

BI-250 Microbiology and Cell Biology for Nursing

Instructor: Angelique Showman
Section: -01 T Th 11:30 – 12:50 Wesselkamper Science Ctr, Room 120
-02 W F 14:30 – 15:50 Henry Hall, Room 109
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Course Requirements:

- Textbook or eBook: Microbiology Fundamentals: a Clinical Approach, 2nd Edition. Marjorie Kelly Cowan (McGraw Hill)
- eCollege (chaminade.ecollege.com)
- Twitter.com
- Quizlet.com

Course Recommendations:

- Connect Plus (McGraw Hill)
- iPad or other tablet device (certain iPad apps will be recommended through the course; those using any other tablet device will have to search for alternatives to these apps. Please come see me and I can attempt to help, but I may be incompatible with non-Apple devices.)

Prerequisites:

BI 151/151L and BI 152/152L.
MA 107 or equivalent with grade of C or better.

Course Description:

This course will include the major topics of cell biology and microbiology that are foundational for an understanding of normal and pathological cellular processes. Cell biology topics will include the study of prokaryotic and eukaryotic cell structures and functions. Microbiology topics will cover the main classes of microorganisms/infectious agents (viruses, bacteria, fungi, parasites), how they are identified, their growth requirements, the role of the immune system in controlling infections and drug strategies that combat these infections.

Course Competencies:

Understand and employ the scientific method in solving complex problems associated with natural science.

Understand how technology and science impacts daily lives.

Awareness of ethical values and how they relate to personal values.

Develop the ability to make sound judgment based on quantitative/qualitative assessment using logical deductive reasoning.

Integrate knowledge and concepts learned from the various scholarly disciplines within natural science.

Ability to understand/create graphical and/or tabulated data to represent results.

Course Objectives:

- Understand the basics of chemistry and the chemical building blocks that make up microbes as well as all life forms.
- Differentiate between the different taxonomic domains.
- Apply methods for culturing and analyzing microorganisms.
- Grasp the importance of aseptic techniques in both collection of samples and avoidance of contaminating patients including physical and chemical control of microbes.
- Compare and contrast the similarities and differences between prokaryotic, eukaryotic and viral cells and additional structures.
- Describe the life cycles including reproduction of bacteria, fungi and protozoa as well as propagation of viruses.
- Identify bacterial growth patterns both in culture and microscopically.
- Understand the importance of beneficial microbes vs. pathogenic microbes.
- Learn the nutritional and environment factors that influence the growth of microbes.
- Compare the role of enzymes in metabolism (catabolism and anabolism) and production of energy in microbial and animal systems.
- Understand the basics of genetics as it applies to both microbes and animals including the importance of genetic engineering.
- Apply the principles of antimicrobial therapy while understanding the interactions between these therapies and microbes including causes of antimicrobial resistance and drug/host interactions.
- Recognize the interactions that occur between microbes and humans, infection progression and epidemiology.
- Examine host defenses and describe the importance and differences between nonspecific and acquired immunity.
- Describe the stages of specific immunity, characteristics of antigens and specialized cells involved in the final line of host defense.
- Comprehend the importance of vaccines, disorders of the immune system resulting in disease and health disorders.
- Exhibit a basic understanding of multiple techniques used to diagnose infections.
- Identify the cause of infectious diseases affecting specific anatomical systems while deducing the importance of normal biota in the health of these systems.
- Understand the synergistic connection of human health, animal health and health of the environment.

Class Policies and Reminders:

Attendance: In class quizzes/exams **cannot** be made up at a later time. If you miss a midterm exam, a written explanation for your absence is required (doctor's note or other document may be needed to determine if the absence is excused). Unexcused absences will result in a score of zero for that exam. Any student who does not take the final exam will fail the course.

Student Conduct: Please refer to the Student Handbook for the CUH policies on Classroom Behavior and Academic Dishonesty.

