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

Course Number: BC/CH 362L
Course Title: Biochemistry II Laboratory
Department Name: Biochemistry/Chemistry
College/School/Division Name: School of Natural Sciences and Mathematics
Term: Spring 2025
Course Credits: 1
Class Meeting Days: Thursday
Class Meeting Hours: 11:30 AM – 2:20 PM
Class Location: Henry Lab 8

Instructor Name: Dr. Kelvin Frazier
Email: kelvin.frazier@chaminade.edu
Office Location: Henry Hall 206C
Office Hours:
R 2:30pm-3:30pm using Calendly https://calendly.com/kelvin-frazier
Instructor Website: CANVAS BC/CH 362-01
Other Professional Contact Information (Skype, Twitter, Blog, etc.): https://www.linkedin.com/in/kelvinfrazier/

University Course Catalog Description

CH 362L Biochemistry II Laboratory (1)

Contemporary experiments and simulations involving DNA and other nucleic acid metabolites. *Prerequisite: CH 360/CH 360L. Concurrent registration in CH 362 required. Materials intensive fee applies. Cross-listed with BC 362L.* **Offered in the Spring**

Marianist Values

This class represents one component of your education at Chaminade University of Honolulu. An education in the Marianist Tradition in 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 ʻOlelo Noʼeau (Hawaiian proverbs) and Marianist core beliefs:

1. Educate for Formation in Faith (Mana) E ola au i ke akua (ʻŌlelo Noʻeau 364) May I live by God
2. Provide an Integral, Quality Education (Naʼauao) Lawe i ka maʻalea a kūʻonoʻono (ʻŌlelo Noʻeau 1957) Acquire skill and make it deep
3. Educate in Family Spirit (ʻOhana) ʻIke aku, ʻike mai, kōkua aku kōkua mai; pela iho la ka nohana ʻohana (ʻŌlelo Noʻeau 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 noʻeau (ʻŌlelo Noʻeau 1430) Education is the standing torch of wisdom
5. Educate for Adaptation and Change (Aina) ʻAʻohe pau ka ʻike i ka hālau hoʻokahi (ʻŌlelo Noʻeau 203) All knowledge is not taught in the same school

Program Learning Outcomes

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. Solves 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. understand advanced biological assays utilizing HTRF
2. explain the various types of metabolism and its molecular pathways.
3. Explain molecular differences between the various nucleic acids in order to recognize their distinguishing structural features.
4. understand the DNA replication pathway and repair mechanisms at the chemical level.
5. understand the biological and synthetic techniques employed in protein synthesis.

Alignment of 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 & 4	1, 2 & 5	1, 2 & 3	1, 2, 3 & 5

Course Prerequisites

- Concurrent registration in BC 362L.
- Completion of BI 360/360L or equivalent with a grade of C or better.

Required Learning 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

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

Assessment

The course grade will be based on the points earned from laboratory reports, worksheets, quizzes and class participation. The approximate breakdown is as follows:

Weighted Percent		Assignment
45%	=	Laboratory Report Sheets
15%	=	Lab Notebook Quiz
10%	=	Pre-lab Quiz
10%	=	Literature Quiz
10%	=	Oral Presentation
10%	=	Attendance and Attitude (following safety precautions, participation, preparedness and notebook checks)

Points		Assignment
45	=	Laboratory Report Sheets
15	=	Lab Notebook Quiz
10	=	Pre-lab Quiz
10	=	Literature Quiz
10	=	Oral Presentation
10	=	Attendance and Attitude

(following safety precautions, participation, preparedness and notebook checks)

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

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

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

There is no "extra credit" for BC/CH 362L and no rounding up on Final Grades.

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. Lab notebooks is recommended to be bound, written in blue or black ink, and have pages numbered. 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. Notebooks will be checked at the end of each lab meeting to assess completion and accuracy.

The first page of your lab notebook should be a table of contents that include the following information:
[date(s) of experiment, experiment title, page number]
Each entry for a LAB experiment should include:

- Title
- Purpose
- Introduction (some key points/equations)
- Procedure Notes / Data Collected (actual data recorded from instruments)
- Calculations (show your work for any calculations here)
- Results/Conclusion

Lab Reports

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

- An abstract describing the purpose of the experiment, the method used, and the results obtained
- Any relevant chemical equations
- Sample calculations
- Sources of error and statistical treatment of data

Quizzes

There will be given 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.

