Physics for Engineering II (PHYS 1220)
Course syllabus
(2019/2020)

Instructor: Dr. Abdelouahab Bentrcia
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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:
- 25% Quizzes (worst quiz will be cancelled for each student)
- 15% Laboratory
- 20% Midterm Exam I
- 40% Final Exam

Credit hours:
- 4(3,0,2) hours

Quizzes dates: at the end of chapters 24, 26, 28, 30 and 32.

Tentative Schedule

Textbook	week	Topics to be covered	Labs
Chapter 23	1,2	**Electric Fields**	**No Lab**
Chapter 24	3	**Gauss's Law**	**No Lab**
Chapter 25	4	**Electric Potential**	**No Lab**
Chapter 26	5	**Capacitance and Dielectrics**	**No Lab**
Chapter 27	6	**Current and Resistance**	**Capacitors in Series & Parallel**
Chapter 28	7-8	**Direct-Current Circuits**	• **Resistance dependence on temperature** • **Ohm's Law, Measurement of Voltage, Current and Resistance** • **Resistors in Series and Parallel**
Chapter 29	9	**Magnetic Fields**	**RC circuit charging and discharging**
Chapter 30	10	**Sources of the Magnetic Field**	**Thomson's experiment to measure e/m of an electron**
Chapter 31	11	**Faraday's Law**	**Biot-Savart Law**
Chapter 32	12	**Inductance**	**Induced EMF**
Chapter 33	13-14	**Alternating-Current Circuits**	**No Lab**

Course Learning Outcomes

1. Define and calculate the basic physical quantities of electrostatics for the case of simple static charge distribution; namely: Coulomb's force, electrostatic field, electric Flux, electrostatic potential, voltage, and capacitance. (a,e)
2. Define and determine the basic quantities of steady electrodynamics; specifically: current, current density, voltage, Resistance, resistivity, conductivity, EMF, and power. (a,e)

3. Analyze simple DC, using circuit reduction and analysis techniques such as Kirchhoff's Rules. (a,e)
4. Define and calculate the basic physical quantities of Magneto-statics for the case of simple steady current distribution; namely magnetic force and magnetic field. (a,e)
5. Illustrate the phenomena of electromagnetic induction and self and mutual inductance. (a,e)
6. Analyze simple AC circuits. (a,e)
7. Use and operate basic physics laboratory equipment, devices and software tools.(b)

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. The student is responsible to check his email (university email) daily for any class announcements.
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.

- **Attendance**

1. Only official 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.
2. Students who miss a quiz will not be offered a makeup quiz. However, the worst quiz for each student will be cancelled.
3. Any official excuse should be presented to the instructor within one week from the absence.

- **Assignments Policy**

1. HWs will be announced in tutorial classes and will be sent to your email through LMS. Although HWs should not be submitted, they should be solved because HW problems might be brought in quizzes.
2. The HW solution will be sent to you maximum 2 weeks after HW announcement.

- **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.