



School of Natural Sciences and Mathematics
Division of Chemistry and Biochemistry

BC / CH 360L: Biochemistry I Lab

Credits: 1 Term: Fall 2026

Section 01 M 2:30 PM – 5:20 PM Henry Hall L7

Section 02 F 2:30 PM – 5:20 PM Henry Hall L7

Instructor Information

Instructor: Seongjin Kim, Ph.D.

Email seongjin.kim@chaminade.edu

Office Location: Henry Hall 123C

Office Hours: Online/In Person TBD

Communication

The best way to contact me is by email. When contacting me, please use your CUH (chaminade.edu) email account and indicate which class you are inquiring about. I will reply to emails within 24 hours during the week, and within 48 hours on weekends and holidays. Feel free to contact me at any time if you have any questions or concerns.

Course Description & Materials

Catalog Course Description

Students gain experience in the isolation, purification, identification, and quantification of biologically important molecules. Spectroscopic, chromatographic, as well as chemical modification techniques are used in identifying peptides and proteins. Enzyme kinetic studies are carried out for quantification purposes.

Cross-listed with BI 360L and BC 360L

Course Prerequisites

Prerequisites: BC 324L or CH 324L, EN 102, COM 101

Corequisite: BC 360

Course Overview

In this practical and hands-on laboratory experience, students will be introduced to the fundamental principles and models of isolation, purification, identification, and quantification of biologically important molecules. The experiments were chosen to improve experimental skills covering spectroscopic and chromatographic methods for the identification of peptides, proteins, and studying

enzyme reaction kinetics. In addition, students will apply their skills and knowledge acquired from both General and Organic Chemistry lecture & laboratory courses. This will be achieved through a combination of guided exercises, independent investigations, and collaborative group work. Proper laboratory safety and etiquette will also be taught. This course is intended for chemistry, biochemistry, and other students on scientific or professional career paths.

Time Allocation

A semester credit hour represents university-level academic work that is awarded upon successful completion of coursework and achievement of the intended learning outcomes. At Chaminade University, each credit hour requires a minimum of 45 hours of total student engagement, regardless of the number of credits, course duration, instructional modality, or degree level.

For a standard 15-week semester, one credit hour generally consists of approximately one hour of classroom or direct faculty instruction and at least two hours of out-of-class student work per week. Therefore, one credit hour represents approximately:

15 hours of classroom or direct faculty instruction, and
30 hours of out-of-class student work,
for a minimum total of 45 hours of student engagement.

The required 45 hours represents a minimum. Additional engagement hours may be required when necessary to achieve the course's intended learning outcomes.

Safety Requirements

Students are required to practice safety precautions while performing experiments, including wearing safety glasses, closed-toe full-coverage shoes, and lab coats. Long pants are recommended. In addition, it is recommended you tie it back away from your face if you have long hair. For your safety, food and drink including chewing gum or candy are not allowed in the lab.

Required Materials

- No laboratory manual is required. Experimental procedures will be posted on Canvas prior to the scheduled lab meetings. It is your responsibility to read this material prior to class and be prepared for upcoming experiments.
- Students are required to wear fully enclosed shoes, laboratory coats and safety glasses in lab at all times. Long pants are also highly recommended underneath laboratory coats.
- A laboratory notebook (composition book) and scientific calculator are required and should be brought to each class. You will not be permitted to use your cell phone as a calculator.
- A mobile device (phone, tablet, or laptop) is required for quizzes.
- A tablet or laptop are recommended to be brought to class during each period to use spreadsheet functions

Canvas

- Section 01 <https://chaminade.instructure.com/courses/46494>
- Section 02 <https://chaminade.instructure.com/courses/46495>

Technical Assistance for Canvas Users:

- Search for help on specific topics or get tips in [Canvas Students](#)
- [Live chat with Canvas Support for students](#)

- Canvas Support Hotline for students: +1-833-209-6111
- Watch this [video to get you started](#)
- [Online tutorials](#): click on "Students" role to access tutorials
- Contact the Chaminade IT Helpdesk for technical issues: helpdesk@chaminade.edu or call (808) 735-4855

Learning Outcomes

Program Learning Outcomes (PLOs)

Chemistry Mission Statement

Chemistry has justifiably been labeled 'The Central Science'. Training in this discipline is therefore beneficial for all citizens of the modern world. All materials in the universe are made up of chemicals; a knowledge of chemistry is indeed a knowledge of ourselves.

