Course Syllabus
Chaminade University Honolulu
3140 Waialae Avenue - Honolulu, HI 96816
www.chaminade.edu

Course Number: CH 360L *(Cross-listed with BI 360L and BC 360L)*
Course Title: Biochemistry I Lab
School Name: Natural Sciences and Mathematics
College/School/Division Name: NSM, Division of Chemistry and Biochemistry
Term: Fall 2021
Course Credits: 1
Class Meeting Days/Location/Time for each section:

Section 01	Tuesday	HL8	11:30 – 2:20 PM
Section 02	Thursday	HL8	11:30 – 2:20 PM

Instructor Name: Francis Sakai-Kawada
Email: francis.sakai-kawada@chaminade.edu
Phone: 808-735-4868
Office Location: Eiben 207D
Office Hours:

Monday, Wednesday, Friday	10:30 – 11:20 AM
OR by appointment	

1. University Course Catalog 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*

2. Course Overview

CH 360L is an upper-level course aimed at students with extensive experience in experimental chemistry and biology. CH 360L is the laboratory course for Biochemistry Lecture course CH 360. CH 360L is to be taken concurrently or after successful completion of CH 360. In this laboratory course, you 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 in these areas. You will also engage in spectroscopic and chromatographic methods for the identification of peptides, proteins, and kinetic studies of enzyme reactions. You will be challenged in the laboratory to use your skills and knowledge you have learned from both General and Organic Chemistry lecture & laboratory courses.

3. Program Learning Outcomes

A) 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
- Educate about the entry requirements, career pathways, and progression into advanced education in the chemical sciences

B) Program Learning Outcomes in Chemistry

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

1. Apply the scientific method as it is used in organic chemistry, inorganic chemistry, analytical chemistry, physical chemistry, and molecular sciences
2. Recognize and explain chemical theory as it applies to the physical world
3. Visualize, evaluate, validate, and interpret results of chemical analyses as part of an integral and quality education (This PLO is a link to our Marianist Values of to provide an integral, quality education)
4. Solve problems using analytical reasoning, professional resources, professional conduct, and ethical behavior
5. Communicate chemical information effectively in oral and written formats

C) Program Learning Outcomes in Chemistry

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

Course Learning Outcomes	**PLO 1**	**PLO 2**	**PLO 3**	**PLO 4**	**PLO 5**
1. Understand the applications of buffers and be able to utilize the Henderson-Hasselbalch equation	X	X		X	X
2. Understand, and correctly use, the various modern chromatographic methods available for the purification of molecules, in particular peptides and enzymes.	X	X		X	X
3. Recognize the various types of biological reactions	X	X	X	X	X
4. Understand the properties of enzyme kinetics and determine the Michaelis-Menten equation	X	X	X	X	X

D) Marianist Values (MVs) and Native Hawaiian Values (NHVs) for CH 360L

The Natural Sciences Division provides an *integral, quality education:* sophisticated integrative course content taught by experienced, dedicated, and well-educated instructors.

- We *educate in family spirit* – every classroom is an *Ohana* and you can expect to be respected yet challenged in an environment that is supportive, inclusively by instructors who take the time to personally get to know and care for you.
- We *educate for service, justice, and peace*, since many of the most pressing global issues (climate change, health inequity, poverty, justice) are those which science and technology investigate, establish ethical parameters for, and offer solutions to.
- We *educate for adaptation and change*. In science and technology, the only constant is change. Data, techniques, technologies, questions, interpretations, and ethical landscapes are constantly evolving, and we teach students to thrive on this dynamic uncertainty.