Title IX: Chaminade University of Honolulu recognizes the inherent dignity of all individuals and promotes respect for all people. Sexual misconduct will NOT be tolerated at Chaminade University of Honolulu. If you have been the victim of sexual misconduct, 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, I must report the matter to the Title IX Coordinator. Should you want to report to a confidential source you may contact the following:

Counseling Center | 808-735-4845 |

Any priest serving as a sacramental confessor or any ordained religious leader serving in the sacred confidence role. | 808-735-4774 |

ADA Accommodations: Students with special needs who meet criteria for the Americans with Disabilities Act (ADA) provisions must provide written documentation of the need for accommodations from the CUH Counseling Center (Dr. June Yasuhara; phone 735-4845) by the end of week three of the class, in order for the instructor to plan accordingly. Failure to provide written documentation will prevent your instructor from making the necessary accommodations. Please refer any questions to the Dean of Students and review the procedures at http://www.chaminade.edu/student_life/sss/counseling_services.php.

Music Devices and Cellphones: As a courtesy to other students and the instructor, the use of music devices, cell phones, smart phones, PDAs (personal digital assistant), pagers or any other electronic device with the potential to make noise is prohibited during all Natural Science and Mathematics classes at Chaminade, unless specifically permitted by your instructor. These devices must be turned off or placed on silent (not vibrate) during the entire lecture time. During quizzes and exams, these devices need to be turned off and stored with the professor until completion of the exam/quiz. If during an exam, your electronic device makes noise (this includes vibrating), you may be asked to turn in your exam/quiz for a grade of zero and leave the room while the rest of the class finishes. The use of any other electronic device other than an approved scientific calculator during exams or quizzes will be considered a form of academic dishonesty and will result in a failing grade for that assignment. Students who cannot comply with this rule will be asked to leave class. Please refer any questions to the Dean of Natural Sciences and Mathematics.

Opportunities for Help: If you need assistance with the material for this course, come to my office for help! I have set office hours, but I am often available at other times. Feel free to drop by or send me an email angelique.showman@chaminade.edu (using your Chaminade account; do **NOT** email me through eCollege!) to make a specific appointment. In addition, there are tutors available at the AAP. **Do NOT wait until the last minute to get help!**

Websites:

eCollege: I will be utilizing eCollege primarily as a document depository. I will be uploading slide handouts for the lectures by the Monday before the first lecture date for you to print out (if you choose) and follow along during the lecture. Submission for the Applied Chemistry Paper will also be through this platform. In addition, I urge you to use the discussion feature to discuss homework problems or other questions you may have regarding the material. I will be monitoring any discussions, so I can provide additional information and assistance if needed. Periodically, I will post current points and grades on eCollege (usually following grading of exams).

Twitter: You will be required to have a Twitter account for class announcements, science articles and access to recorded examples used in lecture/lab. Please use your first and last name when creating your Twitter account. Follow me on Twitter: https://twitter.com/CUH_nrschem_Ang

Quizlet: As time permits, I will provide a few study cards for this course. You can join the course via It is free to create a Quizlet account; please use your first and last name in your account name. Extra credit may be made available through Quizlet.

Grading, Homework and Exams

Participation: Points for participation may be in the form of pop quizzes, short-writing assignments, answering of lecture questions and/or other activities throughout the semester. Students who are observed texting, surfing the web, sleeping or any other distraction will be given zero points for the day and possibly asked to leave lecture.

Worksheets: Worksheets will be provided throughout the semester to prepare you for the exams. It is strongly urged that you form study groups to work through these problems as exam problems may be very similar. Worksheets will be posted on eCollege but keys will not be given; if you are unsure of the answers to questions, come see me. Credit will not be given for completion of worksheet; these are designed to help you prepare for exams. Review session may be scheduled before the exam; attendance to these are optional but I strongly encourage you to attend.

