

General Information	
Academic subject	Biology of microorganisms
Degree course	Bachelor programme: Agriculture Science and Technology
ECTS credits	3 ECTS
Compulsory attendance	No
Teaching language	Italian

Subject teacher	Name Surname	Mail address	SSD
	Fabio Minervini	fabio.minervini@uniba.it	AGR/16

ECTS credits details	
Basic teaching activities	2 ECTS Lectures 1 ECTS Laboratory or field classes

Class schedule	
Period	II semester
Course year	Second
Type of class	Lectures Practical classes with, if necessary, projection of educational videos

Time management	
Hours	75
In-class study hours	30
Out-of-class study hours	45

Academic calendar	
Class begins	March 1 st , 2022
Class ends	June 17 th , 2022

Syllabus	
Prerequisites/requirements	Knowledge of biology, chemistry, maths
Expected learning outcomes	<p><i>Knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ Knowledge about main structures and functions of microbial cells, microbial growth and taxonomy, microbial ecology and control of agriculture- and food-related microorganisms <p><i>Applying knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ To know the potential of microorganisms in relation to their role in agriculture and food fields <p><i>Making informed judgements and choices</i></p> <ul style="list-style-type: none"> ○ To acquire information needed for evaluating the potential role of microorganisms in agriculture and food <p><i>Communicating knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ Ability to describe the main structures of microbial cells and catabolic pathways, microbial growth, classification, nomenclature and identification of microorganisms, microbial ecology and methods for controlling over undesired microorganisms <p><i>Capacities to continue learning</i></p> <ul style="list-style-type: none"> ○ Ability to increase knowledge for evaluating the potential role of microorganisms in agriculture and food

	The expected learning outcomes, in terms of both knowledge and skills, are provided in Annex A of the Academic Regulations of the Degree in Food Science and Technology (expressed through the European Descriptors of the qualification).
Contents	<ul style="list-style-type: none"> • Principles of prokaryotic cell biology: morphology, cytology, genomics, chemotaxis. • Principles of eukaryotic cell biology. • Virus. Phages. • Microbial catabolic reactions: aerobic and anaerobic respiration, alcoholic fermentation, homo- and hetero-lactic fermentation, photosynthesis. • Microbial ecology. Kinetics of microbial growth in culture batch systems. Principles of continuous systems. • Sterilization and other antimicrobial techniques. • Microbial taxonomy: nomenclature, classification and identification. • Basic techniques in microbiology: culture media; isolation of microorganisms from food items, including examination of morphological, physiological and cultivation traits.
Course program	
Reference books	<p>Notes from lectures and laboratory classes. Presentations (in pdf) provided by the teacher.</p> <p>Additional readings</p> <ol style="list-style-type: none"> 1. Madigan, M.T., J.M. Martinko and J. Parker. Brock – Biology of Microorganisms. 8.a ed. London: Prentice & Hall International. 1997. 2. Cappuccino, J.G., Sherman, N. Microbiology – A laboratory manual. Ninth edition. Benjamin Cummings, an imprint of Pearson, 2011.
Notes	
Teaching methods	Lectures will be presented through PC assisted tools (Powerpoint) and slide projector. Projection of educational videos is also included as supplementary teaching method. Powerpoint presentations, in pdf format, will be shared with students through a mailing list. A dedicated mailing list will be created for interaction with students.
Evaluation methods	<p>The exam consists of an oral dissertation on the topics developed during the theoretical and theoretical-practical lectures in the classroom, as reported in the Academic Regulations for the Bachelor Degree (Annex A).</p> <p>Students attending at the lectures may have a middle-term preliminary exam, consisting of either oral or written test, relative to the first part of the program, which will concur to the final evaluation and will be considered valid for one year.</p> <p>The evaluation of the preparation of the student occurs on the basis of established criteria, as detailed in Annex B of the Academic Regulations for the Bachelor Degree.</p> <p>Non-Italian students may be examined in English language, according to the aforesaid procedures.</p>
Evaluation criteria	<p><i>Knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ To describe the main structures and functions of microbial cells, microbial growth and taxonomy, basic techniques in microbiology, principles of microbial ecology, and the main

	<p>methods for controlling over agriculture- and food-related microorganisms</p> <p><i>Applying knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ To describe the potential roles of microorganisms in agriculture and food fields <p><i>Making informed judgements and choices</i></p> <ul style="list-style-type: none"> ○ To describe the main roles of microorganisms in agriculture and food <p><i>Communicating knowledge and understanding</i></p> <ul style="list-style-type: none"> ○ To describe the main structures of microbial cells and catabolic pathways, microbial growth, classification, nomenclature and identification of microorganisms, basic techniques in microbiology, principles and application of microbial ecology, methods for controlling over undesired microorganisms <p><i>Capacities to continue learning</i></p> <ul style="list-style-type: none"> ○ To describe how to increase knowledge for evaluating the potential role of microorganisms in agriculture and food
Receiving times	From Monday to Friday (8:00 am – 6:00 pm) only by appointment