

Biochemistry

Chemistry 334, Block 3, 2019

9-11 am and 12:30-3 pm, Russell Science Center 423/427

Instructors: Catherine Volle, Ph.D.
cvolle@cornellcollege.edu
Russell Science Center 306
Office hours by appointment:
<https://cbvolle.youcanbook.me/>
Availability: 8:00 am to 10:00 pm

Diane Gingerich Feil
dgingerichfeil@cornellcollege.edu
Russell Science Center 403

Course Description

In this course, we will integrate topics from your previous biology and chemistry courses to better understand how life works on a molecular scale. We will investigate the structure and function of the four main classes of biomolecules to determine their role in biological systems. We will explore topics through active learning, so completing all of the assigned reading and coming prepared to class is essential for success. We will also undertake an independent laboratory project centered around enzyme kinetics, and you will be responsible for designing, proposing, executing, and evaluating your experiments.

Course Goals

Students who complete this course successfully will be able to:

- Apply fundamental chemical principles such as pH, reaction kinetics, and thermodynamics to biological macromolecules in order to better understand how biological systems function at a molecular level (Knowledge)
- Design independent experiments, develop assays, and evaluate the resulting data using the scientific method (Inquiry)
- Communicate scientific research in a clear and concise manner (Communication)

Course Support of Educational Priorities and Outcomes of the College

This course supports the following Educational Priorities and Outcomes of Cornell College in the following ways:

- Knowledge: Students will construct their own understanding of biochemical concepts using POGIL. Students will be assessed on their ability to apply concepts to new situations presented as homework problems.
- Inquiry: Students will design and carry out independent experiments. Students will be evaluated on their ability to generate and interpret data.
- Communication: Students will present scientific information in a variety of forms, both written and oral, formally and informally. Students will be evaluated on the logic and clarity of their presentations.

Required Texts, Materials, or Equipment

- Biochemistry, Campbell and Farrell, 7th edition or above and Foundations in Biochemistry, 4th edition. Additional readings and/or activities will be posted on the class Moodle page as PDFs.
- Please make sure you have a lab notebook by day 2. I do not care what kind of notebook you use, but you must have a notebook specifically for lab and you must bring it every day.

Daily Work/Homework

My previous students will tell you that it is a mistake to think my courses are easy. My courses are fair, and there is a big difference between the two. My general philosophy is that if you do all the work required of you, you will get a decent grade. The best way to succeed in this class is to work at it every day, rather than trying to cram everything in at once. Please remember that I am a resource, but one that has autonomy. Do not wait to come see me, because I might not be available, and then where will you be?

Major Assignments (see handouts for more details)

Homework: Homework will come from the Foundations in Biochemistry workbook. Exercises that have a homework component are marked with an asterisk on the schedule. Homework is due the day after it is assigned.

Specific Aims: A specific aims section is an overview of the research you plan to undertake. It is short but covers the main points of background, hypothesis, and research design.

Lab report: Once you have finished your experiments, you will be asked to write a formal lab report, similar to a journal article.

Show and tell: Show and Tell is an informal session in which you share your research progress with the rest of the class. There is no need for a formal presentation, but you must make handouts so everyone can follow along.

Class Participation

This is an upper level class. I'm not going to take attendance. I expect you to show up with any pre-class work completed and to participate fully in class discussions and laboratory work.

Course Grading

Statement of Grading Process and Criteria:

Grades will be determined using answer keys and rubrics. Rubrics are included for each project and answer keys will be available once grading is complete. I do not grade on a curve, nor do I give extra credit. If you are worried about your grade, please come speak with me, so we can figure out what's going on. Also, don't trust the overall grade you have on Moodle. Moodle is a convenient place to see your scores, but it thinks you have a zero on any assignment that isn't due yet.

Explanation of Grading System:

- Homework 525 points (35 each)
- Pre-class activities 85 points (5 each)
- Show and Tell 75 points (25 each)
- Specific Aims 100 points
- Lab report
 - Introduction rough draft 30 points
 - Methods rough draft 35 points
 - Final draft 150 points

Letter grades:

A	94%	Excellent
A-	90%	Mostly excellent
B+	87%	Better than good
B	84%	Good
B-	80%	Mostly good
C+	77%	Better than OK
C	74%	OK
C-	70%	Mostly OK
D+	67%	Partially unacceptable
D	64%	Mostly unacceptable
D-	60%	Completely unacceptable
F	<60%	Did not complete the work

Course Policies and Information for Students

1. ATTENDANCE POLICY

Students are expected to attend all lectures and labs. If you have a legitimate reason for missing class or a deadline, please send an e-mail to me before class begins. For each unexcused absence (no notification before morning or afternoon class begins), 10 points will be deducted from your final point total.

2. PENALTIES FOR LATE WORK and REQUESTS FOR EXTENSIONS

Because you know about every assignment from the start of class, I do not accept late work. However, I do understand that we all have lives outside of class and sometimes extensions are necessary. If you need an extension, please come see me before the work is due so we can do our best to make alternative arrangements.

3. POLICIES ON MISSED EXAMS, MAKE-UP EXAMS

If you know ahead of time that you will miss an exam, you must make every effort to take the exam early. If you unexpectedly miss an exam, you must make it up within three days of the exam date. This is in fairness to your classmates, as they can't receive their exams back until everyone has completed the exam.

4. TECHNOLOGY POLICIES:

You are welcome to use your laptop/phones in the classroom as long as they are being used for class work only. If there is an issue, you will be asked to leave your laptop/phone outside the classroom. Please do not wear headphones in class, and make sure all technology is set to silent.

5. DROP POLICY

You may drop the course at any time in the first three days. In order to drop the class on the fifteenth day you must have attended all classes, completed all assignments, and, based on my analysis of your work, put the appropriate effort into learning the material.

6. DISABILITIES AND ACCOMODATIONS POLICY: Cornell College makes reasonable accommodations for persons with disabilities. Students should notify the Office of Academic Support and Advising and their course instructor of any disability related accommodations within the first three days of the term for which the accommodations are required, due to the fast pace of the block format. For more information on the documentation required to establish the need for accommodations and the process of requesting the accommodations, see <http://www.cornellcollege.edu/academic-support-and-advising/disabilities/index.shtml>.

7. ACADEMIC HONESTY POLICY: Cornell College expects all members of the Cornell community to act with academic integrity. An important aspect of academic integrity is respecting the work of others. A student is expected to explicitly acknowledge ideas, claims, observations, or data of others, unless generally known. When a piece of work is submitted for credit, a student is asserting that the submission is her or his work unless there is a citation of a specific source. If there is no appropriate acknowledgment of sources, whether intended or not, this may constitute a violation of the College's requirement for honesty in academic work and may be treated as a case of academic dishonesty. The procedures regarding how the College deals with cases of academic dishonesty appear in The Catalogue, under the heading "Academic Honesty."

The instructor reserves the right to change the policies, topics, or topic order at her discretion after informing the class.