



TRINITY
MEDICAL SCIENCES
UNIVERSITY

SCHOOL OF
BIOMEDICAL SCIENCES

INTRODUCTION TO MICROBIOLOGY

BIOS 201

Course Description

This course provides basic concepts of microbiology with emphasis on microbial pathogenesis and immunity. Topics include the chemical and physical nature of human microbial pathogens, aspects of medical microbiology, identification and control of pathogens, development and spread of antibiotic resistance, disease transmission and host resistance. The course also illustrates the general principles and techniques of laboratory diagnosis of infectious diseases.

Credit: 3 credits

Repeatable: No

Course Structure

The course will be presented in different formats: Lectures with PowerPoints, self-directed learning, discussions and student assignments etc.

Competencies

This course emphasizes competencies to enhance skills essential for a future health care professional.

- Knowledge
 - **Demonstrate content knowledge and skills in foundational courses required by biomedical professionals**
 - **Demonstrate information literacy**
 - Demonstrate quantitative reasoning
 - **Demonstrate longitudinal learning through coursework**
- Critical Thinking
 - **Develop the skills of self-reflection and peer assessment to improve personal performance.**
 - **Demonstrate the ability to analyze literature and written material**
 - **Demonstrate the ability to distinguish between well-reasoned and poorly reasoned arguments**
- Communication Skills
 - **Demonstrate effective presentation skills to faculty and peers.**
 - **Demonstrate effective listening skills**
 - **Demonstrate effective written communication**

Objectives:

At the end of BIOS 201 course students should be able to describe:

- the chemical and physical structure of bacteria, fungi, viruses and parasites
- the mechanisms by which microbes change their genetic material
- the response of microbes to physical, chemical and antimicrobial agents
- microbial growth and the dynamics of the growth of a microbial population and how this growth can be measured
- the ways in which human pathogens can be transmitted and cause disease
- the host immunity against pathogens
- the laboratory methods used for microbial identification and the importance of microbes in biotechnology.

Schedule: Dates and times to be posted at the beginning of the term on the online calendar.

Course Topics / Outline

Activity #	Lecture Topics
Week 1	Introduction to microbiology, tools of the laboratory (culture and microscopy)
Week 2	Prokaryotic cells, basic mycology (structure, morphology, classification and fungal diseases)
Week 3	Basic virology: structure, classification, replication, pathogenesis and cultivation
Week 4	Quiz 1 , Basic Parasitology (structure and classification), microbial nutrition and growth
Week 5	Bacterial and viral genetics
Week 6	Genetic engineering
Week 7	Mid-Term Exam
Week 8	Physical and chemical agents for microbial control, antibacterial drugs
Week 9	Antifungal and antiviral drugs, antimicrobial resistance
Week 10	Microbe-human interaction, overview of host defense, innate immunity
Week 11	Quiz 2 , specific immunity, disorders of immunity
Week 12	Diagnosis of infections
Week 13	Microbiology of drinking water, applied microbiology
Week 14	End of Term Exam

Assignments:

Students are required to present a topic (the presentation time is 15-20 minutes and the students are required to submit the power-point 24 hours before the presentation schedule), and/or to write a summary of a lecture topic.

Textbooks and Reference Materials:

Required Text

Kathleen Park Talaro, Barry Chess Instructor. Foundations in Microbiology. 10th Edition, McGraw-Hill Education.

Recommended Text

Karen C. Carroll, Janet S. Butel, Stephen A. Morse. Jawetz, Melnick & Adelberg's Medical Microbiology. 27th Edition. McGraw-Hill Education.

Evaluation: Students are evaluated by two quizzes, a midterm exam, a final exam, assignments and their attendance.

Points:

	Percent (%)
Assignments	10
Quizzes	20
Mid Term	30
Final exam	30
Attendance	10
Total	100

Grade:

Percent of Points	Letter Grade
95-100%	A(h)
90-94%	A
85-89%	B+
80-84%	B
75-79%	C+
70-74%	C
<70%	F

Attendance:

Students are expected to attend at least 80% of all scheduled learning activities. Attendance in the class will be recorded. Students who attend 80% or more will be awarded with 10% on total scoring system. Please note that absences due to illness or misadventure will be factored into the 20% of allowable absences if informed respective faculty or the Dean of students.

Policies:

Professional Demeanor

The student should be thoughtful and professional when interacting with faculty and other students. Inappropriate behavior includes the use of offensive language, gestures, or remarks with sexual overtones. Students should maintain a neat and clean appearance, and dress in attire that is generally accepted as professional.

Honesty

Students are expected to demonstrate honesty and integrity in all aspects of their education and in their interactions with faculty, administration, physicians, patients, and fellow students. They will not cheat, plagiarize, or assist others in the commission of these acts.

Faculty and office hours:

Course Director: Dr. Wezenet Tewodros, Professor

Course faculty: Dr. Hari Nepal, Associate Professor

Contact office hours:

- Monday and Wednesday 2:00 PM- 4:00 PM (subject to change),
- Students can also make an appointment via email.
- Drop-in visits are also welcome.