



**Biochemistry 551:
Biochemical Methods
Spring 2021**

Course Credits: 4

Course Designations and Attributes:

Breadth – Physical Sci counts toward the Natural Sci req

Level – Advanced

L&S credit – Counts as Liberal Arts and Science credit in L&S

Course Description: Lab and student seminar. Introduction to modern biochemical laboratory techniques and current biochemical literature. Students will present a seminar based upon scientific literature that parallels experiments they will perform in lab. For advanced undergraduates and non-biochemistry graduate students.

Requisites: Biochem 501 or 507 or concurrent enrollment

Credit Hour Definition: The credit standard for this course is met by an expectation of a total of 180 hours of student engagement with the courses learning activities, which include regularly scheduled instructor:student meeting times (seminars and lectures), regularly scheduled labs, reading, writing, and other student work as described below.

Instructional Modality: Remote

Meeting times and locations:

M 11-11:50: seminar; some sections will meet synchronously, others asynchronously

Lecture instruction is asynchronous

Lab section 301: T 9:00-12:30

Lab section 302: T 12:30-4:00

Lab section 303: W 9:00-12:30

Lab section 304: W 12:30-4:00

All synchronous meetings will occur over BBCollaborate Ultra via the course Canvas page

Regular and Substantive Student-Instructor Interaction

Regular and substantive student-instructor interaction, as defined by the US Department of Education (Within [34 C.F.R. §600.2](#)), is always a requirement of UW-Madison for-credit learning activities. In this course, this interaction includes:

- Personalized feedback on quizzes, exams, and lab assignments
- Asynchronous lecture material Q&A
- Weekly video announcements regarding course content and progress
- Regularly scheduled live office hours

Instructors:

Dr. Lynne Prost, Associate Faculty Associate

2139A Biochemistry, 420 Henry Mall, lprost@wisc.edu

Office hours (will be conducted remotely via BBCU): Mon 10-11am and Thurs 1-2pm

Dr. Vatsan Raman
441B Biochemistry Labs, 433 Babcock Dr, sraman4@wisc.edu
Office hours (will be conducted remotely via BBCU): Tues 10-11am

Teaching Assistants:

Nina Bonde (Sect 302): jocic@wisc.edu
Rachel Cueny (Sect 304): rcueny@wisc.edu
Christine Hustmyer (Sect 304): hustmyer@wisc.edu
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Seminar Instructors:

Aryel Clarke: alclarke2@wisc.edu
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Miguel Osorio Garcia: osoriogarcia@wisc.edu
Sophie Sdao: sdao@wisc.edu
Gretchen Seim: gseim@wisc.edu

Course Learning Outcomes:

- By the end of Biochemistry 551, students should be able to:
1. Explain the theory of several fundamental biochemical techniques
 2. Form hypotheses based on biochemical principles
 3. Design and perform experiments to collect sound scientific data
 4. Critically analyze one's own data as well as data from other sources
 5. Communicate scientific findings in both oral and written form
 6. Value the collaborative nature of biochemistry

Grading:

Points	Grade
> 900	A
850–900	AB
800–849	B
750–799	BC
700–749	C
600–699	D

< 599	F
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Assignments:

Assignment	Points per assignment	Total Points
Exams (2)	100	200
Content quizzes (9)	10	90
Oral lab report		100
Final lab report		150
Mini lab reports (10)	10	100
Pre-lab quizzes (10)	5	50
Lab participation		100
Online surveys (3)		10
Literature seminar		150
Literature seminar participation		50
Total		1000

Course Website: <https://canvas.wisc.edu/courses/228932>

Learning Management System & Digital Instructional Tools

This course will utilize Canvas and Blackboard Collaborate Ultra. Students are encouraged to become familiar with these tools prior to the start of the semester. Support can be found here: <https://it.wisc.edu/services/canvas/>
<https://it.wisc.edu/services/web-conferencing/>

Required Course Materials:

Carolina Distance Learning 551 at-home lab kit
 Software: PyMOL (available through DoIT) and Prism (available as a free trial)

Campus Spaces for Virtual Learning & Testing:

Dedicated on-campus spaces with high-speed internet are available for students to [reserve](#) for any exam/quiz taken during the semester. Computers can also be requested.

Exams, Quizzes, Papers & Other Major Graded Work

- Exams: Two exams will be given via Canvas. The exams will be 60 minutes and will be available between 9 am and 6 pm on the indicated days (see schedule below or refer to Canvas). Proctoring software will not be used. Students must work individually, but are

allowed to use resources (notes, websites, etc.). Students needing alternative exam arrangements, or who experience technical difficulties during an exam, should reach out to Dr. Prost as soon as possible. Note that there is no final exam; the summary period is instead used as a due date for the final lab report (see below).

