



General Microbiology

Course Code	Course Num.	Course Name	Credit Hours	Lec.	Lab.	Tut.	Prerequisites
BIO	241	General Microbiology	4	3	2	0	BIO111

Objectives:

Upon completion of this course students should be able to:

- To recognize the fundamentals of microbiology. To differentiate between the structure of prokaryotic and eukaryotic microorganisms.
- To identify host-microbe interactions, immunity and human infectious diseases.
- To compare and distinguish the basic groups of microbes, including prokaryotic microbes (Archaea, Bacteria), and Viruses, as well as eukaryotic microbes.
- To apply culture techniques, methods of staining and the microscopic, colonial and biochemical identification of microorganisms.

Syllabus:

- Microbes in our Lives.
- Naming and classifying microorganisms the bacteria, the fungus, the protozoa, the algae, the virus, multicellular animal parasites.
- structures external to the cell wall: glycocalyx, flagella, axial filaments, pili and fimbriae.
- The cell wall: composition and characteristics, cell wall and the gram stain, atypical cell wall and damage to the cell wall.
- Structures internal to the cell wall: the plasma membrane, the cytoplasm, the nucleoid, plasmids and resistance factors, ribosomes and other inclusions.
- Microbial metabolism (catabolic and anabolic reactions enzymes energy production metabolic pathways carbohydrate catabolism).
- Growth of bacterial culture: bacterial division and generation time, the growth curve and growth phases.
- Characteristics of protozoa, life cycle, reproduction and nutrition, protective structures.
- Medically important phyla • methods of classification.
- Examples of each class and the diseases they cause. Trypanosomiasis, toxoplasmosis and malaria, protozoan diseases of the digestive system.
- Characteristics of fungi • nutrition and cultivation • medically important phyla of fungi. Economic effects of fungi yeast, molds and dimorphics • sexual and asexual spores
- Viruses, viroids and prions - specific immune response
- Diseases of the digestive tract -diseases of the respiratory tract - venereal diseases

References:

- Tortora, Funke, Case: Microbiology – An Introduction; Pearson (Benjamin Cummings 11e). 12 ed, (2015). ISBN-13: 978-0321929150.
- Brock's Biology of Microorganisms. (2012). Madigan, M., J.M. Martinko, D.A. Stahl and D.P. Clark. 13th edition. [Benjamin Cummings, Boston, MA).
- Microbiology Laboratory, New York City College of Technology. McGraw Hill Publishing.(2013). ISBN 13: 9781121951501.

