



Natural Sciences and Mathematics

Biology

BI 210L: Biotech Lab DNA/RNA Protein

Henry Hall Lab 1, Tuesday 2:30–5:20pm | Credits: 1 | Section: [#] | Term: Fall 2026

Instructor Information

Instructor	Dr. Jonathan D. Baker
Email	jonathan.baker@chaminade.edu
Phone	808.739.8363
Office Location	Wesselkamper Science Center 110
Office Hours	Tuesdays 10am-1pm or by appointment
Virtual Office	By appointment
Virtual Office Hours	By appointment

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.

School & Department

School	School of Natural Sciences and Mathematics
Location	Wesselkamper 115
Phone	(808) 440-4204
Questions?	Contact your instructor or the School of Natural Sciences and Mathematics

Course Description & Materials

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.

Prerequisites: None

Course Overview

This course has been designed to introduce students 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.

Course Snapshot

Modality	Face-to-Face
Meeting Location	Henry Hall Lab 1
Meeting Days/Times	Tuesday, 2:30–5:20pm
Time Allocation	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 studying for quizzes and/or completing other homework assignments.
Required Materials	There is no required text for this lab. All necessary protocols and readings will be provided as handouts or posted on Canvas.
Recommended Items	None.
Canvas	Course materials, announcements, and grades are posted to Canvas (chaminade.instructure.com). Course site: https://chaminade.instructure.com/courses/42318

Learning Outcomes

Program Learning Outcomes (PLOs)

Upon completion of the B.S. degree program in Biology, the student will be able to:

1. Explain fundamental biological concepts and their interrelationships across various levels of biological organization, from molecules to ecosystems, including cell biology, genetics, evolution, physiology, and ecology.
2. Perform laboratory, field and computational techniques relevant to biological research, including accurate data collection, analysis, and interpretation.
3. Compare, evaluate and develop scientific investigations using advanced methodologies, technologies, and resources, and communicate results effectively to professional and lay audiences.
4. Make ethically informed decisions in biological research and practice, considering bioethics, environmental ethics informed by indigenous and traditional knowledge and practices.
5. Analyze societal challenges related to health and the environment through the lens of biological science, recognizing how biological knowledge and associated career paths can contribute to studying, addressing and solving these challenges.

Course Learning Outcomes (CLOs)

Upon completion of BI 210L, the student will be able to:

1. Safety lab etiquette: Demonstrate the capacity to work safely in a laboratory setting, show awareness of common regulatory guidelines for laboratory work, and consistently and proactively practice accepted norms of lab etiquette.
2. Record keeping: Understand the principles of good scientific record keeping; demonstrate the keeping of laboratory notebooks and experimental records, and organize data for accessibility, later understanding, and reproducibility.
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.
4. Precise and reproducible manipulations: Demonstrate familiarity with basic laboratory equipment operation and theory, and perform mechanical and technical operations central to science laboratories, including properly and accurately operating glassware, pipettes, incubators, balances, centrifuges, pH meters, spectrophotometers, and thermocyclers.
5. Precise and reproducible measurements: Demonstrate understanding of the importance and methods for calibration and repetition of laboratory manipulations, and of systematic error.
6. Databases: Demonstrate familiarity with electronic sources of information pertaining to laboratory science.

Marianist Values

An education in the Marianist Tradition is marked by five principles. Reflect on how this course relates to one or more:

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.

This course connects most directly to Provide an Integral, Quality Education and Educate in Family Spirit: the lab looks beyond the borders of biology, challenging students to think through sociological, Native Hawaiian cultural, and artistic lenses to better understand what it means to “do” science, and all lab work is done in small, collaborative peer groups that foster a cooperative spirit.

