

<b>General Information</b>	<b>BACELOR DEGREE IN BIOTECHONOLOGIES</b>
Title of the subject	Microbiology
Degree Course (class)	Industrial and Agri-food Biotechnologies (L-2)
ECTS credits	6
Compulsory attendance	Yes
Language	Italian
Academic year	2020/2021

<b>Subject teacher</b>		
Name and Surname	Maria Calasso	
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Place and time of reception	080 5442948	
Name and Surname	Online reception via TEAMS platform after email request	
<b>ECTS credits details</b>	Discipline sector (SSD)	Area
	AGR/16	-----

<b>Study plan schedule</b>	Year of study plan		Semester	
	2°		2°	
<b>Time management</b>	Lessons	Laboratory	Exercises	Total
CFU	4	2		6
Total hours	100	50		150
In-class study hours	32	24		56
Out-of-class study hours	68	26		94

<b>Syllabus</b>	
Prerequisites / Requirements	Although it is not mandatory, it is desirable to possess basic knowledge on following topics: Chemistry; mathematics; cellular biology; biochemistry, molecular biology, genetics

<b>Risultati di apprendimento attesi (declinare rispetto ai Descrittori di Dublino)</b>	
Knowledge and understanding	Knowledge of the main structures and functions of microbial cells, of the microbial growth and taxonomy, and basic techniques of microbiology
Applying knowledge	Knowledge about the potential of microorganisms; knowledge of the methods for estimating microbial growth
Making informed judgments and choices	Making informed judgments and choices to evaluate the potential role of microorganisms in agro-food biotechnologies and for their determination
Communicating knowledge	Ability to describe the main structures of the microbial cell, the most important metabolisms, microbial growth, classification, nomenclature, and techniques for the identification of microorganisms and basic microbiology techniques

Capacities to continue learning	Ability to learn and update the cultural and operational tools to evaluate the potential role of microorganisms in agri-food biotechnologies
<b>Study Program</b>	
Content	<p><b>Frontal lessons</b>  Presentation of microorganisms and relevance for the biotechnological sciences  Principles of prokaryote's cell biology : morphology; organization and expression of the genome; cytology, chemotaxis. Cell structure of eukaryotes.  Microbial metabolism.  Main and secondary metabolic processes.  Respiration, fermentation, assimilation of carbon, nitrogen, phosphorus and sulfur, and regulation of microbial metabolism.  Kinetics of microbial growth in continuous and discontinuous systems.  Principles of microbial taxonomy and phenotypic and genetic identification of microorganisms.  Environmental conditioning of microorganisms</p> <p><b>Laboratory activities</b>  Basic methods in microbiology (Applications of optical microscopy to the study of microorganisms; Formulation and preparation of substrates for the cultivation of microorganisms; Isolation of microorganisms in culture).  Direct and indirect methods for the determination of microorganisms (Determination of microbial load by counts of cultivable microorganisms; Determination of microbial load by microscopy and turbidimetry).  Preservation in a quiescent state and revivification of microorganisms</p>
Bibliography and textbooks	Lengeler, J.W, Drews, G., Schlegel, H.G. Biology of the Prokaryots. Oxford, UK: Blackwell Science.
Notes to textbooks	All information concerning the texts and scientific articles included in the program is available from the teacher or online.
Teaching methods	<ul style="list-style-type: none"> <li>- Frontal lessons with PPT support</li> <li>- Frontal lessons with video projection and comments</li> <li>- Single seat laboratory exercises</li> <li>- Virtual laboratory activities with PPT and commented videos</li> </ul>
Assessment methods (oral, written, ongoing assessment)	<p>Oral examination</p> <p>Ongoing tests after agreement with the interested students</p>
Evaluation criteria (describe criteria for each of the above expected outcomes)	<p>At the end of the course the student is expected to have acquired:</p> <ul style="list-style-type: none"> <li>• ability to describe the main structures and functions of microbial cells, microbial growth and taxonomy, and the basic microbiology techniques presented during the course</li> <li>• ability to read and interpret texts and articles of international scientific literature in the sector to approach the most important international realities on the potential pro-technological, deteriorating or pathogenic role of microorganisms</li> <li>• ability to analyze the potential role of microorganisms in agro-food biotechnology</li> <li>• expressive skills within the discipline in both Italian and English</li> </ul>

	<ul style="list-style-type: none"><li>• Ability to finalize one's knowledge to evaluate the potential role of microorganisms in agri-food biotechnology</li></ul>
Further information	Students can always contact dr. Maria CALASSO at the following mail address: <a href="mailto:maria.calasso@uniba.it">maria.calasso@uniba.it</a>