

## COURSE SYLLABUS

### 1. Identification

Code and title: QUP 109 – Special Topics in Pericyclic Reactions. Mechanism and synthetic aspects

Professor: Aloir Antonio Merlo

Level: Master and Doctorate

Credit hours: 2

Revised: August\_2019

### 2. Summary

Mechanism of electrocyclic, sigmatropic, and cycloaddition reaction.

### 3. Objective

Provide a necessary background of the pericyclic reactions from mechanisms to their uses in synthesis of natural and technological products.

### 4. Contents

Fundamental definitions of pericyclic process: Symmetry rules, frontiers molecular orbitals, aromatic and anti-aromatic transition states and supra and antarafacial approach. Overview of Electrocyclic, sigmatropic and cycloaddition reactions.

### 5. Assessment

The evaluation will be through an open seminar (20 minutes) dealing with a topic selected by professor from literature. The student, who obtains a final grade of A, B or C, awarded as per the list below, will be considered approved:

A: grade equal to or above 9.0

B: grade equal to or above 7.5 and below 9.0

C: grade equal to or above 5.0 and below 7.5

D: grade below 5

FF: lack of frequency

### 6. Methodology

Lectures, exercises lists, seminars and examinations.

### 7. Bibliography

- Reações pericíclicas - uma sinfonia de moléculas e elétrons. Aloir Antonio Merlo, Editora da UFRGS, Porto Alegre, 2012.

- Molecular Orbitals and Organic Chemical Reactions. Ian Fleming, 2009, Wiley-Interscience publication, Great Britain.

- Advanced Organic Chemistry, Part A: Structure and Mechanism. 4<sup>a</sup> Ed. Kluwer Academic/Plenum Publishers, 2000.

- Organic Chemistry. J. Clayden, N. Greeves, S. Warren, P. Wothers. Reino Unido: Oxford University Press, 2001.