

*Course textbook: Young & Freedman, University Physics, (15<sup>th</sup> Ed.) Pearson*

### COURSE OUTLINE

Week	Dates	Chapter	Contents
1	31.01 – 06.02	Ch. 21. Electric Charge and Electric Field	Electric Charge; Conductors, Insulators, and Induced Charges; Coulomb's Law; Electric Field and Electric Forces; Electric-Field Calculations; Electric Field Lines; Electric Dipoles
2	07.02 – 13.02	Ch. 22. Gauss's Law	Charge and Electric Flux; Calculating Electric Flux; Gauss's Law; Applications of Gauss's Law; Charges on Conductors
3	14.02 – 20.02	Ch. 23. Electric Potential	Electric Potential Energy; Electric Potential; Calculating Electric Potential; Equipotential Surfaces; Potential Gradient
4	21.02 – 27.02	Ch. 24. Capacitance and Dielectrics	Capacitors and Capacitance; Capacitors in Series and Parallel; Energy Storage in Capacitors and Electric-Field Energy; Dielectrics; Molecular Model of Induced Charge; Gauss's Law in Dielectrics
5	28.02 – 06.03	Catch-up and Review Week	<b>Midterm Exam 1 (5 March 2022, 09:30)</b>
6	07.03 – 13.03	Ch. 25. Current, Resistance, and Electromotive Force	Current; Resistivity; Resistance; Electromotive Force and Circuits; Energy and Power in Electric Circuits; Theory of Metallic Conduction
7	14.03 – 20.03	Ch. 26. Direct-Current Circuits	Resistors in Series and Parallel; Kirchhoff's Rules; Electrical Measuring Instruments
8	21.03 – 27.03	Ch. 26. Direct-Current Circuits	R-C Circuits; Power Distribution Systems
9	28.03 – 03.04	Ch. 27. Magnetic Field and Magnetic Forces	Magnetism; Magnetic Field; Magnetic Field Lines and Magnetic Flux; Motion of Charged Particles in a Magnetic Field; Applications of Motion of Charged Particles; Magnetic Force on a Current-Carrying Conductor; Force and Torque on a Current Loop; The Direct-Current Motor; The Hall Effect
10	04.04 – 10.04	Ch. 28. Sources of Magnetic Field	Magnetic Field of a Moving Charge; Magnetic Field of a Current Element; Magnetic Field of a Straight Current-Carrying Conductor; Force Between Parallel Conductors; Magnetic Field of a Circular Current Loop; Ampere's Law; Applications of Ampere's Law; Magnetic Materials
11	11.04 – 17.04	Ch. 29. Electromagnetic Induction	Induction Experiments; Faraday's Law; Lenz's Law; Motional Electromotive Force; Induced Electric Fields; Eddy Currents; Displacement Current and Maxwell's Equations; Superconductivity <b>Midterm Exam 2 (16 April 2022, 09:30)</b>
12	18.04 – 24.04	Ch. 30. Inductance	Mutual Inductance; Self-Inductance and Inductors; Magnetic-Field Energy; The R-L Circuit; The L-C Circuit; The L-R-C Series Circuit
13	25.04 – 01.05	Ch. 31. Alternating Current	Phasors and Alternating Currents; Resistance and Reactance; The L-R-C Series Circuit; Power in Alternating-Current Circuits; Resonance in Alternating-Current Circuits; Transformers
14	02.05 – 08.05	Ch. 32. Electromagnetic Waves	Maxwell's Equations and Electromagnetic Waves; Plane Electromagnetic Waves and the Speed of Light; Sinusoidal Electromagnetic Waves; Energy and Momentum in Electromagnetic Waves; Standing Electromagnetic Waves
15	09.05 – 15.05	Catch-up and Review	

#### Recommended Textbooks:

1. OpenStax, University Physics Vol. 2, <https://openstax.org/details/books/university-physics-volume-2> (Free-online)
2. Jewett and Serway, *Physics for Scientists and Engineers (7<sup>th</sup> Ed.)*, Thomson
3. Giancoli, *Physics for Scientists & Engineers (4<sup>th</sup> Ed.)*, Pearson.

**Course Web Page:** You can find useful information concerning the course, including a copy of this syllabus, a list of staff, past exam solutions, etc., at <http://www.fen.bilkent.edu.tr/~phys102/>

**Laboratory Web Page:** Information on the laboratory work, including the weekly schedule and the semester plan, can be found at

<http://www.fen.bilkent.edu.tr/~physlab/>

### **Grading Scheme:**

Midterm Exam 1: 15%, Midterm Exam 2: 20%, Final Exam: 25%, Laboratory Work: 20%, Quizzes 10%, Homework 10%

### **Letter Grade Bins:**

A [100,90], A- (90, 85], B+ (85, 80], B (80, 75], B- (75, 70], C+ (70, 65], C (65, 55], C- (55, 50], D+ (50, 45], D (45, 40], F (40, 0]

### **Important Note:**

Students will not be admitted into the final exam, and will receive an automatic **FZ** grade if:

- their lab grade is not a passing grade, i.e., less than 60;
- their two midterm grades M1 and M2 are such that  $(0.15*M1+0.20*M2) < 10.5$ ;
- their attendance is less than 70%.

