

Microbiology

Calendar: 4th semester

Contact Hours: T:30,0; PL:22,5; O:7,5

Intended learning outcomes of the curricular unit:

It's expected that students acquire competences and knowledge in the variety that microbiology represents to the biotechnology field. This is ensured by the combinations of theoretical classes, practical classes and with seminars organized by experts in microbial biotechnology. At the end of the UC is expected that students are able to:

1. Identify the main landmarks in the development of microbiology and appoint the scientists associated with it; 2. Understand the fundamentals of microorganisms' biology and their diversity; 3. Understand the kinetic and the energy of growth and cell death; 4. Understand the effect of environmental factors and anti-microbial agents in microbial growth; 5. Apply the knowledge about the metabolism of microorganisms in the changes they mediate; 6. Understand the basic mechanisms underlying the adaptability proliferation of microorganisms in the human host; 7. Train the students in the use of basic microbiological techniques.

Syllabus:

Theoretical classes: 1. Introduction to the study of microbiology. 2. Cell structure. 3. Criteria for classification of bacteria. 4. Bacterial Growth, survival and Death: Growth curve. Requirements for growth. Role of metabolism in biosynthesis and growth. Growth control. 5. Microbial genetics: Gene organization and expression. Vectors for biotechnological applications. 6. Other microorganisms with biotechnological potential: Yeasts and other fungi: general aspects. Viruses: general aspects. Prions: general aspects. 7. Microbiology of water and soil: general aspects. 8. Food microbiology: general aspects. 9. Microbial biotechnology applied to Health: general aspects

Practical classes: 1. Methods and laboratory techniques in microbiology; 2. Sterilization of culture media and equipment; 3. In vitro cultures of microorganisms using different culture media; 4. Microscopic observation of microorganisms using different staining procedures

Teaching methodologies (including evaluation):

The course has one theoretical component and another practical, both integrated. The theoretical classes follow a participatory-expository teaching methodology, as well as the debate within the group of students. In the laboratory classes students will be asked to perform experiments covering syllabus and focus on providing students with skills for hands-on competences on the field. Laboratory evaluation includes reports from each experience, and for the theoretical part students will perform an oral presentation about a theme developed by using actualized references. Each component, theoretical and practical, accounts for 50% of the total classification.