



Microbiology | Lecture and Lab

Academic Year 2020-2021

Course Information

Course Numbers

BIO231/BIO231L

Total Credits

4 (3 Lecture + 1 Lab)

Time Requirement

75 hrs (Lecture 45hrs + Lab 30hrs)

Course Details

Recommended Prerequisites

High School Diploma or equivalent; General Education courses are highly recommended

Course Description

The course is designed to convey general concepts, methods, and applications of microbiology for health sciences. The role of microorganisms in the environment and in human disease is discussed. Topics include: immunology, bacteriology, virology, and mycology; the morphology, biochemistry, and physiology of microorganisms including bacteria, viruses, and fungi; the diseases caused by these microorganisms and their treatments. Laboratory portion of the course provides firsthand experiences that inform, illustrate, expand, and reinforce major concepts discussed in lecture.

Lecture and Laboratory Communication

A website will be set up on Canvas by your instructor.

Log in with your Username and password: <https://scuhs.instructure.com>

Faculty Information

Refer to the Canvas course webpage for this information.

Class Meeting Times

Refer to Canvas course webpage for this information.

Instructional Materials

Required Text(s)

Lecture: An Introduction to Microbiology, 11th Ed., by Tortora, Funke & Case (ISBN: 13: 9780321767387)

- OR - Chess, Talaro's Foundations in Microbiology, 11e (ISBN-13: 978-1259705212)

Lab

SCU Microbiology Laboratory Manual (available on Canvas)

Course Purpose

Student Learning Outcomes:

At the conclusion of this course, a successful student should be able to:

1. Explain the diversity of microbes.
2. Compare various metabolic and replicative processes
3. Classify various microorganisms
4. Apply the principles of microbial genetics
5. Understand the basics of biotechnology equipment and principles, including recombinant DNA methods.
6. Understand pathogenicity and epidemiology.
7. Identify the components of the immune system and describe the process of immune response in detail.

Course Schedule

(subject to slight modifications by the instructor)

Day	Lecture	Assessment
1	Introduction Chapter 1: Microbial World and you Chapter 2: Chemical Principles	Class Participation
2	Chapter 3: Observing Microbes Through a Microscope Chapter 4: Functional Anatomy of Prokaryotic and eukaryotic cells	Class participation
3	Chapter 5: Microbial Metabolism Chapter 6: Microbial Growth	Exam 1
4	Chapter 8: Microbial Genetics Chapter 13: Viruses, Viroids, and Prions	Class participation
5	Chapter 14: Principles of Disease and Epidemiology Chapter 15: Microbial Mechanisms of Pathogenicity	Exam 2
6	Chapter 16: Innate Immunity: Nonspecific Defenses of the Host Chapter 17: Adaptive Immunity: Specific Defenses of the Host	Class participation
7	Chapter 18: Practical Applications of Immunology Chapter 19: Disorders Associated with the Immune System	Exam 3
8	Chapter 9: Biotechnology Chapter 10: Classification of Microorganisms	Class participation
9	Lecture 20: Antimicrobial Drugs	Class participation
10	Review and Final	Exam 4

Tentative Grading Procedures

Lecture

Assessment	Points	Weight (%)
Exam 1		20
Exam 2		20
Exam 3		20
Exam 4		30
Participation (in class mini quizzes/activities)		10
Total		100%

Lab Schedule

(subject to slight modifications by the instructor)

Laboratory	Assessment
Biosafety Guidelines, Biosafety Rules, Microorganisms/Biosafety Levels Aseptic Technique, Microscopy	Class activities
Preparing a Smear and Gram Stain	Class activities
Microscopy/ cell structure Organic Substances	Class activities
Capsule Stain, Culture Transfer Techniques, Isolation of Pure Cultures, Viable Plate Counts	Exam 1 Class activities
Effect of Temperature on Microbial Growth, Endospore Stain, Atmospheric Oxygen Requirements	Class activities
Use of Selective, Differential and Enriched, Chemical Control of Microorganisms	Exam 2 Class activities
Chemotherapeutic Agents, Additive and Synergistic Effects of Antibiotics	Class activities
Microbiota of the Mouth and Normal Microbiota of the Throat and Skin and Yogurt Production	Class activities
Review	Exam 3

Tentative Grading Procedures

Lab

Assessment	Weight (%)
Exam 1	20
Exam 2	25
Exam 3	25
Class activities	24
Attendance/Participation	6
Total	100

Grading scale:

Please note letter grades will be assigned only at the end of the trimester.