Exams: Exams include three midterms and one final comprehensive exam. No electronic devices are permissible including cellular or smart phones (iPhone, Blackberry, etc.).

Final Exam Dates: Final exam dates will be announced later in the semester. **Do NOT schedule work, plane tickets home, etc during the Monday-Thursday exam week scheduled by the university as the final exam time can fall during any time this week.** This exam will be cumulative, covering all of the material presented in class over the semester. Any student who does not take the final exam will fail the course.

Course Grades: The course grades will be based on the following scale (650 total points). Any changes will be announced in class.

Participation – 200 points
Midterm exams – 300 points (100 each)
Final exam 150 points

Letter grade (based on 600 points): A = 90 - 100% (582 – 650 points)
 B = 80 - 89% (517 – 581 points)
 C = 70 - 79% (452 – 516 points)
 D = 60 - 69% (387 – 451 points)
 F = 59% and below (<386 – 0 point)

Tentative Class Schedule and Important Dates:

Week	Dates	Description
1	8/25 & 26	Course Information Chapter 1: Intro to Microbes
	8/27 & 28	Chemistry Boot Camp: Building Blocks of Life
2	W 9/2	Add-Drop Last Day
	9/1 & 2	Chapter 3: Bacteria and Archaea
	9/3 & 4	Chapter 4: Eukaryotic Cells and Microorganisms
3	9/8 & 9	Chapter 5: Viral Structures and Life Cycles
	9/10 & 11	Chapter 6: Microbial Nutrition and Growth
4	9/15 & 16	EXAM I: Ch 1 including Chemistry Boot Camp, Ch 3, 4, 5, 6
	9/17 & 18	Chapter 7: Microbial Metabolism
5	9/22 & 23	Chapter 7 cont.: Microbial Metabolism
	9/24 & 25	Chapter 8: Microbial Genetics and Genetic Engineering
6	9/29 & 9/30	Chapter 8 cont.: Microbial Genetics and Genetic Engineering
	10/1 & 2	Chapter 9: Physical and Chemical Control of Microbes
7	10/6 & 7	Chapter 10: Antimicrobial Treatment
	10/8 & 9	Chapter 11: Interactions Between Microbes and Humans
8	10/13 & 14	EXAM II: Ch. 7, 8, 9, 10, 11
	10/15 & 16	Chapter 12: Host Defenses I: Overview and Nonspecific Defenses
9	10/20 & 21	Chapter 13: Host Defenses II: Specific Immunity and Immunizations
	10/22 & 23	Chapter 13 cont.: Host Defenses II: Specific Immunity and Immunizations

Week	Dates	Description
10	10/27 & 28	Chapter 14: Disorders in Immunity Chapter 15: Diagnosing Infections
	10/29 & 30	Chapter 15 cont.: Diagnosing Infections
11	11/3 & 4	Chapter 16: Infectious Diseases - Skin and Eyes
	11/5 & 6	Chapter 17: Infectious Diseases – Nervous System
	F 11/6	<i>Last Day to Withdraw, Credit/No Credit</i>
12	11/10 & 11	NO CLASS: Veterans' Day
	11/12 & 13	EXAM III: Ch. 12, 13, 14, 15, 16, 17
13	11/17 & 18	Chapter 18: Infectious Diseases – Cardiovascular and Lymphatic System
	11/19 & 20	Chapter 19: Infectious Diseases – Respiratory Systems Chapter 20: Infectious Diseases – Gastrointestinal Tract
14	11/24 & 25	Chapter 20 cont.: Infectious Diseases – Gastrointestinal Tract Chapter 21: Infectious Diseases – Genitourinary System
	11/26 & 27	NO CLASS: Thanksgiving
15	12/1 & 2	Chapter 22: The Interconnected Health of the Environment, Humans, and Other Animals
	12/3 & 4	Review for Final: Emphasis on 18, 19, 20, 21, 22

Class schedule is subject to change and will be announced in class as needed.