

INTRODUCTION

Over the last 100–150 years the oil has played an immense role in the life of mankind. First large-scale applications of petroleum products were the use of kerosene in cities and residential settlements for street lighting and of lubrication oils in the middle and at the end of the 19th century, then the use of gasoline and diesel fuel in motor engines, kerosene in aviation, and fuel oil for heating households.

All these applications would have been impossible without skilled crude oil processing, without broad understanding of the chemical and fractional composition of oil, without a knowledge of the processes for oil fractionation and conversion of chemical composition of petroleum products.

All these matters are addressed in the oil refining technology studying the properties of oil and petroleum products, fractionation processes and subsequent changes in the fraction properties caused by physical and chemical effects. All refinery processes are related to the oil refining technology. Oil chemistry explains chemical transformations of oil fractions in the course of processing.

Crude oil comes to a refinery from oilfields and, first of all, requires to be treated in desalting/dewatering units; subsequently, it is fractionated in atmospheric and vacuum distillation units. Then, each of the cuts requires further treatment and processing. These processes run in secondary processing units (physical and chemical processing) and have a definitely stated sequence. In order to support operation of the process units, large off-site facilities are necessary, including power-generation systems, water supply systems, tanks, wastewater treatment facilities, railroad loading/unloading racks, etc.

The structure of the proposed educational course is in compliance with the above-mentioned sequence.