



GENERAL MICROBIOLOGY
COURSE OUTLINE

GENERAL

SCHOOL	AGRICULTURAL SCIENCES		
DEPARTMENT	FOOD SCIENCE AND NUTRITION		
COURSE LEVEL	<i>Undergraduate</i>		
COURSE CODE	BΠ313	SEMESTER	3 rd
COURSE TITLE	GENERAL MICROBIOLOGY RESPONSIBLE: I. GIAVASIS		
INDEPENDENT TEACHING ACTIVITIES		WEEKLY TEACHING HOURS	ECTS
	Lectures	3	6
	Lab Lectures-exercises	3	
COURSE TYPE <i>Background, General Knowledge, Scientific Area, Skill Development</i>	<i>Background</i>		
PREREQUISITES:			
LANGUAGE OF TEACHING AND EXAMINATIONS:	GREEK		
THE COURSE IS OFFERED TO ERASMUS STUDENTS	YES		
URL	https://food.uth.gr/mikrobiologia/ https://eclass.uth.gr/courses/FOOD_U_136/		

TEACHING RESULTS

Teaching Results
<p>GENERAL MICROBIOLOGY is the basic background course for understanding the diversity, morphology, cell structure, function, metabolism, reproduction and phylogenetics of microorganisms, the factors that affect the development of microorganisms, the means and methods of inhibiting and destroying microorganisms, culture methods microorganisms, conventional and modern methods of microbiological analysis, genetic improvement of microorganisms. The course supports senior level courses in the Department of Food Science and Nutrition of the UT on microorganisms, pathogenic or beneficial, relevant to food processing and safety. Upon successful completion of the course, the student will be able to: know the basic principles of structure, organization and function of the prokaryotic cell, the eukaryotic cell and viruses, the influence of the environment on their growth and metabolism, the rules their classification as well as the main characteristics of the most important genera and species of microorganisms. The students also familiarize themselves with the most basic laboratory practices followed in a microbiological laboratory. More specifically, they will be able to know the safety rules of a microbiological laboratory, the required equipment and their use, the basic nutrient substrates, the methods of counting microorganisms in food with the method of serial dilutions in Petri dishes and staining techniques, identification methods bacteria, surface and air microbial assessment methods, maximum probable number-MPN, membrane filtration and enrichment methods sample, observe and identify microorganisms under the microscope.</p>
General Skills
<ul style="list-style-type: none"> • Application of knowledge in practice • Search, analyze and synthesize data using the necessary technologies



- Decision making
- Autonomous Work
- Respect for the natural environment
- Exercise criticism and self-criticism
- Promotion of free, creative and inductive thinking

CONTENT

LECTURES

1st Week

Introduction to Microbiology

2nd Week

Microbial world

3rd Week

Prokaryotic organisms I

4th Week

Prokaryotic organisms II

5th Week

Microbial metabolism and nutrition

6th Week

Genetics of bacteria

7th Week

Effect of environmental factors on microbial growth

8th Week

Classification of Microorganisms I

9th Week

Classification of Microorganisms II

10th Week

Viruses

11th Week

Eukaryotic organisms

12th Week

Fungi, Yeasts, Protozoa

13th Week

Review

LAB LECTURES-EXERCISES

1st Week

Sterilization - Inoculation of cultures of microorganisms - LABORATORY

2nd Week

Microbiological nutrient substrates - LABORATORY

3rd Week

Control of microbial growth - Enumeration of microorganisms –
LABORATORY

4th Week

Isolation of a microorganism in pure culture – LABORATORY

5th Week

Microscopy of microorganisms – Staining techniques (simple stains) –
LABORATORY

6th Week

Gram staining technique - LABORATORY

7th Week

Identification of bacteria - Biochemical and physiological tests -
LABORATORY



8th Week

Methods for Microbial Assessment of Surfaces and Air - LABORATORY

9th Week

Enumeration of microorganisms by the method of maximum probable number (MPN) – LABORATORY

10th Week

Microbiological analysis of water – LABORATORY

11th Week

Fungi – LABORATORY

12th Week

Methods for studying antimicrobial activity in vitro (measurement of zones of inhibition in plates, MIC-MBC method) - LABORATORY

13th Week

Review

TEACHING AND LEARNING METHODS - EVALUATION

TEACHING METHOD.	Face to face lectures in the auditorium/classroom and face to face laboratory exercises in an appropriate laboratory.		
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES	Use of Powerpoint slides via PC. The material of the course (Lectures and lab exercises) is posted in the e-class of the DFSN of UT. Communication with students is done through announcements in the e-class. From this platform students can communicate by email with the responsible of the course.		
TEACHING STRUCTURE	<i>Activity Semester</i>	<i>Workload</i>	
	Lectures	39	
	Lab Lectures	39	
	Literature Studing	46	
	Processing laboratory exercises results and report writing	26	
	Course Total: (25 hours of workload per credit unit)	150	
EVALUATION OF STUDENTS	<p>1. Written exam (70 %):</p> <ul style="list-style-type: none"> - Multiple choice questions - Questions of short development - Questions of crisis and development - Extended development questions - Problem solving <p>2. Lab grade (30%):</p> <ul style="list-style-type: none"> - Participation and performance during the laboratory exercise - Written report of laboratory results - Examination in the laboratory part 		



BIBLIOGRAPHY

- Suggested Bibliography:

- BROCK BIOLOGY OF MICROORGANISMS, Michael T. Madigan, John M. Martinko, Kelly S. Bender, Daniel H. Buckley, David A. Stahl
- Introduction to Microbiology 2nd edition, Tortora Gerard, Funke Berdell, Case Christine
- General Microbiology I, Athena Mavridou

-Related scientific journals:

- ASM microbe – American Society for Microbiology (<https://asm.org/>), Food Microbiology, International Journal of Food Microbiology, Journal of Food Protection, Frontiers in Microbiology,