

Physics 102: General Physics for Non-Science Majors Spring 2017

Instructor: Maia Magrakvelidze; JEPS 429

Textbook: "Physics fundamentals" (2th Edition) by Vincent P. Coletta, ISBN-10: 0971313423

Pre-requisites: Physics 101.

| Section 1 | Time | Room # |
|-----------|------------------|----------|
| LEC (MWF) | 1:00-1:50 p.m. | JEPS 313 |
| LAB (T) | 9:00 -10:50 a.m. | JEPS 217 |

| Section 2 | Time | Room # |
|-----------|------------------|----------|
| LEC (MWF) | 8:00 -8:50 a.m. | JEPS 219 |
| LAB (R) | 9:00 -10:50 a.m. | JEPS 217 |

Course Description: An introductory course covering the fundamentals of physics. **Primarily for non-science majors.** Emphasis on building concepts and applying principles. The course focuses on the physics of: electrostatics, electrodynamics, electromagnetic waves, and optics.

Objectives: This course satisfies Natural Science requirement. Successful students will obtain a broad idea of how to analyze the processes of nature, what goes on in the world, and how some technology works, including the basic concepts and how to make numerical estimates of interesting quantities. Also to learn critical analysis of real-life situations.

Reading: Please read the textbook before each lecture class and before doing homework. Reading from the textbook is assigned for each week. Completing the reading before class will greatly improve your learning experience.

Homework: There will be one homework (on average) assigned each week adding up to **total 300 points**. Doing homework problems is an important part of obtaining success in physics, helping you organize your thoughts, learn the concepts, and apply them. Try to do Homework as soon as possible after the lecture. So you don't get behind. **NO LATE HOMEWORK IS ACCEPTED.**

Help: Any student needing help should take full advantage of instructors during her/his office hours or by appointment. **Students should give an honest and exhaustive effort and have her/his questions clearly formulated BEFORE seeking help.**

Labs: The laboratory is a required and integrated part of the course, and counts 20% towards your grade. **A passing grade (60%) in the laboratory is required to pass the course.** See the lab manual and listen to your lab instructor for rules and grading procedures. Take the lab seriously and do well - the lab can greatly affect your overall grade. **NO LATE LABS ARE ACCEPTED and you must not be late to lab - attendance will be taken. MISSED LABS CANNOT BE MADE UP FOR ANY REASON.**

Exams: There are three 1-hour exams during the semester and one two-hour final exam. No makeup exam. Assignment of exam rooms will be announced in lecture. The final exam is mandatory and comprehensive. Try to study the concepts and how to apply them; **do not** just try to memorize how to solve **particular** problems. **No notes or devices other than calculators will be allowed in the exams** - an equations/information sheet will be provided. Exams

questions/problems will be similar (BUT NOT IDENTICAL) to homework, in class examples/questions/problems. **Make-up exams are given only in extraordinary circumstances and only with prior arrangement.**

Grading:

Grades are determined on a 1000 point scale as shown below. You cannot get a good grade in the course unless you do all the homework, take all the exams, and do well in the laboratory. You must pass the laboratory to pass the course.

| A | A- | B+ | B | B- | C+ | C | D | F |
|----------|---------|---------|---------|---------|---------|---------|---------|-----------|
| 930-1000 | 900-929 | 870-899 | 830-869 | 800-829 | 770-799 | 700-769 | 600-699 | Below 600 |

Available points:

Exams: 300 points;
Final exam: 200 points
Laboratory: 200 points *;
Homework: 300 points;
Total available: 1000 points.

* A passing grade in laboratory is required to pass the course.

Authorized versus Unauthorized Aid in Academic Work

You are permitted to talk with other students about homework problems, but you may not copy solutions or answers from any source. You must work the problems for yourself. Please note that you may not use solution manuals, online answer sites, other people's homework, or similar sources in obtaining your solutions and answers. **Plagiarism and cheating are serious offenses and may be punished by failure on the exam, paper or project; failure in the course; and/or expulsion from the university.**

Note: If you have any condition such as a physical or learning disability, which will make it difficult for you to carry out the work as I have outlined it or which will require academic accommodations, please notify me.

