University of Nicosia, Cyprus

Course Code	**Course Title**	**ECTS Credits**
CHEM-126	Chemistry for the Petrochemical Industry	8
Department	**Semester**	**Prerequisites**
Life & Health Sciences	Spring	CHEM-106
Type of Course	**Field**	**Language of Instruction**
Required	Chemistry	English
Level of Course	**Year of Study**	**Lecturer(s)**
1st Cycle	1st	Dr Evroula Hapeshi
Mode of Delivery	**Work Placement**	**Co-requisites**
Face-to-face	N/A	None

Objectives of the Course:

The main objectives of the course are to:

- to give students an introduction to the principles of general, physical, and organic chemistry required to assist with understanding of the petrochemical industry
- to give students a sound understanding of the origin and extraction of petrochemicals and to introduce them to polymer chemistry and petrochemicals
- to develop understanding of the basic chemical reactions employed in the petrochemical industry
- to help in the acquisition of sound hands-on practical skills in the chemistry lab

The course format is 3 h lectures and 2 h laboratory tutorial sessions per week.

Learning Outcomes:

After completion of the course students are expected to be able to:

1. Utilize qualitatively and quantitatively chemical equations for a variety of chemical reaction types
2. Explain the behavior of ideal and real gases
3. Use the basic principles of thermochemistry to predict the heat transfer involved in chemical combustion processes
4. Use the basic principles of chemical kinetics and chemical equilibria to explain the speeds and efficiencies of chemical processes
5. Explain the structure, physical, and chemical properties of hydrocarbons
6. Explain the origin of petrochemicals and methods for their extraction from the earth's mantle
7. Explain methods of separation of crude oil and natural gas into their components
8. Explain the chemical reactions employed in the petrochemical industry for the production of useful materials

Course Contents:

1. Chemistry and measurement
2. Chemical Equations
3. Theory of Gases
4. Thermochemistry
5. Thermodynamics
6. Chemical Kinetics
7. Chemical Equilibrium
8. Organic Chemistry
9. Petrochemicals
10. Petrochemical Industry

Laboratory Experiments:

1. Laboratory Safety Demonstrations
2. Volumetric Analysis
3. Head of solution
4. Properties of Oil
5. Spectrometric Techniques in Chemistry – Calibration Curve
6. Gas chromatography
7. Fractional Distillation

Learning Activities and Teaching Methods:

Lectures, Laboratory Practical Sessions, and Assignments.

Assessment Methods:

Laboratory practical reports, assignments, tests, final examination

Required Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
S. Matar, L.F. Hatch	Chemistry of Petrochemical Processes	Gulf Professional Publishing	2001 2nd Edition	ISBN-10: 0884153150 ISBN-13: 978-0884153153
Paul R. Robinson	Petroleum processing overview	Springer	2006	ISBN: 0-38725811-6

Recommended Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
J. E. Mc Murry, Robert C. Fay, Jordan Fantini	Chemistry	Pearson Prentice Hall, 6th edition	2012	ISBN 10: 0-321-76087-5 ISBN 13: 978-0-321-76087-6
D.L. Burdick, W.L. Leffler	Petrochemicals in Nontechnical	Pennwell Corporation	2010 4th	ISBN-10: 1593702167

	Language		Edition	ISBN-13: 978-1593702168
R.H. Petrucci, W.S. Harwood, and F.G.Herring	General Chemistry Principles and Modern Applications	Prentice Hall	2002 8th Edition	ISBN: 0-13-014329-4