



PROGRAMS AND BIBLIOGRAPHY

Subject	
Code	Name
QO856	The Chemistry of Heterocyclic Compounds: An introduction

Vector
OF:S-5 T:002 P:000 L:000 O:000 D:000 HS:002 SL:002 C:002 AV:N EX:S FM:75%

Pre requirement	QO321 *QO521
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Summary
An overview of the structure of heterocyclic compounds. Basic aspects of the nomenclature of heterocyclic compounds. The reactivity profile of the heterocyclic compounds. The three-, four-, five- and six-membered heterocycles. Five- and six-membered heteroaromatic compounds (reactivity and synthesis). Fused heteroaromatic compounds (indoles, benzofurans, quinolones, coumarins, and other derivatives); their reactivity and synthesis. Heterocyclic and heteroaromatic compounds in nature, medicines, and in high performance materials.

Program
<ul style="list-style-type: none">▪ The distinction between heteroaromatic and heterocyclic compounds▪ The main classes of heterocyclic compounds containing one or two heteroatoms (N, O, S): aziridines, oxetanes, azetidines, and azetidiones,▪ The main classes of five- and six-membered heterocyclic compounds containing one or two heteroatoms (N, O, S),▪ Aromatic heterocyclic compounds:<ul style="list-style-type: none">▪ furans▪ thiophenes▪ pyrroles▪ oxazoles▪ imidazoles▪ pyridines▪ pyrimidines and pyrazines▪ pyrazoles▪ quinolines and isoquinolines▪ Main classes of fused heteroaromatic compounds:<ul style="list-style-type: none">▪ indoles▪ benzofurans

- benzothiophenes
- coumarins
- Synthesis of drugs and medicines containing heterocyclic and heteroaromatic moieties/structures.

Bibliography

1. J. A. Joule e K. Mills, "Heterocyclic Chemistry", 5th edition, 2010, Wiley-Blackwell, ISBN: 978-1405133005.
2. Theophil Eicher, Siegfried Hauptmann e Andreas Speicher, "The Chemistry of Heterocycles: Structures, Reactions, Synthesis, and Applications" 3rd Edition, 2013, Wiley-VCH, ISBN: 978-3527327478.
3. Stefani, H. A. "Introdução à Química de Compostos Heterocíclicos", Guanabara Koogan, RJ, 2009
4. Clayden, J.; Greeves, N.; Warren, S.; Wothers, P. "Organic Chemistry", Oxford University Press, 2001; or any newer version.
5. Streitwieser, H.; Heathcock, C.; Kosower, E. M. "Introduction to Organic Chemistry", 4th Ed.; McMillan Publis. Comp., NY, 1992.
6. Smith, M. B. "Organic Synthesis", 2nd. Ed., McGraw Hill Inc., NY 2002.
7. G. Solomons, C. Fryhle, "Organic Chemistry", 7th ed., John Wiley & Sons, Inc., 2000. (more recent editions might also be used)

Several other Organic Chemistry books can be consulted, depending on the specific topic; specific bibliography may also be used, but this will be informed in advance to the class

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.