



**ATILIM UNIVERSITY  
FACULTY OF ENGINEERING  
PHYSICS GROUP**

**PHYS 102 - General Physics II (Electricity and Magnetism)**

**COURSE DESCRIPTION & SYLLABUS**

**2022-2023 Fall Semester**

**Course Coordinator:** Doç. Dr. Mehmet Işık

**Instructors:** Prof. Dr. Yasemin Saraç, Doç. Dr. Filiz Korkmaz Özkan, Doç. Dr. Mehmet Işık, Doç. Dr. Hüseyin Oymak, Doç. Dr. Özge Sürücü

**Laboratory Assistants:** Duygu Lale Tuna, Onur Durhan, Cansu Emir, İrem Yılmaz

**Course Language:** English

**Course hours:** 3-hours lecture + 3-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 electromagnetism.

**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. Enhance 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.

**Sources:**

1. **Course Book:**
  - *Physics for Scientists & Engineers with Modern Physics* by Giancoli (4<sup>th</sup> Edition), Pearson –(2014)
2. **Supplementary Books:**

- *Principles of Physics* by Halliday, Resnick, and Walker (10<sup>th</sup> Edition), John Wiley (2014)
- *Physics for Scientists and Engineers* by Knight (2<sup>nd</sup> Edition), Pearson – Addison Wesley (2008)
- *Physics for Scientists and Engineers* by Jewett and Serway (8<sup>th</sup> 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 (12<sup>th</sup> Edition), Pearson – Addison Wesley (2008)

#### **Contents of the course:**

Chapter 21. Electric Charge and Electric Fields	Chapter 26. DC Circuits
Chapter 22. Gauss' Law	Chapter 27. Magnetism
Chapter 23. Electric Potential	Chapter 28. Sources of Magnetic Field
Chapter 24. Capacitance, Dielectrics, Electric Energy Storage	Chapter 29. Electromagnetic Induction and Faraday's Law
Chapter 25. Electric Currents and Resistance	Chapter 30. Inductance

#### **Evaluation:**

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

#### **Laboratory regulations for ENGINEERING students:**

- Experiments are held face to face in the laboratory.
- A student who does not attend the laboratory is to be graded zero.
- A medical report (approved by the head of the department) is mandatory in order to have a make-up laboratory session.
- You are not allowed to attend a laboratory session if you happen to be late more than 15 minutes.
- Only those who obtain at least 12 points, out of 20, are considered successful. The others will fail in both the laboratory work and the course.
- You cannot eat, drink, or smoke during any laboratory session.
- You must bring your own laboratory manual and a scientific calculator. You cannot use your mobile phone as a calculator.
- Try not to use your mobile phone in any laboratory session. It is best to close it, except an emergency happens to befall you.
- All grades are periodically announced. Keep on checking regularly all your grades from Moodle page. Objections are to be considered only at office hours.
- If you have any questions about the laboratory, you can send e-mails to the following addresses:
  - cansu.emir@atilim.edu.tr
  - irem.yilmaz@atilim.edu.tr
  - duygu.tuna@atilim.edu.tr
  - onur.durhan@atilim.edu.tr

#### **Laboratory evaluation:**

- 20 points for reports

### **Laboratory regulations for PILOT TRAINING students:**

(The lectures and laboratory hours will be held only for pilot training students as online according to senate decisions)

- Laboratory lessons will be held on via Microsoft Teams.
- Experiments will be done through the simulation program. Your computer must have Java Word and Excel programs.
- You complete laboratory reports on your computer and upload soft copy of them. **You have to upload to the MOODLE.** Lab reports must be in PDF form.
- ***This semester you will have 6 experiments with 20 points each. Only those who obtain at least 12 points, out of 20, are considered successful. The others will fail in both the laboratory work and the course. If you do not participate in 2 of 6 experiments, you will be immediately fail the laboratory section. Students who fail the physics laboratory course also fail the physics course.***
- You need scientific calculator.
- All grades are periodically announced. Keep on checking regularly all your grades from our website. Objections are to be considered only at laboratory zoom session.
- If you have any questions about the laboratory, you can send e-mails to the following addresses:
  - cansu.emir@atilim.edu.tr
  - irem.yilmaz@atilim.edu.tr
  - duygu.tuna@atilim.edu.tr
  - onur.durhan@atilim.edu.tr

### **Laboratory evaluation:**

- 20 points for reports