A = 90% to 100%

B = 80% - less than 90%

C = 70% - less than 80%

D = 60% - less than 70%

F = less than 60%

W = Withdrawal

Grading procedures:

The format of assessments may include multiple choice, short answer, labelling, fill-in-the-blank, or matching examinations. Participation points are required and will be assigned by the instructor as the course progresses using any of the following: in class mini quizzes, activities, online quizzes. For online quizzes students must have a phone, tablet, laptop or other internet connected device to participate. Students must be in class during the participation activities to receive participation marks.

Academic Integrity

Visit SCU's [Academic Integrity](#) page to review policies for professionalism and academic integrity.

Teaching Methods and Activities

The course requires a significant time commitment from students. This commitment is both in terms of reading lecture outlines prior to reading the chapters, as well as reviewing the material.



Lab Required Attire

Close-toed shoes, professional attire and lab coats are mandatory during all lab hours. No shorts, heels, or flip-flops will be allowed in the laboratory; hair longer than shoulder-length must be pulled back and held with a clip or hair tie. Gloves, goggles and additional safety equipment will be required per experiment.

Classroom Expectations

- Please be professional, prompt, prepared, and polite always.
- The professor will adhere to all policies as found in the Student Handbook
- Cellular phones must be kept on silent during class and time.
- Students may not use a phone as a calculator.

Best Practices for Studying

- Read before and read after each class. Skim the chapter before it is covered in lecture in order to become comfortable with some of the terms associated with each topic. Review each chapter after it is covered in class to enhance your understanding of what was covered in class.
- Participate during class by taking notes during class and looking over them afterwards. Don't skip class, arrive late, or leave early. Ask questions for clarification when you don't understand the material.
- Stay on top of the homework and assignments. Do the assigned problems as close to the time as when the topic is covered in the class to increase the depth of your understanding of specific concepts and will help you learn the material more efficiently and effectively.
- Do not wait until the night before the homework is due to start the assignment. You will get more out of it if you take the time to really learn the concepts and review the material without being rushed.
- Find a group of students to study with. Seek out students dedicated to doing well in the course. This makes studying more fun and helps you learn the material better by teaching what you know and learning from your peers what you don't know. Explaining these concepts to others will help you learn the material even better.
- Stay focused by finding an environment where you can study with few distractions.

University Policies

Accommodations

As a learning-centered community, Southern California University of Health Sciences recognizes that all students should be afforded the opportunity to achieve their academic and individual potential. The University recognizes and supports the standards set forth in Section 504 of the Rehabilitation Act and

the American with Disabilities Act (ADA). In accordance with its mission and federal and applicable state laws, the University is committed to making reasonable accommodations for qualified applicants for admission and enrolled students with disabilities. A student who needs accommodation(s) due to a disability should contact the Academic Support Office located in the Learning Resource Center.

Faculty and Dr./Patient Relationships



SCU faculty are highly skilled. However, per University Policy, health care is offered to students through the University Health System only. Neither preclinical nor clinical faculty can provide advice, assessment, treatment, or other elements that would be considered part of a Doctor-Patient relationship outside of a clinical setting established for that purpose.

Learning Activities

Students are expected to spend at least two hours for each lecture hour of course time per week in activities and assessments outside the classroom. Examples of activities include but are not limited to writing papers; reading articles or text; small group work; presentations; completing assignments; preparation for assessments; online activities and other activities that do not include direct instructor interaction and involvement.

All university policies apply to this course and all others. For full policy information please consult the university SCU Policy Manual. For a quick reference guide to the following policies: make-up examination, F-challenge examination, grade posting, results of failing grades, student support information, syllabus amendments, special needs, student conduct, and attendance, please consult the academic policies document housed on the [Online Student Services](#) .