PLEASE KEEP THIS COURSE SYLLABUS FOR FUTURE REFERENCE AS IT CONTAINS IMPORTANT INFORMATION

EASTERN MEDITERRANEAN UNIVERSITY
DEPARTMENT OF PHYSICS

COURSE CODE	*PHYS102*	**COURSE LEVEL**	*Freshman*	
COURSE TITLE	Physics II	**COURSE TYPE**	University Core in Physical / Natural Sciences	
CREDIT VALUE	(4,1,0) 4	**ECTS VALUE**	6	
PREREQUISITES	PHYS101	**COREQUISITES**	MATH151 OR MATH150	
DURATION OF COURSE	One semester	**Semester and year**		

	Name	**e-mail**	**Office**	**Office Hours**	**Telephone**
Instructor:					
Assistant:					

COURSE WEB PAGE	EMU Learning Management System: https://lms.emu.edu.tr/

CATALOGUE DESCRIPTION

Concepts of thermal physics; the laws of thermodynamics. Problems of electrostatics involving electric forces, electric fields, electric flux, Gauss's law and electric potential. Problems of electrodynamics involving magnetic forces, magnetic fields and magnetic flux. Faraday's law of induction.

AIMS AND OBJECTIVES (Relationship of Course to Programme Outcomes)

This course offers students the opportunity to develop:

- to introduce the fundamental concepts of thermodynamics, electricity and magnetism necessary for engineering science, and to provide essential background for engineering students;
- to provide students with a deeper understanding of the fundamental laws and concepts of natural phenomena;
- to improve students' problem-solving skills;
- to strengthen students' creative and systematic thinking capability.

LEARNING OUTCOMES (COMPETENCES)

On successful completion of this course, students will have developed **knowledge and understanding** of:

- the concepts, theories, techniques and generalizing principles of thermodynamics, electricity and magnetism;
- the mathematical forms of the physical laws and relationships in thermodynamics, electricity and magnetism and their application in problem solving;
- the diagrammatic and graphical representation of physics problems and physical data;
- the validation of theory through demonstration and observation.

Students will also have developed **their skills in**:

- correctly using the laws of thermodynamics and the equations of electric and magnetic fields;
- analytically and critically applying the theoretical concepts and methods covered in the course, and formulating appropriate equations to solve problems;
- using the textbook and other printed and electronic literature relevant to the course efficiently and effectively;
- analysing and evaluating data, and writing reports;
- using good scientific English for written and oral communication.

Finally, students will have developed their **appreciation of, and respect for, values and attitudes** toward:

- the discipline of physics as a fundamental branch of science that provides qualitative and quantitative explanations of the physical world;
- being open-minded, curious, creative and a reasoned sceptic;
- being aware of ethical issues in science.

TEXTBOOK AND RECOMMENDED RESOURCES

Textbook / required reading:

– Primary: R. A. Serway and J. W. Jewett, Physics for Scientists and Engineers, 11th Edition (Cengage).

Recommended resources:

– R. A. Serway and J. W. Jewett, Physics for Scientists & Engineers, 11th Edition (Cengage).

COURSE CONTENT AND LECTURE SCHEDULE

Week	Dates	Topics
1		Introduction
2		Chapter 18 – Temperature
3		Chapter 19 – The First Law of Thermodynamics
4		Chapter 20 – The Kinetic Theory of Gases
5		Chapter 21 – Heat, Engines, Entropy and the Second Law of Thermodynamics | PRE-MIDTERM QUIZ (24 October 2025, Friday at 17:30, CL Building)
6		Chapter 22 – Electric Fields
7–8		**MIDTERM EXAMINATION PERIOD**
9–10		Chapter 23 – Gauss's Law
11		Chapter 24 – Electric Potential
12		Chapter 28 – Magnetic Fields
13–14		Chapter 29 – Sources of the Magnetic Field
15–16		Chapter 30 – Faraday's Law of Induction
17–18		**FINAL EXAMINATION PERIOD**

