

Course textbook: Giancoli, Physics for Scientists & Engineers with Modern Physics, (4th Ed.) Pearson

COURSE OUTLINE

Week	Dates	Chapter	Contents
1	24.09-28.09	21 Electric Charge and Electric Field	Static Electricity; Electric Charge and its Conservation, Electric Charge in the Atom, Insulators and Conductors, Induced Charge; the Electroscope, Coulomb's Law, The Electric Field, Electric Field Calculations for Continuous Charge Distributions, Field Lines, Electric Fields and Conductors, Motion of a Charged Particle in an Electric Field, Electric Dipoles
2	01.10-05.10	22 Gauss's Law	Electric Flux, Gauss's Law, Applications of Gauss's Law
3	08.10-12.10	23 Electric Potential	Electric Potential Energy and Potential Difference, Relation Between Electric Potential and Electric Field, Electric Potential Due to Point charges, Potential Due to Any Charge Distribution, Equipotential Surfaces, Electric Dipole Potential, Electric Field Determined From the Potential, Electrostatic Potential Energy; the Electron Volt
4	15.10-19.10	24 Capacitance, Dielectrics, Electric Energy Storage	Capacitors, Determination of Capacitance, Capacitors in Series and Parallel, Electric Energy Storage, Dielectrics, Molecular Description of Dielectrics
5	22.10-26.10	Catch up and Review	Midterm Exam 1 (27.10.2018, 14:00)
6	29.10-02.11	25 Electric Currents and Resistance	The Electric Battery, Electric Current, Ohm's Law; Resistance and Resistors, Resistivity, Electric Power, Power in Household Circuits, Alternating Current, Microscopic View of Electric Current: Current Density and Drift Velocity
7	05.11-09.11	26 DC Circuits	EMF and Terminal Voltage, Resistors in Series and in Parallel, Kirchhoff's Rules, Series and Parallel EMF's; Battery Charging, Circuits containing Resistor and Capacitor (RC Circuits)
8	12.11-16.11	27 Magnetism	Magnets and Magnetic Fields, Electric Currents Produce Magnetic Fields, Force on an Electric Current in a Magnetic Field; Definition of the Magnetic Field, Force on an Electric Charge Moving in a Magnetic Field, Torque on a Current Loop; Magnetic Dipole Moment, Discovery and Properties of the Electron, The Hall Effect
9	19.11-23.11	28 Sources of Magnetic Field	Magnetic Field Due to a Straight Wire, Force Between Two Parallel Wires, Definitions of the Ampere and the Coulomb, Ampere's Law, Magnetic Field of a Solenoid and a Toroid, Biot-Savart Law, Magnetic Materials - Ferromagnetism
10	26.11-30.11	Catch up and Review	Midterm exam 2 (01.12.2018, 14:00)
11	03.12-07.12	29 Electromagnetic Induction and Faraday's Law	Induced EMF, Faraday's Law of Induction; Lenz's Law, EMF Induced in a Moving Conductor, Electric Generators, Back EMF and Counter Torque; Eddy Currents, Transformers and Transmission of Power, A Changing Magnetic Flux Produces an Electric Field
12	10.12-14.12	30 Inductance, Electromagnetic Oscillations, and AC Circuits	Mutual Inductance, Self Inductance, Energy Stored in a Magnetic Field, LR Circuits, LC Circuits and Electromagnetic Oscillations, LC Oscillations with Resistance (LRC Circuit), AC Circuits With AC Source, LRC Series AC Circuit, Resonance in AC Circuits
13	17.12-21.12	31 Maxwell's Equations and Electromagnetic Waves	Changing Electric Fields Produce Magnetic Fields; Ampere's Law and Displacement Current, Gauss's Law for Magnetism, Maxwell's Equations, Production of Electromagnetic Waves, Electromagnetic Waves and Their Speed from Maxwell's Equations, Light as an Electromagnetic Wave and the Electromagnetic Spectrum, Measuring the Speed of Light, Energy in EM Waves and the Poynting Vector, Radiation Pressure
14	24.12-31.12	Catch up and Review	

Other Recommended Textbooks:

1. Jewett and Serway, *Physics for Scientists and Engineers 7th Ed.*, Thomson
2. Young and Freedman, *University Physics Vol. 1 (13th Edition)*, 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 [100,85], A- (85, 80], B+ (80, 75], B (75, 70], B- (70, 65], C+ (65, 60], C (60, 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.
- the average of their Midterm 1 and Midterm 2 is below 30.
- their attendance is less than 70%.