- Online quizzes, surveys, and lab assignments: See Canvas for due dates and assignment details. Proctoring software will *not* be used. If a student is unable to complete a quiz/assignment by the due date, please reach out to Dr. Prost, who will provide instructions for completing the quiz/assignment for partial credit.
- Mini lab reports: are due at the start of each lab period. Refer to Canvas for details. Students may have a 24-hour extension, but there is a 50% point penalty. Mini lab reports are never accepted after 24 hours past the deadline.
- Seminar assignments: Student presentations and discussions will take place either synchronously or asynchronously; refer to section syllabus for details.
- Oral lab report: must be presented at the assigned date and time via Blackboard Collaborate. In case of emergency, contact Dr. Prost immediately to discuss options.
- Final lab report: is due to Canvas on Sun 5/2 at 12:25 (course summary period time). *Late final lab reports will not be accepted under any circumstances.*
- Lab attendance: is required via Blackboard Collaborate. If you must miss lab, please inform Dr. Prost as soon as possible, and she will work with you. If you are in a different time zone and have trouble making the assigned lab time, please reach out to Dr. Prost to discuss options.

Privacy of Student Information & Digital Tools: Teaching & Learning Analytics & Proctoring Statement

The privacy and security of faculty, staff and students' personal information is a top priority for UW-Madison. The university carefully reviews and vets all campus-supported digital tools used to support teaching and learning, to help support success through [learning analytics](#), and to enable proctoring capabilities. UW-Madison takes necessary steps to ensure that the providers of such tools prioritize proper handling of sensitive data in alignment with FERPA, industry standards and best practices.

Under the Family Educational Rights and Privacy Act (FERPA which protects the privacy of student education records), student consent is not required for the university to share with school officials those student education records necessary for carrying out those university functions in which they have legitimate educational interest. 34 CFR 99.31(a)(1)(i)(B). FERPA specifically allows universities to designate vendors such as digital tool providers as school officials, and accordingly to share with them personally identifiable information from student education records if they perform appropriate services for the university and are subject to all applicable requirements governing the use, disclosure and protection of student data.

Privacy of Student Records & the Use of Audio Recorded Lectures

See information about [privacy of student records and the usage of audio-recorded lectures](#).

Lecture materials and recordings for this course are protected intellectual property at UW-Madison. Students in this course may use the materials and recordings for their personal use related to participation in this class. Students may also take notes solely for their personal use. If a lecture is not already recorded, you are not authorized to record my lectures without my permission unless you are considered by the university to be a qualified student with a disability requiring accommodation. [Regent Policy Document 4-1] Students may not copy or have lecture materials and recordings outside of class, including posting on internet sites or selling to

commercial entities. Students are also prohibited from providing or selling their personal notes to anyone else or being paid for taking notes by any person or commercial firm without the instructor's express written permission. Unauthorized use of these copyrighted lecture materials and recordings constitutes copyright infringement and may be addressed under the university's policies, UWS Chapters 14 and 17, governing student academic and non-academic misconduct.

Campus Resources

- [University Health Services](#)
- [Undergraduate Academic Advising and Career Services](#)
- [Office of the Registrar](#)
- [Office of Student Financial Aid](#)
- [Dean of Students Office](#)

Course Evaluations

Students will be provided with an opportunity to evaluate this course and your learning experience. Student participation is an integral component of this course, and your confidential feedback is important. Please watch for an email at the end of the semester containing instructions for accessing the digital course evaluation.

Students' Rules, [Rights & Responsibilities](#)

During the global COVID-19 pandemic, we must prioritize our collective health and safety to keep ourselves, our campus, and our community safe. As a university community, we must work together to prevent the spread of the virus and to promote the collective health and welfare of our campus and surrounding community.

UW-Madison [Badger Pledge](#)

Quarantine or Isolation Due to COVID-19

Student should continually monitor themselves for COVID-19 symptoms and get [tested](#) for the virus if they have symptoms or have been in close contact with someone with COVID-19. Student should reach out to instructors as soon as possible if they become ill or need to isolate or quarantine, in order to make alternate plans for how to proceed with the course. Students are strongly encouraged to communicate with their instructor concerning their illness and the anticipated extent of their absence from the course (either in-person or remote). The instructor will work with the student to provide alternative ways to complete the course work.

Diversity & Inclusion Statement

[Diversity](#) is a source of strength, creativity, and innovation for UW-Madison. We value the contributions of each person and respect the profound ways their identity, culture, background, experience, status, abilities, and opinion enrich the university community. We commit ourselves to the pursuit of excellence in teaching, research, outreach, and diversity as inextricably linked goals. The University of Wisconsin-Madison fulfills its public mission by creating a welcoming and inclusive community for people from every background – people who as students, faculty, and staff serve Wisconsin and the world.