Honor Code: I encourage students to work collaboratively; however, cheating is a serious offense. Please read and understand your University of Mary Washington Honor

Tentative Course Schedule: General Physics 102, Spring 2017

| Week | Date | Lecture Topics | Ch. | Labs | Notes |
|------|-------|--|-------|---------------------------|--------------|
| 1 | 01-16 | No Class on Monday Electric charge | 17 | | |
| 2 | 01-23 | Gauss's Law, Electric potential | 17,18 | | |
| 3 | 01-30 | Capacitance | 18 | 1. Electric fields | |
| 4 | 02-06 | Current (DC, AC) and resistance | 19 | 2. Ohm's law | |
| 5 | 02-13 | Circuits <i>review</i> | 20 | 3. DC circuit | Exam #1 |
| 6 | 02-20 | Magnetism | 21 | 4. Oscilloscope | |
| 7 | 02-27 | Magnetic field, inductance | 21,22 | 5. Oscilloscope | |
| 8 | 03-06 | No Classes this week | | | Spring break |
| 9 | 03-13 | Inductance, AC circuits | 22 | | |
| 10 | 03-20 | Electromagnetic oscillations <i>review</i> | 23 | 6. Reflection | Exam #2 |
| 11 | 03-27 | Optics: Mirrors and lenses. | 24 | 7. Spherical lenses | |
| 12 | 04-03 | Optical instruments | 25 | 8. Atomic line | |
| 13 | 04-10 | EM waves, Diffraction and Interference | 26 | 9. Nuclear radioactivity | |
| 14 | 04-17 | Atom, <i>review</i> | 29 | 10. Nuclear radioactivity | Exam #3 |
| 15 | 04-24 | Nuclear physics, <i>review</i> | 30 | | |
| 16 | 05-01 | time??? | | | Final Exam |

Tentative HW Schedule

| HW | Given on | Due date | | | Points | Total | Chapters | |
|----|----------|---------------------|---------------|---------|--------|-------|----------|--------------|
| | | Date | Day | Time | | | | |
| 1 | 1/17 | 1/25 | Wednesday | 4:45 PM | 25 | 25 | 17 | week1 |
| 2 | 1/25 | 02/01 | Wednesday | 4:45 PM | 25 | 50 | 17,18 | week2 |
| 3 | 02/01 | 2/8 | Wednesday | 4:45 PM | 25 | 75 | 18 | week3 |
| 4 | 2/8 | 2/15 | Wednesday | 4:45 PM | 25 | 100 | 19 | week4 |
| 5 | 2/15 | 2/22 | Wednesday | 4:45 PM | 25 | 125 | 20 | week5 |
| 6 | 2/22 | 3/1 | Wednesday | 4:45 PM | 25 | 150 | 20,21 | week6 |
| 7 | 3/1 | 3/15 | Wednesday | 4:45 PM | 25 | 175 | 21,22 | week7 |
| | | Spring break | | | | | | week8 |
| 8 | 3/15 | 3/22 | Wednesday | 4:45 PM | 25 | 200 | 22 | week9 |
| 9 | 3/22 | 3/29 | Wednesday | 4:45 PM | 25 | 225 | 23 | week10 |
| 10 | 3/29 | 4/5 | Wednesday | 4:45 PM | 25 | 250 | 24 | week11 |
| 11 | 4/5 | 4/12 | Wednesday | 4:45 PM | 25 | 275 | 25 | week12 |
| 12 | 4/12 | 4/19 | Wednesday | 5:45 PM | 25 | 300 | 26 | week13 |
| 13 | 4/19 | 4/28 | Friday | 4:45 PM | 25 | 325 | 29,30 | week14 |
| | | | | | | | | week15 |
| | | | | | | | | week16 |

Dr. Magrakvelidze ☺

| | Monday | Tuesday | Wednesday | Thursday | Friday |
|--------------|-------------------------------------|--------------------------------------|-------------------------------------|--------------------------------------|---|
| 7:00 | | | | | |
| 8:00 | Gen. Physics Jepson 219 | | Gen. Physics Jepson 219 | | Gen. Physics Jepson 219 |
| 9:00 | OFFICE HOUR | Gen. Phys. Lab Jepson 217 | OFFICE HOUR | Gen. Phys. Lab Jepson 217 | Univ. Physics Lab Jepson 217 |
| 10:00 | OFFICE HOUR | | OFFICE HOUR | | |
| 11:00 | | | | | |
| 12:00 | LUNCH | LUNCH | LUNCH | LUNCH | LUNCH |
| 1:00 | Gen. Physics Jepson 313 | | Gen. Physics Jepson 313 | Research | Gen. Physics Jepson 313 |
| 2:00 | | OFFICE HOUR | | Research | |
| 3:00 | Univ. Physics Jepson 313 | Research | Univ. Physics Jepson 313 | Research | Univ. Physics Jepson 313 |
| 4:00 | Research | Research | Research | Research | Research |
| 5:00 | Research | Research | Research | Research | Research |