

Laboratory III

Calendar: 3rd semester

Contact Hours: PL:45,0 + OT: 15,0

Scientific Area: Processos em Engenharia Química e Biológica

Learning outcomes of the curricular unit

This curricular unit is based on the application of the theoretical concepts lectured in the UCs of Transport Phenomena I, Organic Chemistry, Physical Chemistry and Materials in several laboratory experiments.

It is intended that in this course, students acquire the following skills:

- Plan, execute, develop and optimize experiments in the area of the several referred CUs.
- Interpret results of experiments that highlight some of the fundamental concepts of the same UCs.
- Correlate theoretical models taught with the proper applicability in the treatment of experimental results.
- Handle material /specific equipment used the experiments.
- Assess the importance of the accuracy of measurements performed.
- Develop a scientific report clearly and objectively.

Syllabus

Chapter 1 - 3.0 weeks

Experimental work related with Thermodynamic Chemistry

Chapter 2 - 1.0 week

Experimental work related with Physical Chemistry

Chapter 3 - 2.0 weeks

Experimental work related with Biochemistry

Chapter 4 - 4.0 weeks

Experimental work related with Transport Phenomena I

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

Laboratory III is a curricular unit that aims to consolidate the theoretical and theoretical-practical knowledge acquired in the various courses lectured in the same semester (Transport Phenomena I, Chemical Processes, Physical Chemistry, Thermodynamic Chemistry, Biochemistry). 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. The syllabus was defined to directly follow the curricular unit's objectives.

Teaching methodologies

Accomplishment of several experiments regarding the programme of the several UCs. Each experimental activity is preceded by a discussion of the scientific principles and procedures for the experiment to be performed. Students should prepare the laboratory work, putting the necessary annotations, experimental procedure and the required calculations in an individual lab notebook (mandatory). In the following week, students should present results, calculations and discussion updated in the laboratory notebook.

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

Laboratory III is a UC that aims to consolidate the theoretical or theoretical-practical knowledge acquired in the several courses of the semester. Several experimental experiments are carried out and results are presented through a written 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 to practice.