Course Title: Petroleum Chemistry

Course Code: CH-814

Credit Hours 3-0

Prerequisite: Nil

Course Objectives

i. To acquaint students with chemistry of refinery and petrochemical industries.
ii. To educate student about quality control protocols associated with the oil industry.
iii. To familiarize students with the processes by which fuel oil, diesel oil, lub oil, and asphalt are stripped from crude petroleum.
iv. To accustom budding researchers about contemporary research challenges in field of petroleum chemistry.

Course Outcomes

Upon successful completion of this course, the student will be able to:

i. Explain processes involved in the exploration and recovery of petroleum.
ii. Improve comprehension about analysis and treating processes of petroleum and petroleum products.
iii. Explore research opportunities in the field of refinery and petrochemical industries.

Course Contents

Petroleum Classification, Exploration, Recovery, Shale Oil Conversion and Chemical Composition.

Fractionation techniques including Distillation, Solvent Treatment, Adsorption and Chemical Methods.

Petroleum Analysis including Physical Properties, Thermal Properties, Electrical Properties, Optical Properties.

Factors Influencing Stability and Compatibility of Petroleum System

Refining Processes, Hydrotreating and Desulfurization, Dewatering and Desalting, Atmospheric, Vacuum, Azeotropic and Extractive Distillation, Thermal Cracking, Visbreaking, Coking, Hydroprocesses, Reforming, Isomerization, Alkylation Processes, Polymerization Processes, Solvent Processes, Refining Heavy Feedstocks.

Composition, Properties and Uses of Petroleum Products including Gaseous

Fuels, Naphtha, Gasoline, Kerosene, Fuel Oil, Lubricating Oil, Grease, Wax, Asphalt.

Petrochemicals from Paraffins, Olefins, Aromatics, Acetylene, Natural Gas.

Discussion on Recent Researches Article Published in Petroleum Chemistry Related Journals.

Recommended Books

1. The Chemistry and Technology of Petroleum (5th Ed.) by James G. Speight, CRC Press Taylor & Francis Group **2014** ISBN: 978-1-4398-7390-8
2. Handbook of Petroleum Product Analysis (2nd Ed.) by James G. Speight, John Wiley & Sons **2015** ISBN 978-1-118-36926-5