



Chaminade
University
OF HONOLULU

Course Syllabus

[Chaminade University Honolulu](https://www.chaminade.edu)

3140 Waialae Avenue - Honolulu, HI 96816

www.chaminade.edu

Course Number: BC/CH 360

Course Title: Biochemistry I

Department Name: Biochemistry/Chemistry

College/School/Division Name: School of Natural Sciences and Mathematics

Term: Fall 2023

Course Credits: 3

Class Meeting Days: MWF

Class Meeting Hours: 1:30pm-2:20pm

Class Location: Hale Hoaloha, 303 Lecture

Instructor Name: Dr. Kelvin Frazier

Email: kelvin.frazier@chaminade.edu

Office Location: Henry Hall 123C

Office Hours: MWF 2:20pm-3:10pm using Calendly <https://calendly.com/kelvin-frazier>

Instructor Website: CANVAS BC/CH 360-01

Other Professional Contact Information (Skype, Twitter, Blog, etc.):

<https://www.linkedin.com/in/kelvinfrazier/>

University Course Catalog Description and Course Overview

BC 360 Biochemistry I (3)

This is the first part of a year-long course where the vast knowledge of biochemistry is filtered through a rational perspective guided by general chemical and biological principles. Following a survey and review of common classes of biologically significant metabolites such as peptides, carbohydrates, lipids, nucleic acids, as well as equally important smaller molecules, the emphasis is shifted to biological thermodynamics and enzyme mechanisms. During the latter part of the course the broad spectrum of principles studies is utilized to cover individual metabolic pathways in detail.

Prerequisites: BC324 or CH 324, BC 324L or CH 324L , EN 102, COM 101

Corequisite: BC 360L

Offered ONLY in the Fall

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
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 'Olelo No'eau (Hawaiian proverbs) and Marianist core beliefs:

1. Educate for Formation in Faith (Mana) E ola au i ke akua ('Olelo No'eau 364) May I live by God
2. Provide an Integral, Quality Education (Na'auao) Lawe i ka ma'alea a kū'ono'ono ('Olelo No'eau 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 ('Olelo No'eau 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'eau ('Olelo No'eau 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 ('Olelo No'eau 203) All knowledge is not taught in the same school

Program Learning Outcomes (PLOs) in Chemistry

Upon completion of the undergraduate program in Chemistry, students will have demonstrated the ability 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
4. Solve problems using analytical reasoning, professional resources, professional conduct, and ethical behavior
5. Communicate chemical information effectively in oral and written formats

Course Learning Outcomes

By the end of our course, students will be able to:

1. The dynamics and function of sugars and amino acids (and their polymers) at the molecular to cellular levels.

2. of the various types of metabolism and their molecular pathways.
3. of the biological and synthetic techniques employed in protein synthesis.

Alignment of Course Learning Outcomes

	CLO 1	CLO 2	CLO 3	CLO 4	CLO 5
Marianist & Native Hawaiian Values	1, 2 & 3	1, 2 & 3	1, 2 & 3	1, 2 & 3	1, 2 & 3
Program Learning Outcomes	1, 2 & 3	1, 2, 3	1, 2	1, 2 & 3	1, 2, 3

Course Prerequisites

- Concurrent registration in BC 360L.
- Completion of BC/CH 324/324L or equivalent with a grade of C or better.

Required Learning Materials

The following items should be brought to each class meeting.

- Reading materials will be referenced by the instructor. There is no book required for purchase for this course.
- Computer with online access and a Microsoft Office or its equivalent.
- Scientific Calculator.

Course Website:

<https://chaminade.instructure.com/courses/28811>

All course evaluations will be conducted via Canvas, so even if you are teaching face-to-face courses, your students will have to access the site.

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

Tutoring and Writing 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 Account – Notifications – TutorMe. For more information, please contact Kōkua 'Ike at tutoring@chaminade.edu or 808-739-8305.

Assessment

See below for Grading scale.

Grading Scale

10%	Midterm Exam 1
10%	Midterm Exam 2
10%	Midterm Exam 3
30%	Final Exam
15%	Literature Quiz (x6)
15%	Project
10%	Attendance

Grades will strictly not be curved and letter grades will be assigned as follows:

<u>Grade</u>	<u>Percent</u>
A	90-100%
A-	88-89%
B+	86-87%
B	80-85%
B-	78-79%
C+	76-77%
C	70-75%
C-	68-69%
D+	66-67%
D	60-65%
F	0-59%

There is no "extra credit" for BC/CH 360.

-Literature Quiz should be sourced by ACS publications <https://pubs.acs.org/> (Class does not meet in-person on Literature Quiz Days). Please email summery reports to kelvin.frazier@chaminade.edu by 11:59pm.

-The final exam is cumulative and will include concepts covered during the entire semester. final exam can only be taken on its scheduled day and time. Do not schedule any travel, appointments, work, etc. that would conflict with the final exam.

Supplement Books:

- Berg, J.M.; Gatto Jr., G.J.; Hines, J.; Tymoczko, J. L.; Stryer, L., *Biochemistry*, 10th ed., W.H. Freeman, **2023**
- Nelson, D.L.; Cox, M.M, *Lehninger Principles of Biochemistry*, 8th ed., W.H. Freeman, **2021**
- Ahern, K.; Rajagopal, I., *Biochemistry Free and Easy*, **2013**
(<https://oregonstate.app.box.com/s/i5zduolgda8snovflueqazdv4q4ikiw>)

Course Policies

Instructor and Student Communication

Questions for this course can be emailed to the instructor at kelvin.frazier@chaminade.edu. Online, in-person and phone conferences can be arranged. Response time will take place up to 24 hours.

