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|  OSTİM TEKNİK ÜNİVERSİTESİ A N K A R A | FACULTY OF ENGINEERING COURSE SYLLABUS FORM | Doküman No | MF.FR.003 |
| | | Revizyon Tarihi | 13.11.2024 |
| | | Revizyon No | 01 |
| | | Sayfa No | 1 / 4 |

| PHYS 101 –Engineering Physics I | | | | |
|---------------------------------|-----------------------|-----|--------|--|
| Course Code | Course Name | | | Semester |
| PHYS 101 | Engineering Physics I | | | Fall <input checked="" type="checkbox"/> Spring <input type="checkbox"/> Summer <input type="checkbox"/> |
| Hours | | | Credit | ECTS |
| Theory | Practice | Lab | 4 | 6 |
| 3 | 0 | 2 | | |

| Course Details | |
|--------------------------------|---|
| Department | EE, ME, IE, AE |
| Course Language | English |
| Course Level | Undergraduate <input checked="" type="checkbox"/> Graduate <input type="checkbox"/> |
| Mode of Delivery | Face to Face <input checked="" type="checkbox"/> Online <input type="checkbox"/> Hybrid <input type="checkbox"/> |
| Course Type | Compulsory <input checked="" type="checkbox"/> Elective <input type="checkbox"/> |
| Course Objectives | The goal of PHYS 101 course is to provide a calculus-based physics instruction to help students pursue advanced studies in engineering, to develop conceptual understanding of physical principles, gain skills and ability for problem solving. |
| Course Content | Physics and measurements, Vectors, kinematics and dynamics in one and two dimensions, work-energy and conservation of energy, linear momentum and collisions, rotational motion; angular momentum; equilibrium, gravitation, oscillating motion, waves. |
| Course Method/ Techniques | Lecture <input checked="" type="checkbox"/> Question & Answer <input checked="" type="checkbox"/> Presentation <input type="checkbox"/> Discussion <input checked="" type="checkbox"/> |
| Prerequisites/ Corequisites | |
| Work Placement(s) | |

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Textbook/References/Materials

- Physics for Scientist Engineers 10th addition by John W. Jewett Jr. and Raymond Serway, Cengage.
- Physics for Scientists and Engineers with Modern Physics by Giancolli. Peaeson.
- Fundamentals of physics by Halliday and Resnick, 9th addition. John Wiley & Sons.

Course Category


| | | | | |
|--------------------------------|-------------------------------------|--|------------|-------------------------------------|
| Mathematics and Basic Sciences | <input checked="" type="checkbox"/> | | Education | <input type="checkbox"/> |
| Engineering | <input checked="" type="checkbox"/> | | Science | <input checked="" type="checkbox"/> |
| Engineering Design | <input type="checkbox"/> | | Health | <input type="checkbox"/> |
| Social Sciences | <input type="checkbox"/> | | Profession | <input type="checkbox"/> |

Weekly Schedule

| No | Topics | Materials/Notes |
|----|---|-----------------|
| 1 | Physics and Measurement | Chapter 1 |
| 2 | One-Dimensional Motion | Chapter 2 |
| 3 | Vectors | Chapter 3 |
| 4 | Two-Dimensional Motion | Chapter 4 |
| 5 | The Laws of Motion | Chapter 5 |
| 6 | Circular Motion and other Applications of Newton's Laws | Chapter 6 |
| 7 | Work and Energy | Chapter 7 |
| 8 | Midterm Exam | |
| 9 | Conservation and Energy | Chapter 8 |
| 10 | Linear Momentum and Collisions | Chapter 9 |
| 11 | Rotation of a Rigid Object about a Fixed Axis | Chapter 10 |
| 12 | Angular Momentum | Chapter 11 |
| 13 | Equilibrium, gravitation | Chapter 12 |
| 14 | Oscillation and waves | Chapter 13 |
| 15 | Final Exam | |
| | | |

Assessment Methods and Criteria


| In-term studies | Quantity | Percentage |
|----------------------------|----------|------------|
| Attendance | | |
| Lab | | 15% |
| Practice | | |
| Fieldwork | | |
| Course-specific internship | | |
| Quiz/Studio/Criticize | | |
| Homework | | |
| Presentation / Seminar | | |

