Code: QA815

Name: Química do Meio Ambiente

Name in English: Environmental Chemistry

Name in Spanish: Química del Medio Ambiente

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**	**2**	**0**	**0**	**0**	**4**	**15**	**4**

Occurrence on curriculum: 05, 50, 56

Pre requirement: QA282 + *QF531

Summary:
Soil, water and atmosphere chemistry. Environmental pollution: prevention and treatment processes (remediation). Chemical reactions and processes of interest to human health in waters, soils and atmosphere. Legislation and environmental pollution.

Program:
Introduction to environmental problems, sustainability and green chemistry. Biogeochemical cycles of elements. Chemistry of atmosphere: evolution of primitive atmosphere; atmosphere structure; photochemical reactions; greenhouse effect and climate changes. Air pollution: point and diffuse sources – emission modeling; legislation and quality standards. Hydrosphere and processes: eutrophication process; water/atmosphere interface and $CO_2/HCO_3^-/CO_3^{2-}$ system. Pollution and water treatment, effluents treatment. Legislation and quality standards. Soil chemistry. Sorption and contaminants dissipation from soil. Contaminants and soil remediation. Ecotoxicology principles. Water and effluents treatment plants. Students' seminars presentation about theory complementary themes. Scientific and newspaper manuscripts discussion.

Basic Bibliography

1) BAIRD, C.; CANN, M. **Química Ambiental**. 4. Ed. Porto Alegre: Bookman, 2011. 844 p.
2) SPIRO, T.; STIGLIANI, W.M. **Química Ambiental**. 2. Ed. São Paulo: Pearson, 2009. 334 p.
3) ROCHA, J.C.; ROSA, A.H.; CARDOSO, A.A. **Introdução à Química Ambiental**. 2. Ed. Porto Alegre: Bookman, 2011. E-book.

Supplementary Bibliography

1) CAMPOS, M.L.A.M. **Introdução à biogeoquímica de ambientes aquáticos**. Campinas: Átomo, 2010. 209 p.
2) MANAHAN, S.E. **Environmental Chemistry**. Boca Raton: CRC Press, 2004. 783 p.
3) BAIRD, C. **Environmental Chemistry**. New York: W. H. Freeman, 2003. 557 p.
4) STUMM, W. MORGAN, J.J. **Aquatic chemistry: chemical equilibria and rates in natural waters**. 3. Ed. New York: John Wiley & Sons, 1996. 1022 p.
5) SCHWARZENBACH, R.P.; GSCHWEND, P.M.; IMBODEN, D.M. **Environmental Organic Chemistry.** 2. Ed. Hoboken: Wiley, 2003. E-book. 1313 p.