The mission of this program is to:

- Promote molecular literacy (i.e., awareness of the importance of physical, chemical, and biological changes on the atomic and molecular scale)
- Provide hands-on laboratory training using modern chemical techniques and instrumentation
- Engage students in an undergraduate research program
- Enable students to integrate knowledge of the physical world

Program Learning Outcomes in Chemistry

Upon completion of the undergraduate program in Chemistry, students will be able to:

- Apply the scientific method as it is used in organic chemistry, inorganic chemistry, analytical chemistry, physical chemistry, and molecular sciences
- Recognize and explain chemical theory as it applies to the physical world
- Visualize, evaluate, validate, and interpret results of chemical analyses as part of an integral and quality education
- Solve problems using analytical reasoning, professional resources, professional conduct, and ethical behavior
- Communicate chemical information effectively in oral and written formats

Course Learning Outcomes (CLOs)

Upon successful completion of this course students will be able to:

1. Explain the chemical principles underlying biological systems.
2. Describe the structures and properties of amino acids, proteins, carbohydrates, lipids, and nucleic acids.
3. Explain how protein structure determines biological function.
4. Apply enzyme kinetics to biochemical reactions.
5. Explain the thermodynamic principles governing metabolism.
6. Analyze major metabolic pathways.
7. Interpret biochemical data.
8. Solve quantitative biochemical problems.

Course Learning Outcomes	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5
1. Understand the distinction between qualitative and quantitative chemical analysis.	x		x	x	
2. Interpret experimental results and draw reasonable conclusions. Identify sources of error in chemical experiments.	x	x	x	x	
3. Understand the importance of performing accurate and precise quantitative measurements. Keep legible and complete experimental records.	x	x	x	x	x
4. Collaborate with peers in obtaining and interpreting data.			x	x	x

Marianist Values

This class represents one component of your education at Chaminade University of Honolulu. An education in the Marianist Tradition is marked by five principles and you should take every opportunity possible to reflect upon the role of these characteristics in your education and development:

1. Education for formation in faith.
2. Provide an integral, quality education.
3. Educate in family spirit.
4. Educate for service, justice and peace, and integrity of creation.
5. Educate for adaptation and change.

Native Hawaiian Values

Education is an integral value in both Marianist and Native Hawaiian culture. Both recognize the transformative effect of a well-rounded, value-centered education on society, particularly in seeking justice for the marginalized, the forgotten, and the oppressed, always with an eye toward God (Ke Akua). This is reflected in the 'Ōlelo No'ēau (Hawaiian proverbs) and Marianist core beliefs:

1. Educate for Formation in Faith (Mana) E ola au i ke akua ('Ōlelo No'ēau 364) May I live by God.
2. Provide an Integral, Quality Education (Na'auao) Lawe i ka ma'alea a kū'ono'ono ('Ōlelo No'ēau 1957) Acquire skill and make it deep.
3. Educate in Family Spirit ('Ohana) 'Ike aku, 'ike mai, kōkua aku kōkua mai; pela iho la ka nohana 'ohana ('Ōlelo No'ēau 1200) Recognize others, be recognized, help others, be helped; such is a family relationship.
4. Educate for Service, Justice and Peace (Aloha) Ka lama kū o ka no'ēau ('Ōlelo No'ēau 1430) Education is the standing torch of wisdom.
5. Educate for Adaptation and Change (Aina) 'A'ohe pau ka 'ike i ka hālau ho'okahi ('Ōlelo No'ēau 203) All knowledge is not taught in the same school

Course Activities

Quizzes (30% of total grade)

You may have quizzes at the beginning of labs from topics related to the previous laboratory experiment. Students who arrive late will not be allowed to take the quiz and no makeup quiz will be available; however, students will be allowed to drop their lowest quiz grade.

