Laboratory II

Calendar: 2nd semester

Contact Hours: 45h00 PL+ 15h OT

Scientific Area: Química

Learning outcomes of the curricular unit
This course is based on the practical application of theoretical concepts learned in chemistry II and Organic Chemistry. It is intended that in this UC, students acquire the following skills :
- Apply the basic concepts of statistical analysis of results and the correct procedures for recording and reporting experimental results . Develop the capacity to interpret the results based on the knowledge learned in other CUs.
- Develop a scientific report.
- Apply basic concepts of chemical reactions, writing, accuracy of chemical equations and know how to perform stoichiometric calculations.
- Know how to perform and understand the various types of volumetric analyzes and perform calculations concerning chemical principles that underlie them.
- The student should be familiar with the functional groups and understand simple organic syntheses.

Syllabus
Chapter 1 - 2.0 week(s)
Fundamentals of Analytical Chemistry and Laboratory.
Chapter 2 - 1.0 week(s)
Chemical Equilibrium and verification of Le Chatelier's Principle.
Chapter 3 - 3.0 week(s)
Identification of functional groups.
Synthesis of t-butyl chloride.
Synthesis of Nylon and synthesis of polystyrene.
Chapter 4 - 1.0 week(s)
Chemical Reactions. Stoichiometric calculations.
Chapter 5 - 1.0 week(s)
Precipitation titration.
Chapter 6 - 2.0 weeks (s)
Potentiometric Titration. Volumetry Acid-Base.
Chapter 7 - 1.0 weeks (s)
Complexation Volumetry.

Demonstration of the syllabus coherence with the curricular unit's objectives
The practical training (here represented by laboratory sessions) aims to strengthen the knowledge gained in lectures of Chemistry II about the various types of chemical equilibrium and application of some knowledge of Organic Chemistry (functional groups identification and syntheses). 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 completion of each practical work is preceded by a discussion of the scientific principles and procedures underlying each laboratory experiment. Before laboratory classes, students should prepare the laboratory notebook with the required information of the laboratory experiment that they will perform. This notebook is mandatory in every class. In the week following the completion of the laboratory work, students should have the results, calculations and updated discussion in the laboratory notebook. This information must be available for evaluation by the teacher when prompted.

Demonstration of the coherence between the teaching methodologies and the 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 data and understand the degree of precision and accuracy in measurements in a

given analysis and estimation of errors. This period of methodology acknowledgement and analysis of scientific results allows to build up basic skills for an experimental course, such as Chemical Engineering, allowing students an overview of the entire course.