

Laboratory V

Calendar: 5th semester

Contact Hours: PL - 45,0; OT - 15

Scientific Area: Processos em Engenharia Química e Biológica

Learning outcomes of the curricular unit

The Laboratory V UC consists of a set of laboratory experiments in which consist the student applied the theoretical concepts taught in Pollution, Bioreactors, Separation Processes II and Instrumental Methods of Analysis B.

At the end of the semester, students should be able to: describe and explain scientifically the different processes that make a chemical analysis instruments; propose and plan appropriate experiences to clarify problems using analytical chemistry instruments; identify and understand the interaction of instrumental analytical chemistry with other areas of human activity (environmental analysis, industrial , etc); learn to understand and describe the operation of a biological reactor; manipulate materials / special equipment used in carrying out the experiments; evaluate the importance of the accuracy of measurements to be made; prepare a clear and objective scientific report.

Syllabus

Chapter 1 - 1.0 weeks

Conducting experimental activities within Chemical Analysis and Pollution curricular units.

Chapter 2 - 4.0 weeks

Conducting experimental activities within Chemical Analysis and Separation Processes II curricular units.

Chapter 3 - 4.0 weeks

Conducting experimental activities within Bioreactors curricular units.

Demonstration of the syllabus coherence with the curricular unit's objectives

The laboratory IV curricular unit aims to consolidate theoretical and theoretical- practical knowledge acquired in lectures of the several curricular units occurring simultaneously (Separation Processes II, Bioreactors, Instrumental Methods of Analysis B and Pollution). By performing these laboratory experiments, students will gain knowledge of planning, implementation, development and optimization of experiments, in the area of the curricular units that the laboratory work supports, as well as learn to correlate the experimental work with the theoretical models taught, its correct applicability in the treatment of the experimental results. Syllabus was defined to directly follow the curricular unit's objectives.

Teaching methodologies:

The completion of each practical work is preceded by performing a quiz related with the protocol of each laboratory practical work. Before each laboratory class, students should make the preparation of the work by: making annotations of the theoretical principles, experimental procedure, safety care in the execution of experiment and perform calculations on the individual lab notebook, which is mandatory to bring to class. Student performance during the experimental activity is accounted for the final grade. Students have to submit a written report for each experimental work. All experimental activities will be discussed later in a session that accounts for the final grade.

Demonstration of the coherence between the teaching methodologies and the learning outcomes.

Laboratory V is a curricular unit that aims to consolidate the theoretical or theoretical-practical knowledge acquired in various curricular units of the semester. Several experimental experiments are carried out and results are presented through a report with evaluation. Questionnaires are made at the beginning of each laboratory class in order to get a better preparation for each experimental work. Student performance in the execution of laboratory work is evaluated as well as the laboratory reports and the laboratory notebook, allowing to get some laboratory experience. The preparation of a report and respective discussion/ presentation allows the teacher to have a better perception of the student understanding concerning the concepts applied in practice.