



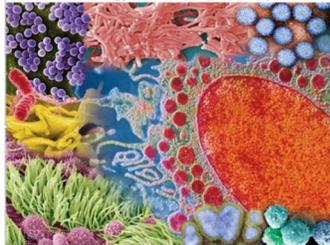
Natural Sciences and Mathematics  
Biology

## BI-430L Microbiology

Henry Hall, Lab 0, Th 2:30 PM - 5:20 PM

Lab Credits:1 Section: #01-1 Term: Spring 2026

### Instructor Information



**Instructor:** Frederique Kandel, PhD.

**Email:** frederique.kandel@chaminade.edu

**Phone:** 808-7398376

**Office Location:** Henry 106

**Office Hours:** Friday 10am and by appointment

### Communication

Please use your Chaminade email to communicate with the instructor via email outside the class. Response time will be within three business days. In-person and Zoom conferences can be arranged.

### School & Department Information

#### School of Natural Sciences and Mathematics

Office Location: Wesselkamper Room 116 Phone: (808) 440-4204

If you have questions regarding the Biology department, reach out to your Instructor or the School of Natural Sciences and Mathematics.

### Course Description & Materials

#### Catalog Course Description

BI 430L is the laboratory corresponding to BI 430. This laboratory is designed to allow the student to experience hands-on applications of the concepts explored in class.

Prerequisites: EN-102, COM-101, BI-307, BI-307L *or consent of instructor.*

Co-requisites: BI-430 *or consent of instructor.*

## Course overview

As all courses at Chaminade, this class aims to provide an integral quality education, in family spirit and ultimately to educate for service, justice and peace.

Another characteristic of Marianist Education is to “Educate for adaptation and change”. This is especially particularly appropriate and relevant for the study of any science and of biology in particular. Tools and technologies in microbiology have advanced, and continue to advance at an increasing pace, so is our understanding of microbes. For instance, because we do not know how to culture many bacteria, until recently only a small percentage could be studied. In the last forty years, DNA sequencing techniques allowed scientist to identify such “non-culturable” bacteria. This lead to the realization that microbial diversity had been grossly underestimated. New tools in genomics, metabolomics and concomitant advances in bioinformatics are also unveiling the crucial role microbes play in the biogeochemical processes of our environment and their contribution to our health. The wide adoption of CRISPR as a gene editing tool is poised to revolutionize the treatment of various genetic conditions, but it also poses serious ethical questions and potential ecological risks.

In this laboratory, along with the practice of classical staining culture techniques still relevant today, you will be introduced to some of these modern tools via lab experiments and simulations.

## Time Allocation

This is a **one-credit hour course requiring 45 clock hours of student engagement**, per the official CUH Credit Hour Policy.

During this semester student will spend approximately:

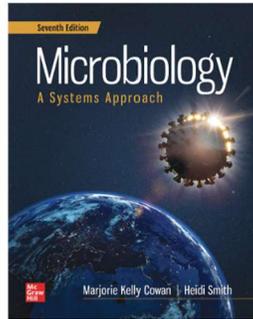
- 30 hours in laboratory,
- 10+ hours of laboratory preparation, study and lab summary writing plus homework including laboratory simulations.
- 2.5+ hours reviewing for exam 1 (You will need more than 2.5 hours if you did not keep up with the material, so please review your data/note after each lab).
- 2.5+ hours reviewing for the final exam.

## Required Materials

The material required for the class BI-430 and the corresponding laboratory BI-430L is an access to McGraw-Hill “Connect” with the text:

**Microbiology: A Systems Approach by Marjorie Kelly Cowan, Heidi Smith**

SKU:9781266244230R365 - 7<sup>TH</sup>. Release 2025,



The most economical option is to buy the ACCESS CARD to connect (includes the e-book) from either our bookstore or the McGraw hill link in Canvas. Additional material will be supplied as needed using canvas.

**Canvas** (<https://chaminade.instructure.com>)

You are already familiar with Canvas the learning management system (LMS) used at Chaminade. Our course URL is:

<https://chaminade.instructure.com/courses/45015>

We will discuss the organization of the platform for this course during our first class.

Further information can be accessed via the resources below.

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](mailto:helpdesk@chaminade.edu) or call (808) 735-4855

## Learning Outcomes

### Program Learning Outcomes (PLOs)

Upon completion of [degree program name], 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. Design and conduct 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.

