Code: **QO856**

Name: **Química dos Compostos Heterocíclicos: Uma Introdução**

Name in English: **Chemistry of Heterocyclic Compounds: An Introduction**

Name in Spanish: **Q Química de Compuestos Heterocíclicos: Una Introducción uímica Orgánica II**

Subject type: **Weekly**

Approval Type: **Grade and Attendance**

Characteristic: **Optional**

Frequency: **75%**

Period Type / Offering period: **Semester / Not offered regularly; consult department**

Requires Final Exam: **Yes**

Vectors

T	L	P	O	PE	OE	SL	WEEKS	CREDITS
2	**-**	**-**	**-**	**-**	**-**	**2**	**15**	**2**

Occurrence on curriculum: **05, 50, 56**

Pre requirement: **QO321 + *QO521**

Summary: **Structure of heterocyclic compounds. Basic aspects of heterocyclic compound nomenclature and general reactivity patterns. Heterocycles containing three-, four-, five-, and six-membered rings (reactivity and synthesis). Fused heteroaromatic compounds (indoles, benzofurans, quinolines, coumarins, and other derivatives), and their reactivity and synthesis. Heterocyclic and heteroaromatic compounds in nature, medicine, and high-performance materials.**

Program:

1) The distinction between heteroaromatic and heterocyclic compounds.

2) Main classes of three- and four-membered heterocyclic compounds containing one or two heteroatoms (N, O, S): aziridines, oxetanes, azetidines, and azetidinones.

3) Principal classes of five- and six-membered heterocyclic compounds containing one or two heteroatoms (N, O, S).

- Furans
- Thiophenes
- Pyrroles
- Oxazoles
- Imidazoles
- Pyridines
- Pyrimidines
- Pyrazines
- Pyrazoles
- Quinolines
- Isoquinolines

4) Major classes of fused heteroaromatic compounds:

- Indoles
- Benzofurans
- Benzothiophenes
- Coumarins
- Synthesis of pharmaceuticals/medicines containing heterocyclic/heteroaromatic rings.

5) Synthesis of pharmaceuticals/medicines containing heterocyclic/heteroaromatic rings.

Basic Bibliography

1) JOULE, J.A., and MILLS, K., "Heterocyclic Chemistry," 5th Edition, Wiley-Blackwell, 2010.
2) EICHER, T., HAUPTMANN, S., and SPEICHER, A., "The Chemistry of Heterocycles: Structures, Reactions, Synthesis, and Applications," 3rd Edition, Wiley-VCH, 2013.
3) STEFANI, H.A., "Introdução à Química de Compostos Heterocíclicos," Guanabara Koogan, RJ, 2009.

Supplementary Bibliography

1) CLAYDEN, J., GREEVES, N., WARREN, S., "Organic Chemistry," 2nd Ed., Oxford University Press, 2012.
2) STREITWIESER, HEATHCOCK, KOSOWER, Introduction to Organic Chemistry, 4th Ed., McMillan Publishers, NY, 1992.
3) SMITH, M.B., "Organic Synthesis," 2nd Ed., McGraw Hill Inc., NY, 2002.
4) SOLOMONS, FRYHLE, SNYDER, Organic Chemistry, 12th Ed., John Wiley, NY, 2016.
5) Additional material suggested by the instructor.