

## Special microbiology (IInd Year of study, IVth SEMESTER)

Credit value (ECTS) 5

### Course category

Domain (Imposed)

### Course holder:

Assoc. Prof. PhD. Florin-Daniel LIPȘA

### Discipline objectives (course and practicum)

The course aims to make students acquire knowledge on the microbiological conditions of food production in conditions that ensure the biochemical stability, innocuousness and food safety, the use of useful microorganisms for the diversification of food, preserve and improve of the nutritional and functional nature and knowledge of regulations and the microbiological criteria for assessing the quality and methods of microbiological food control.

Practical training aims to familiarize students with technical work in microbiology laboratories and knowledge of general notions relating to taxonomy, morphology, physiology and reproductive peculiarities of the main groups of microorganisms implications in food science and biotechnology.

### Contents (syllabus)

Course (chapters/subchapters)
<b>Alcoholic fermentation.</b> <b>Microbiology of wine, beer and other alcoholic products.</b> Groups of microorganisms. Sources of contamination. Alteration microorganisms. Methods used to reduce the level of contamination. Microbiological control of beer and wine.
<b>Lactic fermentation.</b> <b>Microbiology of milk and derivatives.</b> Groups useful microorganisms. Sources of contamination. Pathogenic microorganisms. Organoleptic changes of milk and milk products produced by microorganisms. The influence of different thermal processing on microorganisms in milk. Selected crops used to manufacture dairy products.
<b>Propionic and butyric fermentation.</b> <b>Gluconate fermentation and citrus.</b>
<b>Microbiology of meat</b> Microbiology of raw meat chilled. Microbiology of frozen meat. Microbiology of minced meat. Microbiology of meat and meat products. Microbiology of poultry meat. Microbiology of fish meat.
<b>Acetic fermentation.</b> <b>Microbiology of vinegar.</b> Groups of microorganisms. Sources of contamination. Methods used for the production of vinegar.
<b>Microbiology of canned food</b> Microbiological quality control of canned food. The main groups of microorganisms found in cans.

<p><b>Microbiology of spices</b> Groups of microorganisms and contamination level. Alteration microorganisms. Pathogenic microorganisms. Methods used to reduce the level of contamination. Microbiological control of spices.</p>
<p><b>Egg microbiology</b> Groups of microorganisms. Sources of contamination. Pathogenic microorganisms.</p>
<p><b>Microbiology of sugar</b> Groups of microorganisms and contamination level. Alteration microorganisms. Pathogenic microorganisms. Methods used to reduce the level of contamination. Microbiological control of sugar.</p>
<p><b>Microbiology of cereals, wheat flour and bread</b> Groups of microorganisms and contamination level. Alteration microorganisms. Diseases of bread.</p>
<p><b>Modern principles applied in food microbiological control.</b> Methods of assessing the number of microorganisms (classical methods and rapid methods). Microorganisms indicators of microbiological quality of food. Microorganisms indicators of food safety.</p>
<p><b>Legislative aspects regarding the microbiological quality of food.</b> <b>Microbiology forecasting.</b></p>

Practicum
<p><b>Alcoholic fermentation.</b> The study of microorganisms that produce alcoholic fermentation. Classification morphology, nutrition, diffusion, development cycle, the isolation and obtain a pure culture of yeasts.</p>
<p>The study of microorganisms that produce <b>acetic fermentation.</b></p>
<p>The study of microorganisms that produce lactic <b>acid fermentation.</b></p>
<p>The study of microorganisms that produce <b>propionic fermentation.</b></p>
<p><b>Microbiology of eggs and egg products.</b> Normal flora. Pathogenic flora.</p>
<p><b>Microbiology of meat and meat products.</b> Normal flora. Pathogenic flora.</p>
<p><b>Microbiology of semicanned and canned food. Microbiology of spices.</b> Normal flora. Pathogenic flora.</p>
<p><b>Microbiology of cereals and derivatives. Microbiology of fruit and vegetables.</b> Normal flora. pathogenic flora.</p>
<p><b>Final colloquium of knowledge evaluation</b></p>

## References

1. Apostu S. - *Microbiologia produselor alimentare*, vol. I, II și III, Editura Risoprint, Cluj-Napoca, 2006.
2. Dan Valentina - *Microbiologia alimentelor*, Editura Alma, Galați, 2001.
3. Dragomir Felicia - *Microbiologia alimentelor*, Editura Universitaria, Craiova, 2006.
4. **Lipșa F.D.**, Ulea E. – *Microbiologia produselor alimentare*, Ed. Ion Ionescu de la Brad, Iași, 2017.

5. **Lipşa F.D.**, Ulea E. – *Practicum de microbiologie alimentara*, Editura Ion Ionescu de la Brad, 2018.

### **Evaluation**

<b>Evaluation form</b>	<b>Evaluation Methods</b>	<b>Percentage of the final grade</b>
Exam	Oral examination	60%
Appreciation of the activity during the semester	Oral assessment during the semester, verification tests and final laboratory colloquium.	40%

### **Contact**

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