Native Hawaiian Values

Education is central to both Marianist and Native Hawaiian culture — both seek transformative, value-centered learning that serves the marginalized. This is reflected in the ‘Ōlelo No‘eau (Hawaiian proverbs) below:

1. **Educate for Formation in Faith (Mana):** E ola au i ke akua (‘Ōlelo 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 (‘Ōlelo No‘eau 1957) — Acquire skill and make it deep.
3. **Educate in Family Spirit (‘Ohana):** ‘Ike aku, ‘ike mai, kōkua aku kōkua mai (‘Ōlelo No‘eau 1200) — Recognize others, be recognized, help others, be helped.
4. **Educate for Service, Justice and Peace (Aloha):** Ka lama kū o ka no‘eau (‘Ōlelo 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 (‘Ōlelo No‘eau 203) — All knowledge is not taught in the same school.

Alignment of Course Learning Outcomes

	CLO 1	CLO 2	CLO 3	CLO 4	CLO 5	CLO 6
Marianist Values	2, 3	2, 3	2, 3	2, 3	2, 3	2, 3
PLOs	2	2, 3	2, 3	2, 3	2, 3	3
Native Hawaiian Values	2, 3	2, 3	2, 3	2, 3	2, 3	2, 3
Gen Ed Outcomes(if applicable)						

Attendance & In-Class Participation

Attendance Policy

Presence in class is mandatory: lab skills and techniques cannot be fully learned outside of the lab setting. Students are expected to attend regularly and notify the instructor when illness or another extenuating circumstance prevents attendance, making arrangements to complete missed work; it is the instructor's prerogative to adjust deadlines accordingly. Unexcused absences equivalent to more than a week of classes may lower the course grade, and two or more consecutive weeks of unexcused absence may result in withdrawal from the course by the instructor. Any student who stops attending without officially withdrawing may receive a failing grade.

Quick Reference — Absence Thresholds:

Excused Absence	Illness or another extenuating circumstance, with the instructor contacted within 24 hours of the missed lab period; a doctor's written excuse may be required for illness.
Unexcused Absence	Any absence not communicated to the instructor within 24 hours of the missed lab, or without documentation.
Warning Threshold	Unexcused absences totaling more than one week of class meetings — instructor may notify student.
Grade Penalty	Unexcused absences totaling more than one week of class meetings may lower the final course grade.
Course Failure	Two or more consecutive weeks of unexcused absence may result in withdrawal from the course by the instructor, or a failing grade if the student stops attending without officially withdrawing.

In-Class Participation Expectations

Active, respectful engagement is essential. Students are expected to come prepared and contribute meaningfully to discussions, activities, and collaborative work.

Students are expected to:

- Come prepared — complete readings and activities before each session.
- Participate actively in discussions and group work, demonstrating critical thinking.
- Engage respectfully and honor diverse perspectives.
- Use personal devices for course purposes only unless otherwise directed.
- Submit work by established deadlines to support course pacing.

Please set cell phones to silent during class. Laptops and tablets are encouraged for assigned online activities and readings but should be used for course purposes only.

Course Activities

In-Class Activities	<i>Each weekly session is a hands-on lab period covering core biotechnology skills — lab safety, precision and accuracy, solutions and dilutions, and bioinformatics.</i>
Homework / Assignments	<i>Students keep a laboratory notebook documenting each lab session, following a template provided by the instructor; write-ups will be submitted weekly to Canvas as a scanned PDF of the notebook entry for the week's lab.</i>
Exams	<i>A midterm covering Weeks 1-7 will be given in class on Oct. 6; a final practical exam, the Lab Olympics, will be given on Dec. 1st.</i>
Projects	<i>This course does not include a term project; assessment is based on lab notebooks, worksheets, quizzes, and competency checks throughout the semester.</i>