Academic Integrity Statement

By virtue of enrollment, each student agrees to uphold the high academic standards of the University of Wisconsin-Madison; academic misconduct is behavior that negatively impacts the

integrity of the institution. Cheating, fabrication, plagiarism, unauthorized collaboration, and helping others commit these previously listed acts are examples of misconduct which may result in disciplinary action. Examples of disciplinary action include, but is not limited to, failure on the assignment/course, written reprimand, disciplinary probation, suspension, or expulsion. For more information, refer to <https://conduct.students.wisc.edu/academic-misconduct/student-resources/>

Below are a number of specific expectations for maintaining academic integrity in Biochem 551:

- Take online quizzes and exams individually and do not share correct or incorrect answers with classmates.
- Do not plagiarize published work. You must use proper citations in your written lab reports *and oral presentations* (i.e., do not copy text from a paper and paste into bullet points in a powerpoint).
- Do not use others' work as your own. Critical discussions of ideas and data are encouraged; however, your reports and other assignments must be completed individually (or, where specified, with a partner).

Please note that 551 uses the Turnitin plagiarism service built in to Canvas. All of your submitted assignments will automatically be compared to a repository of 551 student work as well as website content, journals and periodicals. Turnitin generates an “originality report,” which you will have access to, that assists staff in identifying cases of potential plagiarism.

Accommodations for Students with Disabilities Statement

The University of Wisconsin-Madison supports the right of all enrolled students to a full and equal educational opportunity. The Americans with Disabilities Act (ADA), Wisconsin State Statute (36.12), and UW-Madison policy (Faculty Document 1071) require that students with disabilities be reasonably accommodated in instruction and campus life. Reasonable accommodations for students with disabilities is a shared faculty and student responsibility. Students are expected to inform faculty [me] of their need for instructional accommodations by the end of the third week of the semester, or as soon as possible after a disability has been incurred or recognized. Faculty [I], will work either directly with the student [you] or in coordination with the McBurney Center to identify and provide reasonable instructional accommodations. Disability information, including instructional accommodations as part of a student's educational record, is confidential and protected under FERPA. (See: [McBurney Disability Resource Center](#))

More information on the McBurney Center can be found here:

Web: [How to Become a McBurney Client](#)

Phone: (608) 263-2741

Email: mcburney@studentlife.wisc.edu

Text: (608) 225-7956

Fax: (608) 265-2998

NOTE: Students with disabilities who need accommodation are encouraged to contact Dr. Prost as soon as possible. While recommendations from the McBurney Center are helpful, students are not required to be registered with McBurney to request accommodations.

Academic Calendar & Religious Observances

See: <https://secfac.wisc.edu/academic-calendar/#religious-observances>

Course Schedule:

Week (Dates)	Seminar (Mondays)	Lecture	Lab
1 (Jan 25-29)	Online assignment	Lecture 1: Protein structure and function	No lab this week!
2 (Feb 1-5)	Instructor seminar	Lecture 2: PCR/Cloning 1 Lecture 3: PCR/Cloning 2	Lab 1: Structural analysis using PyMOL 1
3 (Feb 8-12)	Student seminar 1	Lecture 4: PCR/Cloning 3 Lecture 5: PCR/Cloning 4	Lab 2: HCAII: PCR and gel electrophoresis
4 (Feb 15-19)	Student seminar 2	Lecture 6: Electrophoresis Lecture 7: CRISPR/Cas9	Lab 3: Lab-at-home: Biotechnology methods
5 (Feb 22-26)	Student seminar 3	Lecture 8: Overexpression 1 Lecture 9: Overexpression 2	Lab 4: HCAII: Gibson Assembly cloning
6 (Mar 1-5)	Student seminar 4	Exam review (Th) & Exam 1 (F)	Lab 5: HCAII: Screening for positive clones
7 (Mar 8-12)	Student seminar 5	Lecture 10: Protein purification Lecture 11: UV/Vis	Lab 6: Structural analysis using PyMOL 2
8 (Mar 15-19)	Student seminar 6	Lecture 12: Fluorescence Lecture 13: Microscopy	Lab 7: HCAII: Expression and purification
9 (Mar 22-26)	Student seminar 7	Lecture 14: Data analysis Lecture 15: Protein folding	Lab 8: HCAII: SDS-PAGE
10 (Mar 29-Apr 1) *No class Apr 2	Student seminar 8	<i>No lecture material this week</i>	Lab 9: Protein stability (lab-at-home and HCAII)
11 (Apr 5-9)	Student seminar 9	Lecture 16: Enzyme kinetics Lecture 17: Ligand binding	Lab 10: Enzyme kinetics (lab-at-home and HCAII)
12 (Apr 12-16)	Student seminar 10	Exam Review (Th) & Exam 2 (F)	Lab 11: Ligand binding
13 (Apr 19-23)	Student seminar 11	No lectures	Work period
14 (Apr 26-30)	Student seminar 12 (if needed)	No lectures	Oral reports
15 (May 3-7)	No seminar	No lectures	Final lab report due Sun 5/2 at 12:25 pm