



## University of Benghazi

### Faculty of Medicine

## Microbiology Course Overview

The Microbiology course is one of the basic requirements of the human medicine program. It is taught in the third year. The number of study hours is 183 hours. The course aims to: Acquire comprehensive knowledge on the basic principles of bacteriology, virology, mycology, and immunology including the nature of pathogenic microorganisms, pathogenesis, laboratory diagnosis, transmission, prevention and control of diseases common in the country. Acquire skills to use and care of basic microbiological equipment; performance of basic laboratory procedures and in proper collection and forwarding of microbiological specimens to the laboratory. Acquire critical thinking and problem-solving skills for self and lifelong learning. Acquire communication, and team working skills that are essential for them to become active members in society.

### Learning outcomes:

#### Knowledge and understanding

1. Describe general bacterial, viral and fungal morphology, physiology and genetics.
2. Explain the physiology of the immune system, its beneficial role, and its role in immunopathology (hypersensitivity, autoimmunity and transplant rejection). Discuss the most important clinical conditions caused by microorganisms including their laboratory diagnosis, treatment, prevention and control.
3. Describe the morphology, culture characteristics, antigenic structure and virulence factors of microorganisms of medical importance.

4. Describe the principles of infection control and the basis of antimicrobial uses and resistance.

### **Intellectual skills**

1. Interpret results of microbiological, serological and molecular tests.
2. Formulate a systematic approach for laboratory diagnosis of common infectious clinical conditions.
3. Select the most appropriate tool for the identification of the causative organism.
4. Classify different microorganisms according to standard taxonomy.
5. Analyze body immune response to certain pathogens.

### **Practical and professional skills**

1. Use microscope to identify different bacteria according to positive and negative staining.
2. Perform a various type of staining preparations to differentiate between different types of bacteria Handle culture media, biomedical tests and serological test commonly used for bacterial, fungal and viral identification.
3. Perform different physical and chemical methods of sterilization.

### **General and learning methods**

1. Communicate effectively with their colleagues and senior doctors.
2. Be an influential part of a teamwork and aware of team dynamics.
3. Manage their time effectively

### **Teaching and learning methods**

1. Lectures
2. Tutorials
3. Practical session

### **Methods of evaluation**

1. MCQs, True/False questions, and structure short essay, matching.
2. Oral exam.

3. Practical exam.

### **References**

1. Medical Microbiology and immunology (Mims). Richard, Hazel, Mark & Peter L. Chiodini (2019), 6<sup>th</sup> edition.
2. Medical microbiology (Jawetz). Jawetz, Melnick & Adelberg's (2019), 28th edition.
3. Medical Microbiology (Harvey). Lippincott Williams & Wilkins (2013), 3<sup>rd</sup> edition
4. Review of medical microbiology and immunology. Warren levinson (2013), 13th edition