



Chaminade University OF HONOLULU

Course Syllabus

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

3140 Waialae Avenue - Honolulu, HI 96816

Course Number: BI 210L

Course Title: Biotech Lab DNA/RNA Protein

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

Term: Spring 2025

Course Credits: 1

Class Meeting Days: Tuesdays

Class Meeting Hours: 2:30pm to 5:20pm

Class Location: Henry Hall Lab 1

Instructor Name: Dr. Chrystie Naeole, PhD

Email: chrystie.naeole@chaminade.edu

Phone: 808.739.8551

Office Location: Wesselkamper Science Center 109

Office Hours: Tuesday & Thursday 1:00pm to 2:30pm or by appointment

University Course Catalog Description

Introduction to Biological Techniques. Techniques used in the fields of molecular and cellular biology are covered, including DNA, RNA and protein purification and manipulation. One three hour period per week. Offered Fall and may be offered in Spring semesters. Required course for first year students in biology majors. Must be completed prior to enrollment in upper division Biology classes by Biology majors. Not required for upper division in Forensic Sciences or Biochemistry majors. Materials intensive fee applies.

Course Overview

This course has been designed to introduce you to the basic skills and techniques required to be successful in any laboratory setting. An emphasis is placed on self-directed inquiry and learning as well as how to think about science through a broader lens.

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

Alignment of Natural Sciences Courses with Marianist and Hawaiian values of the University

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.

Alignment of BI 210L with Marianist and Hawaiian values of the University

- BI210L Biotechniques lab provides an *integral quality education* as this lab looks beyond the borders of biology and challenges the students to think through a sociology, Native Hawaiian cultural and artistic lens to better understand what it means to “do” science.
- BI210L also emulates *educating in the family spirit*. This is done by emphasizing that science is not done in a vacuum. Labs, by their very nature and design, are collaborative work environment. All lab work is done in small, peer groups, which foster a cooperative spirit.

Program Learning Outcomes

Upon completion the program in Biology, a graduating student will demonstrate the following competencies:

1. Apply the scientific method in the design and testing of hypotheses
2. Transform and display, statistically evaluate, validate, and interpret scientific data and communicate the results of such analyses effectively both orally and in writing.
3. Acquire and comprehend information from published scientific literature, databases and bioinformatics software to extract and interpret biological data
4. Recognize the chemical and physical principles that underlie all life forms, and the biological organization at the molecular, cellular, tissue, organ, organism, and system levels that emerge from these principles

5. Define the components and processes of genetic and epigenetic information transmission, and their determinant effects on the adaptive and evolutionary processes that they drive
6. Integrate an awareness of bioethical issues to positively influence the application of science to service, justice and peace in the solution of societal problems

Course Learning Outcomes and Linkage to Program Learning Outcomes

Students who successfully complete this course will be able to:

Course Learning Outcomes	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6
1. Safety lab etiquette: Demonstrate the capacity to work safely in a laboratory setting and have awareness of common regulatory guidelines for laboratory work. Additionally, students will consistently and proactively behave within accepted norms of lab etiquette.						
2. Record keeping: Understand the principles of good scientific record keeping; demonstrate the keeping of laboratory notebooks and experimental record, and organization of data for accessibility and later understanding and reproducibility	X	X				
3. Mathematics: Perform basic mathematical calculations including scientific notation and algebraic conversions essential to the preparation of solutions and quantitation of molecules including standard curve analysis and regression analysis.		X				
4. Precise and reproducible manipulations: Be familiar with basic laboratory equipment operation and theory of its operation as well as be able to demonstrate mechanical and technical operations central to science laboratories; including properly and accurately operating basic biology lab instrumentation such as glassware, pipettes, incubators, balances, centrifuges, pH meters, spectrophotometers, and thermocyclers.	X	X				
5. Precise and reproducible measurements: Demonstrate understanding of the importance and methods for calibration, repetition of laboratory manipulations, understanding of systematic error.	X	X				
6. Databases: Familiarity with electronic sources of information pertaining to the above			X			

Course Prerequisites

None

Required Learning Materials

There is no required text for this lab. All necessary protocols and reading will be provided to you either as handouts or will be posted on Canvas.

Course Website: <https://chaminade.instructure.com/courses/42318>

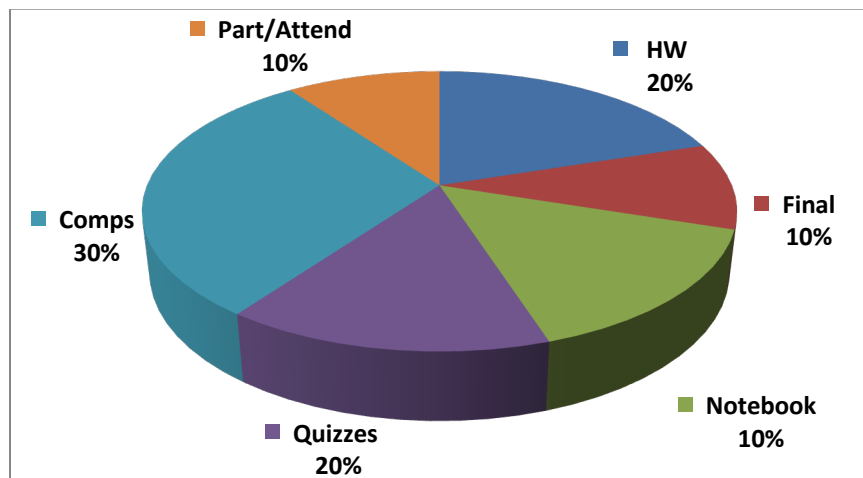
Technical Assistance for Canvas Users:

- 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 Client Services – Tech Support for technical issues: cstechsupport@chaminade.edu or call (808) 735-4855

Kōkua ‘Ike: Tutoring and 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.

