



**NATIONAL UNIVERSITY OF ENGINEERING**  
**COLLEGE OF CHEMICAL AND TEXTILE ENGINEERING**  
**CHEMICAL ENGINEERING PROGRAM**

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**QU119 – LABORATORY OF CHEMISTRY II**

**I. GENERAL INFORMATION**

<b>CODE</b>	: QU117 Chemistry I
<b>SEMESTER</b>	: 2
<b>CREDITS</b>	: 1
<b>HOURS PER WEEK</b>	: 3 (Laboratory)
<b>PREREQUISITES</b>	: QU116 Chemistry I QU117 Laboratory of Chemistry I
<b>CONDITION</b>	: Compulsory

**II. COURSE DESCRIPTION**

This course is complementary to theory course QU118 Chemistry II. Students develop skills for the handling of chemical reactants, materials, laboratory instruments and equipment, applying safety norms. In this laboratory course, students experimentally verify the theoretical concepts and methods presented in course QU118 Chemistry II

**III. COURSE OUTCOMES**

At the end of the course, students:

1. Carefully use chemical reactants in proper quantity and concentration according to the experiment to be done.
2. Use instruments, devices and equipment proper of the experimental practice of chemical engineering.
3. Take care safety and security measures in the handling of chemical reactants, instruments and equipment.
4. Write laboratory reports clearly describing carried out experiments, analyzing results and presenting conclusions.

**IV. COURSE CONTENTS**

1. Calorimetry – Part 1
2. Calorimetry – Part 2
3. Chemical kinetics
4. Chemical equilibrium. Application of Le Chatelier principle
5. Chemical equilibrium in aqueous solutions – Part 1
6. Chemical equilibrium in aqueous solutions – Part 2
7. Oxidation-Reduction reactions
8. Electrochemistry
9. Corrosion
10. Quantitative determination of ions in water

## **VI. METHODOLOGY**

There is a guide for every laboratory experience students should read before the experience. At the beginning of the experience, an entrance test is taken to verify the preparedness of students. Students carry out the experience working by teams and following guide indications and faculty advice. At the end of the experience, students submit a report summarizing main results, analysis and conclusions. Student active participation is promoted.

## **VII. GRADING SYSTEM**

The Final Grade (FG) is calculated with the following formula:

$$\mathbf{FG = ( 9 PP + 1 C1 + 2 C2) / 12}$$

PP: Average grade of six laboratory experience work and report

C1: Average of entrance quizzes

C2: Average of experiment final quizzes

## **VIII. BIBLIOGRAPHY**

1. BROWN THEODORE- LEMAY EUGENE.  
Chemistry Laboratory Guide  
National University of Engineering, Lima, Peru, 2010
2. CHANG RAYMOND  
Chemistry  
McGraw-Hill Editorial, 2012