

Laboratory IIIB

Calendar: 3rd semester

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

Intended learning outcomes of the curricular unit:

This curricular unit is based on laboratories experiences representing theoretical concepts acquired in the Biochemistry, Transport Phenomena I and. Thermodynamics s curricular units.

It is intended that, in this curricular unit, the students acquire the following competencies: 1. Plan, implement, develop and optimize experiments in the area of the curricular units that the laboratory work refers. 4. Interpreting results of experiments that highlight some of the basic phenomena I transfer, materials and biochemistry. 5. Correlate the theoretical models taught, with the proper applicability in treatment of experimental results. 6. Handle material / specific equipment used in carrying out the experiments.

Syllabus:

Laboratories IIIB consists in a set of laboratory experiments involving the application of theoretical concepts acquired in Biochemistry, Transport Phenomena I and Chemical Thermodynamics UCs. 1. Study of the enzymatic activity (determination of the specific activity; K_m and V_{max} determination; temperature and pH effect) 2. Enzymatic kinetics (determination of the kinetic parameters for sucrose hydrolysis catalyzed by invertase enzyme in *Saccharomyces bayanus* cells) 3. Demonstration of the Osborne Reynolds experience. 4. Pressure losses. 5. Heat transfer in steady state. 6. Gas Thermodynamics

Demonstration of the syllabus coherence with the curricular unit's intended learning outcomes.

In Laboratory I IB the student will consolidate the theoretical knowledge and theoretical-practical knowledge acquired in the several curricular units lectured during the semester. Taking in consideration the theoretical concepts acquired in these curricular units, an homogeneous distribution of several laboratory experiences and reports related with Biochemistry, Transport Phenomena I and. Thermodynamics is performed. By performing these laboratory experiments, students acquire planning, implementation, development and optimization experience skills in the area relate laboratory experience. Also correlation skills between the theoretical models taught on the curricular units classes and its proper applicability to the experimental results obtained is acquired.

Teaching methodologies (including evaluation):

Execution of laboratory experiences related to several curricular unit programs. Each experimental work is preceded by a discussion of scientific principles and procedures of the work protocol. The students should prepare of laboratory work by place the necessary theoretical support, experimental procedure and calculations on the individual lab notebook, (mandatory). In the following week, students should have the results, calculations and data discussion in the lab notebook. This information must be available for evaluation by the teacher when requested. The evaluation has the following components: questionnaire at the beginning of each laboratory session; student's performance in carrying out laboratory work; sheets results and laboratory notebook; report preparation and its discussion/presentation. The final rating will be the weighted average grade obtained in each laboratory work. To pass is required, a minimum score of 9,5 values (0 to 20 values scale)

Demonstration of the teaching methodologies coherence with the curricular unit's intended learning outcomes.

Laboratory IIIB a curricular unit which intended to consolidate the theoretical knowledge knowledge acquired in several UC's of the semester in which it is taught. Several laboratory experiences are carried out and results treatment is presented in a technical report.

With evaluation of questionnaires conducted at the beginning of each class, permits the student to prepare itself for laboratory class, having a prior knowledge of the work to be done, as well as the theoretical principles behind such laboratory experience. The student's performance at the laboratory, laboratory results report and laboratory notebook will also be evaluated, preparing the student for working life, giving him experience of working a

laboratory context. With a report and its discussion / presentation allows the teacher to evaluate its understanding of the theoretical principles of the referred experience as well as the ability to apply the theoretical concepts acquired during the theoretical classes of the several curricular units.