The study of science and technology can be formative, exploring human creativity and potential in the development of technologies and scientific solutions, the opportunity to engage in the stewardship of the natural world, and the opportunity to promote social justice. We provide opportunities to engage with the problems that face Hawai‘i and the Pacific region through the Natural Sciences curriculum, in particular, those

centered around severe challenges in health, poverty, environmental resilience, and erosion of traditional culture. The Marianist Educational Values relate to Native Hawaiian ideas of *mana, na'auao, ohana*, *aloha* and *aina*. We intend for our Natural Sciences programs to be culturally-sustaining, rooted in our Hawaiian place, and centered on core values of *Maiau,* be neat, prepared, careful in all we do; *Makawalu*, demonstrate foresight and planning; *'Ai,* sustain mind and body; *Pa'a Na'au*, learn deeply

4. Course Prerequisites

- Concurrent registration in CH 360 required

5. Required Learning Materials

- Scientific Calculator and Computer (Laptop)
- Your own laboratory coat (You may purchase them at Castle Science 120)
- Proper Attire. Bare feet, flip-flops, or sandals are NOT ALLOWED. If your clothing does not cover your midriff, knees, and shoulders, you must wear a lab coat
- Personal/Prescription lens safety goggles (Standard Specs are supplied in lab).

6. Technical Assistance for Canvas Users:

- Search for help on specific topics at help.instructure.com
- Chat live with Canvas Support 24/7/365
- Watch this video to get you started with online guides and tutorials
- Contact the Chaminade IT Helpdesk for technical issues: helpdesk@chaminade.edu, or call (808) 735-4855

7. Assessment

The course grades will be based on the following point total and scale. Any changes will be announced in class.

Safety	10 points
Attendance	40 points
Recent Advances in Biochemistry Paper	100 points
Journal Club Presentation	50 points
Quizzes	100 points (5 x 20 points)
Lab Notebook	100 points
Lab Reports	150 points (5 x 30 points)
	550 total points

Students can expect timely and regular feedback on lab reports and quizzes.

Grading Scale

GRADE	Total Points	Percentage	
A	495 – 550	90 – 100%	Outstanding scholarship and an unusual degree of intellectual initiative
B	440 – 494	80 – 89%	Superior work done in a consistent and intellectual manner
C	357 – 439	65 – 79%	Average grade indicating a competent grasp of subject matter
D	247 – 356	45 – 64%	Inferior work of the lowest passing grade, not satisfactory for fulfillment of prerequisite course work
F	Below 247	Below 45%	Failed to grasp the minimum subject matter; no credit given

Recent Advances in Biochemistry Paper

The purpose of this exercise is to improve your research skills by writing a review of the most recent findings in biochemistry. To achieve the best possible grade, you will need to emphasize primary literature, demonstrate a sophisticated understanding of the latest biochemical research in your field of interest, and extensive critical thinking.

Lab Notebooks

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. Pre-laboratory flow charts and questions should be recorded in the laboratory notebook. Lab notebooks must be bound, and pages numbered, must include a title page [Date(s) of Experiment, Description of Experiment, Page Number(s)] and written in blue or black permanent ink. Pencil must not be used. Mistakes happen and are expected; however, they still need to be readable. Mistakes are only to be crossed out with a single line and NO correction tape/white out can be used. Laboratory notebooks should not be rewritten to make it look prettier. Any changes to the prescribed procedure should be documented clearly in your laboratory notebook, and each step you complete should be written down in past tense. Thorough documentation of all steps taken, observations, and data are required. Pre-laboratory work will be checked each lab period. Laboratory notebooks will be spot-checked periodically and contribute to your professional practice points.

Lab Reports

You are required to write-up in a formal scientific format your experiments and turn them in at the beginning of the next laboratory class for grading. You must include the following sections in chronological order for each experiment:

Title
Name(s) of Scientist
Date Experiment Performed
Objective(s)
Physical Constant
Data
Results
Discussion
Conclusion

Quizzes

There will be quizzes scheduled this semester. You will be allowed to use your lab notebooks during the quiz, so please be sure to take organized and high-quality notes for every lab.

8. Course Policies

Late Work Policy

Requests for extensions due to extenuating circumstances (documented computer or medical problems, for example) will be considered but in general work received after the deadline will not be graded. Students should notify their instructors when illness or other extenuating circumstances prevents them from attending class and make arrangements to complete missed assignments. Tardiness – failure to be on time for class may result in loss of participation points and even quiz/exam points as additional time will not be given, nor will makeup quizzes be given for students who are tardy.

Grades of "Incomplete"

Students and instructors may negotiate an incomplete grade when there are specific justifying circumstances. When submitting a grade the “I” will be accompanied by the alternative grade that will automatically be assigned after 90 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 90 days after the end of the semester or term. This limit may not be extended.