Midterm Exam Dates:

Midterm Exam 1: 27 October 2018, Saturday (14:00 hrs.)

Midterm Exam 2: 01 December 2018, Saturday (14:00 hrs.)

General Information About Exams:

- All students should comply with the Honor Code. They will be asked to sign the following code on the cover sheet of the exam questions 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.
- Students are not allowed to use calculators during exams. No cell phones will be admitted into the exam room. They will be collected prior to the exam and will be handed back afterwards.
- Students should be present in the designated rooms announced before the start of the exam, and should have their Bilkent **ID** cards on them. Exam proctors will have a list of students assigned to each location and will not accept students whose name is not on the list. Students who are late for more than 20 minutes will not be allowed to take 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). Instructors should inform their students about this matter. Reassessment forms will be available on the course website. Students should use this form and write a detailed objection stating why their exam paper should be reassessed. Students should be aware that their grade could increase or decrease following a reassessment.
- 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 (10 min.) quizzes will be administered at the end of a class period. Results of these quizzes 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™ (www.masteringphysics.com) " of the textbook. The website will also provide a grading procedure for each student which will comprise 10% of his/her final average grade.

To be able to sign in at Mastering URL "www.masteringphysics.com" students will have to register online. To register one needs:

- A valid e-mail address.
- The student access code that is printed on the card which can be found inside the textbook.
- Instructor's course ID which, for Phys.102, is **P102F1819**.

The access code is unique and hence, each student must have his own copy of the textbook.

To register students should:

- Go to the Mastering URL www.masteringphysics.com
- Click "Student" under "Register" to register for MasteringPhysics with the student access code
- On the next screen, click "Outside US and Canada"
- Click "Yes I have a Course ID" and enter the course ID provided by the instructor to the box and click "Go"
- Choose "Yes I have an access code" and click "Next"
- Read and accept the licence agreement to continue registration
- Follow the on screen instructions on next page, enter the access code and complete the registration.

Registration information will also be emailed to the user for records.

After registration one can sign in at any time.

To access the course students should:

- Go to "www.masteringphysics.com"
- Click "Sign In"
- Enter the login credentials and click "Sign In"
- Enter the Course ID once again to enrol to the instructor's course.

After the enrolment one can follow the assignments from the main page.

In case of difficulties, one can contact Pearson at destek@pearson.com e-mail address by providing the unique access code, course ID, e-mail address and an explanation of the problem.

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 STARS 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.

Students will also be able to access Pearson's "MasteringPhysics" server to work on their home works from their Moodle screens.

Recitations

The 4th (in some sections 3rd) hour of each week will be used as a recitation hour in which assistants will solve example problems in class.

Weekly recitation program

Week	Material
1	Ch. 21 Electric Charge and Electric Field, Problems 18, 43, 51
2	Ch. 22 Gauss's Law, Problems 10, 22, 46, 57
3	Ch. 23 Electric Potential, Problems 15, 32, 38, 51
4	Ch. 24 Capacitance, Dielectrics, Electric Energy Storage, Problems 26, 50, 64
5	Review problems, Chapter 21 Pr. 40, Chapter 22 Pr. 50, Chapter 23 Pr. 60, Chapter 24 pr. 89
6	Ch. 25 Electric Currents and Resistance, Problems 26, 29, 55, 86
7	Ch. 26 DC Circuits, Problems 32, 50, 64
8	Ch. 27 Magnetism, Problems 12, 29, 39
9	Ch. 28 Sources of Magnetic Field, Problems 23, 28, 34
10	Review problems, Chapter 26 Pr. 48, Chapter 27 Pr. 59, Chapter 28 Pr. 31
11	Ch. 29 Electromagnetic Induction and Faraday's Law, Problems 12, 33, 78
12	Ch. 30 Inductance, Electromagnetic Oscillations and AC Circuits, Problems 4, 13, 26, 59
13	Ch. 31 Maxwell's Equations and Electromagnetic Waves, Problems 6, 11, 32, 35
14	Review problems, Chapter 29 Pr. 20, Chapter 30 Pr. 100, Chapter 31 Pr. 63

Labs

Labs will start during the second week of the semester with an orientation session.

Please refer to the lab web page (www.fen.bilkent.edu.tr/~physlab/) for more information on all lab-related questions.

Attendance

Attendance is compulsory and will be monitored by the instructor regularly.

Best wishes for a prosperous semester.