Assessment



Grading Scale

Letter grades are given in all courses except those conducted on a credit/no credit basis. They are interpreted as follows:

- | | |
|-----------|--|
| 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 <60%	= Failed to grasp the minimum subject matter; no credit given

➤ **Laboratory Notebooks**

- It is preferred that all students use electronic notebooks. Information about electronic notebooks can be found on Canvas. However, if you choose to use a hard copy notebook that will be acceptable as well.
- Notebook may be traditional bound notebook or may be an electronic notebook. If notebook is bound must be with non-tear out pages. No spiral notebooks, or three holed folder paper. Additional formatting information will be available on Canvas.
- Notebooks will be checked, for grade, randomly throughout the semester.

➤ **Comps & Quizzes**

- Quizzes will be given at the beginning of class and will cover information from the previous week.
- Competency checks will be performed at the end of each module.

➤ **Makeup Labs**

- Makeups labs are not provided unless a student has contacted the instructor within 24 hours of the missed class period to discuss the circumstances surrounding the absence. If absence is due to illness and doctor's written excuse may be required.
- If another lab section is available, the student may be allowed, with permission to makeup the lab in another instructor's section. Otherwise, an equivalent electronic lab will be provided.

Course Policies

Late Work Policy

1. Presence in class is mandatory & necessary in order for a student to fully grasp concepts. Students are expected to regularly attend all courses for which they are registered. Students should notify their instructors when illness or other extenuating circumstances prevents them from attending class and make arrangements to complete missed assignments. 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.
2. If you miss a class, it is your responsibility to ask the instructor or your classmates for the information that you missed and to pick up any handouts that may have been distributed.
3. Any missed work that is turned in late and graded may receive up to a one grade deduction. So, if the assignment was graded as A work, due to being late it may be decreased to a B.
4. Any missed work that is turned in late without any prior discussion with the instructor will not be accepted and will be given a score of zero.

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 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.

Writing Policy

If written assignments are given expectations relating to that assignment will be provided at that time. All written work is expected to be done in the student's own voice. Plagiarism is not allowed, and any student suspected of plagiarism will be subject to Chaminade University Policy. Additionally, the plagiarized assignment will be given a score of zero.

Instructor and Student Communication

Questions for this course can be emailed to the instructor at chrystie.naeole@chaminade.edu. Response time will usually take place within 2 days of receiving your initial correspondence. Online, in-person and phone conferences can be arranged.

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.

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.

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.

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 and 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.

Attendance Policy

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.

For further information, [refer to the Chaminade Catalogue](#).

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 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, [refer to the Chaminade Catalogue](#).

Schedule

Course Schedule (subject to change as instructor deems necessary)

Week	Date	Lab topic	Assignments
1	Jan 7	Lab Culture: Lab Safety, Notebooks & Native Hawaiian Values	Week 1 Reflection Lab Culture Discussion Prep for Lab Safety Quiz
2	Jan 14	Lab Chemicals	M)SDS Worksheet Lab Safety Quiz
3	Jan 21	Introduction to Precision & Accuracy pt 1 – Kumu Kahoali'i Keahi Guest Speaker	Precision vs Accuracy Discussion
4	Jan 28	Introduction to Precision & Accuracy pt 2 - Kumu Kahoali'i Keahi Guest Speaker	Reflection Precision & Accuracy Worksheet Prep for Quiz
5	Feb 4	Precision & Accuracy: Balances	Intro to Precision & Accuracy Quiz Prep for next week quiz
6	Feb 11	Precision & Accuracy: Pipettes	Intro to Precision & Accuracy Quiz

			Prep for next week quiz
7	Feb 18	Precision & Accuracy: Microscopes	Pipettes Quiz; Prep for next week quiz Review for Practical
8	Feb 25	Precision & Accuracy Practical	Microscopes Quiz
9	Mar 4	Precision & Accuracy Practical	Pipettes Quiz Prep for next week quiz
10	Mar 11	Introduction to Solutions & Dilutions - Kumu Kahoali'i Keahi Guest Speaker	Intro to Soln & Dil Discussion Prep for next week quiz
	Mar 18	SPRING BREAK – NO LAB	
11	Mar 25	Solutions & Dilutions: Molarity, Concentrations, Dilution Factors	Math Worksheet (due next week) Prep for next quiz
12	Apr 1	Solutions & Dilutions: Buffers & pH	Molarity, Conc and Dil Quiz Prep for next week quiz
13	Apr 8	Solutions & Dilutions: Serial Dilutions	Buffers and pH Quiz Prep for next week practical
14	Apr 15	Bioinformatics: PubMed	
15	Apr 22	Solutions & Dilutions Practical	

Note: Every effort has been made to ensure that the material in this syllabus is accurate and complete. However, occasionally changes must be made in the printed schedule. Thus, the instructor reserves the right to make any changes in the contents of this syllabus that she deems necessary or desirable. These changes, if any, will be announced as soon as the need for them becomes apparent.

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.

How This Course Meets the Credit Hour Policy

This is a one-credit lab course requiring a minimum of 45 clock hours of student engagement per the official CUH Credit Hour Policy. Students enrolled in this course are anticipated to spend 42.5 hours in lab and 1 hour a week on studying for quizzes and/or completing any other homework assignments.