Course Policies

Late Work	<i>Missed work turned in late may receive up to a one-letter-grade deduction (e.g., A-level work may be reduced to a B). Missed work turned in late without prior discussion with the instructor will not be accepted and will be given a score of zero.</i>
Make-Up Work	<i>Makeup labs are not provided unless the student has contacted the instructor within 24 hours of the missed class period to discuss the circumstances (a doctor's written excuse may be required for illness). If another lab section is available, the student may be permitted, with permission, to make up the lab there; otherwise, an equivalent electronic lab will be provided.</i>
Extra Credit	<i>No extra credit is available in this course.</i>
Incomplete Grade	<i>Students and instructors may negotiate an incomplete grade when there are specific justifying circumstances. The "I" will be accompanied by an alternative grade (IB, IC, ID, or IF) that is automatically assigned after 30 days; if only an "I" is submitted, the default grade is F. Completion of the work, evaluation, and reporting of the final grade is due within 30 days after the end of the semester, and this limit may not be extended.</i>
Syllabus Changes	The instructor reserves the right to modify this syllabus. Changes will be announced in class and posted to Canvas.

Grading Breakdown

Assignment	% of Course Grade
Laboratory Notebooks	45%
Midterm	20%
Final (Lab Olympics)	25%
Attendance	10%
Total	100%

Final Grades

Final grades are submitted to Self-Service (selfservice.chaminade.edu):

Grade	Range
A	90% and above
B	80–89%
C	70–79%
D	60–69%
F	59% and below

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, plagiarism, **and unauthorized and/or undisclosed AI usage**, in addition to more obvious dishonesty. See catalog section *Student Use of Artificial Intelligence in Academic Work* for further information. Questions of academic dishonesty in a particular class are first reviewed by the instructor, who must make a report with recommendations to the Director of the Academic College. Punishment for academic dishonesty will be determined by the instructor, Director, and the Dean of Academic College and may include an “F” grade for the work in question, an “F” grade for the course, academic notice, or dismissal from the University.

AI (Artificial Intelligence) Statement

Chaminade University recognizes the increasing role of artificial intelligence (AI) technologies in academic and professional environments. AI encompasses, but is not limited to, generative AI platforms, automated writing or content generation software, coding assistants, and similar tools. Students must ensure all submitted work genuinely reflects their knowledge and effort. Using AI to produce or significantly complete graded assignments, exams or other academic tasks – defined as use that substitutes for or substantially replaces a student’s own analysis, reasoning or written expression – without explicit instructor approval is considered academic misconduct and will be dealt with according to the University’s Academic Honesty Policy.

If an instructor has reasonable grounds to question whether submitted work genuinely reflects a student’s own knowledge, authorship, or mastery of course material — or whether it meets the course’s expectations for AI use — the instructor may require the student to provide additional or alternative evidence of authorship and content mastery. Such evidence may include drafts, notes, revision history, source materials, process explanations, oral discussion, in-class work, or completion of an alternative assessment. A student’s refusal or inability to provide such evidence may be considered, along with other available information, in evaluating whether the work meets course requirements and stated learning outcomes. Instructors will not rely solely on AI detection software or other automated tools in making grading or academic integrity determinations. Such determinations will be based on the totality of the available information and handled in accordance with applicable University policies and procedures. See the catalog section *Student Use of Artificial Intelligence in Academic Work* for further information.

Title IX and Nondiscrimination

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. For pregnant and parenting students, I am also obligated to provide you with similar resources for support and protections available to you. My goal is

to make sure that you are aware of the range of options available to you and have access to the resources and support you need.

Contact information and reporting options: chaminade.edu/titleix/nondiscrimination/. File a report via the [Campus Incident Report Form](#).

Nondiscrimination Policy and Notice of Nondiscrimination

The university is committed to comply with all State and Federal statutes, rules, and regulations which prohibit discrimination. The university is committed to a policy of nondiscrimination on the basis of race, sex, gender identity and expression, age, religion, color, national origin (including shared ancestry and ethnic characteristics), ancestry, citizenship, disability, genetic information, marital status, breastfeeding, arrest and court record (except as permissible under State law), sexual orientation, or status as a covered veteran. Inquiries about Title IX or general Civil Rights concerns 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 [HERE](#). *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](#).

Student with Disabilities Statement- Kōkua 'Ike

Accessibility Services recognizes disability as a valued aspect of diversity and ensures equal access to the educational environment in accordance with Section 504 of the Rehabilitation Act; the Americans with Disabilities Act, as amended; and the principles and professional standards of the Association on Higher Education and Disability. Access is supported through reasonable accommodations and referrals to campus and community resources.

