BA118- Chemistry

CREDIT HOURS

2 Hours

CONTACT HOURS (Hours/week)

Lecture: 2; Lab: 2

COURSE COORDINATOR

TEXT BOOK

- William D. callister Jr., Material Science and engineering ,Third edition 1994.
- M.G.Fontana ,Corrosion Engineering ,1984.
- H.H Uppal and R.v. Revice., Corrosion and corrosion control ,Third edition 1985.
- M.M uppal., Engineering Chemistry, 1990.
- National Geographic.vol 176, No.G, 1989.
- Drew principhic.vol. 176, No.G, 1989.
- Drew principles of industrial water treatment. Third edit. Drew chemical corporat.
- Corrosion for science Engineering and Edit K R Trethewey 1995.

COURSE DESCRIPTION

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.

PREREQUISITE:

None

RELATION OF COURSE TO PROGRAM

Required

COURSE INSTRUCTION OUTCOMES

The student will be able to identify the effects of the environment on the material whatever its form is indifferent purposes. Accruing Scientific bases which equality the student to control dominate and protect the used materials, Enabling the student to solve industrial problems in a scientific method.

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).

CONTRIBUTION OF COURSE TO MEET THE REQUIREMENTS OF CRITERION 5:

Professional component Content			
Math and Basic Sciences	**Engineering Topics**	**General Education**	**Other**
✓			

RELATIONSHIP OF COURSE TO STUDENT OUTCOMES:

Student Outcomes		Course aspects
A	An ability to apply knowledge of mathematics, science, and engineering	a_1 a_2
B	An ability to design and conduct experiments, analyze and interpret data.	b_1 b_2 b_3 b_4
C	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economics, environmental, social, political, ethical, health, and safety, manufacturability, and sustainability	
D	An ability to function on multi-disciplinary teams.	d_1 d_2 d_3 d_4
E	An ability to identify, formulate, and solve engineering problems	
F	An understanding of professional and ethical responsibility	
G	An ability to communicate effectively	g_1 g_2 g_3
H	The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and social content	
I	A recognition of the need for, and an ability to engage in life-long learning.	
J	A knowledge of contemporary issues within and outside the electrical engineering profession.	
k	An ability to use the techniques, skills, and modern engineering tools necessary for electrical engineering practice.	