Lab Notebooks (20% of total grade)

The lab notebook is where all notes, raw data and calculations for experiments will be documented as well as who participated in the experiment and when the experiment occurred. Lab notebooks must be bound, written in blue or black ink, and have pages numbered (you may number the pages manually). Mistakes happen and are expected; however, they still need to be readable, thus mistakes are only to be crossed out with a single line and NO correction tape/white out should be used. Lab notebooks should not be rewritten to make it look prettier. Scanned or photographed notebooks will be submitted at the beginning of next lab meeting.

Each entry for a LAB experiment should include:

- Title
- Name
- Date experiment performed
- Purpose
- Procedure Notes / Data Collected (actual data recorded from instruments)
- Calculations
- Results

Lab Reports (30% of total grade)

The lab reports will be evaluated for completion and accuracy of the information required. They should be brief and concise, and contain the following:

- Title
- Name
- Date experiment performed
- Abstract (short paragraph, should be less than about 150 words)
- Introduction (Summarize important **background information** needed by the reader to understand your experiment)
- Procedure Notes / Data Collected (actual data recorded from instruments)
- Calculations (show your work for any calculations)
- Results/Conclusion (Any relevant chemical equations / Sources of error and statistical treatment of data)

Final Exam

There is no final exam for this laboratory course.

Participation (20% of total grade)

You will receive points for participation in this class. These may include class attendance, in-class work, and/or other possible assignments.

Extra Credit

There is NO extra credit for BC/CH 360L.

Course Policies

Attendance

The following attendance policy is from the 2026-2027 Academic Catalog. Students are expected to attend regularly all courses for which they are registered. Student should notify their instructors when illness or other extenuating circumstances prevents them from attending class and make arrangements to complete missed assignments. Notification may be done by emailing the instructor's Chaminade email address, calling the instructor's campus extension, or by leaving a message with the instructor's division office. It is the instructor's prerogative to modify deadlines of course requirements accordingly. Any student who stops attending a course without officially withdrawing may receive a failing grade.

Unexcused absences equivalent to more than a week of classes may lead to a grade reduction for the course. Any unexcused absence of two consecutive weeks or more may result in being withdrawn from the course by the instructor, although the instructor is not required to withdraw students in that scenario. Repeated absences put students at risk of failing grades.

Students with disabilities who have obtained accommodations from the Chaminade University of Honolulu ADA Coordinator may be considered for an exception when the accommodation does not materially alter the attainment of the learning outcomes.

Federal regulations require continued attendance for continuing payment of financial aid. When illness or personal reasons necessitate continued absence, the student should communicate first with the instructor to review the options. Anyone who stops attending a course without official withdrawal may receive a failing grade or be withdrawn by the instructor at the instructor's discretion.

Late Work

All overdue assignment not completed or anticipated to be late must have approval from the instructor along with a valid excuse and documentation when applicable.

Changes to the Syllabus

While the provisions of this syllabus are as accurate and complete as possible, your instructor reserves the right to change any provision herein at any time. Every effort will be made to keep you advised of such changes, and information about such changes will be available from your instructor.

Grades of Incomplete

Students and instructors may negotiate an incomplete grade when there are specific justifying circumstances. This grade is appropriate only if extraordinary conditions beyond the control of the student have led to an inability to complete course requirements. When submitting a grade, the “I” will be accompanied by the alternative grade that will automatically be assigned after 30 days. These include IB, IC, ID, and IF. If only an “I” is submitted the default grade is F. The completion of the work, evaluation, and reporting of the final grade is due within 30 days after the end of the semester or term. This limit may not be extended.