METHOD OF ASSESSMENT

– Pre-Midterm Quiz	10 %	(24 October 2025, Friday at 17:30, CL Building)
– Midterm Examination	30 %	(to be announced within the Midterm Exams Period: 08–22 November 2025)
– Laboratory Participation	5 %	
– Laboratory Final Examination	10 %	(covers all Physics-II laboratory experiments; held together with the Final Examination)
– Final Examination	45 %	(to be announced within the Final Exams Period: 05–20 January 2026)
– **TOTAL:**	**100%**	

Bonus-eligible activities:

Attendance bonus of up to 5%:

100%–90% participation → 5 points;

89%–80% → 4;

79%–70% → 3;

69%–50% → 1.

GRADING CRITERIA	
A (excellent) ~85% and above	Excellent understanding of the concepts and principles, demonstrated by correct and accurate knowledge and application of theory/laws in solving problems. Responses are clear, legible, concise and accurate. Excellent performance.
B (good) ~70% and above	Better-than-average understanding of the concepts and principles, demonstrated by correct and accurate application of theory/laws, but without the depth and outstanding quality of an "A". Responses are clear and legible but occasionally contain minor inaccuracies. Performance exceeds the minimum requirements.
C (average) ~60% and above	An average understanding of the concepts and principles, demonstrated by reasonably correct application of theory/laws but lacking depth. Responses are reasonably clear but contain inaccuracies. Content and form meet, but do not exceed, basic expectations. Acceptable, non-exceptional performance.
D (barely sufficient) ~50% and above	Minimal knowledge and barely sufficient understanding of the concepts and principles, demonstrated by approximately correct application of theory/laws. Responses are not very clear, barely legible and contain many inaccuracies. Content and form do not adequately meet basic expectations and/or display significant errors.
F (fail) Below 50%	Work does not meet the most minimal standards. It reveals no understanding of the material and a lack of basic academic skills and knowledge. Performance is not acceptable.
NG (nil grade)	Not enough information to assign a letter grade. Conditions (each independent): overall attendance below 50%; laboratory participation in fewer than three sessions (for courses with a laboratory); or missing any two of the main examinations. Repeating students who have already fulfilled the attendance requirement (previous grade not NG/W) are exempt from the attendance condition.

Note: letter grades are determined by a curve system; no fixed letter-grade template applies.

IMPORTANT NOTES

Attendance:

Active participation in lectures is a requirement for the successful completion of this course. If a non-repeating student's total attendance (classes, tutorials, laboratories and examinations) falls below 50%, the grade NG is assigned automatically. The same rule applies to repeating students who received a grade of NG or W in the previous semester. Repeating students who received a grade of D- or F are exempted from the attendance requirement.

Make-up Examination:

In accordance with the Examinations and Evaluations Regulation of Eastern Mediterranean University, a student who has not attended any of the Pre-Midterm Quiz, Midterm, or Final examinations must submit a valid excuse within three working days after the examination in order to be granted the right to enter the make-up examination. A student missing more than one of the main examinations (Pre-Midterm Quiz, Midterm and Final, or the corresponding make-up examination) is assigned the grade NG.

Objections:

Graded examination papers are available for inspection upon request. In accordance with University regulations, any objection or re-grade request must be made within one week following the announcement of grades.

RESIT EXAMINATION

Resit Examination: students who fail the course, or who obtain a grade of C-, D+ or D and carry an academic warning on their transcript, are entitled to take the Resit Examination (Resit Exams Period: 03–09 February 2026). The Resit Examination encompasses the total weight of all in-term assessments (Pre-Midterm Quiz, Midterm and Final); the numerical total after the Resit is computed as Laboratory Participation + Resit Examination (95%). Online application through the student portal is required within three days following the announcement of semester grades. The maximum duration of the Resit Examination is 120 minutes.