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|---|---|-------------|
| Project | | |
| Report | | |
| Seminar | | |
| Midterm Exam | 1 | 35% |
| Final Exam | 1 | 50% |
| Total | | 100% |
| Contribution of Midterm Studies to Success Grade | | |
| Contribution of End of Semester Studies to Success Grade | | |
| Total | | 100% |

| ECTS Allocated Based on Student Workload | | | |
|---|-----------------|-----------------------|-----------------------|
| Activities | Quantity | Duration (Hrs) | Total Workload |
| Course Hours | 14 | 3 | 42 |
| Lab | 14 | 2 | 28 |
| Practice | | | |
| Fieldwork | | | |
| Course-specific Work Placement | | | |
| Out-of-class study time | 14 | 2 | 28 |
| Quiz/Studio/Criticize | | | |
| Homework | | | |
| Presentation / Seminar | | | |
| Project | | | |
| Report | 8 | 3 | 24 |
| Midterm Exam and Preparation for Midterm | 1 | 10 | 10 |
| Final Exam and Preparation for Final Exam | 1 | 20 | 20 |
| Total Workload | | | 152 |
| Total Workload / 25 | | | 152/25 |
| ECTS Credit | | | 6.08 |

| Course Learning Outcomes | | | | | | | | | | | | | | | | |
|---|---|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-------|
| No | Outcome | | | | | | | | | | | | | | | |
| L1 | Demonstrate conceptual understanding of the fundamental forces of nature and the laws of dynamics. | | | | | | | | | | | | | | | |
| L2 | Realize importance of physics and the scientific method for advancement of technology and human life. | | | | | | | | | | | | | | | |
| L3 | Analyze problems using the laws of mechanics and the conservation laws of nature. | | | | | | | | | | | | | | | |
| L4 | Gain knowledge and skills for modeling and solving variety of physics and engineering problems. | | | | | | | | | | | | | | | |
| L5 | Perform experiments, make measurements, analyse data and make calculations to reach meaningful results\ present such activities as a scientific report. | | | | | | | | | | | | | | | |
| Contribution of Course Learning Outcomes to Program Competencies/Outcomes | | | | | | | | | | | | | | | | |
| Contribution Level: 1: Very Slight, 2: Slight, 3: Moderate, 4: Significant, 5: Very Significant | | | | | | | | | | | | | | | | |
| | P1 | P2 | P3 | P4 | P5 | P6 | P7 | P8 | P9 | P10 | P11 | P12 | P13 | P14 | P15 | Total |

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|--------------|---|---|--|--|---|---|---|---|---|--|---|--|--|--|--|--|
| L1 | x | x | | | x | x | x | x | x | | x | | | | | |
| L2 | x | x | | | x | x | x | x | s | | x | | | | | |
| L3 | x | x | | | x | x | x | x | x | | x | | | | | |
| L4 | x | x | | | x | x | x | x | x | | x | | | | | |
| L5 | x | x | | | x | x | x | x | x | | x | | | | | |
| Total | | | | | | | | | | | | | | | | |

- Adequate knowledge in mathematics, science and subjects specific to Electrical and Electronics Engineering; ability to use theoretical and applied knowledge in these areas in complex engineering problems.
- Ability to identify, formulate and solve complex engineering problems; ability to select and apply appropriate analysis and modelling methods for this purpose.
- Ability to design a complex system, process, device or product under realistic constraints and conditions to meet specific requirements; ability to apply modern design methods for this purpose.
- Ability to develop, select and use modern techniques and tools required for the analysis and solution of complex problems encountered in engineering practice; ability to use information technologies effectively.
- Ability to design and conduct experiments, collect data, analyse and interpret results in order to investigate complex engineering problems or research topics specific to the discipline of Electrical and Electronics Engineering.
- Ability to work effectively in disciplinary and multidisciplinary teams; ability to work individually.
- Ability to communicate effectively in oral and written Turkish; knowledge of at least one foreign language; ability to write effective reports and understand written reports, to prepare design and production reports, to make effective presentations, to give and receive clear and understandable instructions.
- Awareness of the necessity of lifelong learning; the ability to access information, to follow developments in science and technology and to continuously renew oneself
- Acting in accordance with ethical principles, professional and ethical responsibility awareness; knowledge of standards used in engineering applications.
- Knowledge about business life practices such as project management, risk management and change management; awareness of entrepreneurship, innovation; knowledge about sustainable development.
- Knowledge about the effects of engineering applications on health, environment and safety in universal and social aspects and the problems of the age reflected in the field of engineering; awareness of the legal implications of engineering solutions