### **Midterm Exam Dates:**

Midterm Exam 1: 5 March 2022, 09:30

Midterm Exam 2: 16 April 2022, 09:30

### **General Information About Exams:**

- All students should comply with the Honor Code. They will be asked to sign the following code for their exams to be graded: *"I pledge, on my Honor, not to lie, cheat, or steal in either my academic or personal life. I understand that such acts violate the Honor Code and undermine the community of trust of which we are all stewards."*
- The exams will be common and will be administrated to all students at the same time. Questions and their solutions for each exam will be prepared by the exam committee and will be available on the course web site following the exam.
- Exam papers will be graded by the instructors. Each question will be graded by one instructor.
- Make-up exams for the midterms will be administrated in the last week of courses. Make-up for the final exam will be administrated within five work days following the final exam. Students are expected to present a valid medical report to their Dean's office within two work days to be able to sit in the make-up exam (University Rules and Regulations for Undergraduate Studies, Item No. 4.8).
- Students will have the right to ask for a reassessment of their exam paper **within five work days** after the announcement of their grades (University Rules and Regulations for Undergraduate Studies, Item No. 4.12). Reassessment applications should be done after a careful examination of the solutions posted on the web, and should contain a detailed description stating why the exam paper should be reassessed. Applications without a valid reason will mean that solutions are still not well understood, and therefore, will result in further deduction of marks.
- Students who received **FZ** grades will not be admitted to the final exam. Attempting to take the final exam after receiving an **FZ** grade will result in a disciplinary action.

## Quizzes

During the semester, a minimum of 10 short (15 min.) quizzes will be given during class periods. Average of these quiz marks will comprise 10% of each student's final grade.

## Homework

Homework problems will be assigned and monitored regularly by the coordinator using the online tutoring and homework system "MasteringPhysics™ ( <https://mlm.pearson.com/global/> )" of the textbook. The website will also provide a grading procedure for each student which will comprise 10% of the final grade.

To be able to sign in at Mastering URL "www.masteringphysics.com" students will have to register online. Instructor's course ID for PHYS102 is **eris31759**. Visit the course web page <http://www.fen.bilkent.edu.tr/~phys102> to get help on how to register.

Repeating students can extend their expired old access codes. For MyLab subscription extension, the form at the address <https://form.jotform.com/210621725489054> must be completed carefully. Requests filled with inaccurate information will not be taken into consideration.

Homework time-table is as follows:

<b>PHYS102 Homework Timetable (US Time Format: mm / dd / yy)</b>			
<b>Homework</b>	<b>Available From</b>	<b>Deadline at</b>	<b>Available Until</b>
Introduction	01/31/22 at 11:59 pm	02/13/22 at 11:59 pm	05/22/22 at 12:00 am
Homework 01	01/31/22 at 11:59 pm	02/13/22 at 11:59 pm	05/22/22 at 12:00 am
Homework 02	02/13/22 at 11:59 pm	02/20/22 at 11:59 pm	05/22/22 at 12:00 am
Homework 03	02/20/22 at 11:59 pm	03/04/22 at 11:59 pm	05/22/22 at 12:00 am
Homework 04	03/04/22 at 11:5 9 pm	03/20/22 at 11:59 pm	05/22/22 at 12:00 am
Homework 05	03/20/22 at 11: 59 pm	03/27/22 at 11:59 pm	05/22/22 at 12:00 am
Homework 06	03/27/22 at 11: 59 pm	04/03/22 at 11:59 pm	05/22/22 at 12:00 am
Homework 07	04/03/22 at 11: 59 pm	04/15/22 at 11:59 pm	05/22/22 at 12:00 am
Homework 08	04/15/22 at 11: 59 pm	04/24/22 at 11:59 pm	05/22/22 at 12:00 am
Homework 09	04/24/22 at 11: 59 pm	05/01/22 at 11:59 pm	05/22/22 at 12:00 am
Homework 10	05/01/22 at 11: 59 pm	05/12/22 at 11:59 pm	05/22/22 at 12:00 am

**Note:** The first item "Introduction" is a non-credit exercise intended for new students designed to help them get acquainted with the "Mastering Physics" web site.

## **Moodle**

This course will require students to use the new integrated STARS/Moodle system. For this students must first create a Moodle account and then enrol (register) themselves to the desired Moodle course pages. Students can login the server using the “Moodle” button on their SRS screens. This must be done at least once at the beginning of the semester to create a Moodle account. Previous semester Moodle accounts will not work on the new server. Please refer your students to their Moodle account for the common syllabus, current and past exams, necessary forms and announcements.

To access the course on Moodle students should:

1. Log in the STARS system
2. Click on the “Moodle” button next to the name of the relevant course

If you experience any problems, please contact [moodle@bilkent.edu.tr](mailto:moodle@bilkent.edu.tr).

## **Labs**

Please refer to the lab web page ([www.fen.bilkent.edu.tr/~physlab/](http://www.fen.bilkent.edu.tr/~physlab/)) for detailed information.

## **Attendance**

According to Bilkent University Rules and Regulations attendance to lectures is compulsory. It will be monitored by the instructor regularly.

**Best wishes for a healthy and prosperous semester.**