# AYDIN ADNAN MENDERES UNIVERSITY
## COURSE INFORMATION FORM

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|---|---|---|---|---|---|---|---|---|
| Course Title | | Physics Laboratory I | | | | | | |
| Course Code | | FİZ121 | | Couse Level | | First Cycle (Bachelor's Degree) | | |
| ECTS Credit | 2 | Workload | 50 *(Hours)* | Theory | 0 | Practice | 0 | Laboratory | 3 |
| Objectives of the Course | | To prove second law of Newton as experimental, understand the motion subject as experimentally and calculate physical parameters, understand balance and momentum, understand gyroscopic motion | | | | | | |
| Course Content | | Learning the methods of studying in the laboratory, the investigation of motions of bodies under the the effects of different forces and observing the relation between force, acceleration and distance, creating relation between theory and experiment. | | | | | | |
| Work Placement | | N/A | | | | | | |
| Planned Learning Activities and Teaching Methods | | | | Experiment, Demonstration | | | | |
| Name of Lecturer(s) | | Prof. Ethem AKTÜRK | | | | | | |

## Assessment Methods and Criteria

| Method | Quantity | Percentage (%) |
|---|---|---|
| Midterm Examination | 1 | 15 |
| Final Examination | 1 | 70 |
| Quiz | 6 | 15 |
| Laboratory | 6 | 10 |

## Recommended or Required Reading

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|---|---|
| 1 | Prof. Dr. İsmet Ertaş, Denel Fizik Laboratuvar Deneyleri |
| 2 | Serway, Fen ve Mühendislik İçin Fizik, Palme Yayıncılık |

| Week | Weekly Detailed Course Contents | |
|---|---|---|
| 1 | Theoretical | Introduce laboratory, demonstrate how using the measuring apparatuses |
| 2 | Theoretical | Introduce laboratory, demonstrate how using the measuring apparatuses |
| 3 | Laboratory | The experiment of constant motion on air track |
| 4 | Laboratory | The experiment of constant motion on air track |
| 5 | Laboratory | Motion on inclined plane and trajectory motion |
| 6 | Laboratory | Motion on inclined plane and trajectory motion |
| 7 | Laboratory | Simple (mathematical) pendulum |
| 8 | Laboratory | Simple (mathematical) pendulum |
| 9 | Intermediate Exam | MIDTERM |
| 10 | Laboratory | Spring pendulum |
| 11 | Laboratory | Spring pendulum |
| 12 | Laboratory | Collisions in two dimensions |
| 13 | Laboratory | Collisions in two dimensions |
| 14 | Laboratory | Constant circular motion |
| 15 | Laboratory | Constant circular motion |

## Workload Calculation

| Activity | Quantity | Preparation | Duration | Total Workload |
|---|---|---|---|---|
| Laboratory | 6 | 1 | 3 | 24 |
| Quiz | 6 | 1 | 0.5 | 9 |
| Midterm Examination | 1 | 2 | 1 | 3 |
| Final Examination | 1 | 10 | 4 | 14 |
| | | | Total Workload (Hours) | 50 |
| | | | [Total Workload (Hours) / 25*] = **ECTS** | 2 |

*25 hour workload is accepted as 1 ECTS

**Learning Outcomes**

| | |
|---|---|
| 1 | Calculate constant of any 8 using Hooke's law and demonstrate if any system is in balance or not |
| 2 | Calculate the first velocity in horizontal motion |
| 3 | Understand basic harmonic motion |
| 4 | Calculate acceleration of any moving particle |
| 5 | Understand gyroscopic motion |
| 6 | Understand torque subject |
| 7 | Calculate the average velocity in one dimensional |

**Programme Outcomes** *(Physics)*

| | |
|---|---|
| 1 | To understand the importance of physics by understanding the general concepts of physics, matter and energy |
| 2 | To be able to define the movements of matter and to distinguish the characteristics of movements under different force (potential) |
| 3 | Be able to say the meaning of Lagrange and Hamiltonian formulations of the movement and apply them to simple problems, |
| 4 | To be able to express the fundamental concepts such as time, space, force, momentum and energy in the movements of matter close to the speed of light and be able to solve and interpret the simple problems related to |
| 5 | To be able to establish the relationship between electric and magnetic forces and to be able to illustrate their applications to technology and solve problems related to the movement of particles in electric and magnetic fields |
| 6 | Be able to say the basic laws of electromagnetics and apply them to problems, illustrate their applications to simple technology |
| 7 | To be able to tell the reasons of the differences between the classical cases and the quantum scale and explain the reasons |
| 8 | Explain the concepts of discontinuity, uncertainty, matter-antimatter, indecisiveness of quantum physics with examples and explain simple problems related to the subject. |
| 9 | To be able to solve the problems of micro-particles under different simple potentials and be able to say their meanings |
| 10 | To be able to establish the relationship between the movements and properties of multi-particle systems and the laws of probability and solve simple problems |
| 11 | To be able to illustrate the laws, meanings and applications of thermodynamics and use them |
| 12 | Be able to use their knowledge about quantum physics and mechanics in explaining some properties of atoms and nuclei |
| 13 | To be able to show the meanings of some theoretical concepts by experimenting, and develop a strong relationship between thought and the real world, develop analytical thinking |
| 14 | To be able to apply the meanings of the basic laws of physics, their comprehension of universality and the relations between them and the unity of the laws of nature. |
| 15 | Use computer to solve physics problems |
| 16 | To be able to understand the problems by using their analytical knowledge skills and to propose solutions by dealing with the laws of physics |
| 17 | Be able to use the knowledge of physics to understand new technologies |
| 18 | To be able to tell the relations between symmetry and conservation laws in laws of physics |

**Contribution of Learning Outcomes to Programme Outcomes** *1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High*

| | L1 | L2 | L3 | L4 | L5 | L6 |
|---|---|---|---|---|---|---|
| P1 | 4 | 4 | | | | |
| P2 | 4 | 4 | 4 | | | |
| P5 | 5 | 5 | 4 | 4 | 4 | |
| P6 | 5 | | 4 | 4 | 4 | 4 |