



Information about the subject

Degree: Bachelor of Science Degree in Human Nutrition and Dietetics

Faculty: Faculty of Medicine and Health Sciences

Code: 1312003 **Name:** Food Microbiology

Credits: 6,00 **ECTS Year:** 4 **Semester:** 1

Module: Eligibility Module

Subject Matter: Food microbiology **Type:** Elective

Department: Nutrition

Type of learning: Classroom-based learning

Languages in which it is taught: Spanish

Lecturer/-s:



Module organization

Eligibility Module

Subject Matter	ECTS	Subject	ECTS	Year/semester
ICT	6,00	ICTs	6,00	4/1
Community Health Care	6,00	Attention in Community Health	6,00	This elective is not offered in the academic year 24/25
Functional Foods and Nutraceuticals	6,00	Functional and Nutraceutical Food	6,00	4/1
Food microbiology	6,00	Food Microbiology	6,00	4/1
Promoción y Programas de Estilos de Vida Saludables	6,00	Promotion and Programmes of Healthy Lifestyles	6,00	This elective is not offered in the academic year 24/25

Recommended knowledge

Not established



Learning outcomes

At the end of the course, the student must be able to prove that he/she has acquired the following learning outcomes:

- R1 Understanding and assimilation of the concepts included in the course content.
- R2 Ability to solve problems related to these contents using different resources.
- R3 Ability to work in a laboratory performing correctly the basic operations and observing the corresponding security rules, as well as a correct understanding of the planning, development and purpose of the experience.
- R4 Collaboration with the teacher and colleagues throughout the learning process: Attendance to theoretical, practical or tutoring sessions; teamwork; respect in the treatment; compliance with the rules of organization of the subject for the benefit of all.



Competencies

Depending on the learning outcomes, the competencies to which the subject contributes are (please score from 1 to 4, being 4 the highest score):

BASIC		Weighting			
		1	2	3	4
CB1	Students demonstrate knowledge and understanding in an area of study that is at the core of general secondary education, and is often at a level that, while supported by advanced textbooks, also includes some aspects that involve knowledge from the cutting edge of their field of study.				X
CB3	Students have the ability to gather and interpret relevant data (usually within their area of study) to make judgements that include reflection on relevant social, scientific or ethical issues.				X
CB4	Students can convey information, ideas, problems and solutions to both specialized and non-specialized audiences.				X
GENERAL		Weighting			
		1	2	3	4
CG11	Students know the microbiology, parasitology and toxicology of food.				X
SPECIFIC		Weighting			
		1	2	3	4
CE15	Students know the microbiology, parasitology and toxicology of food.				X



Assessment system for the acquisition of competencies and grading system

Assessed learning outcomes	Granted percentage	Assessment method
R1, R2, R3, R4	5,00%	Evaluation of the use of the practical classes in the classroom, of problems or computers, seminars and tutorials. Through attendance, and participation in the different activities proposed.
R1, R2	60,00%	Written evaluation of the knowledge and skills obtained. The test may consist of a series of open-ended or multiple-choice questions on the theoretical content of the subject and/or practical exercises (problem solving).
R1, R2, R3, R4	20,00%	Assessment of practical laboratory work, or laboratory culinary techniques workshop, through which the competencies acquired must be demonstrated and that they are capable of being used to solve the different situations and problems that arise in a laboratory; this assessment may be carried out by one of the following methods, or a combination of several of them: an individual written test, the individual or group performance of a laboratory experience, the submission of an individual or group report on the work carried out in the laboratory
R2, R4	15,00%	Evaluation of individual or group practices or activities, in which information related to each of the subjects must be sought and structured, and cases or problems resolved. This is done through a system of continuous evaluation throughout the course, which involves the delivery and / or exposure of work, whose objectives and content will be proposed by the teacher.

Observations

To pass the course and average, you need a minimum grade of 5 on the theoretical and practical exam.



Attendance to practices, as well as the delivery of dossiers is mandatory for the exam. During the course, there is a continuous assessment of in-class activities such as questionnaires, presentations, summaries.

