

## SYLLABUS

**1. Course title:**

GENERAL MICROBIOLOGY AND FOOD MICROBIOLOGY

**2. Code:****3. Cycle of study:****4. ECTS credits:****5. Type of course:** Mandatory  Elective**6. Prerequisites:****7. Class restrictions:****8. Duration / semester:****9. Weekly contact hours:**

9.1. Lectures:

3

9.2. Seminars:

0

9.3. Laboratory/Practice classes:

2

**10. Faculty:**

Faculty of Technology

**11. Department/study program:**

Food Technology

**12. Lecturer:**

PhD Snježana Hodžić, Associate Professor

**13. Lecturer's e-mail:**

snjezana.hodzic@untz.ba

**14. Web site:**

www.untz.ba

**15. Course aims:**

- 15.1. To introduce students with the systematics and distribution of the mo, the main characteristics of mo (viruses, bacteria, yeast, mold, protozoa and algae) and the influence of physical and chemical agents on microorganisms.
- 15.2. To introduce students with microbiological risks to food and the influence of internal and external factors on growth and propagation in foods, types of food spoilage and methods used to prevent food growth, and food as a carrier of many human and animal diseases.
- 15.3. Introduce students with food microbionics of animal and plant origins.

**16. Learning outcomes:**

After successfully mastering the course students will be able to:

- 16.1. To analyze the properties of viruses, bacteria, yeast and mold, protozoa and algae.
- 16.2. To differentiate the microscopic, macroscopic characteristics of cellular mo.
- 16.3. To collate chemical and physical properties of foodstuffs and the growth of microorganisms in them as well as effects of different factors (temperature, pH, aw, oxygen, etc.) to prevent the growth of microorganisms in food.
- 16.4. Identify pathways of microbial contamination of foodstuffs in preparation and production of food, its significance and its consequences.

**17. Course content:**

The contents of lectures by teaching units are: 1. Introduction to microbiology systematics of mo 2. General properties of bacteria 3. General properties of bacteria genera important for food technology 4. General properties of fungus (yeas and mold) 5. General properties of protozoa and algae 6. General properties of viruses 7. Metabolism of mo 8. The effect of physical and chemical agents on mo 9. Microbiological hazards in foodstuffs, alimentary toxicoinfections 10. MO and food spoilage 11. The effects of external and internal factors for growth prevention of mo in food; methods for food protection from spoilage 12. Microbionics of water, milk and dairy 13. Microbionics of eggs, meat and meat products 14. Microbionics of fruits and vegetables 15. Microbionics of cereals, spices and additives. Laboratory exercises follow the theoretical teachings in order for students to individually conduct microscopic and macroscopic research of bacteria, fungi, protozoa, as well as proving mo in air, water and foodstuffs.

**18. Learning methods:**

The following activities of successful learning are planned: theoretical lectures with the use of visual teaching aids, concrete experience, observation and reflection, methods of presentation and discussion, active learning techniques and active participation and discussion between students in lectures and laboratory exercises.

**19. Assessment methods:**

Knowledge and skills are evaluated continuously during the semester through: partial test -T1 and T2, colloquium-K from laboratory exercises, final exam, seminar work and attendance and activity in exercises and lectures. Students are obligated to undertake all forms of exams during the semester. The exam of laboratory exercises is passed through the test and is organized after the exercises are completed. The colloquium consists of a test of 20 questions (open questions, questions with multiple answers, true/false questions, recognition of microscope slides). The student can achieve a maximum of 10 points.

Partial exam I and includes review of knowledge acquired through lectures (teaching units 1 to 5).

Partial exam II reviews the knowledge acquired through lectures (teaching units from 5 to 10).

Partial exams I and II are in written form and consist of 40 questions. The student can have a maximum of 15 points on each partial exam.

Within the scope of the exam pre-requisites, the student can conduct seminar work on the contents of the subject, which he submits in written form for examination and evaluation, and can achieve a maximum of eight points.

Attendance at lectures and exercises is evaluated with a maximum of two points (lectures and exercises are mandatory). During pre-exam activities, the student can achieve a maximum of 50 points.

The final exam is organized in writing and oral exam and covers the entire course. The requirement for the oral exam is the written exam. The written final test contains 60 questions, and the student can achieve a maximum of 20 points. The written exam is 50% of the test points earned. On the oral part of the exam, the student draws three questions, each question worth ten points. The oral exam is passed if the student answers all three questions so that he can achieve a minimum of 18 or a maximum of 30 points.

The maximum number of points a student can achieve through the written and oral final exam is 50 points.

In order for a student to complete the course, they must have a minimum of 54 cumulative points, of which at least 28 points (10 in the written and 18 in the oral) on the final exam.

The student's final success is expressed in numeric, descriptive or letter assessment to the following scale:

Number of points	Grade	Letter grade
0-53	5 (five)	F
54-64	6 (six)	E
65-74	7 (seven)	D
75-84	8 (eight)	C
85-94	9 (nine)	B
95-100	10 (ten)	A

**20. Assessment components:**

The exam score is based on the total number of points the student has obtained by fulfilling the pre-requisites and completing the final exam, and it contains a maximum of 100 points and is determined according to the following scale:

Attendance at lectures and exercises 2 points;

Seminar work 3 points;

Colloquium I and II 15 points (7,5+7,5);

Partial test I and II 30 points (15+15);

Final Exam 50 points.

**21. Required reading list:**

1. Duraković S. (1996) General Microbiology; Medical Biochemists Zagreb
2. Durakovic S., Redžepovic S. (2003) Introduction to General Microbiology, Kugler
3. Durakovic S. et al. (2002) Modern Food Microbiology (Book First) Kugler Zagreb

**22. Web sources:****23. Applicable starting from the academic year:**

2015/16

**24. Adopted in the Faculty/Academy session:**