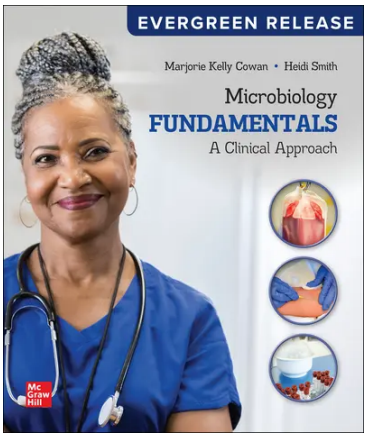
Chaminade University OF HONOLULU



General Microbiology
Biological Science BI162

Course Number: BI162
Course Title: General Microbiology
Department Name: Biology
College/School/Division Name: School of Natural Sciences and Mathematics
Class Meeting Days: Monday/Wednesday/Friday
Class Meeting Hours: 10:30 am - 11:20 am
Class Location: Henry Hall, Lab Room 4

Instructor Name: Dr. Mindy McDermott
Email: mindy.mcdermott@chaminade.edu
Office Location: Wesselkamper 103
Office Hours: by appointment

Required Learning Materials
1. Microbiology Fundamentals, 4th edition, , By Marjorie Kelly Cowan, Heidi Smith and Jennifer Lusk; McGraw-Hill, ISBN: 1260786048 Release: 2025

2. Access to McGraw-Hill “Connect” used with the Microbiology Fundamentals: A Clinical Approach. 4th Edition textbook.

The most economical option is to buy the ACCESS CARD to connect (includes the e-book) from either our bookstore or directly from McGraw-Hill at McGraw Hill Higher Education (mheducation.com)
All additional material will be provided on Canvas.

Course Instructions and Credit Hour Policy
This is a three-credit hour course requiring 135 clock hours of student engagement, per the official CUH credit hour policy. Students enrolled in this course are anticipated to spend 37.5 hours in class, 10 hours studying for and taking each of 5 exams (50), and 20 hours studying for and taking the final exam. There will be an additional 27.5 hours of work required above what is listed here, to include but not limited to, course readings, classroom discussions, and homework/writing assignments.

Course Overview
This course provides an introduction to microbiology with a strong emphasis on human health and clinical relevance. Students will explore the fundamental biology of microorganisms, including microbial metabolism and growth, methods of sterilization and disinfection, host–microorganism interactions, immune responses, and the mechanisms by which pathogenic microorganisms cause disease. Students will examine the critical role of the human microbiome in maintaining health, the vast diversity of microorganisms present in our environment, and the beneficial applications of microbes in medicine and biotechnology.

Designed with future health professionals in mind, this course connects microbiological concepts directly to clinical practice and patient care. Concurrent enrollment in the laboratory component (BI 162L) provides hands-on experience with microbiological techniques, aseptic practices, and experimental investigations that reinforce lecture concepts and build essential professional skills. Laboratory exercises will supplement the lecture material to provide first-hand experience with the structure and processes discussed in lecture.

Marianist and 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 ʻŌlelo 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 hâlau hoʻokahi (ʻÔlelo Noʻeau 203)**.** All knowledge is not taught in the same school.

Alignment of Natural Sciences Courses with Marianist & Native 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.

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

Expected Course Learning Outcomes (CLOs)

Upon successful completion of this course, students will be able to:

1. Describe and apply the steps of the scientific method to biological questions.
2. Differentiate among prokaryotic microorganisms, eukaryotic microorganisms, and viruses based on structure, function, and replication.
3. Classify microorganisms using current taxonomic systems and evolutionary relationships.
4. Evaluate the beneficial and harmful roles of microorganisms in human and animal health.
5. Explain fundamental principles of microbial metabolism and genetics and assess the benefits and risks of genetic engineering.
6. Analyze contemporary methods used to prevent, diagnose, and treat infectious diseases.
7. Examine the interactions between human health, microorganisms, and the environment.

Biology Program Learning Outcomes (PLOs)

Upon successful completion of a B.S. degree in Biology, students 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 effectively communicate results 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 Outcome	Program Learning Outcome	Marianist and Hawaiian Values
1. Describe and apply the steps of the scientific method to biological questions.	2	2,3,4,5
2. Differentiate among prokaryotic microorganisms, eukaryotic microorganisms, and viruses based on structure, function, and replication.	1	2,3,4,5
3. Classify microorganisms using current taxonomic systems and evolutionary relationships.	1	2,3,4,5
4. Evaluate the beneficial and harmful roles of microorganisms in human and animal health.	1,5	2,3,4,5
5. Explain fundamental principles of microbial metabolism and genetics and assess the benefits and risks of genetic engineering.	1,4,5	2,3,4,5
6. Analyze contemporary methods used to prevent, diagnose, and treat infectious diseases.	1,4,5	2,3,4,5
7. Examine the interactions between human health, microorganisms, and the environment.	1	2,3,4,5

Strategies for Success

1. Read your chapters in TopHat before the lecture
2. Attend all lectures and study sessions
3. Actively engage in all activities. Don't divide up the work and copy
4. Devote a block of time each day to your A&P course
    - You should be spending 1-2 hours at home for every hour in the lecture
5. Set up a study schedule and stick to it
6. Do not procrastinate
7. Develop the skill of memorization, and practice it regularly
8. Approach the information in different ways and find ways that have special significance to you
    - The more ways you learn something, the more often you access it, and the more importance you assign it, the easier it becomes to remember.
9. Have your classmates help motivate you and form study groups
10. As soon as you experience difficulty with the course, seek assistance

Grading Policies

Grading Procedure

Grades will reflect an overall understanding of topics covered during the course. Attendance, completion of assigned readings, and attentiveness in the lecture will ensure satisfactory performance in the class. Demonstrating a thorough understanding of course material and intelligent engagement in class discussions constitutes high achievement in the course. We will have in-class work to do to facilitate class discussion, which may range from group activities, reviews of current literature, media, articles, and class discussions. Group activities may consist of brief oral reports or short written reports. For written coursework, you will be graded on your ability not only to answer the question, but also in how effectively you can defend your answer/position using your knowledge of the subject & applying what you learned using appropriate facts and examples.

