

HOW TO SOLVE PRACTICAL ASPECTS OF MICROBIOLOGY

SYLLABUS



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Brief description of the subject:

This course tackles practical and applied issues in Microbiology. While students taking courses in Microbiology know different methods of enumeration, we have found that they often raise questions such as:

What can be done to enumerate the microorganisms present in a sample when we suspect that their density is too high or too low?

How is the microbial density expressed? How are the results corrected?

The liquid samples are usually not a problem but, what about the solid ones?

How is the biomass of a microbial population calculated?

Throughout the development of this subject other problematic issues are raised, such as the calculation of the parameters defining the growth of a bacterial population or inoculum size.

We propose to solve or clarify these questions by proposing several exercises which simulate typical situations in a microbiology laboratory. For that, each question will be addressed by a brief explanation of the topic to be developed, followed by problems (at least 10) covering

Key competences

To properly handle and rework information in Microbiology (and other materials) so that students solve basic problems of Microbiology.

Program Summary

1. Dilutions and concentrations. How to work with liquid and solid samples
2. Basic methods for the enumeration of microorganisms
3. Biomass calculation
4. Determination of the parameters defining the bacterial growth
5. Calculation of inoculum size

Activities

1. Exercises related to the program
2. Other exercises

Observations

Throughout the years, we have found that students in general Microbiology subjects (General Microbiology, Microbiology of aquatic environment, Industrial Microbiology,...) know the theoretical basis of enumeration methods, the concepts of dilution and concentration and how to define the parameters of growth, but they lack the practical skills for the application of this knowledge. In the new curriculum (Microbiology, Applied Microbiology, Fundamentals of industrial Microbiology) we expect a similar situation.

In the former curriculum, the subject of Fundamentals of Applied Microbiology trained the student in solving such practical matters. However, the new curriculum does not include a similar subject, eliminating the opportunity for the prospective students to acquire skills in the resolution of such practical matters.