



UNIVERSITY OF NICOSIA ΠΑΝΕΠΙΣΤΗΜΙΟ ΛΕΥΚΩΣΙΑΣ

University of Nicosia, Cyprus

Course Code CHEM-215	Course Title Introduction to Oil and Gas Chemistry	ECTS Credits 6
Department Management and MIS	Semester Fall / Spring	Prerequisites None
Type of Course Major Requirement	Field Chemistry	Language of Instruction English
Level of Course Undergraduate	Year of Study 2 nd	Lecturer Dr. Photos Hajigeorgiou
Mode of Delivery Face-to-face	Work Placement N/A	Co-requisites None

Objectives of the Course:

The main objectives of the course are to:

- give students an introduction to the basic principles of chemistry
- provide an introduction to fossil fuel extraction and refinement
- help to develop an appreciation for the effects of fossil fuel use on the environment
- demonstrate physical and chemical properties and changes of matter in a laboratory setting

Learning Outcomes:

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

1. Discuss the concept of temperature scales, physical and chemical properties, changes in matter, density, and common methods of separation of mixtures
2. Explain atomic and molecular structure and discuss the arrangement of atoms or molecules in different forms of matter
3. Utilize chemical equations in demonstrating the chemical changes that take place in matter
4. Calculate amounts of product formed in chemical reactions, with particular emphasis on fossil fuel combustion in air, and discuss the effects of fossil fuel combustion on the atmosphere
5. Discuss how the combustion products of fossil fuels contribute to the greenhouse effect
6. Calculate the amount of heat that accompanies fossil fuel combustion
7. Discuss the basic properties of ideal and real gases, and in particular the volume occupied by a gas, and the pressure it exerts on a container
8. Identify the hydrocarbon components of petroleum products and natural gas
9. Discuss qualitatively the chemical reactions that take place in the different layers of the Earth's atmosphere, ozone production and depletion, and the protection of living organisms from solar uv radiation by the atmospheric components

Course Contents:

1. Matter and Measurement
2. Atoms and Molecules
3. Chemical Reactions and Chemical Equations
4. Basic Calculations in Chemistry
5. Thermochemistry
6. Theory of Gases
7. Intermolecular Forces and Phase Changes
8. Petroleum and Natural Gas
9. Atmospheric Chemistry

Laboratory Experiments

1. Laboratory Safety Demonstrations
2. Constant Pressure Calorimetry
3. Estimation of the Molar Mass of Carbon Dioxide Gas
4. Measurement of Density
5. Fractional Distillation
6. Determination of the Boiling Point of a Liquid

Learning Activities and Teaching Methods:

Lectures 3 hrs/wk, Laboratory Practical Sessions 2 hrs/wk, Assignments and Final Exam

Required Textbooks:

Authors	Title	Publisher	Year	ISBN
1. T.L. Brown, H.E. Lemay, B.E. Bursten, C.J. Murphy	Chemistry The Central Science	Prentice Hall	2009 11 th Edition	ISBN: 0-13- 235848-4
2. P.G. Hajigeorgiou	CHEM-215 Laboratory Manual	University of Nicosia	2012	
3. P.G. Hajigeorgiou	CHEM-215 Lecture Notes	University of Nicosia	2012	

Recommended Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
1. R.H. Petrucci, W.S. Harwood, and F.G. Herring	General Chemistry Principles and Modern Applications	Prentice Hall	2002 8 th Edition	ISBN: 0-13- 014329-4
2. J. Olmsted III, and G.M. Williams	Chemistry The Molecular Science	WCB Publishers	1997 2 nd Edition	ISBN: 0- 8151-8450-6