

Laboratory I

Calendar: 1st semester

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

Intended learning outcomes of the curricular unit:

Syllabus:

1. Safety Practices in the Chemistry Lab. 2. Measurement and handling numbers. 3. Types of Solutions and concentration units. 4. Techniques of handling analytical glassware and analytical equipment. 5. Separation Processes (filtration, decantation, extraction). 6. Techniques for purification of compounds (crystallization, distillation, chromatography, etc.).

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

Chemistry and Physics are eminently experimental sciences, so the practical instruction (represented here by laboratory sessions) has a double objective: to strengthen knowledge obtained in the lecture portion and confront the student with real chemical and physical problems.

The laboratory sessions have been designed with the objective that the student correlates many of the concepts studied in lecture, convincing him or her in this way that the knowledge obtained throughout the course can be applied to optimize processes and chemical transformations, whose transcendence goes beyond mere academic interest.

Teaching methodologies (including evaluation):

The modular course consists of two preliminary lectures and eight experiments performed by teams of two students each. The lab work is organized as follows: 1- Preparing for the experiment. The students should read and understand the laboratory protocol and read suggested reference materials prior to the lab session. In addition, some lab session time will usually be devoted to a discussion of the theory concern the experiment. 2- Running the experiment. Each team is responsible for conducting each experiment under supervision of instructor. 3- End of the experiment. Preliminary discussion of the experimental outcomes with instructor. 4- Report.

The final grade will be determined by proportionally weighting performance in the following assessment elements: full reports (3 x 10 %) and technical reports and quizzes (5 x 10%); Individual practical examination (10%); participation in lab work as evaluated by instructor (10 %).

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

Laboratory sessions enable students to become familiar with experimental techniques commonly used in chemistry, including the use of instruments, observation of phenomena and achieving results. In addition, the student must learn to process the data and understand the degree of precision and accuracy in measurements made by the analysis and estimation of errors.

This period of learning the methodology and analysis of scientific results is one of the most important skill s for an experimental course, such as Biotechnology, allowing students an overview of the entire course.