Code: QA381

Name: Espectroanalítica

Name in English: Spectroanalytical Chemistry

Name in Spanish: Espectroanalítica

Subject type: Weekly

Approval Type: Grade and frequency

Characteristic: Regular

Frequency: 75%

Period Type / Offering period: Semi-annual / Every period

Requires Final Exam: Yes

Vectors

T	L	P	O	PE	OE	SL	WEEKS	CREDITS
2	**0**	**0**	**0**	**0**	**0**	**2**	**15**	**2**

Occurrence on curriculum: 05, 50

Pre requirement: QA282

Summary:
Introduction to analytical spectroscopy methods. Optics spectroscopy instruments. UV visible molecular absorption spectroscopy. Molecular luminescence spectroscopy. Atomic spectroscopy.

Program:
Properties of electromagnetic radiation. Diffraction, transmission, refraction, scattering and polarization of radiation. Interaction of radiation with matter. Photoelectric effect. Radiation emission and absorption. Transmittance and absorbance measurements. Absorption and emission spectra. Beer´s Law. Beer´s Law limitations. Components of optical instruments. Radiation sources. Wavelength selector. Radiation transducer. Molecular fluorescence. Instruments and applications. Molecular phosphorescence spectroscopy. Chemiluminescence. NIR spectroscopy. Atomic spectra origin. Atoms and ions production. Sample introduction systems. Atomic emission spectrometry. Plasma sources. Atomic absorption spectroscopy. Flame atomization. Electrothermal atomization.

Basic Bibliography

1) SKOOG, D.A.; WEST, D.M.; HOLLER, F.J.; CROUCH, S.R. **Fundamentos de Química Analítica**. tradução da 9. Ed. São Paulo: Cengage Learning, 2015. 950 p.
2) HARRIS, D.C. **Análise Química Quantitativa**. 9. Ed. Rio de Janeiro: LTC, 2017. 774 p.
3) SKOOG, D.A.; HOLLER, F.J.; NIEMAN, T.A. **Princípios de Análise Instrumental**. 6. Ed. Porto Alegre: Bookman, 2009. 1055 p.

Supplementary Bibliography

1) CHRISTIAN, G.D. **Analytical Chemistry**. 6. Ed. New York: Wiley, 2004. 828 p.
2) EWING, G.W. **Métodos Instrumentais de Análise Química**. 1. Ed. São Paulo: Blucher, 1972, 312 p. E-book.
3) MATOS, S.P. **Técnicas de Análises Químicas: métodos clássicos e instrumentais**. 1. Ed. São Paulo: Érica, 2019. E-book.
4) CIENFUEGOS, F.; VAITSMAN, D. **Análise Instrumental**. 1. Ed. Rio de Janeiro: Interciência, 2000. 606 p.
5) WILLARD, H.H.; MERRITT, L.L.; DEAN, J.A. **Instrumental Methods of Analysis**. 7. Ed. Belmont: Wadsworth, 1988. 895 p.