



**PROGRAMS AND BIBLIOGRAPHY**

<b>Subject</b>	
<b>Code</b>	<b>Name</b>
QG564	Experimental Organic and Inorganic Chemistry

<b>Vector</b>
OF:S-1 T:000 P:000 L:008 O:000 D:000 HS:008 SL:008 C:008 AV:N EX:S FM:75%

<b>Pre requirement</b>
QG109 QI145 QO521

<b>Summary</b>
Study of strategies for the synthesis, purification and characterization of organic and inorganic substances, showing the shift of the equilibrium of reactions through the removal of products or by-products, or the precipitation of the same; the use of inert atmosphere; purification by distillation, crystallization, sublimation or column chromatography; the characterization by infrared spectroscopy, nuclear magnetic resonance spectroscopy, melting point, mass spectrometry and gas chromatography.

<b>Program</b>
-Caption of O <sub>2</sub> by a cobalt complex and synthesis of BINOL with emphasis on crystallization and melting point techniques. Synthesis of PCC and PCC / alumina followed by oxidation of alcohols with both reagents with emphasis on extraction techniques, drying agents and liquid column chromatography. -Preparation of cyclohexene and addition of dichlorocarbene to cyclohexene with emphasis on simple distillation, vacuum and gas chromatography techniques in conjunction with mass spectrometry. -Preparation of ferrocene and ferrocene acetylation with emphasis on infrared spectroscopy and sublimation techniques. Synthesis of triphenylmethanol and its derivatization with emphasis on <sup>13</sup> C and <sup>1</sup> H nuclear magnetic resonance techniques. Synthesis of 2-acetylcyclohexanone and the [Cr(acac) <sub>3</sub> ] complex with emphasis on fractional distillation and azeotrope technique. Enamine hydrolysis and purification of 2-acetylcyclohexanone. -Preparation of the chromium (III) acetylacetonate complex with an emphasis on the refractive index technique.

<b>Bibliography</b>
1. R. G. Engel, G. S. Kriz, G. M. Lampman, D. L. Pavia. "Química Orgânica Experimental". 3a ed. Cengage Learning, São Paulo, 2013. 2. R. G. Engel; G. S. Krig; G. M. Lapman; D. L. Pavia; "Introduction to Organic Laboratory Techniques - A Small Scale Approach"; Cengage Learning : United States, 2011.

3. D. L. Pavia, G. M. Lampman, G. S. Kriz, Jr., Introduction to Organic Laboratory Techniques, a Contemporary Approach, Saunders, Philadelphia, 2nd ed., 1982.
4. D. L. Pavia, G. M. Lampman, G. S. Kriz, Jr., R.G. Engel, Introduction to Organic Laboratory Techniques, a Microscale Approach, Saunders, Philadelphia, 3rd ed., 1999.
5. Z. Szafran, R. M. Pike, M. M. Singh, Microscale Inorganic Chemistry: A Comprehensive Laboratory Experience, John Wiley & Sons, Inc. New York, 1991.
6. D. L. Pavia, G. M. Lampman, G. S. Kriz, Jr., Introduction to Spectroscopy, Saunders Golden Sunburst series, 2nd ed 1996

**Evaluation criteria**

For grading policy, see: Regimento Geral de Graduação, Seção I – Normas Gerais, Capítulo V – Da Avaliação do Aluno na Disciplina. Students are required to attend 75 % of the lectures.  
For further details, see: Regimento Geral de Graduação, capítulo VI, seção X, artigo 72.