General Information	
Academic subject	Environmental microbiology (Course Environmental Restoration)
Degree course	
Curriculum	
ECTS credits	3 ECTS
Compulsory attendance	No
Language	Italian

Subject teacher	Name Surname	Mail address	SSD
	Maria Calasso	maria.calasso@uniba.it	AGR/16

ECTS credits details			ETCs
Basic teaching activities	3 ECTS: 2 ECTS Lectures + 1 ECTS Laboratory and field classes		3

Class schedule	
Period	1st semester
Year	Second
Type of class	Lecture- workshops

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

Academic calendar	
Class begins	
Class ends	

Syllabus	
Prerequisites/requirements	
Expected learning outcomes (according to Dublin Descriptors) (it is recommended that they are congruent with the learning outcomes contained in A4a, A4b, A4c tables of the SUA-CdS)	*Knowledge and understanding* o Knowledge of the microorganisms, their most important environmental properties and their applications in support of the productivity and sustainability of the territorial and agri-forestry environment *Applying knowledge and understanding* o Ability to identify the main microbiological procedures to monitor the ecosystems *Making informed judgements and choices* o Ability to orient the search of biotechnological solutions using microorganisms suitable to monitoring the productivity and sustainability of the territorial and agri-forestry environment *Communicating knowledge and understanding* o Ability to communicate the use of microorganisms in the productivity and sustainability management systems of the territorial and agri-forestry environment *Capacities to continue learning* o Ability to learn the methods needed for better control and use of microrganisms in territorial and agri-forestry environment o The results of the expected learning, in term of knowledge and ability,

	are listed in the Annex A of the Didactic Regulation of the Master Course (expressed by the European descriptors of the study title).
Contents	Environmental microbiology course provides a summary knowledge of microorganisms, their properties of greater relevance and their applications in support of productivity and sustainability of the territorial and agro-forest environment.
Course program	**Lectures** Overview on environmental microbiology Principles of microbial cell biology Principles of microbial taxonomy Microbial cell physiology Microbial metabolism Virus. Phages. Microbial ecology and biodiversity Application of microorganisms in bioremediation Microbial interactions **Theoretical-practical lectures and laboratory classes** Basic methods in microbiology Monitoring and control of the microorganisms in the ecosystems
Bibliography	o Brock. Biologia dei microrganismi, Microbiologia generale, ambientale e industriale 14/Ed. Michael T. Madigan - John M. Martinko - David A. Stahl - Kelly S. Bender - Daniel H. Buckley o Brock, Biologia dei Microrganismi di M.T. Madigan e J.M. Martinko, Casa Editrice Ambrosiana. Volumi 1 e 2A Microbiologia generale e Microbiologia Ambientale e industriale o Microbiologia di D.R. Wessner, D. Dupont e T.C. Charles, Casa Editrice Ambrosiana, 2015 o Environmental Microbiology, Third edition, Ian L. Pepper, Charles P. Gerba, Terry J. Gentry. Elsevier o Lecture notes and educational supplies provided during the course (will be provided by means of online platforms, i.e.: Edmodo) o Research article and/or review by https://pubmed.ncbi.nlm.nih.gov/
Notes	
Teaching methods	Lectures will be presented through PC assisted tools (PowerPoint, video) and laboratory classes
Assessment methods (indicate at least the type written, oral, other)	The students attending the lectures may have a middle-term preliminary exam, consisting of a written test, relative to the first part of the program, which will be considered valid for a year. The results of this exam will concur to the final evaluation. 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 farms, as reported in the Academic Regulations for the Master Degree in Agro-Environmental and Territorial Sciences (SAAT) and in the study plan (Annex A). The evaluation of the preparation of the student occurs based on established criteria, as detailed in Annex A of the Academic Regulations for the Degree in Agro-Environmental and Territorial Sciences (SAAT). For students who have done the middle-term preliminary exam, the evaluation of the final exam will be expressed in thirtieths. The profit exam for foreign students can be carried out in English and / or by means of a written test.
Evaluation criteria (Explain for each expected learning outcome what a student has to know, or is able to do, and how many levels of achievement	Knowledge and understanding o Describe the main properties and applications of environmental related microrganisms in support of the productivity and sustainability of the territorial and agri-forestry environment Applying knowledge and understanding

there are.	o Describe the main microbiological methods to monitor ecosystems making informed judgements and choices o Research methodologies using microorganisms suitable for monitoring the productivity and sustainability of the territorial and agri-forestry environment Communicating knowledge and understanding o Describe the use of microrganisms in productivity and sustainability management of the territorial and agri-forestry environment Capacities to continue learning o Introduce an operational approach for the use of microorganisms in territorial and agri-forestry systems
Further information	**Visiting hours** Visiting hours: From Monday to Friday 9:00 a.m. – 18.00 p.m. by appointment only (telephone +39 080 544 2948; e-mail maria.calasso@uniba.it)