Code: **QF952**

Name: **Físico-Química Experimental**

Name in English: **Physical Chemistry Laboratory**

Name in Spanish: **Físico-química Experimental**

Subject type: **Weekly**

Approval Type: **Grade and Attendance**

Characteristic: **Regular**

Frequency: **75%**

Period Type / Offering Period: **Semester / 2nd Period - even periods**

Requires Final Exam: **Yes**

Vectors

T	L	P	O	PE	OE	SL	WEEKS	CREDITS
-	**6**	**-**	**2**	**-**	**-**	**6**	**15**	**8**

Occurrence on curriculum: **56, 50**

Pre requirement: ***QF531**

Summary: **Experiments related to topics: chemical thermodynamics, kinetics, electrochemistry, phase equilibrium, colligative properties, properties of materials, and physical chemistry of colloids and surfaces.**

Program:

The experiments selected for this discipline aim to reinforce fundamental concepts of Physical Chemistry, complementing the content of the theoretical courses of the program and introducing the student to new methods, techniques, and equipment. Half of the discipline is dedicated to fundamental experiments of Physical Chemistry, and the other part to experiments of a technological nature. Specific bibliography for each experiment is indicated in the experimental script.

I: experiments of fundamental character.

Ia. (Chemical Kinetics and Ionic Mobility):

1. Kinetics of methylene blue reduction
2. Sucrose inversion kinetics
3. Conductivity

Ib. Phase Equilibrium

1. Liquid-vapor equilibrium
2. Liquid-liquid equilibrium
3. Phase equilibrium in ternary system
4. Solid-solid phase equilibrium

Ic. Thermodynamics

1. Excess molar volume
2. Heat capacity of materials
3. Solution enthalpies

Id. Equilibrium and Chemical Potential

1. Reaction equilibrium
2. Ebulliometry
3. Cryoscopy
4. Electrochemistry

II: experiments of a technological nature.

IIa. Properties of Materials

1. Polymer crystallization (by optical polarization microscopy)
2. Thermal Analysis (DSC)
3. Extrusion, injection, and measurement of mechanical and surface properties of polymers (experiment in polymer processing plant).
4. X-ray Diffraction

IIb. Polymers in Solution

1. Viscosity of Polymeric Solutions
2. Polyelectrolytes: influence of ionic strength on viscosity
3. Polymer Solubility Parameter
4. Rheology of colloids

IIc. Physical Chemistry of Surfaces

1. Surface Tension
2. Foams and Emulsions
3. Adsorption at Interfaces

Basic Bibliography

Provided especially for each experiment