Microbiology | Lecture and Lab

Academic Year 2020-2021

Course Information

Course Numbers	Total Credits	Time Requirement
BIO231/BIO231L	**4 (3 Lecture + 1 Lab)**	**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 first-hand 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)

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

Also includes: Microbiology Relevancy Modules

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)

Wk	Lecture	Assessment
1	Module 1: The Main Themes of Microbiology Module 2: The Chemistry of Biology	Reading Assignments Quizzes Module Exams
2	Module 3: A Survey of Prokaryotic Cells and Microorganisms Module 4: A Survey of Eukaryotic Cells and Microorganisms	Reading Assignments Quizzes Discussions Module Exams
3	Module 5: An Introduction to Viruses Module 6: Microbial Nutrition, Growth, and Metabolism	Reading Assignments Quizzes Module Exams
4	Module 7: Tools of the Laboratory: Methods of Studying Microorganisms Module 8: Physical and Chemical Agents for Microbial Control Module 9: Microbial Genetics	Reading Assignments Quizzes Discussions Module Exams
5	Module 10: An Introduction to Host Defenses and Innate Immunities, Adaptive, Specific Immunity and Immunization Module 11: Microbe–Human Interactions: Infection, Disease, and Epidemiology Module 12: Antimicrobial Drugs	Reading Assignments Quizzes Module Exams

Tentative Grading Procedures
Lecture

Assessment	Points per assignment	Total number of assignments
Reading Assignment	25	12 (1 per module)
Quiz	10	12 (1 per module)
Discussions	50	2 (Wk 2 and Wk 4)
Module Exam	50	12 (1 per module)

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
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

Academic Integrity

Visit SCU's **Academic Integrity** page to review policies for professionalism and academic integrity.

Teaching Methods and Activities

Each week's material is divided into two to three modules, for a total of 12 modules. The course will follow a linear format, meaning you will complete all the modules in sequence. The material in each module will include a combination of readings, videos, and written and interactive assignments. You'll also complete an exam at the end of each module. You may engage in discussions with your peers throughout the course. You can read about each of the course components below. Each module takes about 5 hours to finish. The flow of the modules on Canvas should be followed.

The course requires a significant time commitment from students. This commitment is both in terms of reading lecture PowerPoints prior to reading the chapters, as well as reviewing the material and doing "Check Your Understanding" activities after. In the five weeks of classes, we will cover 12 chapters of the book. Not every topic will be covered in great depth, but students are expected to study each topic in detail.

Introduction: These sections introduce the content covered in each module and outline the learning objectives. Reading the Introduction will help you identify the central concepts of the module and connect what you will learn to the broader context of the course.

Lecture Outline: These sections contain the lecture slides for each chapter. They provide a comprehensive summary of the chapter. Reading the lecture slides prior to doing the reading assignments on Learning Smart will help you to formulate your thoughts and promote active learning.

Reading Assignment: These sections are created on "Connect" through SmartBook. They improve reading productivity and provide students with better knowledge retention. SmartBook is an intelligent eBook that applies the adaptive technology of LearnSmart to ensure a focus on content the student hasn't learned while also promoting long-term retention of learned material. Learn more about this technology at LearnSmart.

Key Point: Its content helps you gain a deeper understanding of the concepts presented in the learning modules and in the textbook. Often, Key Point pages feature animations, games, videos, or other interactive learning resources.

Check Your Understanding: On Check Your Understanding pages, you will practice the module content you've covered using interactive study tools. These interactive study tools will help you assess your progress and identify areas for improvement. Additionally, interactives give you an opportunity to review and apply information presented in your course and in the online textbook before taking exams.

Discussions: This course has two Discussions, one for week two and one for week four. Each discussion requires you to think critically about the content you've learned in the modules for each week. Discussions will be available from Day 1 through to Day 6 at 11:59 p.m Pacific Standard Time (PST) of the assigned week. At the end of Day 6, the Discussion will close, and you will not be able to comment any longer. Your participation in the Discussions is mandatory and will be evaluated by the course faculty.

Exams: There will be 1 exam given at the end of each module. There will be questions that come directly from the textbook chapters, activities, and videos. Questions may come in the form of multiple choices, free response, or fill in the blank. Students will have 30 minutes to complete each exam. These exams are all on Connect. Please pay attention to the due dates. They are final and will not be extended. You must use a remote exam proctoring software to proctor your exams (all 14 exams). You need to have both video and audio on. You need to start the recording prior to starting the test and end after finishing the test. Your face should be in the field of view.

Online Learning at SCU: MySCU is SCU's online campus portal. It includes SCU's learning management system (Canvas). It acts as a single point of access for a variety of campus information. It houses resources such as university policies, campus safety procedures, financial aid forms, class schedules, campus news, library databases, and other electronic resources for faculty, staff, and students. Incoming students receive login credentials and learn to navigate MySCU during orientation.

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 .**