COURSE OUTLINE

(1) GENERAL

SCHOOL	Engineering		
DEPARTMENT	Electrical and Computer Engineering		
LEVEL OF STUDY	Undergraduate		
COURSE UNIT CODE	1.003	**SEMESTER**	1st
COURSE TITLE	Physics		

COURSEWORK BREAKDOWN	**TEACHING WEEKLY HOURS**	**ECTS Credits**
Theory (Lectures)	4	4.8
Tutorial/Exercises	1	1.2
TOTAL	**5**	**6**

COURSE UNIT TYPE	General Knowledge
PREREQUISITES	-
LANGUAGE OF INSTRUCTION/EXAMS	Greek
COURSE DELIVERED TO ERASMUS STUDENTS	No
WEB PAGE (URL)	https://eclass.hmu.gr/courses/ECE104/

(2) LEARNING OUTCOMES

Learning outcomes

The course in Physics provides students with basic knowledge of Mechanics, Thermodynamics and Oscillations, while, it also helps them to understand the use of different types of mathematical description such as vectors, differential calculus, scalar and vector product, etc. In particular, emphasis is given on the understanding of basic concepts such as displacement, velocity, acceleration, force, momentum, torque, work, energy, rotation, kinetic and rotational motion, as well as basic principles of oscillations and wave and thermodynamics. At the same time, special attention is given to the practice of students in solving basic relevant physics problems.

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 a particle or a rigid object as well as to the Oscillations/Waves and the Thermodynamics.
- Understand basic physical problems and choose the appropriate model to solve them.
  - ✓ To apply the knowledge acquired in solving complex problems
  - ✓ Evaluate, analyze and relate this knowledge.
  - ✓ To develop critical thinking skills in order to interpret phenomena of everyday life.

General skills

- Search, analysis and synthesis of data and information, using the necessary technologies
- Autonomous work
- Teamwork
- Search, analysis and synthesis of data and information, using the necessary technologies
- Decision making
- Promoting liberal, creative and inductive/deductive thinking
- Work in an interdisciplinary environment

(3) SYLLABUS

1. Physics and Measurement
2. Motion in One Dimension
3. Vectors
4. Motion in Two Dimensions
5. The Laws of Motion
6. Circular Motion and Other Applications of Newton's Laws
7. Energy of a System
8. Conservation of Energy
9. Linear Momentum and Collisions
10. Rotation of a Rigid Object About a Fixed Axis
11. Angular Momentum
12. Oscillatory Motion
13. Wave Motion
14. Temperature
15. The First Law of Thermodynamics
16. Heat Engines, Entropy, and the Second Law of Thermodynamics

(4) TEACHING METHODS - ASSESSMENT

<table>
<tr><td>MODE OF DELIVERY</td><td>In-Class Face-to-Face</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATION TECHNOLOGY</td><td>▪ Use of ICTs in lecturing
▪ Use of ICTs in weekly tests
▪ Use of ICTs for the communication with students via the e-class platform</td></tr>
<tr><td>TEACHING ORGANIZATION</td><td><table><tr><th>Method description/Activity</th><th>Semester Workload</th></tr><tr><td>Lectures</td><td>65</td></tr><tr><td>Non-guided personal study</td><td>90</td></tr><tr><td>Electronic test</td><td>35</td></tr><tr><td>Total Contact Hours</td><td>180</td></tr></table></td></tr>
<tr><td>ASSESSMENT METHODS</td><td>All announcements for the course regulations and complementary reading material are permanently posted in the course web page. The course grade incorporates the following evaluation procedures:
1. Weekly tests (10 %)
• Short answer questions
2. Written examination I (40 %)
• Problem solving.
• Short answer questions
3. Final written examination (50 %)
• Problem solving.
• Short answer questions
• Multiple choice questions</td></tr>
</table>

(5) RECOMMENDED BIBLIOGRAPHY

- *Physics for Scientists and Engineers with Modern Physics, Raymond Serway – John Jewett*
- *Fundamental university physics Volume 1: Mechanics, Alonso-Finn*
- *University Physics with Modern Physics, H. Young, R. Freedman*