Program Learning Outcomes

Biochemistry Mission Statement

Biochemistry is the study of the living organism at the molecular level. It draws on techniques from a broad spectrum of specialized branches of chemistry to study the molecular basis of vital processes. The mission of the Biochemistry Major program at Chaminade is to deliver an excellent education in biological chemistry, preparing students to be innovative, rigorous, and well-trained scientists, educators or health practitioners. The biochemistry degree program recognizes that chemistry is "the central science" and that biochemical processes are essential to all life on our planet. The biochemistry major is composed of sophisticated intellectual content and practical experiences. Students will be exposed to contemporary ideas in biology, a challenging range of chemistry courses and rigorous laboratory courses involving modern techniques and advanced instrumentation. Application of the scientific method, statistical and presentation skills, and critical evaluation of data are foundational to the course progression in the major, which culminates in a capstone research experience. Our undergraduate students experience an education that reflects the research interests and expertise of the faculty, specifically targeting the areas of natural products, synthetic and computational chemistry, cell and molecular biology, signal transduction, genetics and genomics, and integrative biology. The curriculum is synthesized with a rich program of available development activities including internships, conference attendance and preparation activities for the health professions and graduate school.

The vision of the Biochemistry major is linked to key components of the Chaminade educational experience. Our close-knit faculty fosters education in the family spirit, and the rapid progress in techniques and ideas that hallmark biology and chemistry drive our determination to prepare students who can adapt and change. Ultimately, the goal of science is to understand the mysteries of nature and improve the human condition, while recognizing the crucial hierarchy of all organisms within multi-level ecosystems. In particular, the goal of modern biochemistry is to develop novel molecules that address global problems, such as innovative therapies for disease, novel energy sources, and new biomaterials.

Program Learning Outcomes in Biochemistry

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

1. Appraise and articulate biochemical processes based on the fundamentals of organic chemistry, inorganic chemistry, analytical chemistry, physical chemistry, and biology as part of their integral and quality education.
2. Construct and employ effective and safe laboratory skills utilizing modern scientific instrumentation and techniques.
3. Analyze, compare, and formulate an interpretation of biochemical data and problems as applied to living organisms and the environment.
4. Assemble and assess biological data and compose a scientific analysis report or presentation.

Course Learning Outcomes	**PLO 1**	**PLO 2**	**PLO 3**	**PLO 4**
1. Apply quantitative chemical analysis.	X		X	
2. Interpret experimental results and draw reasonable conclusions. Identify sources of error in chemical experiments.	X	X	X	

3. Prepare accurate and precise quantitative measurements. Collect legible and complete experimental records.	X	X	X	X
4. Collaborate with peers in obtaining and interpreting data.	X			X

Marianist Values (MVs) and Native Hawaiian Values (NHVs) for BCCH 362L

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, and careful in all we do; *Makawalu*, demonstrate foresight and planning; ‘*Ai,* sustain mind and body; *Pa‘a Na‘au*, learn deeply

Course Policies

Late Work Policy

It is important to communicate with your instructor so that they can help you meet the learning objectives of the course.

Please be sure to let your instructor know in advance if you cannot attend class for any reason and provide written documentation from a third party to validate the excuse.

- Unexcused absences for two consecutive weeks may result in being withdrawn from the course by the instructor.
- A planned, excused absence must be communicated to the instructor at least one week prior to the class. Necessary arrangements will be made to meet student learning objectives.
- An unplanned, excused absence must be communicated to the instructor within one week of the missed class. Necessary arrangements will be made to meet student learning objectives.

Determination of valid excuses for missed classes is at the sole discretion of the instructor.

Student athletes should communicate absences to the instructor with the earliest possible notice. Students are not allowed to miss class for practices.

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]. I respond to student emails by the next school day in most cases. Typically, this will be within 24 hours, but response time may be longer for e-mails sent during the evening, weekend, or holidays. It is the responsibility of the student to check their email frequently.

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.

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

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 45 hours of engagement. 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, 10-week term, or equivalent amount of work over a different amount of time.

Direct instructor engagement and out-of-class work result in total student engagement time of 45 hours for one credit.

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.

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

BC/CH 204L Course Schedule Spring 2025

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

Week	Dates	Experiment
1	1/9	Lab Check-In: Syllabus and Safety Information
2	1/16	Literature Quiz
3	1/23	Biodiesel Lab
4	1/30	Biodiesel Lab Continue
5	2/6	Biodiesel Lab Data Analysis
6	2/13	Bioplastic Lab
7	2/20	Bioplastic Lab Continue
8	2/27	Bioplastic Lab Data Analysis Pitch Project
9	3/6	Project Biosensor-Working Session
10	3/13	Project Biosensor-Working Session
11	3/20	**SPRING RECESS**
12	3/27	Project Biosensor-Working Session
13	4/3	Project Biosensor-Working Session(Additional Time)
14	4/10	Project Biosensor Lab Report Due
15	4/17	Oral Project Presentation Due
16	4/24	**LAST DAY OF INSTRUCTION**

Credit Hours:

3 hour per class lab. (Subtotal = 12)
3 hours of prep and writing for literature quiz. (Subtotal = 3)
1 hours of review/repeat review/memorization per class lab. (Subtotal = 4)
1 hours of safety quiz preparation per quiz (4 quizzes) (Subtotal = 2)
1 hours of lab notebook quiz (Subtotal = 2)
3 hours of lab report writting (Subtotal = 6)
18 hours for Project preparation/lab work/ and recording (Subtotal = 18)

Total Hours = 47