MENTION OF DISTINCTION:

In accordance with the regulations governing the assessment and grading of subjects in force at UCV, the distinction of "Matrícula de Honor" (Honours with Distinction) may be awarded to students who have achieved a grade of 9.0 or higher. The number of "Matrículas de Honor" (Honours with Distinction) may not exceed five percent of the students enrolled in the group for the corresponding academic year, unless the number of enrolled students is fewer than 20, in which case a single "Matrícula de Honor" (Honours with Distinction) may be awarded. Exceptionally, these distinctions may be assigned globally across different groups of the same subject. Nevertheless, the total number of distinctions awarded will be the same as if they were assigned by group, but they may be distributed among all students based on a common criterion, regardless of the group to which they belong. The criteria for awarding "Matrícula de Honor" (Honours with Distinction) will be determined according to the guidelines stipulated by the professor responsible for the course, as detailed in the "Observations" section of the evaluation system in the course guide.

Learning activities

The following methodologies will be used so that the students can achieve the learning outcomes of the subject:

- M1 Exposition of contents by the teacher, analysis of competencies, explanation and demonstration of capacities, skills and knowledge in the classroom. The blackboard, the computer and the cannon will be used to display texts, graphics, etc.
- M2 Resolution of practical exercises and case studies, analysis of evaluation procedures and procedural intervention. All this with the support of the teacher. This aspect can be controlled through attendance and active participation in the practical sessions.
- M3 Resolution of practical exercises and case studies, analysis of evaluation procedures and procedural intervention. All this with the support of the teacher. This aspect can be controlled through attendance and active participation in the practical sessions.
- M4 Monographic sessions throughout the course, oriented towards current aspects and applications of the subject.
- M5 Student study: individual preparation of readings, essays, problem solving, seminars, papers, reports, etc. for discussion or delivery in electronic format.



- M6 Application and sharing of multidisciplinary knowledge This is the resolution of a problem that in its subsequent professional practice would require the application of skills acquired through the development of the modules and that would produce synergies in the assimilation of transversal and specific skills. Group work competences will be specifically evaluated.
- M7 Personalised attention and in small groups. Period of instruction and/or orientation carried out by a tutor with the aim of reviewing and discussing the materials and topics presented in the classes, seminars, readings, completion of assignments, etc. The attendance of the student and his/her level of gradual development in the knowledge of the subjects will be evaluated.
- M8 A set of tests, written or oral, used in the evaluation of the student.
- M9 Group preparation of readings, essays, problem solving, seminars, papers, reports, etc... for discussion or delivery.



IN-CLASS LEARNING ACTIVITIES

	LEARNING OUTCOMES	HOURS	ECTS
Theoretical lessons M1	R1, R2, R4	28,00	1,12
Practice lessons M2	R1, R2, R3, R4	5,00	0,20
Laboratory M3	R2, R3, R4	15,00	0,60
Group work presentation M6	R2, R4	6,00	0,24
Seminar M4	R4	2,00	0,08
Office Hours M7	R1	2,00	0,08
Evaluation M8	R1, R2, R3, R4	2,00	0,08
TOTAL		60,00	2,40

LEARNING ACTIVITIES OF AUTONOMOUS WORK

	LEARNING OUTCOMES	HOURS	ECTS
Autonomous work M5	R1, R2, R3, R4	70,00	2,80
Group work M6	R1, R2, R4	20,00	0,80
TOTAL		90,00	3,60



Description of the contents

Description of the necessary contents to acquire the learning outcomes.

Theoretical contents:

Content block	Contents
PART 1. FUNDAMENTALS OF MICROBIOLOGY	Unit 1. Generalities of food microbiology. Unit 2. Basic principles of microbiology. Molecular biology of microorganisms Unit 3. Nutrition, growth and microbial metabolism.
PART 3. GENERAL ASPECTS	Unit 4. Food contamination Unit 5. Microbial ecology
PART III. PATHOGENS INVOLVED IN FOODBORNE DISEASES	Unit 6. Diseases transmitted by food and pathogenic bacteria that cause intestinal poisoning. Unit 7. Pathogenic bacteria that cause intestinal infections. Unit 8. Food-borne parasitic diseases. Unit 9. Viruses transmitted by food. Unit 10. Fungi and food-borne diseases.
PART 4.DETECTION AND CONTROL OF FOODBORNE ILLNESSES	Unit 11. Guarantee of the microbiological quality of food. Unit 12. Detection of microbial contamination in food. Unit 13. Food legislation
PART V. MICROORGANISMS OF INTEREST IN THE FOOD INDUSTRY	Unit 14. Microorganisms of interest in the food industry
PART VII.NEW TRENDS IN FOOD MICROBIOLOGY	Unit 15. New trends in food microbiology. Unit 16. Food microbiology in the 21st century
PART VIII. LABORATORY PRACTICES	Different laboratory practices related to the subject will be carried out.