### 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, and integrity of creation.
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 ('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

**Course Learning Outcomes (CLOs) with their alignments to PLO and the Marianist and Hawaiian values promoted at Chaminade University**

<i>Upon Completion of this laboratory course, students will be able to:</i>		Program outcome link.	In alignment with:	
			Marianist values	Hawaiian values
1	Apply safe laboratory practices	2	2,3,4,5	2,3,4,5
2	List, explain and experience the steps of the scientific method	2	2,3,4,5	2,3,4,5
3	Use microscopy techniques and various types of microscopes to observe bacteria and other relevant microorganisms.	2	2,3,4,5	2,3,4,5
4	Experiment with various methods of microbial culture, test various antimicrobial substances and discuss their importance and limitations	2,3,4	2,3,4,5	2,3,4,5

5	Make use of various techniques to identify microorganisms	2,3	2,3,4,5	2,3,4,5
6	Apply laboratory techniques to quantify microorganisms	2, 3	2,3,4,5	2,3,4,5
7	Use CRISPR to modify the genetic material of bacteria	2, 3	2,3,4,5	2,3,4,5

## Course Activities and Assessment

	% of grade	Due Date
Assignments	20	Simulations and exercises are assigned weekly.
Midterm	35	3/5/2026
Final exam	35	4/30/2026
Attendance	10	Ongoing evaluation

## Course Policies

### Attendance

**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.

### **Late Work**

Assignments must be submitted by the due date. In case of issues, contact the instructor as soon as possible.

### **Extra Credit**

No extra credit will be granted. The open-book connect homework exercises given after each chapter are and give you plenty of opportunity to earn points. More importantly they will allow you to systematically review the material.

### **Grades of Incomplete**

As per catalog policy, under exceptional circumstances the instructor can grant an incomplete grade. The work will have to be completed within 90 days.

### **Final Grades**

Final grades are submitted to [Self-Service](#):

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, 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.

For the most up to date information, please refer to the [Academic Honesty Policy](#) on the Chaminade University Catalog website.

## **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. 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.

## **Nondiscrimination Policy & 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](#).

#### **Hazing Prevention Resources and Athlete Helpline:**

Assists athletes, parents, coaches, and any allies interested in ensuring physical and mental safety for sports communities by offering confidential emotional support, crisis intervention, informational athlete-focused resources, and guidance related to concerns about any type of abuse—including hazing.

Chaminade University's Hazing Policy:

<https://catalog.chaminade.edu/studenthandbook/codeofconduct>

<https://hazingpreventionnetwork.org/athlete-helpline/>

<https://hazingpreventionnetwork.org/how-to-report-hazing/>

**Basic Needs Resources:** <https://chaminade.edu/basic-needs/>

#### **Campus Safety/ SafeSwords**

A program for students, faculty and staff, who may feel uncomfortable or unsafe walking alone on campus, at any time of the day. Call security, and a security professional will meet you at your location on campus. The security professional will escort you to your residence hall, car, etc.

Students may utilize this when walking to and from night classes around campus or after late night events. [SafeSwords Webpage](#)

### **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.

### **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 Kōkua 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 Kōkua Ike via email at [ada@chaminade.edu](mailto:ada@chaminade.edu) each semester if changes or notifications are needed.

### **Kōkua 'Ike: Tutoring & 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](mailto:tutoring@chaminade.edu) or 808-739-8305.

## Changes to the Syllabus

While the provisions of this syllabus are as accurate and complete as possible, your instructor reserves the right to change any provision herein at any time. Every effort will be made to keep you advised of such changes, and information about such changes will be available from your instructor.

## Tentative Schedule

<b>1/15/2026</b>	<b>Introduction/lab safety</b>
<b>1/22/2026</b>	Simple staining
<b>1/29/2026</b>	Gram stain+ selective and differential agar setup
<b>2/5/2026</b>	Endospore staining + Selective and differential agar results
<b>2/12/2026</b>	Biochemical testing and Bacteria identification+Virus worksheet
<b>2/19/2026</b>	Eukaryotes part 1 Fungi- Fluorescent microscopy
<b>2/26/2026</b>	Eukaryotes part 2 Protists
<b>3/5/2026</b>	<b>MIDTERM</b>
<b>3/12/2026</b>	Kirby-Bauer setup-COVID-19 tests: how do they work?
<b>3/19/2026</b>	Spring Break, No class
<b>3/26/2026</b>	Prince Kuhio day, No class
<b>4/2/2026</b>	Kirby Bauer results + Bacterial enumeration setup
<b>4/9/2026</b>	Bacterial enumeration results+Eukaryote part 3-helminths
<b>4/16/2026</b>	CRISPR-1-Introduction to ESM
<b>4/23/2026</b>	CRISPR-2
<b>4/30/2026</b>	<b>FINAL EXAM</b>