

Department : **Clinical Laboratory Sciences**
Course Number : **OPTO 425**
Course Title : **Microbiology I**
Credit Hours : **1+ 1**

Course Description:

This is a general medical microbiology course intended for students in Optometry department. The structure of the course is based on presenting the fundamentals of microbiology to include structures, morphology and classification of bacteria, viruses, fungi and parasites. The students will be introduced to the pathogenesis of the various infectious agents. The course will also cover some topics related to ocular microbiology including the sources and modes of transmission of ocular infectious diseases, clinical patterns as well as clinical specimen collected and their differential diagnosis.

Reference:

1. Engelkirk G Paul. and Engelkirk D Janet, **Burton's Microbiology for the Health Sciences**, 9th edition. Lippincott, 2011.

Lectures Outline:

Weeks

Subjects

1. General introduction.
Theory of spontaneous generation.
Historical Background: Founders of microbiology.
Procaryotes vs. Eucaryotes./ Classification of microorganisms
+ **LAB 1:** Introduction to laboratory diagnosis of microorganisms.
Safety/ General Items of microbiology lab /Microscopes
2. Introduction to Viruses; Structure and morphology of viruses
Classification / Replication
Medically important viruses:
Coronavirus, HIV virus.
3. Introduction to Fungi; Structure and morphology of fungi
Classification / Medically important fungi;
Dermatophytes, Medulella, Candida spp., Cryptococcus spp.,
4. Introduction to Parasites
Classification /General characteristics of protozoa
Medically important protozoa:
Ameba spp., Plasmodium spp
+ **LAB 2:** Microscopy. Identification of viruses. Examination of stained smears of parasites & fungi

5. General characteristics of helminths
Medically important helminths:
Ascaris lumbricoides., *Tenia* spp., *Schistosoma* spp.
Onchocerca volvulus, *Loa loa* .
6. Introduction to Bacteria Classification / Morphology / structure of bacteria & Medically important bacteria.
+ Mid-Term I
7. Bacterial growth & replication.
Factors affecting bacterial growth:Physical & nutritional factors
+ LAB 3: Demonstration of staining techniques. (simple&differential)
Bacterial culture media & cultivation techniques
8. Normal microbial flora.
Beneficial role, harmful effects.
Distribution in different parts of the body.
9. Pathogenicity & virulence factors of infectious diseases.
Modes of transmission of microorganisms
+ Mid-Term II
10. Control methods:
Sterilization , disinfection, sanitization:
Factor affecting sterilization & disinfection.
Physical methods of control: temperature, radiation, filtration.
+ Lab revision
11. **Final Lab Exam**
12. Control methods.....cont.
Chemical methods of control: Sterilizing agents, disinfectants.

Assessments:

First mid Term Examination:	20%
Second mid Term Examination:	20%
Final Practical Examination:	20%
Final Theoretical Examination:	40%