

General Information	
Academic subject	Biology of microorganisms (I.C. Biology and biotechnology of Food-related microorganisms)
Degree course	Bachelor programme: Food Science and Technology
ECTS credits	3 ECTS
Compulsory attendance	No
Teaching language	Italian

Subject teacher	Name Surname	Mail address	SSD
	<b>Fabio Minervini</b>	<a href="mailto:fabio.minervini@uniba.it">fabio.minervini@uniba.it</a>	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	February 25 <sup>th</sup> , 2019
Class ends	June 7 <sup>th</sup> , 2019

Syllabus	
Prerequisites/requirements	Prerequisites: "Food Biochemistry and Genetics" Knowledge of biology, chemistry, maths
Expected learning outcomes	<p><i>Knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>○ Knowledge about main structures and functions of microbial cells, microbial growth and taxonomy, as well as about basic techniques in microbiology</li> </ul> <p><i>Applying knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>○ To know the potential of microorganisms in relation to pro-technological, spoiling or pathogenic role</li> </ul> <p><i>Making informed judgements and choices</i></p> <ul style="list-style-type: none"> <li>○ To acquire information needed for evaluating the potential role of microorganisms in food</li> </ul> <p><i>Communicating knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>○ Ability to describe the main structures of microbial cells and catabolic pathways, microbial growth, classification, nomenclature and identification of microorganisms, as well as basic techniques in microbiology</li> </ul> <p><i>Capacities to continue learning</i></p> <ul style="list-style-type: none"> <li>○ Ability to increase knowledge for evaluating the potential role of microorganisms in food</li> </ul> <p>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)</p>
Contents	<ul style="list-style-type: none"> <li>• Principles of prokaryotic cell biology: morphology, gene organization and expression, cytology, chemotaxis. Eucaryotic</li> </ul>

	<p>cell structure.</p> <ul style="list-style-type: none"> <li>• Virus. Phages.</li> <li>• Biochemical and bioenergetic principles for understanding microbial metabolism. Main and secondary metabolic pathways. Cell respiration, fermentation and regulation of microbial metabolism.</li> <li>• Basic techniques in microbiology. Kinetics of microbial growth in batch systems. Study of microbial morphologies and cultures.</li> <li>• Principles of microbial taxonomy.</li> </ul>
Course program	
Reference books	<p>Notes from lectures and laboratory classes. Presentations (in pdf) provided by the teacher.</p> <p>Additional readings</p> <ul style="list-style-type: none"> <li>• Madigan, M.T., J.M. Martinko and J. Parker. Brock – Biology of Microorganisms. 8.a ed. London: Prentice &amp; Hall International. 1997.</li> <li>• 2. Jay, J.M., M.J. Loessner, D.A. Golden. Modern Food Microbiology. 7th ed. Springer Science+Business Media, LLC. 2005.</li> </ul>
Notes	
Teaching methods	<p>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.</p>
Evaluation methods	<p>The exam consists of an oral dissertation on the topics developed during the theoretical and theoretical-practical lectures in the classroom and in the laboratory/production plants, as reported in the Academic Regulations for the Bachelor Degree in Food Science and Technology (article 9) and in the study plan (Annex A).</p> <p>Students attending at the lectures may have a middle-term preliminary exam, consisting of a written test, relative to the first part of the program, which will concur to the final evaluation and will be considered valid for a 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 in Food Science and Technology.</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"> <li>○ To describe the main structures and functions of microbial cells, microbial growth and taxonomy, as well as about basic techniques in microbiology</li> </ul> <p><i>Applying knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>○ To describe the potential of microorganisms in relation to pro-technological, spoiling or pathogenic role</li> </ul> <p><i>Making informed judgements and choices</i></p> <ul style="list-style-type: none"> <li>○ To describe how to evaluate the potential role of microorganisms in food</li> </ul> <p><i>Communicating knowledge and understanding</i></p> <ul style="list-style-type: none"> <li>○ To describe the main structures of microbial cells and catabolic pathways, microbial growth, classification, nomenclature and identification of microorganisms, as well as basic techniques in microbiology</li> </ul>

	<i>Capacities to continue learning</i> <ul style="list-style-type: none"><li>○ To describe how to increase knowledge for evaluating the potential role of microorganisms in food</li></ul>
Receiving times	From Monday to Friday (8:00 am – 6:00 pm) only by appointment