ATILIM UNIVERSITY
FACULTY OF ENGINEERING
PHYSICS GROUP

PHYS 101 - General Physics I (Mechanics)

COURSE DESCRIPTION & SYLLABUS

2025-2026 Spring Semester

Course Coordinator: Prof. Dr. Filiz Korkmaz Özkan

Instructors: Prof. Dr. Filiz Korkmaz Özkan, Prof. Dr. Yasemin Saraç, Dr. Öğr. Üyesi Murat Mesta, Dr. Öğr. Üyesi Neslihan Gökçek, Dr. Öğr. Üyesi Duygu Lale Nasöz

Laboratory Assistants: Cansu Emir, Onur Durhan, Dilek Demiroğlu Günöven, Alpcan Akalpoğlu

Course Language: English

Course hours: 3-hours lecture + 2-hours laboratory practice

Course ECTS: 6 (3,2,0)

Course objective: The goal of this course is to establish the first bridge between physics and engineering and to apply physics in defining, modelling, and solving engineering problems for the first time in the engineering student's career. To this end, the student is provided with the calculus-based concepts of mechanics.

General learning outcomes of the course:

1. Understand and apply the methods of solving elementary mechanics problems that lead to the first insights into the fundamentals of related fields in engineering sciences.
2. Understand conceptually the topics of mechanics and apply them to basic engineering problems.
3. Apply and integrate the concepts of physics and the principles of engineering sciences into a working practical knowledge.
4. Eenhance the student's ability and motivation to solve seemingly difficult problems in various fields.
5. Provide the student with a fruitful and friendly introduction to the subject by giving them the opportunity to establish conceptual relations between mechanics and a wide range of topics in engineering disciplines.

A student must attend at least 70% of the lectures according to the university regulations*. Those who fail to comply will be graded NA.

*Üniversitemiz mevzuatı kapsamında yer alan:
"MADDE 18 – (1) (Değişik: RG-27/10/2024-32705) Öğrenciler derslere, uygulamalara, sınavlara ve öğretim elemanının gerekli gördüğü diğer akademik çalışmalara katılmak zorundadır. Öğrencilerin derslere en az %70, uygulamalara ise en az %80 oranında devamı zorunludur" ifadesi
Unofficial translation: Statement within the scope of our university legislation: Students must attend classes, practices, exams and other academic studies deemed necessary by the instructor. Students are required to attend classes at least 70% of the time and at least 80% of the practices.

Sources:

1. **Course Book:**
   Physics for Scientists & Engineers with Modern Physics by Giancoli (5th Edition), Pearson – (2024)

2. **Supplementary Books:**

- *Principles of Physics* by Halliday, Resnick, and Walker (10th Edition), John Wiley (2014)
- *Physics for Scientists and Engineers* by Jewett and Serway (8th Edition), Brooks / Cole Cengage Learning (2010)
- *University Physics* by Bauer and Westfall, McGraw – Hill (2011)
- *Sears and Zemansky's University Physics* by Young and Freedman (12th Edition), Pearson – Addison Wesley (2008)

Contents of the course:

Chapter 1. Introduction, Measurement, Estimating
Chapter 2. Kinematics in One Dimension
Chapter 3. Kinematics in Two or Three Dimensions; Vectors
Chapter 4. Newton's Laws of Motion
Chapter 5. Using Newton's Laws: Friction, Circular Motion
Chapter 7. Work and Energy
Chapter 8. Conservation of Energy
Chapter 9. Linear Momentum
Chapter 10. Rotational Motion
Chapter 11. Angular Momentum; General Rotation

Evaluation:

- First Midterm: 20%
- Second Midterm: 20%
- Final Exam: 25%
- Laboratory work: 20%
- Homework*: 15 %

*****Students presenting an official medical report for a given period will be excused from assignments scheduled on the dates specified in the report.

PHYS101 Laboratory Regulations

Attendance and Participation

- A student must attend **all laboratory sessions**.
- A student who does not attend a laboratory session will receive **zero** for that session.
- A **medical report approved by the Head of the Department** is mandatory in order to be eligible for a make-up laboratory session.
- Students arriving **more than 15 minutes late** will not be allowed to attend the laboratory session and will get **zero** for that experiment.

Laboratory Structure and Grading

- Laboratory grading is evaluated over **100 points** and is calculated as follows:
  - **60 points:** Laboratory reports
  - **20 points:** Pre-lab quizzes
  - **20 points:** Instructor evaluation
- **Lab quizzes (20 points)** are held at the beginning of each session. Students will receive a small sheet of paper containing a single question and are expected to solve it within 5 minutes, clearly showing all steps of their solution.
- **Laboratory reports (60 points)** students must bring a printed copy of the experiment report for each experiment which is available on the courses Moodle page.
- **Instructor evaluation (20 points)** will be determined at the discretion of the instructor based on compliance with laboratory rules, preparedness, punctuality, proper use and protection of laboratory equipment, laboratory discipline, and overall professional conduct. Failure to comply with these rules may negatively affect the instructor's evaluation score.

Safety and Conduct Rules

- Students must pay attention to **laboratory safety, and distancing rules** when required by institutional policies.
- On the experiment setup table, **only laboratory-related materials (lab manual and calculator)** are allowed. Bags, coats, and other personal belongings must be kept away from the experiment tables.
- **Phone usage is strictly prohibited** in the laboratory for any purpose e.g. as a calculator, for messaging, or translation. In case of an emergency, students must inform the laboratory instructor. You may bring a computer or tablet with you to access digital resources.
- Eating, drinking, or smoking in the laboratory is strictly prohibited.
- Students must bring their **scientific calculators & experiment reports to** every laboratory session. Lab manuals are available on the course's Moodle page.

Group Work and Academic Integrity

- Each experiment will be performed in **groups of two students**.
- **Each group will submit only one laboratory report**, and all group members are jointly responsible for the submitted report.
- **Academic integrity rules strictly apply.** Any form of plagiarism, copying from other groups, or unauthorized collaboration will result in a **grade of zero for the report** and may lead to further disciplinary action.

Announcements and Contact

- All grades will be periodically announced. Students should regularly check their grades on the **Moodle page**. Objections will be considered only during office hours.
- For any laboratory-related questions, students may contact:
    - **cansu.emir@atilim.edu.tr**
    - **onur.durhan@atilim.edu.tr**