

MA05 BIOLOGY

Credits: 3

The course Biology seeks to strengthen in the student the perception of his role as biologic entity and the impact of his activities in the environment. The students will understand the fundamentals of the biological sciences applicable to biotechnologies. Additionally, they will understand how the productive activities interact with the surroundings and the environment.

Evolution and the origin of life / The thought of the great investigators / The environment / Eco-biology and Ecology / Biotechnology and ethics / Biotechnologies and the productive processes / The bio-industrial developments.

Bibliography: CAMPBELL, N.A.: Biology ; CURTIS, H., BARNES, N.S.: Biology ; SCRAGG, A.: Biotechnology for Engineers: Biological Systems in Technological Processes ; MILLER, G.T.Jr.: Ecology and Environment.

MA41 CHEMISTRY

Credits: 4

The course presents the fundamentals of Chemistry, explains the internal structure of the matter and facilitates the estimation of the values of the different chemical variables, as well as it gives the basic knowledge of organic chemistry, its application in chemical and manufacturing industry, emphasizing in the state-of-the-art technologies and the processes of industrial application. Concepts about the influence of the chemical processes in environmental pollution are introduced. Laboratory experiments are conducted to extend and complement the theoretical knowledge.

The matter and its properties / The periodic table / Chemical connections and terminology / Algebra of Chemistry / Laws of the gases / Chemical equilibrium applied to inorganic chemistry and to organic chemistry / Metallurgy / Cement / Ceramics / Hydrocarbons and petroleum / Alcohols, ethers, esters, aldehyde, acetone, organic acids / Principles of environmental chemistry.

Bibliography: CHANG, RAYMOND: Chemistry ; SHACKELFORD, JAMES: Material Science for Engineers ; VALDEZ DE LA TORRE, BERTA: Ceramics and Refractories ; WADE, LG: Organic Chemistry.