Cell phones, tablets, and laptops

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.

Disability Access

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 'Ike: Center for Student Learning 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 'Ike 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.

Attendance Policy

The following attendance policy is from the 2019-2020 Academic Catalog (p. 54-55). Faculty members should also check with their divisions for division-specific guidelines.

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 Tutor 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.

Student Conduct Policy

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 students 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 are handled through 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. A copy of the Student Handbook is available on the Chaminade website under Student Life.

For further information, please refer to the Student Handbook.

<https://catalog.chaminade.edu/generalinformation/studentaffairs/studenthandbook2324/studenthandbook>

Course Schedule

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

DATE	TOPICS AND MODE OF LECTURE	
8/21	Course information	
8/23	Foundation of Biochemistry	
8/25	Lecture: Water & Buffers	
8/28	Student Project Discussion	
8/30	Lecture: Amino Acid (pH & Nomenclature/Symbols) & Drawing Amino Acids with Stereochemistry	
9/1	Lecture: Amino Acid (pH & Nomenclature/Symbols) & Drawing Amino Acids with Stereochemistry	
9/4	<i>Holiday: Labor Day</i>	
9/6	Student Project Discussion	
9/8	Lecture: Drawing structures of Dipeptides and Polypeptides, Intro to Primary, Tertiary, Quaternary Protein Structures & Function	
9/11	Student Project Discussion	
9/13	Lecture: Introduction to Proteins	
9/15	Lecture: Introduction to Proteins	
9/18	Lecture: Enzymes	
9/20	Literature Quiz 1: Drug interactions with Proteins (Due 11:59pm)	
9/22	Literature Quiz 2: Enzymes (Due 11:59pm)	
9/25	Lecture: Carbohydrates	
9/27	Midterm Review	
9/29	Midterm Review	
10/2	Midterm Exam I	
10/4	Lecture: Nucleotides and Nucleic acids	
10/6	Lecture: Glycolysis and and the	
10/9	<i>Holiday: Discoverers' Day</i>	
10/11	Literature Quiz 3: Nucleotides and Nucleic acids (Due 11:59pm)	
10/13	Literature Quiz 4: Glycolysis and Glycogen (Due 11:59pm)	
10/16	Gluconeogenesis	
10/18	Lecture: The Citric Acid Cycle	
10/20	Lecture: The Citric Acid Cycle	

10/23	Literature Quiz #5: The Citric Acid Cycle (Due 11:59pm)	
10/25	Review Midterm Exam II	
10/27	Review Midterm Exam II	
10/30	Midterm Exam II	
11/1	Lecture: Photosynthesis	
11/3	Lecture: Photosynthesis	
11/6	Literature Quiz #6: Photosynthesis (Due 11:59pm)	
11/8	Lecture: The Calvin Cycle	
11/10	Holiday: Veterans' Day	
11/13	Student Project Discussion	
11/15	Midterm Exam III Review: Q & A	
11/17	Midterm Exam III Review: Q & A	
11/20	Midterm Exam III	
11/22	Open Q & A on Midterm Exam III (Optional)	
11/24	Holiday: Thanksgiving	
11/27	Review for Final Exam	
11/29	Review for Final Exam (Student Project Due by 11:59pm)	
12/1	Review for Final Exam	
12/4	Final Exam Monday 11:00 AM – 1:00 PM. Location: Lecture Room https://catalog.chaminade.edu/generalinformation/academicaffairs/undergraduate/academicinformation/fallfinalexamschedule	

Credit Hour Policy

The unit of semester credit is defined as university-level credit that is awarded for the completion of coursework. One credit hour reflects the amount of work represented in the intended learning outcomes and verified by evidence of student achievement for those learning outcomes. Each credit hour earned at Chaminade University should result in a minimum of 45 hours of engagement, regardless of varying credits, duration, modality, or degree level. This equates to one hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work each week for approximately fifteen weeks for one semester. Terms that have alternative lengths, such as 10 week terms, should have an equivalent amount of faculty instruction and out-of-class student work to meet each credit hour. Direct instructor engagement and out-of-class work result in total student engagement time of 45 hours for one credit. The number of engagement hours may be higher, as needed to meet specific learning outcomes.

Specific Credit Situations

The minimum 45 hours of engagement per credit hour can be satisfied in fully online, internship, or other specialized courses through several means, including (a) regular online instruction or interaction with the faculty member and fellow students and (b) academic engagement through extensive reading, research, online discussion, online quizzes or exams; instruction, collaborative group work, internships, laboratory work, practica, studio work, and preparation of papers, presentations, or other forms of assessment. This policy is in accordance with federal regulations and regional accrediting agencies.

Credit Hours:

1 hour per class lecture.	(Subtotal = 45)
3 hour review/repeat review/memorization per class lecture.	(Subtotal = 135)
3 hour quiz preparation per quiz (6 quizzes)	(Subtotal = 18)
4 hour midterm exam preparation/practice per exam.	(Subtotal = 12)
6 hour final exam preparation/practice for the final exam.	(Subtotal = 6)
32 hour for Project	(Subtotal = 32)

Total Hours = 248