Writing Policy

Plagiarism will not be tolerated and will be checked.

Instructor and Student Communication

Questions for this course can be emailed to the instructor at [francis.sakai-kawada@chaminade.edu]. Online, in-person and phone conferences can be arranged. Response time will take place up to [1-12 hours].

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.

ADA Policy

Chaminade University of Honolulu is committed to providing reasonable accommodations for persons with documented disabilities. If you need individual accommodations to meet course outcomes because of a documented disability, please speak with me to discuss your needs as soon as possible so that we can ensure your full participation in class and fair assessment of your work. Students with special needs who meet criteria for the Americans with Disabilities Act (ADA) provisions must provide written documentation of the need for accommodations from Kōkua ʻIke by the end of week three of the class, in order for instructors to plan accordingly. If a student would like to determine if they meet the criteria for accommodations, they should contact the Kōkua ʻIke Coordinator at (808) 739-8305 for further information (ada@chaminade.edu).

Title IX Compliance

Chaminade University of Honolulu recognizes the inherent dignity of all individuals and promotes respect for all people. Sexual misconduct, physical and/or psychological abuse will NOT be tolerated at CUH. If you have been the victim of sexual misconduct, physical and/or psychological abuse, we encourage you to report this matter promptly. As a faculty member, I am interested in promoting a safe and healthy environment, and should I learn of any sexual misconduct, physical and/or psychological abuse, I must report the matter to the Title IX Coordinator. If you or someone you know has been harassed or assaulted, you can find the appropriate resources by visiting Campus Ministry, the Dean of Students Office, the Counseling Center, or the Office for Compliance and Personnel Services.

Flexible Absence Policies

Normal policies around student absences will be flexible and adjusted to accommodate sick students and adhere to CDC and local public health guidance. Students will not be penalized due to absences related to illness or suspected illness.

Students should not come to campus when ill or potentially ill. Accommodations, including extended due dates and online instruction will be provided for anyone unable to attend class due to restrictions placed on them due to possible exposure to COVID-19.

Any student required to self-isolate should follow the CDC self-isolation recommendations and the directions of their health care provider. Students who are required to self-isolate should contact their faculty member.

In case of self-isolation for potential COVID-19 exposure or symptoms, students and faculty should use and complete the CDC Symptom Monitoring Worksheet

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.

Academic Conduct Policy

From the 2020-2021 Undergraduate Academic Catalog (p. 13):
Campus life is a unique situation requiring the full cooperation of each individual. For many, Chaminade is home, school, recreation center, and work, all in one. 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. The university expects students to remain in good conduct standing, which is defined as not currently being under a resolution status (i.e., student conduct probation, suspension, or expulsion). Please refer to the Student Handbook for more details. A copy of the Student Handbook is available on the Chaminade website.

For further information, please refer to the Student Handbook: https://chaminade.edu/wp-content/uploads/2021/04/NEW-STUDENT-HANDBOOK-20-21-Final-3.31.2021.pdf

Course Schedule Fall 2021

The Professor may modify elements of this syllabus according to the operational needs of the class

CH 360L Schedule of Experiments Fall 2021

Week	Dates	Experiment
1	08/24 08/26	Lab Check-In: Syllabus and Safety Information
2	08/31 09/02	Buffers and UV Spectroscopy (Part I)
3	09/07 09/09	Buffers and UV Spectroscopy (Part II)
4	09/14 09/16	Chromatography (Part I – Ion Exchange)
5	09/21 09/23	Chromatography (Part II – Size Exclusion)
6	09/28 09/30	Benzoin Condensation (Part I)
7	10/05 10/07	Benzoin Condensation (Part II)
8	10/12 10/14	Peer-Review Session
9	10/19 10/21	Enzyme Kinetics (Part I)
10	10/26 10/28	Enzyme Kinetics (Part II)
11	11/02 11/04	Paper Due Student Presentations (Part I)
12	11/09 11/11	**HOLIDAY: VETERAN'S DAY**
13	11/16 11/18	Student Presentations (Part II)
14	11/23 11/25	**HOLIDAY: THANKSGIVING**
15	11/30 12/02	Student Presentations (Part III)