



Chaminade University OF HONOLULU

Course Syllabus

Course Number: BI 210L

Course Title: Biotechniques Lab

Department Name: Natural Sciences and Mathematics

College/School/Division Name: Chaminade University of Honolulu

Term: Fall 2019

Course Credits: 1

Class Meeting Days: Tuesday

Class Meeting Hours: 2:30 – 5:20 PM

Class Location: Henry Hall Lab 1

Instructor Name: Dr. Chrystie Naeole

Email: chrystie.naeole@chaminade.edu

Phone: 808-739-8551

Office Location: Wesselkamper Science Center, Room 109

Office Hours: By appointment

1. 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.

2. 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.

3. 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

4. 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 'Ōlelo No'eau (Hawaiian proverbs) and Marianist core beliefs:

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; pela iho la ka nohana 'ohana ('Ōlelo 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 ('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

5. Program Learning Outcomes

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

1. An understanding of the scientific method and the ability to design and test a hypothesis
2. The ability to visualize, statistically evaluate, validate and interpret scientific data, and to communicate science effectively both orally and in writing
3. The ability to acquire and comprehend information from published scientific literature and to employ computational resources in the resolution of biological problems
4. An understanding of the chemical and physical principles that unite all life forms, and of biological organization at the molecular, cellular, tissue, organ, organism and system levels
5. The ability to 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. An understanding of the etiology of major human disease burdens in terms of pathophysiological mechanisms, epidemiology within populations and possible therapeutic approaches
7. An understanding of the entry requirements, career pathways and progression for the major post-graduate fields of research, education and the health professions

6. 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	PLO 7
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.							x
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						x
4. Precise and reproducible manipulations: Be familiar with basic laboratory equipment operation and theory of its operation as well as be able to		x					x

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.							
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				x

7. Course Prerequisites

None.

8. 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.

9. Course Website: <https://chaminade.instructure.com/courses/11327>

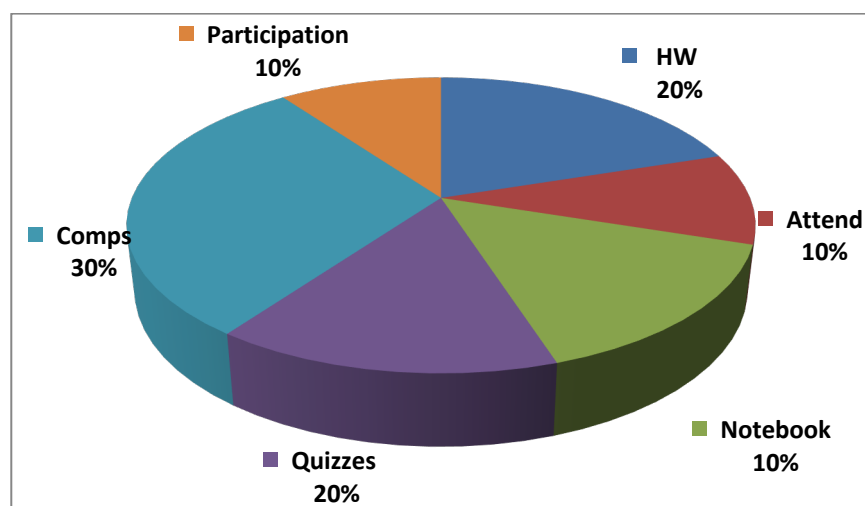
10. Technical Assistance for Canvas Users

- 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

11. 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 (<https://chaminade.edu/advising/kokua-ike/>) for the latest times, list of drop-in hours, and information on scheduling an appointment. Free online tutoring is also available via Smarthinking. Smarthinking can be accessed 24/7 from your Canvas account. Simply click Account - Notifications - Smarthinking. For more information, please contact Kōkua `Ike at tutoring@chaminade.edu or 808-739-8305.

12. Assessment



13. 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 notebook:

- We will be piloting the use of electronic notebooks this semester. Additional information is available on Canvas.
- Notebooks will be checked, for grade, randomly throughout the semester.

➤ Comps & Quizzes:

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

14. Course Schedule (subject to change as instructor deems necessary)

Week	Date	Lab topic	Assignments
1	Jan 14	Lab Culture: Safety, Chemicals, etc.	Finding a Chemical Hydrochloric Acid (M)SD Introduction to Precision & Accuracy (Pre-Lab Reading) Prep for next week quiz
2	Jan 21	Introduction to Precision & Accuracy pt 1	Lab Safety Quiz
3	Jan 28	Precision & Accuracy: Balances	Prep for next week quiz
4	Feb 4	Introduction to Precision & Accuracy pt 2	Balances Quiz Upena Making Discussion
5	Feb 11	Precision & Accuracy: Pipettes	Intro to Precision & Accuracy Quiz Prep for next week quiz
6	Feb 18	Precision & Accuracy: Microscopes	Pipettes Quiz Prep for next week quiz
7	Feb 25	Introduction to Solutions & Dilutions	Microscopes Quiz Intro to Soln & Dilution Discussion Prep for next week quiz
8	Mar 3	Solutions & Dilutions: Molarity, Concentrations, Dilution Factors	Math Worksheet (due next week) Prep for next week quiz
9	Mar 10	Solutions & Dilutions: Buffers & pH	Molarity, Conc and Dil Quiz Prep for next week quiz
10	Mar 17	Solutions & Dilutions: Serial Dilutions	Buffers and pH Quiz Prep for next class quiz
11	Mar 24	Spring Break	
12	Mar 31	Technical Application(s): DNA and PCR	Serial Dilutions Quiz Prep for next week quiz
13	Apr 7	Technical Application(s): Gel Electrophoresis	DNA & PCR Quiz Prep for next week quiz
14	Apr 14	Introduction to Data Visualization	

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.

15.1. Late Work Policy

- Presence in class is mandatory & necessary in order for a student to fully grasp concepts. Students are expected to attend regularly 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.
- 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.
- 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.
- 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 0.

15.2. 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.

15.3. Writing Policy

This course does not have written assignments.

15.4. Instructor and Student Communication

Questions for this course can be emailed to the instructor at chrystie.naeole@chaminade.edu. Online, in-person and phone conferences can be arranged. Response time will usually take place within 24 hours of receiving your correspondence.

15.5. 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.

15.6. ADA Policy

Statement from the [New Student Handbook](#)

Pursuant to federal and state laws, including the Americans with Disabilities Act of 1990 as amended by the ADA

Amendments Act of 2008 and Section 504 of the Rehabilitation Act of 1973, all qualified students with disabilities are protected from discrimination on the basis of disability and are eligible for reasonable accommodations or modifications in the academic environment to enable them to equal access to academic programs, services, or activities. If a student would like to determine if they meet the criteria for accommodations, they should contact the Counseling Center in the Student Support Services Building, Room 101, by phone at (808) 735-4845 or email: counselingcenter@chaminade.edu for further information. Web: studentaffairs.chaminade.edu/counseling-center/counseling-services

15.7. 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.

15.8. Attendance Policy

The following attendance policy is from the 2018-2019 Academic Catalog (p. 57-58):

- 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.

15.9. Academic Conduct Policy

From the 2018-2019 Undergraduate Academic Catalog (p. 42):

Any community must have a set of rules and standards of conduct 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. For further information, please refer to the Student Handbook: <https://chaminade.edu/wp-content/uploads/2019/08/NEW-STUDENT-HANDBOOK-19-20-Final-8.20.19.pdf>