Grading Weights
Assignments 20%
Exam 1 23%
Exam 2 23%
Final exam (comprehensive) 25%
Attendance/participation 9%

Grading Scale
Letter grades are given in all courses except those conducted on a credit/no credit basis. Grades are calculated from the student's daily work, class participation, tests, reports and examinations. They are interpreted as follows:

A (90% & above) 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 course
F (59% & below) Failed to grasp the minimum subject matter; no credit given

Tutoring and Writing Services
Chaminade is proud to offer free, one-on-one tutoring and writing assistance to all students. Tutoring 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, which can be accessed 24/7 from your Canvas account (click Account – Notifications – Smarthinking). For more information, please contact Kōkua `Ike at tutoring@chaminade.edu or 808-739-8305.

Course Policies

Late Work Policy
Assignments are expected on the due date. If you are unable to make the due date, a conversation must be had with me PRIOR to the due date for an extension. Unexcused late work will receive a reduced grade.

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 30 days after the end of the semester or term. This limit may not be extended.

Instructor and Student Communication
Questions for this course can be emailed to the instructor at [mindy.mcdermott@chaminade.edu]. Online, in-person, and phone conferences can be arranged. Response time will take place as soon as possible, usually within one day.

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.

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@chamiande.edu for further information. Web: studentaffairs.chaminade.edu/counseling-center/counseling-services

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 dedicated to 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.

Attendance Policy
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. Notification may be done by emailing the instructor's Chaminade email address. 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.

Academic Conduct Policy
The success of the Honor Code is made possible only with the acceptance and cooperation of every student. Each student is expected to maintain the principles of the Code. Example of Honor Code violations include, but are not limited to:

- Giving or receiving information from another student during an examination;
- Using unauthorized sources for answers during an examination;
- Illegally obtained test questions before the test;
- Any and all forms of plagiarism – submit all or part of someone else's work or ideas as your own;
- The destruction and/or confiscation of school and/or personal property.

Violations of Academic Integrity include, but are not limited to:

- Cheating: Intentionally using or attempting to use unauthorized materials, information, notes, study aids, or other devices in an academic exercise.
- Fabrication and Falsification: Intentional and unauthorized alteration or invention of any information or citation in an academic exercise. Falsification is a matter of inventing or counterfeiting information for use in any academic exercise.
- Multiple Submissions: The submission of substantial portions of the same academic work for credit (including oral reports) more than once without authorization.
- Plagiarism: Intentionally or knowingly presenting the work of another as one's own (i.e., without proper acknowledgment of the source).
- Abuse of Academic Materials: Intentionally or knowingly destroying, stealing, or making inaccessible library or other academic resource materials.
- Complicity in Academic Dishonesty: Intentionally or knowingly helping or attempting to help another to commit an act of academic dishonesty.

Plagiarism includes, but is not limited to:

- Complete or partial copying directly from a published or unpublished source without proper acknowledgement to the author. Minor changes in wording or syntax are not sufficient to avoid charges of plagiarism. Proper acknowledgement of the source of a text is always mandatory.
- Paraphrasing the work of another without proper author acknowledgement.
- Submitting as one's own original work, however freely given or purchased, the original exam, research paper, manuscript, report, computer file, or other assignment that has been prepared by another individual.
- Use of generative artificial intelligence (AI) without permission by instructor. Sentences, paragraphs, or entire papers written by AI are not original work.

**Students are encouraged to utilize change tracking and history functions of their word processing software to help document that a work is original to the student.*

Consequences of academic honesty violations:

From the Chaminade University catalog (https://catalog.chaminade.edu/generalinformation/academicaffairs/policies/academichonesty) : 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.

**Additional information on student conduct can be found in the student handbook.*

Week	Week of	Assignments	Important this week
1	1/12	Introduction to Microbes and Their Building Blocks	
2	1/19	*Dr. Martin Luther King Jr. Day* *No Class*	
2	1/21	Tools/Methods for the Culturing and Observation of Microorganisms	**Add/Drop ends**
3	1/26	Bacteria and Archaea	
4	2/2	Eukaryotes	
5	2/9	Viruses and Prions	
6	2/16	*President's Day* *No Class*	
6	2/18	**Exam 1**	**Exam 1**
7	2/23	Microbial Nutrition and Growth	
8	3/2	Microbial Metabolism	
9	3/9	Microbial Genetics and Genetic Engineering	

10	3/16	SPRING BREAK	
11	3/23	Physical and Chemical Control of Microbes	
12	3/30	Antimicrobial Treatment	
13	4/6	**Exam 2** Interactions Between Microbes and Humans	**Exam 2**
14	4/13	Overview of Immunity & Diagnosing Infections	
15	4/20	Diagnosing Infections	
16	4/27	Final Exam Review	
17	5/4	**Cumulative Final Exam**	**Final Exam**

***Note: This syllabus and course schedule are living documents: they are free to change**. I will adhere as closely as possible, but there may be times in which we will spend extra time on a particular topic or add/delete a topic to the course. I strive to keep our education current and relevant to the world in which we live.