

Physics for Engineering II (PHYS 1220)

Course syllabus

Instructor: Dr. Abdelouahab Bentrchia

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Class Timings: see time table on my website or on the office door.

Office Hours: see time table on my website or on the office door

Textbook:

- Serway Jewett, *Physics for Scientists and Engineers*, 6th Edition, THOMSON BROOKS/COLE

Pre-requisite:

- AGE 1110 Calculus for Engineers.
- PHYS 1210 Physics for Engineers I.

References:

- Halliday, Resnick, Walker, *Fundamentals of Physics*, 6th Edition, WILEY.
- Young and Freedmann, *University Physics*, 11th Edition, PEARSON ADDISON WESLEY.

Grading Criteria:

- 5% Homework
- 20% Quizzes (instead of Midterm Exam 2)
- 15% Laboratory
- 20% Midterm Exam I (6th-10th Mar)
- 40% Final Exam

Quizzes' dates:

- Quiz1 (1 Feb) - Quiz2 (15 Feb) - Quiz3 (29 Feb) - Quiz4 (28 Mar) - - Quiz5 (11 Apr).

Credit hours:

- 4(3,0,2) hours

Tentative Schedule

Textbook	week	Topics to be covered
Chapter 23	1,2	Electric Fields 23.1 Properties of Electric Charges 23.2 Charging Objects by Induction 23.3 Coulomb's Law 23.4 The Electric Field 23.5 Electric Field of a Continuous Charge Distribution 23.6 Electric Field Lines 23.7 Motion of a Charged Particle in a Uniform Electric Field
Chapter 24	3	Gauss's Law 24.1 Electric Flux 24.2 Gauss's Law 24.3 Application of Gauss's Law to Various Charge Distributions 24.4 Conductors in Electrostatic Equilibrium
Chapter 25	4	Electric Potential 25.1 Potential Difference and Electric Potential 25.2 Potential Difference in a Uniform Electric Field 25.3 Electric Potential and Potential Energy Due to Point Charges 25.4 Obtaining the Value of the Electric Field from the Electric Potential

		25.5 Electric Potential Due to Continuous Charge Distributions 25.6 Electric Potential Due to a Charged Conductor
Chapter 26	5	Capacitance and Dielectrics 26.1 Definition of Capacitance 26.2 Calculating Capacitance 26.3 Combinations of Capacitors 26.4 Energy Stored in a Charged Capacitor 26.5 Capacitors with Dielectrics
Chapter 27	6	Current and Resistance 27.1 Electric Current 27.2 Resistance 27.3 A Model for Electrical Conduction 27.4 Resistance and Temperature 27.5 Superconductors 27.6 Electrical Power
Chapter 28	7-8	Direct-Current Circuits 28.1 Electromotive Force 28.2 Resistors in Series and Parallel 28.3 Kirchhoff's Rules 28.4 RC Circuits
Chapter 29	9	Magnetic Fields 29.1 Magnetic Fields and Forces 29.4 Motion of a Charged Particle in a Uniform Magnetic Field 29.5 Applications Involving Charged Particles Moving in a Magnetic Field
Chapter 30	10	Sources of the Magnetic Field 30.1 The Biot–Savart Law 30.3 Ampère's Law 30.5 Magnetic Flux 30.6 Gauss's Law in Magnetism
Chapter 31	11	Faraday's Law 31.1 Faraday's Law of Induction 31.3 Lenz's Law 31.4 Induced emf and Electric Fields 31.5 Generators and Motors
Chapter 32	12	Inductance 32.1 Self-Induction and Inductance 32.2 RL Circuits 32.3 Energy in a Magnetic Field 32.4 Mutual Inductance
Chapter 33	13-14	Alternating-Current Circuits 33.1 AC Sources 33.2 Resistors in an AC Circuit 33.3 Inductors in an AC Circuit 33.4 Capacitors in an AC Circuit 33.5 The RLC Series Circuit 33.6 Power in an AC Circuit 33.8 The Transformer and Power Transmission

Course Policy

- **General policies**

1. Course material such as lecture slides, homework ...etc. will be posted on my website however posted material is not a substitute for the text book. Therefore, students are expected to purchase the textbook.

2. A student is responsible to check his email (university email) daily for any class announcements. Most of these announcements will be posted on my website, therefore it is also recommended to visit my website at least once a week.
3. Use of mobile/cellular phone or other electronic devices or equipment is not allowed during class. All such systems must be turned off or silenced and not used during classes without prior permission from the instructor.
4. It is the student's responsibility to ask questions, for me if you don't ask questions then I assume that you are happy. If for one reason or another, my answer is not satisfactory for your question, then you are welcome to visit my office for more discussions and details.

- **Exam policy**

1. Instead of the second major exam, there will be 5 quizzes that span the whole course material. These quizzes will be conducted every two weeks (the dates are mentioned above).
2. There is no need to memorize formulas, a formula sheet will be provided in the exam.

- **Attendance**

1. Only excuses obtained from the Students Affairs Dept. are accepted. Personal excuses are not accepted.
2. Three late arrivals = One absence.
3. Any student who misses more than 25% of all lectures will not be allowed to enter the final exam.

- **Makeup policy**

1. No make-up will be provided for exams unless an official excuse exists which should be validated from the student affairs.
2. Students who miss a quiz or a deadline for homework submission because of an excused absence will not be allowed to make-up the quiz or the homework but instead the calculation of the quiz/homework grade will be adjusted so that the missed grade will not be counted.
3. Any official excuse should be presented to the instructor within one week from the absence.

- **Assignments Policy**

1. HWs will be announced in class and will be posted online along with the deadline for submission in my website. Therefore it is the student's responsibility to check my website regularly for any announcements (at least once a week).
2. All HWs should be submitted on time. Any late homework will be subject to a late penalty as follows: 20% for every one day late, that is, after 5 days no homework will be accepted.
3. All HWs should be submitted to the TA.
4. Only two (2) randomly selected HWs will be graded and that will be your grade, therefore you are strongly encouraged to solve and submit all HWs.
5. The HW solution will be posted online after one week from the due date of the homework.

- **Laboratory Policy**

1. Graphs and Sketches have to be done neatly with a pencil, a ruler and other required tools or plotted using software. Sketches which do not agree with engineering sense and requirements are not graded.