Appointments with the Accessibility Services Coordinator are available through Stellic at <https://chaminade.stellic.com> and may be held virtually or in person. Drop-in appointments are also welcome.

Students seeking support must meet with the Accessibility Services Coordinator as early as possible, even if they are unsure whether they have appropriate documentation of their disability or its impacts. The Accessibility Services Coordinator prioritizes listening to students' experiences and will discuss any documentation needs during the initial intake meeting. Students may seek support at any time.

Learn more at <https://chaminade.edu/ada-accommodations>

Assessment of Student Work

Chaminade University may use student work anonymously to assess achievement of course, program, and institutional learning outcomes as part of ongoing quality improvement efforts.

Campus Resources & Support Services

The following resources are available to all Chaminade students. Reach out early — these services exist to support your success.

Resource	Description	Contact / Website
Accessibility Services (Kōkua 'Ike)	Accommodations under Section 504 and ADA. Contact early — appointments via Stellic, virtual or in person.	ada@chaminade.edu chaminade.edu/ada-accommodations
Tutoring & Academic Coaching (Kōkua 'Ike)	Tutoring and Academic Coaching Services support students' progression toward their academic, personal, and professional goals with clarity and intention. Services include individualized support in English, math, nursing, sciences, and social sciences, as well as guidance in developing goals and study strategies.	chaminade.edu/tutoring-academic-coaching-services
Career Services	Career Services supports students throughout their career journeys. Services include individualized job search strategy coaching, resume reviews, job interview coaching, and access to career-related resources and opportunities.	chaminade.edu/career-services
Basic Needs Resources	Support for food insecurity, housing instability, and other basic needs.	chaminade.edu/basic-needs/
Title IX / Nondiscrimination	Reporting and support for sex discrimination and gender-based violence. Campus Incident Report Form available online.	chaminade.edu/titleix/resources-and-support/
Hazing Prevention	Confidential support, crisis intervention, and reporting for any type of abuse including hazing.	hazingpreventionnetwork.org/athlete-helpline/
Campus Safety / SafeSwords	Security escort service for anyone who feels unsafe walking alone on campus at any time of day. Call security and a professional will escort you to your destination.	chaminade.edu/student-life/security/campus-safeswords-program/
CUH Alert Emergency Notification	Emergency text system. Register your cell number via the Chaminade portal and confirm the text to complete enrollment.	chaminade.edu

Weekly Course Schedule

Note: The instructor reserves the right to modify this schedule. Changes will be announced in class and posted to Canvas.

Week	Date	Theme	Due Dates
1	8/18	Lab Safety, Notebooks, and Lab Culture	
2	8/25	Liquid Handling: Pipettes (Single and Multichannel), Balances, Precision and Accuracy; Making Reagents, Standards, and Working Solutions	See Canvas
3	9/1	Measuring Light: Spectrophotometry	See Canvas
4	9/8	Student vs. Robot: Accuracy and Precision, Calibration Curve; Water Analyzer AQ400	See Canvas
5	9/15	Introduction to Staining and Visualization (Old School): Limu Specimen Prep, Cyanotype Materials Prep	See Canvas
6	9/22	Microscopy: Dissecting, Compound, and Polarized	See Canvas
7	9/29	Intro to Fluorescence Microscopy	See Canvas
8	10/6	Midterm on Weeks 1-7	See Canvas
9	10/13	WELLNESS WEEK – No Class	See Canvas
10	10/20	Bento Box Lab Part 1	See Canvas
11	10/27	Bento Box Lab Part 2	See Canvas
12	11/3	Old School Visualization: Limu Cyanotype Printing	See Canvas
13	11/10	CRISPR Lab (Transformation, Gene Editing)	See Canvas
14	11/17	TBD – see Canvas	See Canvas
15	11/24	Exam Review	See Canvas
16	12/1	Final – Lab Olympics	See Canvas