

Course: Petroleum Refining and Petrochemical Processes		
Language: English		
Lecturer: Professor Ante Jukić, Associate Professor Elvira Vidović		
TEACHING	WEEKLY	SEMESTER
Lectures	2	30
Laboratory	1	15
Seminar	0	0
		Overall: 45
		ECTS: 5
PURPOSE:		
Integration and implementation of previously acquired basic chemical / engineering knowledge on the most important processes in petroleum refining and petrochemical industry; interaction of science, technology, ecology and economy are considered.		
THE CONTENTS OF THE COURSE:		
<ol style="list-style-type: none"> 1. Introduction to petroleum refining. The origin, exploration, chemical composition and properties of petroleum. Raw materials, processes and products. 2. Separation processes; atmospheric and vacuum distillation, adsorption, extraction. 3. Thermal conversion processes: cracking processes; coking, visbreaking. 4. Catalytic conversion processes: catalytic cracking, hydrocracking - reaction mechanisms, thermodynamics, kinetics, catalysts, processes. 5. Catalytic conversion processes. Catalytic reforming, isomerization, alkylation: reaction mechanisms, thermodynamics, kinetics, catalysts, processes. 6. Treating processes. Hydrodesulphurization and hydrodenitrification: thermodynamics, catalysts, reaction mechanisms, kinetics, processes. 7. Production and properties of lubricating mineral oils. 8. Introduction in petrochemistry: raw materials, processes, products. 9. Natural gas: composition, treatment processes. 10. Production of hydrogen and syngas. Fischer-Tropsch synthesis and synthetic fuels. IGCC technology. 11. Ammonia production. 12. Production of olefins by steam cracking. 		
GENERAL AND SPECIFIC COMPETENCE:		
To familiarize students with the technologies and processes of petroleum refining and petrochemical industry; understanding of social and ecological influences on technology and economy of processing units.		

KNOWLEDGE TESTING AND EVALUATION:

Two written colloquiums (optional) related to lectures (if failed – final written exam) and colloquiums related to laboratory practices - during the semester.

Final written exam.

Final oral exam.

MONITORING OF THE COURSE QUALITY AND SUCCESSFULNESS:

Student inquiry.

LITERATURE:

Z. Janović: Petroleum and petrochemical processes and products, Croatian Society for Fuels and Lubricants, Zagreb, 2011. (Croatian)

D. S. J. Jones i R. Peter: Handbook of petroleum processing, Springer, 2006.

S. D. Raseev: Thermal and catalytic processes in petroleum refining, Marcel Dekker, New York, 2003.

A. Chauvel i G. Lefebvre: Petrochemical processes - technical and economic characteristics: Vol. I. Synthesis gas derivatives and major hydrocarbons; Vol. II. Major oxygenated, chlorinated and nitrated derivatives, Technip, Paris, 2001.