

Food Microbiology and Food Preservation (D001877)

Due to Covid 19, the education and evaluation methods may vary from the information displayed in the schedules and course details. Any changes will be communicated on Ufora.

Course size (nominal values; actual values may depend on programme)
Credits 6.0 Study time 180 h Contact hrs 60.0 h

Course offerings and teaching methods in academic year 2020-2021

A (semester 1)	English	Gent	self-reliant study activities	20.0 h
			guided self-study	5.0 h
			lecture	27.5 h
			PDE tutorial	7.5 h

Lecturers in academic year 2020-2021

Rajkovic, Andreja LA23 lecturer-in-charge

Offered in the following programmes in 2020-2021

[Master of Science in Biomedical Sciences](#) crdts 6 offering A

Teaching languages

English

Keywords

Microbial contamination, food preservation, microbial food safety, food spoilage, hygiene

Position of the course

The objective is to obtain basic knowledge of and insights into the microbial aspects of food preservation and food safety. Based on the elementary knowledge of general microbiology, biochemistry and molecular biology, the microbial aspects of food products are discussed. The theoretical part of the course elaborates on principles of microbial contamination of different food raw materials, discusses factors affecting growth of microorganisms in different food products and brings this into connection with possible food spoilage and foodborne diseases showing also microbial spoilage mechanisms of specific food products, food poisoning scenarios, and basic aspects of predictive microbiology. It also introduces contemporary and applied food preservation methods. The practical part consists of an introductory lecture on classic methods on food microbiology, problem solving case studies from the food industry and a hands-on session on predictive modelling, combined with an assignment on the (epidemiological) investigation of one outlined food safety issue.

Contents

This course partly overlaps with the course 'Food microbiology and analysis' given in the Master of Science in Food technology, with the main difference that the practical part is partly given separately, focusing more on the epidemiological aspects of food pathogens.

THEORY

0. Introduction of microbiological concepts
1. Microbial contamination of raw materials
2. Microbial growth in food
3. Microbial aspects of preservation
4. Spoilage of food products
5. Foodborne pathogens
6. Predictive microbiology
7. The expiry date

PRACTICAL PART

1. Classic methods of microbial analysis of food products.
3. Problem solving of case studies in food safety or spoilage in the food supply chain

4. Exercise on predictive microbiology
5. Assignment on the epidemiological and practical aspects of a food pathogen-food product combination by means of a literature study, with focus on epidemiological trends, impact on food safety, methods to detect and monitor, and possible guidelines/strategies to control this food safety issue.

Initial competences

Having successfully completed the courses General biochemistry, Biochemistry II, Microbiology, Molecular Biology I and Molecular biology II from the bachelor program biomedical sciences, or having acquired the relevant final competencies of these courses by other means.

Final competences

- 1 Understand the behaviour of microorganisms in food products and the factors influencing this behaviour.
- 2 Being able to adapt industrial processes of food products in the framework of microbiological quality by means of the obtained knowledge regarding microbial aspects of food preservation.
- 3 Being able to link food products with food poisoning microorganisms and the types of food poisonings in order to evaluate the microbiological safety of a food product.
- 4 Being able to analyse a problem that is situated within the field of the microbial aspects of food preservation and to suggest a solution for this problem
- 5 Being able to relate food pathogens with epidemiological data.

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Guided self-study, lecture, PDE tutorial, self-reliant study activities

Extra information on the teaching methods

Guided self-study: guidance on task, guidance on theory
 independent work: individual task
 PDE tutorials: case studies, PMP

Learning materials and price

A theory course is available and is mandatory to buy. Cost: +- 25 euro
 A practical course is placed on UFORA.
 Lesson slides and other supporting materials are provided via Ufora.
 A list of recommended standard books is mentioned in the 'reference' section.

References

- Modern food Microbiology. 2000. Edited by J.M. Aspen Publications, Inc
- Microorganisms in foods. Part 5. Microbiological specifications of food pathogens 1996. ICMSF. Blackie Academic & Professional
- Microorganisms in foods. Part 6. Microbial ecology of food commodities. 1998. ICMSF. Blackie Academic & Professional
- Uyttendaele M (ed.). 2018. Microbiological guidelines. die Keure.

Course content-related study coaching

For the theory and the practical part, the student has the possibility to ask extra information or explanation to the lecturer during contact hours or via e-mail.

Evaluation methods

end-of-term evaluation and continuous assessment

Examination methods in case of periodic evaluation during the first examination period

Written examination with open questions, open book examination

Examination methods in case of periodic evaluation during the second examination period

Written examination with open questions, open book examination

Examination methods in case of permanent evaluation

Oral examination, participation, assignment

Possibilities of retake in case of permanent evaluation

examination during the second examination period is possible

Extra information on the examination methods

Exam (66%) - PE

- Theory: written closed-book exam;

- Case study: open-book exam

Permanent evaluation (33%) - NPE

Assignment on food pathogen, oral presentation, participation

Calculation of the examination mark

Theory: period aligned evaluation: 66%

Exercises: non period aligned evaluation: 33%

Unjustified absence in or non-participation to the permanent evaluation will give rise to a total maximum score of 9/20 (highest failing mark) regardless of the score on the periodic evaluation.