ECTS

Course information in English

General course information:

Course title:	PHYSICS I	**Course code:**	ΓΚ0201
Credits:	6	**Work load (hours):**	151
Course level:	Undergraduate ☑	Graduate ☐	
Course type:	Mandatory ☑	Selective ☐	
Course category:	Basic ☑	Orientation ☐	
Semester:	1	**Hours per week:**	4

Course objectives (capabilities pursued and learning results):

The main objective is that the student has an advanced knowledge of the principles of physics, to be able to describe simple or more complex natural phenomena, to be able to identify the parameters that play a key role in the phenomenon and to choose the appropriate equations to describe them.

Be able to explain the various natural phenomena based on known natural laws, be able to study a complex problem and draw conclusions.

Be able to apply what knowledge he has acquired in different contexts by making the appropriate calculations.

Upon successful study of the course, the student will be aware of the application of the laws of physics in the various areas of physics in order to more effectively reinforce the content of their specialty courses, while at the same time being able to understand the principles of operation of newer techniques that may use later in their studies or career.

Upon successful completion of the course the student will be able to:

- Know and understand in depth the basic concepts, principles and laws related to the Mechanics of the Material, Solid Body, Fluids and Thermodynamics.
- Apply the knowledge gained in solving complex problems.
- To evaluate, analyze and correlate this knowledge.
- Develop critical thinking skills to interpret everyday reality phenomena.
- Collaborate harmoniously and productively with other classmates in problem solving as well as work assignments.

More general skills

- Search, analyze and synthesize data and information using the

necessary technologies • Independent work • Teamwork • Respect for the natural environment • Promote free, creative and inductive thinking • Critical thinking skills • Ability to define and solve problems
Prerequisites:
• Knowledge of basic physic concepts. • Basic Knowledge of Differential and Integral Calculus

Instructor's data:

Name:	Theodoros KARAKASIDIS
Level:	Professor
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Other tutors:	

Specific course information:

Week No.	Course contents	Hours	
		Course attendance	Preparation
1	Kinematics. Relative Motion. Galilean Transformation.	4	3
2	Forces. Newton's Laws.	4	3
3	Torques, Dynamics of rigid bodies.	4	4
4	Work – Power – Energy, Potential and kinetic energy.	4	4
5	Momentum – angular momentum.	4	4
6	Mechanical properties of matter.	4	3
7	Solids, liquids, gases.	4	3
8	Hydrostatic pressure. Hydrodynamics/aerodynamics. Motion of fluids.	4	4
9	Harmonic motion. Waves. Superposition of waves. Acoustics.	4	4
10	Temperature and molecular energy.	4	4
11	Ideal and real gases.	4	4
12	Heat. Heat transfer. Thermodynamics.	4	4
13	Laws of Thermodynamics. Entropy	4	4
14	Applications of physics in various areas	4	4

Additional hours for:			
Class project	**Examinations**	**Preparation for examinations**	**Educational visit**
15	3	25	

Suggested literature:
• D. Young, R. A. Freedman, T. R. Sandin, A. Lewis Ford, Sears and Zemansky's University Physics (10th Edition) Addison-Wesley Pub Co; 10th edition, 1999. • D. C. Giancoli, Physics for Scientists & Engineers with Modern Physics, Addison-Wesley, 4th Edition, 2008. • Paul G. Hewitt, J. Suchocki, L. A. Hewitt «Conceptual Physical Science", Longman; 2nd edition (January 1999)

Teachingmethod*(selectanddescribeifnecessary* - **weight***):*		
Teaching	☑	70 %
Seminars	☐	…….%
Demonstrations	☐	…….%
Laboratory	☑	10 %
Exercises	☑	20 %
Visits at facilities	☐	…….%
Other*(describe):* …….	☐	…….%
Total		100%

Evaluation method*(select)*- **weight:**				
	written	*%*	*Oral*	*%*
Homework	☑	85	☐	
Class project	☐		☐	
Interim examination	☐		☐	
Final examinations	☑	15	☐	
Other*(describe):* ……	☐		☐	