



PROGRAMS AND BIBLIOGRAPHY

Subject	
Code	Name
QI852	Chemistry of the Elements

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
QI145

Summary
Atomic structure and its relation to the systematic chemistry of the elements. Chemical processes for production and applications of elements and their compounds. Physical and chemical properties of commercial relevant compounds.

Program
Electronic structure of polyelectronic atoms and the periodic classification of elements. Metals and their properties: alkaline and alkaline-earth metals; transition metals; lanthanides and actinides. Alloys. Hydrogen and its compounds; hydrides of elements of groups 13 to 17. Boron and its compounds; allotropes and clusters. Carbon group; allotropes, carbides, nanotubes, fullerenes e graphenes; silicon e its compounds; silicates e aluminosilicates. Nitrogen and oxygen groups; nitrogen and oxygen activation, halides, oxides and sulfides. Phosphor, phosphates and polyphosphates. Halogens and noble gases; pseudohalogens and interhalogens, oxygen compounds. Production of elements and their commercial relevant compounds. Acidity and basicity of compounds. Oxiacids. Redox chemistry and potential diagrams.

Bibliography
Textbooks J. D. LEE, "Química Inorgânica - não tão concisa" tradução da 5ª ed. inglesa, Ed. Edgard Blücher Ltda, 1999. D. F. Shriver, P. W. Atkins, C.H. Langford. Inorganic Chemistry. 2nd. ed. Oxford : Oxford University Press, 1994. 819p. N. N. GREENWOOD e A. EARNSHAW - "Chemistry of the Elements", Pergamon Press, 1984; 2a. ed., B. Heinemann, 1997.
Supplemental Readings Articles selected by the professor.

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.