Food Microbiology

SCHOOL	ENVIRONMENT			
ACADEMIC UNIT	FOOD SCIENCE & TECHNOLOGY			
LEVEL OF STUDIES	BACHELOR OF SCIENCE			
COURSE CODE	FST304		SEMESTER	3
COURSE TITLE	FOOD MICROBIOLOGY			
INDEPENDENT TEACHING ACTIVITIES if credits are awarded for separate components of the course, e.g. lectures, laboratory exercise, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits		WEEKLY TEACHING HOURS	CREDITS	
		Lectures	2	
Laboratory practice			3	
		Total	5	9
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).				
COURSE TYPE Specialised general knowledge General background, special background, specialised general knowledge, skills development Specialised general knowledge PREREQUISITE COURSES: E				
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek	•		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No			
COURSE WEBSITE (URL)				

LEARNING OUTCOMES

Learning Outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A Description of the level of learning outcomes for each quality

- Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area
- Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B
- Guidelines for writing Learning Outcomes

The aim of Food Microbiology course is for students to develop an understanding on the general biology of the microorganisms found in foods including their growth characteristics, identification and pathogenesis as well as food poisoning, food spoilage, food preservation, and food legislation

Upon successful completion of the course students will:

- Have the expertise to perform microbiological analysis in food and evaluate their microbiological quality
- Be able to describe the characteristics of foodborne, waterborne and spoilage microorganisms based on the

preservation method used

- Be able to explain why microbiological quality control programs are necessary in food production
- Be able to establish and supervise a HACCP plan system
- Be able to chose the appropriate method of microbiological analysis in foods and analyze its results.
- Be able to evaluate and apply new methods for the microbiological analysis of foods and compare their results with those of standard methods and procedures used.
- Choose the proper method for microbiological analysis and evaluate its results
- Evaluate and apply new methods of analysis of food commodities and compare their results with those of standard methods.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and	Project planning and management
information, with the use of the necessary technology	Respect for difference and multiculturalism
Adapting to new situations	Respect for the natural environment
Decision-making	Showing social, professional and ethical responsibility and sensitivity to gender issues
Working independently	Criticism and self-criticism
Team work	Production of free, creative and inductive thinking
Working in an international environment	
Working in an interdisciplinary environment	
Production of new research ideas	Others

- Working independently
- Decision-making
- Solving problems
- Projects

SYLLABUS

Lectures

- Pathogenic Bacteria, Viruses and Fungi in Food and Water Supplies
- Sources of Food Contamination and Poisoning Factors Influencing Microbial Growth in Food
- Microorganisms Used in Food Fermentations
- Microbial Enumeration in Food Products (Selective and Differential Media, Enrichment Culture Technique)
- Microbial Challenges in the Food Chain (Production, Transfer, Storage)
- Microbial Industrial Enzymes
- Food Poisoning and Food Infection
- Regulations and Standards Standard Methods in Food Microbiology

Laboratory Practice

- Growth of *Escherichia coli*, *Staphylococcus aureus*, *Bacillus cereus*, *Salmonella* sp., *Shigella* sp., *Listeria monocytogenes*, *Vibrio parahaemolyticus*, *Clostridium perfringens* (all ATCC strains) on selective and differential media.
- Microbiological Analysis of Canned Foods

- Microbiological Analysis of Cereals
- Microbiological Analysis of Milk and Dairy
- Microbiological Analysis of Eggs and their Products
- Microbiological Analysis of Fish and their Products
- Microbiological Analysis of Fruit Juices and Soft Drinks
- Microbiological Analysis of Meat and Meat Products
- Microbiological Analysis of Spices
- Microbiological Analysis of Fruits and Vegetables
- Microbiological Analysis of Water (Most Probable Number and Membrane Filter Technique)
- Microbiological Analysis of Industrial Surfaces and Machinery
- Use of Rapid Tests in Food Microbiology

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY Face-to-face, Distance learning, etc.	In teaching class				
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY Use of ICT in teaching, laboratory education, communication with students	Power point presentation, Whit	eboard writing			
TEACHING METHODS	Activity	Semester workload			
	Lectures	78			
The manner and methods of teaching are described in detail.	Laboratory practice	39			
Lectures, seminars, laboratory practice,	-				
fieldwork, study and analysis of bibliography,					
tutorials, placements, clinical practice, art workshop, interactive teaching, educational			- 1/		
visits, project, essay writing, artistic creativity, etc.					
The student's study hours for each learning					
activity are given as well as the hours of non- directed study according to the principles of the					
ECTS	Total contact hours and				
	training	117			
STUDENT PERFORMANCE EVALUATION	Final written examination in	theory and in laboratory	y th <mark>at includ</mark> es:		
Description of the evaluation procedure					
Language of evaluation, methods of					
evaluation, summative or conclusive, multiple	-fill-in the blanks questions				
choice questionnaires, short- answer questions, open-ended questions, problem solving, written					
work, essay/report, oral examination, public	-short answer questions				
presentation, laboratory work, clinical examination of patient, art interpretation, other	-multiple choice questions				

ATTACHED BIBLIOGRAPHY

- 1. Bibek Ray, Arun Bhunia (2013). Fundamental Food Microbiology, Fifth Edition. CRC Press
- 2. Martin R Adams, Maurice O Moss, Peter McClure (2016). Food Microbiology. Royal Society of Chemistry

Performance Statistics of the last 2years								
Grade (descending order)	absolute frequency	relative frequency %	sum of success rates per class					
FOOD MICROBIOLOGY								
10	36	18%	18%					
9	13	6%	24%					
8	28	14%	38%					
7	39	19%	57%					
6	86	43%	100%					
	202	100%						