Final Grades

Final grades are submitted to [Self-Service](#). Letter grades are given in all courses except those conducted on a credit/no credit basis. Grades are calculated from the student’s quizzes, class participation, exams, and the final examination. Final letter grades are interpreted as follows with the tentative percentage cutoffs:

Grade	Percentage	
A	90 – 100 %	A Outstanding scholarship and an unusual degree of intellectual initiative
B	80 – 89 %	B Superior work done in a consistent and intellectual manner
C	70 – 79 %	C Average grade indicating a competent grasp of subject matter
D	60 – 69 %	D Inferior work of the lowest passing grade, not satisfactory for fulfillment of prerequisite course work
F	Below 60 %	F Failed to grasp the minimum subject matter; no credit given

Cell Phones, Tablets, and Laptops

Music Devices and Cellular Phones: Unless specifically permitted by your instructor, use of music devices and cell phones is prohibited during all Natural Science and Mathematics classes, as it is discourteous and may lead to suspicion of academic misconduct. Students unable to comply will be asked to leave class.

Out of consideration for your classmates, please set your cell phone to silent mode during class. Students are encouraged to bring laptops or tablets to class as the instructor will assign online activities and readings that will require the use of a laptop or tablet. Laptops and tablets should not be misused, such as checking distracting websites. Use your best judgment and respect your classmates and instructor.

Important Information

Academic Honesty

Academic honesty is an essential aspect of all learning, scholarship, and research. It is one of the values regarded most highly by academic communities throughout the world. Violations of the principle of academic honesty are extremely serious and will not be tolerated.

Students are responsible for promoting academic honesty at Chaminade by not participating in any act of dishonesty and by reporting any incidence of academic dishonesty to an instructor or to a University official. Academic dishonesty may include theft of records or examinations, alteration of grades, and plagiarism, in addition to more obvious dishonesty.

Questions of academic dishonesty in a particular class are first reviewed by the instructor, who must make a report with recommendations to the Dean of the Academic Division. Punishment for academic dishonesty will be determined by the instructor and the Dean of Academic Division and may include an "F" grade for the work in question, an "F" grade for the course, suspension, or dismissal from the University.

For the most up to date information, please refer to the [Academic Honesty Policy](#) on the Chaminade University Catalog website.

Student Conduct

Campus life is a unique situation requiring the full cooperation of each individual. For many, Chaminade is not only a school, but a home and a place of work as well. That makes it a community environment in which the actions of one student may directly affect other students. Therefore, each person must exercise a high degree of responsibility. Any community must have standards of conduct and rules by which it operates. At Chaminade, these standards are outlined so as to reflect both the Catholic, Marianist values of the institution and to honor and respect students as responsible adults. All alleged violations of the community standards within the campus residence halls are adjudicated by the Housing & Residence Life professional staff; alleged violations of the community standards within the greater campus community are adjudicated by the Director of Student Conduct & Title IX. The university has an established student conduct process, outlined in the Student Handbook, and operated within the guidelines set to honor both students' rights and campus values.

Students should conduct themselves in a manner that reflects the ideals of the University. This includes knowing and respecting the intent of rules, regulations, and/or policies presented in the Student Handbook, and realizing that students are subject to the University's jurisdiction from the time of their admission until their enrollment has been formally terminated. Please refer to the Student Handbook for more details (available on the Chaminade website under Student Life).

For further information, please refer to the [Student Conduct](#) section on the Chaminade University Catalog Website.

Title IX and Nondiscrimination Statement

Chaminade University of Honolulu is committed to providing a learning, working and living environment that promotes the dignity of all people, inclusivity and mutual respect and is free of all forms of sex discrimination and gender-based violence, including sexual assault, sexual harassment, gender-based harassment, domestic violence, dating violence, and stalking. As a member of the University faculty, I am required to immediately report any incident of sex discrimination or gender-based violence to the campus Title IX Coordinator.

