

COURSE OUTLINE

(1) GENERAL

SCHOOL	Engineering		
ACADEMIC UNIT	Industrial Design and Production Engineering		
LEVEL OF STUDIES	Undergraduate		
COURSE CODE	6005	SEMESTER	6
COURSE TITLE	Fluid Mechanics		
INDEPENDENT TEACHING ACTIVITIES		WEEKLY TEACHING HOURS	CREDITS
Lectures		3	3
Exercises / Tutorials		1	2
		4	5
COURSE TYPE	General background		
PREREQUISITE COURSES:	No		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	No		
COURSE WEBSITE (URL)	https://eclass.uniwa.gr/courses/IDPE205/		

(2) LEARNING OUTCOMES

Learning outcomes
<p>The course belongs to Level 6 of the European Qualifications Framework. Thus, the objectives of the course are:</p> <ul style="list-style-type: none"> • Acquisition of the theoretical background by the student in subjects relating to Fluid Engineering. • Ability by the student to apply the basics concepts of Fluid Engineering. <p>Upon completion of the course, the student will be able to:</p> <ul style="list-style-type: none"> • solve with analytical or approximate techniques simple problems of Fluid Engineering and • to deepen the further understanding of such methods.
General Competences
<ul style="list-style-type: none"> • Search for, analysis and synthesis of data and information, with the use of the necessary technology. • Adapting to new situations. • Decision-making. • Working independently. • Team work. • Working in an international environment. • Production of new research ideas. • Production of free, creative and inductive thinking.

(3) SYLLABUS

<ul style="list-style-type: none"> • Natural properties of fluids; • Fluid statics; • Fluid kinematics; • Conservation of mass - Equation of continuity; • Flow function; • Change of momentum; • Differential equations of motion for non-real fluids - Euler equations; • Differential equations of motion for real fluids - Navier-Stokes equations; • Fluid engineering application.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY	Face-to-face and distance learning.	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	ICT is used in both parts of the course, theoretical and laboratory, both for teaching and for communicating with students.	
TEACHING METHODS	<i>Activity</i>	<i>Semester workload</i>
	Theoretical part with Lectures	39
	Tutorial with works and/or midterm exam (optional)	50
	Individual study	61
	Course Total (30h/ECTS)	150
STUDENT PERFORMANCE EVALUATION	<p>Language of Assessment: Greek</p> <p>Assessment Methods: The assessment of students is done with written exams at the end of the semester that include theory questions in various forms (e.g., multiple choice, short answer, filling in the gap, etc.) as well as exercises that require detailed problem solving.</p> <p>Final written exam: 80%</p> <p>Works and/or midterm exam (optional): 20%</p> <p>The evaluation criteria are announced to the students at the beginning of the semester and are posted on the course website in eClass.</p>	

(5) ATTACHED BIBLIOGRAPHY

- Suggested bibliography:

1. Μηχανική Ρευστών με εφαρμογές, Ξένος Μ. & Τζιρτζιλιάκης Ε., Εκδόσεις Gotsis, Πάτρα 2018.
2. Μηχανική Ρευστών, Γούλας Α., Έκδοση 1η, 1986, Εκδότης: Σ. Γιαχούδης & ΣΙΑ Ο.Ε.
3. Μηχανική των Ρευστών - Τόμος 1, Ά. Παπαϊωάννου, Έκδοση 2η, 2002, Εκδότης: Γ. Γκέλμπεσης.
4. Εφαρμοσμένη Ρευστομηχανική, Δ.Γ. Παπανίκας, Έκδοση 4η, 2010, Εκδότης: Φ. Παπανίκα & ΣΙΑ Ο.Ε.
5. Υπολογιστική Μηχανική Ρευστών, Σούλης Ι., Έκδοση 1η, 2008, Εκδότης: Χ. Ν. Αϊβάζης.

- Related academic journals:

1. Journal of Fluid Mechanics
2. International Journal of Fluid Mechanics Research
3. Engineering Applications of Computational Fluid Mechanics