COURSE OUTLINE

(1) GENERAL

SCHOOL	ENGINEERING		
ACADEMIC UNIT	DEPARTMENT OF MINERAL RESOURCES ENGINEERING		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	MRE832	SEMESTER	8/ 3rd orientation
COURSE TITLE	Safety and Environment in Hydrocarbons Production and Distribution		

INDEPENDENT TEACHING ACTIVITIES *if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits*	WEEKLY TEACHING HOURS	CREDITS
Lectures	3	4
Labs	1	1
Total	4	5
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).		

COURSE TYPE *general background, special background, specialised general knowledge, skills development*	*Special background*
PREREQUISITE COURSES:	There are no prerequisite courses
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No
COURSE WEBSITE (URL)	

(2) LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

Students should be able to:

- Understand the exploitation problems of hydrocarbons and the complications of transportation and distribution system
- Manage the safety systems of hydrocarbons such as "Operating Management System, OMS " against IOGP.
- Are aware of the risks of hydrocarbons (terrestrial and marine) drilling, in transportation and distribution
- Analyze and preventing marine and terrestrial accidents
- know the international legislative framework of the land and the sea

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

Search for, analysis and synthesis of data and information, with the use of the necessary technology	*Project planning and management*
Adapting to new situations	*Respect for difference and multiculturalism*
	Respect for the natural environment

Decision-making *Working independently* *Team work* *Working in an international environment* *Working in an interdisciplinary environment* *Production of new research ideas*	*Showing social, professional and ethical responsibility and sensitivity to gender issues* *Criticism and self-criticism* *Production of free, creative and inductive thinking* *……* *Others…* *…….*

- Use all E.U directives and legislations on environmental protection and safety in onshore and offshore systems, in the production, transportation and distribution phase of oil, natural gas and hydrogen.
- Training specialized students of marine and terrestrial accident operations
- Showing social, professional and ethical responsibility

(3) SYLLABUS

INTRODUCTION

Safety, health and environmental protection in onshore and offshore hydrocarbon extraction facilities. Environmental risk management for terrestrial, marine and coastal operations. Learning from accidents. International law of the sea, UNCLOS convention. Hydrocarbon and hydrogen process safety and health, EU regulatory framework for hydrocarbon exploration and transportation, Hazard and functionality, (HAZOP) studies, accident analysis, key safety indicators (KPIs), Fire hazards and controls, Principles of safety, health and environmental protection measures. Gas and oil transportation and distribution system, plant operations and maintenance, health risk and safety of workers, Logistic and transport operations, land transport, accident response measures. Large-scale industrial accidents, Legislative framework.

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Face-to-face, Distance learning, Lectures, Lab demonstration, Tutorials
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	E-Class, electronic communication, video demonstrations, intermediate exams via e-Class tools
TEACHING METHODS *The manner and methods of teaching are described in detail.* *Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.* *The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS*	
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure*	

Activity	*Semester workload*
Lectures	36
Lab	12
Tutorials	32
Self-study	20
Course total	***100***

Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Final exam (60%, minimum required grade = 4/10), Multiple choice intermediate exam (20%), Homework (20%)

(4) SUGGESTED BIBLIOGRAPHY

- Suggested bibliography:

· 1. Βοτσαλάκης Π. (2011) «Δίκτυα Κατανομής Αερίου στις πόλεις και σταθμοί διανομής» , Εκδόσεις Ορυκτός Πλούτος, Αθήνα.
2. Κιούπης Ν. 2019. «Μελέτη Συστημάτων Αντιδιαβρωτικής & Καθοδικής Προστασίας»
3. Βοτσαλάκης Π. (2015). «Βιομηχανική Χρήση», Τεχνικά χρονικά, ΔΕΠΑ
4. Γεωργακόπουλος Α., (2012). «Στοιχεία Κοιτασματολογίας Πετρελαίου»
5. Παπαδόπουλος, Χ, (2014). «Εγκαταστάσεις Φυσικού Αερίου» Εκδόσεις Ορυκτός Πλούτος, Αθήνα.
6. Σταματάκη Σ., (2017). «Υπεδαφική Αποθήκευση Φυσικού Αερίου Ανάπτυξη στρατηγικών αποθεμάτων», «ΟΡΥΚΤΟΣ ΠΛΟΥΤΟΣ»
7. Saxon, C. (2016). Oil and Gas Pipelines. Gale. pp. 636–639
8. Vassiliou, MS. (2009). Historical Dictionary of the Petroleum Industry. Scarecrow Press.
9. Glanville, K. (2019). Trans Adriatic Pipeline Project. Greece Pipeline 2 and 3 Operating and Maintenance Manual, pp. 25-44.
10. www.depa.gr. «ΟΦΕΛΗ ΑΠΟ ΤΗΝ ΧΡΗΣΗ ΦΥΣΙΚΟΥ ΑΕΡΙΟΥ»
11. www.depa.gr. «ΣΥΣΤΗΜΑ ΜΕΤΑΦΟΡΑΣ»
12 www.egig.eu "EGIG REPORT March 2018"
13. Pipeline Association for Public Awareness 2018 "Pipeline Emergency Response Guidelines" 14. Pipeline Emergency Response Guidelines, 2018
15. ΚΑΝΟΝΙΣΜΟΣ (ΕΕ) αριθ. 994/2010 ΤΟΥ ΕΥΡΩΠΑΪΚΟΥ ΚΟΙΝΟΒΟΥΛΙΟΥ ΚΑΙ ΤΟΥ ΣΥΜΒΟΥΛΙΟΥ 10/2010
16. Wise Global Training. 2015. Introduction to Oil and Gas Operational Safety. *For the NEBOSH International Technical Certificate in Oil and Gas Operational Safety*. First edition published 2015 by Routledge. Taylor and Francis Group.
17. Πολυζάκης Απ. 2020. Ενέργεια, Περιβάλλον και Αειφόρος Ανάπτυξη. Εύδοξος [94645312]:
18. Κασίνης Σόλων 2015. Περί Πετρελαίου και Φυσικού αερίου – About oil and gas.Ευδοξος (59360495)
19. Μακρίδης, Σ., Κικκινίδης, Ε. 2019. Τεχνολογίες Υδρογόνου. Εύδοξος: 86375913 Ηλεκτρονικό Βοήθημα / Διαθέτης (Εκδότης): Σ. ΜΑΚΡΙΔΗΣ

- Related academic journals:

Oil and Gas Science and Technology
Oil and Gas Journal
Journal of Unconventional Oil and Gas Resources
Oil and Gas Geology