Nondiscrimination Policy & Notice of Nondiscrimination

Chaminade University of Honolulu does not discriminate on the basis of sex and prohibits sex discrimination in any education program or activity that it operates, as required by Title IX and its regulations, including in admission and employment. Inquiries about Title IX may be referred to the University's Title IX Coordinator, the U.S. Department of Education's Office for Civil Rights, or both and contact information may be found at the [Chaminade University Title IX Office Contact Information and Confidential Resources website](#). On-campus Confidential Resources may also be found here at [CAMPUS CONFIDENTIAL RESOURCES](#).

The University's Nondiscrimination Policy and Grievance Procedures can be located on the University webpage at: <https://chaminade.edu/compliance/title-ix-nondiscrimination-policies-procedures/>.

To report information about conduct that may constitute sex discrimination or make a complaint of sex discrimination under Title IX, please refer to the [Campus Incident Report form](#). Chaminade University of Honolulu prohibits sex discrimination in any education program or activity that it operates. The NOTICE of NONDISCRIMINATION can be found here: [Notice of Nondiscrimination](#).

CUH Alert Emergency Notification

To get the latest emergency communication from Chaminade University, students' cell numbers will be connected to Chaminade's emergency notification text system. When you log in to the Chaminade portal, you will be asked to provide some emergency contact information. If you provide a cellphone number, you will receive a text from our emergency notification system asking you to confirm your number. You must respond to that message to complete your registration and get emergency notifications on your phone.

Assessment for Student Work

With the goal of continuing to improve the quality of educational services offered to students, Chaminade University conducts assessments of student achievement of course, program, and institutional learning outcomes. Student work is used anonymously as the basis of these assessments, and the work you do in this course may be used in these assessment efforts.

Student with Disabilities Statement

Chaminade University of Honolulu offers accommodations for all actively enrolled students with disabilities in compliance with Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act (ADA) of 1990, and the ADA Amendments Act (2008).

Students are responsible for contacting Kokua Ike: Center for Student Learning to schedule an appointment. Verification of their disability will be requested through appropriate documentation and once received it will take up to approximately 2–3 weeks to review them. Appropriate paperwork will be completed by the student before notification will be sent out to their instructors. Accommodation paperwork will not be automatically sent out to instructors each semester, as the student is responsible to notify Kokua Ike via email at ada@chaminade.edu each semester if changes or notifications are needed.

Kōkua 'Ike: Tutoring & Learning Services

Chaminade is proud to offer free, one-on-one tutoring and writing assistance to all students. Tutoring and writing help is available on campus at Kōkua 'Ike: Center for Student Learning in a variety of subjects (including, but are not limited to biology, chemistry, math, nursing, English, etc.) from trained Peer and Professional Tutors. Please check [Kōkua 'Ike's](#) website for the latest times, list of drop-in hours, and information on scheduling an appointment. Free online tutoring is also available via TutorMe. Tutor Me can be accessed 24/7 from your Canvas account. Simply click on Account > TutorMe. For more information, please contact Kōkua 'Ike at tutoring@chaminade.edu or 808-739-8305.

Tentative Course Schedule

The following schedule is subject to change based on the operational needs of the course. If any changes are made, you will be notified through a Canvas announcement and email.

Dates (M, F)	Laboratory Experiment
8/17, 8/21	Check-In
8/24, 8/28	Buffers & UV Spectroscopy
8/31, 9/4	Buffers & UV Spectroscopy – Continued
9/7, 9/11	No lab
9/14, 9/18	Analysis of Amino Acids
9/21, 9/25	Peptide Synthesis
9/28, 10/1	Peptide Synthesis – Continued
10/5, 10/9	Enzyme Kinetics (Dry Lab)
10/12, 10/16	No lab
10/19, 10/23	Dialysis
10/26, 10/30	Dialysis - Continued
11/2, 11/6	Ion Exchange
11/9, 11/13	Size Exclusion Chromatography
11/16, 11/20	Alkaline Phosphatase
11/23, 11/27	No Labs – Thanksgiving Holiday
11/30, 12/4	Check-Out