LEARNING / TEACHING METHOD

- Regular face-to-face lectures (4 hours per week + 1 problem hour).
- Tutorial and laboratory sessions on alternating weeks.

LABORATORY POLICY

- There are five laboratory sessions during the semester, scheduled within the tutorial time slots; laboratory and tutorial weeks generally alternate (one week laboratory, one week tutorial). Exact laboratory dates are announced at the beginning of the semester on the LMS/Teams pages.
- Attendance at the laboratory sessions is mandatory. A student attending fewer than three laboratory sessions is assigned the grade NG automatically.
- Laboratory exemption: a repeating student with a previous PHYS102 laboratory grade of at least 3/5 is automatically exempt from the laboratory work; a student not satisfied with the previous laboratory grade must repeat all experiments of the current semester.
- Every student, including exempt students, must attend the Laboratory Final Examination.

FALL SEMESTER LAB TIMETABLE / SCHEDULE

Check the announcements via the Department's website (physics.emu.edu.tr) and the EMU LMS (https://lms.emu.edu.tr/).

Time / Day	Monday	Tuesday	Wednesday	Thursday	Friday
08.30-09.20			PHYS102/04	PHYS102/01	
09.30-10.20			PHYS102/04	PHYS102/01	
10.30-11.20					
11.30-12.20					
12.30-13.20					
13.30-14.20					
14.30-15.20		PHYS102/02 PHYS102/03			PHYS102/06 PHYS102/07
15.30-16.20		PHYS102/02 PHYS102/03			PHYS102/06 PHYS102/07

LABORATORY DATES

Group	Day / Period	Experiment 1	Experiment 2	Experiment 3	Experiment 4	Experiment 5
01	4 / 1-2	02 Oct.	16 Oct.	30 Oct.	27 Nov.	11 Dec.
02	2 / 7-8	07 Oct.	21 Oct.	04 Nov.	02 Dec.	16 Dec.
03	2 / 7-8	30 Sep.	14 Oct.	28 Oct.	25 Nov.	09 Dec.
04	3 / 1-2	01 Oct.	15 Oct.	05 Nov.	26 Nov.	10 Dec.
06	5 / 7-8	03 Oct.	17 Oct.	31 Oct.	28 Nov.	12 Dec.
07	5 / 7-8	10 Oct.	24 Oct.	07 Nov.	05 Dec.	19 Dec.

Laboratory and tutorial schedules are the same; the process generally alternates between one week of laboratory and one week of tutorial.

NOTICE TO REPEATING STUDENTS

Students repeating this course for a better grade should note that whatever grade is obtained at the end of the current semester will replace the previous grade, even if it is lower.

ACADEMIC HONESTY – PLAGIARISM

Cheating is copying from others, or providing written or oral information to others. Plagiarism is copying from other people's work without acknowledgement. According to University by-laws, cheating and plagiarism are serious offences punishable by disciplinary action ranging from simple failure of the examination or project to more serious action (an official letter of warning, or suspension from the University for up to one semester). Disciplinary action is recorded in the student's file and may appear on the student's transcript.

Use of AI: This course is governed by the EMU Artificial Intelligence Policy (Senate decision 26/559-01 of 18.11.2026); unless the instructor states otherwise, the Yellow (limited use) level applies, and all AI use must be declared.

USEFUL PHYSICAL CONSTANTS		
$k_B = 1.38 \times 10^{-23}$ J/K	$N_A = 6.022 \times 10^{23}$ /mol	$R = 8.314$ J/(mol·K)
$\varepsilon_0 = 8.85 \times 10^{-12}$ C²/(N·m²)	$k_e = 8.99 \times 10^{9}$ N·m²/C²	$\mu_0 = 4\pi \times 10^{-7}$ T·m/A
$e = 1.60 \times 10^{-19}$ C	$c = 3.00 \times 10^{8}$ m/s	$g = 9.81$ m/s²