

BA118- Chemistry

Hour: Lecture: 2 Hrs. Tutorial: 2 Hrs. Credit: 3.

Coordinator: Samir Youssef

Text Book:

William D. Callister Jr., Material Science and engineering, Third edition 1994.

Specific course information:

- a. The Science of Chemistry characterized its close relate with the other branches of sciences and with the technological applicants of these sciences and with technological applicants of these sciences, which emerge in the mineral oil, medicate, petroleum, petrochemicals, chemical textile and other industries. This course includes topics of specialized chemical engineering technology without going through details.
- b. Prerequisite: none
- c. Designation: Required

Specific goals for the course:

- An ability to apply knowledge of mathematics, science, and engineering.
- An ability to design and conduct experiments, analyze and interpret data.
- An ability to communicate effectively.
- Knowledge of contemporary issues within and outside the mechanical engineering profession

Course instruction outcomes:

- The student will be provided with knowledge about the effects of the environment on the material whatever its form is indifferent purposes.
- The students will able to control dominate and protect the used materials.
- The students will be able to solve industrial problems in a scientific method.

Student outcomes:

A, B, G, K

Topics Covered:

Electrochemical reactions and cells, volumetric analysis (practical) - Principles of corrosion, titrate technique, determinate of acidity (practical) - Metals and corrosive environments, determinate of alkalinity and chloride (practical) - Forms of corrosion uniform, galvanic and differential aeration cell, determination of hardness (practical) - Pitting, stress corrosion cracking and intergranular corrosion forms, determination of dissolved oxygen (practical) - Atmospheric and erosion corrosion, spectrophotometer analysis (practical) - Coating and inhibitors as protection methods, determination of nitrite and nitrate (practical) - Cathodic protection, determination of phosphate and silica (practical) - Classification of fuel, properties of liquid fuel, determination of some heavy metals (practical) - Combustion of fuel, determination of fluorine and chlorine (practical) - air supply and exhaust gases,

determination of turbidity (practical) - Classification of lubricants advantages and disadvantages of different types, oil analysis determination of viscosity and T.B.N (practical) - Properties of lubricants and additives, determination of insoluble and saltwater (practical) - Nature of impurities in water, soft and hard water effect of using impure water on boilers performance, determination of acidity and water content (practical) - Water treatment, determination of ph (practical) - Air and water pollution, determination of TDS and salinity(practical).

Course / credit hours	Math & Basic Sciences	Engineering Topics	General Education
Chemistry (BA118)/2	2		