

## **Introduction to Microbiology (1 credit)**

001-2-5159

An intensive course for nonmicrobiologists

**Lecturer:** O. Gillor

### **Course Objectives**

This course presents selection of topics from the field of prokaryotic and eukaryotic microorganisms emphasizing bacteria including classification, evolution, cytology, genetics, physiology, and ecology of microorganisms. The lectures concern phylogeny of prokaryotes, structure and function of prokaryotic cells, ecology and physiological diversity of prokaryotes, growth and control of microorganisms, genetics of bacteria, bacteria in water systems, and human applications of microbiology and biotechnology. In addition this course will give the students with a chance to experience laboratory techniques for isolating, culturing, and identifying microorganisms.

### **Grading**

The grade will include a final exam 100%

### **Lecture Topics**

Microbiology introduction and history –

- What is microbiology?
- Landmarks in microbiology: from Antony van Leeuwenhoek to Robert Koch, shattering the theory of spontaneous creation.

- Features of prokaryotic and eukaryotic cells
- Introduction to microbial cell structure

Microbial cell morphologies –

- Bacterial morphology: size, shapes and arrangements
- Bacterial structures: cell membrane, cell wall, glycocalyx, cytoplasm, nucleoid, cytoplasmic inclusions, flagella, pili, and endospores

Microbial physiology–

- Bacterial growth and culturing: Binary fission, bacterial growth curve, requirements for growth, factors affecting microbial growth
- Bacterial metabolism: Review of anabolism, catabolism, ATP, biomolecules, and enzymes.

Microbial Genetics –

- [Nucleic Acids: transformation, genetic elements, DNA, RNA](#)
- [Genome structure, DNA replication](#)
- [Gene structure, Transcription: RNA synthesis and processing](#)
- [Translation: protein synthesis](#)

Viruses –

- General structure, replication and classification
- Host range and specificity.

Eukaryotic microbes

- Algae

- Fungi
- Protists

***Recommended Readings:*** Provided during the course.