar 30- Apr 1	**No Lab**
2 Amino Acid and Protein Chemistry	**MODULE QUIZ DUE** Mon Apr 4 at 11:59PM	Module 2-1 • Acid-Base Properties of Diprotic Amino Acids • Acid-Base Properties of Triprotic Amino Acids
	WATCH before you take lab quiz due on Tues **MODULE QUIZ DUE** Wed Apr 6 at 11:59 PM	Module 2-1: • Polypeptide Properties
	LABS Apr 6-8 **PRE/POST-LAB QUIZ DUE** Tues Apr 5 at 11:59 PM **REPORT DUE:** In lab Week 3	**Lab 1: Amino Acids**
3 Protein Structure	**MODULE QUIZ DUE** Mon Apr 11 at 11:59PM	Module 3-1: • Primary Structure • Secondary Structure (Alpha Helices and Beta-Pleated Sheets)
	WATCH before you take lab quiz due on Tues **MODULE QUIZ DUE** Wed Apr 13 at 11:59 PM	Module 4-1: • Secondary Structure Continued • Tertiary and Quaternary Structure
	LABS Apr 13-15 **PRE/POST-LAB QUIZ DUE** Tues Apr 12 at 11:59 PM	**Lab 2 Protein Structure**

4 Hemoglobin	**MODULE QUIZ DUE** Mon Apr 18 at 11:59PM	Module 4-1: • Hemoglobin and Myoglobin: structure/function, binding curve and cooperativity; • Hemoglobin cooperativity, properties of heme
	WATCH before you take lab quiz due on Tues **MODULE QUIZ DUE** Wed Apr 20 at 11:59 PM	Module 4-2: • Hemoglobin Allostery
	LABS Apr 20-22 **PRE/POST-LAB QUIZ DUE** Tues Apr 19 at 11:59 PM	**Lab 3 Hemoglobin Cooperativity & Allostery**
	TBD	**Review Session**
5 DNA Structure	Mon Apr 25	No Module Due
	EXAM 1 WINDOW Apr-25-28	**Exam 1:** Content: Module 1-1 to Module 4-2; Labs 1-3 *Bring Calculator
	MODULE QUIZ DUE Fri Apr 27 at 11:59 PM	Module 5-1: • DNA Structure, Synthesis, Mutations
	Apr 27-29	**No Lab, but submit Lab 3 reports in your box before your normal lab time**
6 DNA Structure cont and Metabolic Pathways and Complementation Tests	**MODULE QUIZ DUE** Mon May 2 at 11:59PM	Module 6-1: • Metabolic Pathways • Conditional Mutants
	MODULE QUIZ DUE Wed May 4 at 11:59PM	Module 6-2: • Complementation Tests
	LABS May 4-6 **PRE/POST-LAB QUIZ DUE** Tues May 3 at 11:59 PM	**Lab 4 DNA structure**
7 Complementation Tests Continued Transcription in Prokaryotes	**MODULE QUIZ DUE** Mon May 9 at 11:59PM	Module 7-1: • Complementation Tests
	MODULE QUIZ DUE Wed May 11 at 11:59PM	Module 7-2: • Transcription in Prokaryotes
	LABS May 11-13 **PRE/POST-LAB QUIZ DUE** Tues May 10 at 11:59 PM	**Lab 5 Complementations** *During this lab you will be required to **return to the lab twice.*** Lab is open between 8:00 am -5:00 pm M-F **Wednesday's Lab**: First return: Thursday; Second return: Friday **Thursday's Lab:** First return: Friday; Second return: Monday **Friday's Lab:** First return: Monday; Second return: Tuesday
8 Lac Operon	**MODULE QUIZ DUE** Mon May 16 at 11:59PM	Module 8-1: Lac Operon: Negative

	MODULE QUIZ DUE Wed May 18 at 11:59PM	Module 8-2: • Lac Operon: Positive
	LABS May 18-20 **PRE/POST-LAB QUIZ DUE** Tues May 17 at 11:59 PM	**Lab 6: Gene Regulation, Focus on Lac Operon**
	TBD	**Review Session**
9 Lac Operon Asymmetry in Yeast and Development	May 25	• No module, study for exam
	EXAM 2 WINDOW	Content: Module 5-1 through Module 8-2 Labs 4, 5 and 6
	MODULE QUIZ DUE Fri May 29 at 11:59PM	Module 9-1: • Asymmetry in Yeast and Development Part I
	May 27-29	**No lab, but submit Lab 5 reports**
10 Asymmetry in Yeast and Development Continued	May 30	**Memorial Day**
	MODULE QUIZ DUE Wed June 1 at 11:59PM	Module 10-1: Asymmetry in Yeast and Development Part II
	LABS: June 1-3 **PRE/POST-LAB QUIZ DUE** Tues May 31 at 11:59 PM	**Lab 7: Lac Operon Lab**
	TBD	**Review Session**
Finals Week	**FINAL EXAM WINDOW** June 6-9	**Final Exam** Content: Comprehensive *Bring Calculator