Code: **QG650**

Name: **Laboratório de Síntese Orgânica e Inorgânica**

Name in English: **Organic and Inorganic Synthesis Laboratory**

Name in Spanish: **Laboratorio de Síntesis Orgánica e Inorgánica**

Subject type: **Weekly**

Approval Type: **Grade and Attendance**

Characteristic: **Regular**

Frequency: **75%**

Period Type / Offering period: **Semester / Yearly at the second semester**

Requires Final Exam: **Yes**

Vectors

T	L	P	O	PE	OE	SL	WEEKS	CREDITS
-	**4**	**-**	**4**	**-**	**-**	**4**	**15**	**8**

Occurrence on curriculum: **50, 56**

Pre requirements: **QO521 + QI146 or QI145 + QO521**

Summary: **The course focuses on learning techniques for the preparation, isolation, purification, and characterization of organic and inorganic substances, handling toxic and flammable substances, and setting up the necessary apparatus for various purposes. It covers various strategies on syntheses including using an inert atmosphere and organometallic reagents.**

Program:

- Learning the techniques for the preparation, isolation, purification, and characterization of organic and inorganic substances; handling toxic and flammable substances; setting up apparatus for various purposes; and enhancing and expanding fundamental knowledge. The course includes the correlation of structures, properties, functional group transformations, syntheses, and spectroscopic characterization of the studied substances.

- Studying various synthesis, purification, and molecular structure characterization strategies, illustrating the shift in reaction equilibria by removing products or by-products, or through precipitation; using inert atmosphere and/or anhydrous conditions; purifying by distillation, crystallization, sublimation, or column chromatography; structure characterizing by infrared spectroscopy, nuclear magnetic resonance spectroscopy, melting point, and gas chromatography.

- Highlighting reactions like the Grignard reaction (synthesis of triphenylmethanol) and the synthesis and purification of ferrocene and its acetylated derivative (demonstrating the reactivity change in an organic molecule when coordinated to a transition metal).

Basic Bibliography

1) D. L. Pavia, G. M. Lampman, G. S. Kriz, R. G. Engel, "A Small-Scale Approach to Organic Laboratory Techniques", 3rd Ed., Cengage/Brooks/Cole, 2011.

2) R. M. Silverstein, F. X. Webster, D. J. Kiemle, D. L. Bryce "Spectrometric Identification of Organic Compounds", 8th Ed., John Wiley & Sons, 2014.

3) R. J. Angelici, G. S. Girolami, T. B. Rauchfuss, "Synthesis and Technique in Inorganic Chemistry: A Laboratory Manual", University Science Books, 1999.

Supplementary Bibliography

1) T. W. G. Solomon, C. B. Fryhle, "Organic Chemistry", 8th Ed., John Wiley & Sons, 2004.
2) G. Brauer, "Handbook of Preparative Inorganic Chemistry", 2nd Ed., Academic Press, 1965.
3) D. L. Pavia, G. M. Lampman, G. S. Kriz, "Introduction to Spectroscopy", 2nd Ed., Saunders, 1996.
4) J. J. Li, C. Limberakis, D. A. Pflum, "Modern Organic Synthesis in the Laboratory", 1st Ed., Oxford University Press, 2007.
5) W. L. Jolly, "The Synthesis and Characterization of Inorganic Compounds", Prentice Hall, 1st Ed., 1970.