Temporary organization of learning:

Block of content	Number of sessions	Hours
PART 1. FUNDAMENTALS OF MICROBIOLOGY	4,00	8,00
PART 3. GENERAL ASPECTS	2,00	4,00
PART III. PATHOGENS INVOLVED IN FOODBORNE DISEASES	6,00	12,00
PART 4.DETECTION AND CONTROL OF FOODBORNE ILLNESSES	3,00	6,00
PART V. MICROORGANISMS OF INTEREST IN THE FOOD INDUSTRY	3,00	6,00
PART VII.NEW TRENDS IN FOOD MICROBIOLOGY	2,00	4,00
PART VIII. LABORATORY PRACTICES	10,00	20,00

References

- Carroll K.A, Jeffery A. Hobden J.A., Steve Miller S., Morse, S.A.,, Timothy A. Mietzner, T.A. et al. (2016). Microbiología médica. Ed. McGraw-Hill
 - Doyle P. Microbiología de los alimentos. Fundamentos y fronteras. Ed. Acribia.
 - Doyle, M and Beuchat L. (2007). Food Microbiology (3ª ed.). Ed. Washington, D.C.
 - Hernández Urzua M, A (2016).. Microbiología de los alimentos. Ed. Médica Panamericana.
 - James M. J. (2009). Microbiología moderna de los alimentos (5ª edición). Ed. Acribia
 - Juneja, V.K., Sofos, J.N. (2010). Pathogens and Toxins in foods. Ed. Washington, D.C.
 - Martin A., Moss, R. O., McClure P. (2015). Food Microbiology. Ed. Royal Society of Chemistry.
 - Ray, B y Bhunia, A. (2007). Fundamentos de Microbiología de los Alimentos (4ª ed.). Ed. Mc Graw Hill.
 - Tortora G. T, Funke B.R, Case C.L (2017). Introducción a la Microbiología (12ª Ed.). Ed. Médica Panamericana
- MANUSCRIPTS PUBLISHED IN INDEXED JOURNALS IN THE JOURNAL CITATION REPORTS ON THE MATTER.



Addendum to the Course Guide of the Subject

Due to the exceptional situation caused by the health crisis of the COVID-19 and taking into account the security measures related to the development of the educational activity in the Higher Education Institution teaching area, the following changes have been made in the guide of the subject to ensure that Students achieve their learning outcomes of the Subject.

Situation 1: Teaching without limited capacity (when the number of enrolled students is lower than the allowed capacity in classroom, according to the security measures taken).

In this case, no changes are made in the guide of the subject.

Situation 2: Teaching with limited capacity (when the number of enrolled students is higher than the allowed capacity in classroom, according to the security measures taken).

In this case, the following changes are made:

1. Educational Activities of Onsite Work:

All the foreseen activities to be developed in the classroom as indicated in this field of the guide of the subject will be made through a simultaneous teaching method combining onsite teaching in the classroom and synchronous online teaching. Students will be able to attend classes onsite or to attend them online through the telematic tools provided by the university (videoconferences). In any case, students who attend classes onsite and who attend them by videoconference will rotate periodically.

In the particular case of this subject, these videoconferences will be made through:

☒ Microsoft Teams

☐ Kaltura



Situation 3: Confinement due to a new State of Alarm.

In this case, the following changes are made:

1. Educational Activities of Onsite Work:

All the foreseen activities to be developed in the classroom as indicated in this field of the guide of the subject, as well as the group and personalized tutoring, will be done with the telematic tools provided by the University, through:

☒ Microsoft Teams

☐ Kaltura

Explanation about the practical sessions:



2. System for Assessing the Acquisition of the competences and Assessment System

ONSITE WORK

Regarding the Assessment Tools:

☒ The Assessment Tools will not be modified. If onsite assessment is not possible, it will be done online through the UCVnet Campus.

☐ The following changes will be made to adapt the subject's assessment to the online teaching.

Course guide		Adaptation	
Assessment tool	Allocated percentage	Description of the suggested changes	Platform to be used

The other Assessment Tools will not be modified with regards to what is indicated in the Course Guide.

Comments to the Assessment System: