

COURSE SYLLABUS FORM

**American University of Beirut
Faculty of Arts and Sciences
Department of Physics**

Course Number and Title: Physics 210; Introductory Physics II

1. Course Description and Learning Outcomes

a- Course description:

Physics 210 is a calculus-based introductory course in physics designed primarily for students majoring in physics and engineering. This course has Math 101 and 102 as well as Physics 101 (or equivalent courses) as prerequisites. The main topics covered in Physics 210 are: Fluids, Thermodynamics, Wave phenomena, Geometrical and Physical Optics.

b- Intended Learning Outcomes:

The student should be able to:

- i- Grasp the physical concepts related to the material covered in the course.
- ii- Understand the mathematical aspects used to describe and formulate physical principles.
- iii- Evaluate the power and limitations of mathematics in describing our physical world.
- iv- Apply the mathematical formulae used to quantify the various physical phenomena presented.
- v- Develop problem-solving skills through conceptual understanding and calculus-based mathematical modeling of the underlying physics.
- vi- Appreciate the importance of physical principles that govern our world as well as the role of physics in our modern society.
- vii- Acquire scientific and intellectual abilities such as critical thinking and independent learning.

2. Resources Available to Students

Textbook:

Physics for Scientists and Engineers (Volume I & II), By Serway and Beichner, Brooks/Cole Publishing (5th Ed.)

Library resources:

The course notes and the solutions of class problems covered in the classes will be available in the Science library.

On-Line resources:

There are a large number of physics web sites on the net. We encourage students to visit these web sites and practice the different applications and exercises. Recommended web sites: <http://info.brookscole.com/serway/> and <http://explorer.scrtec.org/explorer/>

3. Grading Criteria

Two quizzes of one hour each will be given during the semester. The final grade will be weighted average of the two quizzes (45%), reading quizzes and research report (10%) and the final exam (45%).

4. Schedule

a- Lectures and problems:

Week/Chapter#	Homework Problems*	Class Problems*
<i>1.</i> Introduction/ Wave motion #16	1-3-13-39-43	4-8-14-23-38
<i>2.</i> Sound Waves #17	2-5-9-15-18-31-39	2-5-8-18-22-25-33-35
<i>3.</i> Superposition and #18 Standing waves	2-11-13-18-20-45	3-10-13-25-31
<i>4 & 5.</i> Fluid Mechanics #15	1-7-12-22-24-33	3-7-17-21-23
<i>6.</i> Nature of light #35 & Law of Geometrical optics	5-7-15-27-31-	6-10-15-18-31
<i>7.</i> Geometric optics #36	2-5-11-15-20-24-27-34-40	6-14-26-37
<i>8.</i> Interference of light#37 waves	2-6-13-31	2-15-21-30-40
<i>9.</i> Diffraction and #38 Polarization	2-7-12-18-21-28-42	1-8-11-23-27-42
<i>10.</i> Temperature #19	2-5-12-15-23-25-30	2-7-11-16-24-26-41
<i>11.</i> Heat and the first #20 Law of thermodynamics	4-9-15-19-25-28-33-57	1-4-11-16-21-27-30-45
<i>12.</i> The Kinetic theory #21 of Gases	2-9-14-20-25-32	3-6-9-15-20-24-33-63
<i>13.</i> Heat engine, Entropy #22 & 2 nd law of thermodynamics	1-9-11-19-22-29-33-44	4-11-18-22-23 31-33-37

*** The list of Class and Homework problems may be amended by the instructor, typically the number of problems solved in class ranges from 7 to 12 per chapter.**

b- Examinations & Research report:

There will be two quizzes (60-75 minutes each) to be given during the semester and a final examination (2 to 3 hours) to conclude the course. No documentation can be used during the quizzes and the FE both of which will consist of short multiple-choice questions/problems, conceptual essay questions and conventional problems.

Quiz I: covering Chapters 15 to 18; Week 6.

Quiz II: covering Chapters 35 to 38; Week 10.

Research report: deadline for submission; Week 12.

Final Exam: covers all the material taught in the course; End of semester.

5. Course Policy

- i. *Attendance:* Attendance of the lectures and recitations is mandatory. If a student misses a lecture or a recitation, he/she is entirely responsible for the material covered as well as any announcement that was done during class time. Any student arriving late (i.e. after the start of a lecture or a recitation) may not be allowed to attend the rest of the class.
- ii. *Office hours:* The Phys210 instructor will fix two office hours per week at the beginning of the semester. During these hours students can see the teacher in his office (Bustani Bldg) to ask questions and discuss problems related to the materials covered. Students who are not available during the office hours may directly arrange for an appointment with the teacher Ext: 4280.
- iii. *Reading quizzes:* Reading quizzes are short examinations that can last up to 10 minutes. They consist of a few easy questions about the material covered in class in the previous two lectures. No announcement for reading quizzes will be made, students are expected to daily study the covered material. Missing a reading quiz (either due to absence or late arrival to the lecture) is considered as a grade of zero on the corresponding quiz.
- iv. *Research Report:* Students are also expected to submit a small research report of 10 pages at most, in which they discuss one of the topics covered in class. The report topics will be announced during the first few lectures. Students can work in-group of three and submit one research report.
- v. *Missing a quiz or the Final Exam:* No make-ups will be given for missed quizzes. In case of absence from a quiz due to a “force majeure”, the weights of the remaining quizzes may be readjusted, if the instructor of the course considers the reason for the absence valid. Medical reports will be considered only if, they are issued by the University Health Services of AUB or the AUB Medical Center. A make-up for a missed final exam will be given only after the Administrative Committee of the Faculty of Arts and Sciences approves the request for such a make-up. Additional information about make up examinations can be found on pages 115 and 116 of the 2002-03 AUB catalogue.

- vi. *Cheating*: Any student caught cheating or attempting to cheat during an exam will be dismissed on the spot and will receive a grade of zero on the corresponding exam. Any case of plagiarism in the research report will be also considered as an act of cheating and a grade of zero will be given to the student on the corresponding research report. Any such case will also be reported to the Students Affairs Committee for further action to be taken. Action could include the student being awarded a failing grade in the course and a Dean's warning as well as the possibility of being dismissed from the University.
- vii. *Class discipline*: No eating, drinking, smoking or use of mobile phones is permitted during class time. The instructor reserves the right to dismiss from class, any student acting in a manner that is considered disruptive or counter productive to the teaching/learning process in the classroom.