Code: **QG564**

Name: **Química Orgânica e Inorgânica Experimental**

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

Name in Spanish: **Laboratório de Quimica Orgánica e Inorgánica**

Subject type: **Weekly**

Approval Type: **Grade and Attendance**

Characteristic: **Regular**

Frequency: **75%**

Period Type / Offering period: **Semestral / 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: **QG109 + QI246 + QO521 or QG109 + QO521 + QI146**

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:

- Capture of O_2 by a cobalt complex and synthesis of BINOL, emphasizing crystallization and melting point techniques.
- Synthesis of PCC and PCC/alumina followed by the oxidation of alcohols with both reagents, focusing on extraction techniques, drying agents, and liquid column chromatography.
- Preparation of cyclohexene and addition of dichlorocarbene to cyclohexene, emphasizing simple and vacuum distillation techniques and gas chromatography coupled with mass spectrometry.
- Preparation of ferrocene and its acetylation using sublimation technique for purification and infrared spectroscopy for structure characterization.
- Synthesis of triphenylmethanol and its derivatization using ^{13}C and ^{1}H nuclear magnetic resonance techniques for structure characterization.
- Synthesis of 2-acetylcyclohexanone and the $[Cr(acac)_3]$ complex, employing fractional distillation and azeotropic techniques. Hydrolysis of the enamine and purification of 2-acetylcyclohexanone.

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.