

Physics 110
E,P, & CS Division
Dr. Hollis Williams

MC - Rockville Campus
Spring 2019
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Lecture, and Lab Schedule

Lecture: M, & W SC 412 9:00 - 10:15 am
Laboratory: F SC 412 9:00 - 11:40 am

Office (SC436K) & Hours (appointment also)

Monday, 11:00 am-11:50 am, 6:00-7:00 pm
Wednesday 1:00 pm-2:00 pm, Friday 3:00 pm-4:00 pm

COURSE DESCRIPTION

The course will explore the basic aspects of sound, audio, light and vision using basic principles of physics. Topics will range from the motion of vibrating systems and the production of sound waves to the principles of electricity, the reproduction of sound, production of light, the visible spectrum and recording and reproduction of light. In particular, we will start by examining simple harmonic motion and complex vibrational spectra. We will then examine the propagation and superposition of waves. This will include reflection, refraction, diffraction, and interference. The course is devised for non-science majors, with an emphasis on concepts. There will be math in the course (IT IS a science course!) But the math will be minimized.

Since the course must meet General education requirements for college courses, the students will be expected to comprehend the subjects at a college level. Since the course is not a prerequisite for other courses, there will be some flexibility in the subjects and depths of subjects covered. Your input into the course will be vital in that matter.

CATALOG DESCRIPTION

PHYS 110 - Sound and Light in the Arts (NSLD) (R only)

Selected topics in sound and hearing; traditional and electronic music; light and vision; lasers and holography; color theory; photography; recording and reproduction of sound and light; the broadcast media. Frequent demonstrations, occasional field trips, and guest lecturers. Laboratory work consists of further exploration of lecture-related topics by individuals or small groups. Projects are encouraged if time permits.

PREREQUISITE(S): A grade of C or better in MATH 080, appropriate score on the mathematics placement test, or consent of department. **Assessment Level(s):** ENGL 101/ENGL 101A. Three hours lecture, three hours laboratory each week. Formerly PH 110.

4 semester hours

TEXTBOOKS AND MATERIALS

TEXTBOOK: There is a recommended text: Gilbert, Physics in the Arts, 2012, Elsevier publishing. There are assigned/suggested readings from text held on reserve in the library and from materials online.

LABORATORY: Handouts will be available online for the following week's lab activity. Please read over and have the print out available before coming to class.

MATERIALS: It is recommended that students have a notebook for the course. The notebook should be used during class for note taking and used for study outside of class.

The student is encouraged to have a calculator. It will be useful during class and examinations for making computations easier. If purchasing a calculator look

for one with scientific notation. It does not need to be expensive! (Appropriate calculators cost less than \$15)

METHODS

Material will be presented in the class by lecture, class discussions, demonstrations and associated laboratory sessions. The student is encouraged to **actively** participate in the lecture - discussions. Questions by students are always welcomed by the instructor. Homework will be assigned and collected on a regular basis. Homework problems are usually assigned from the textbook and assist in applying and understanding the principles presented in class. **Late homework will not be accepted.** There will be lab assignments each week of the course. The labs will reinforce the subject matter of the course. The time and assignments will be specified by the laboratory instructor. You must see the lab instructor if any assignment is missed or for any considerations of the lab. Your attendance is important to the learning process. You are expected to be at every class on time and to be an active participant in class activities. Learning is not a passive sport. Repeated tardiness and/or absences will lower your grade

Note: It is advisable for the student to read the assigned sections **before** the lecture on that material. It is not necessary to understand completely the reading. It helps in comprehension to have repeated contact with the material and the student will gain more from the lecture.

GRADING POLICY

Attendance is required. There will be six quizzes, and a final exam. Each of the quiz will be worth 6%, the final will be worth 24%, homework will be worth 15%, the laboratories will be worth 20%, and 5% of your grade will be based on attendance (including punctuality) and participation. Assignments (homework and labs) will not be accepted late without a written doctor's excuse.

A = > 90%; B = 80 - 90%; C = 70 - 80%; D = 55 - 70%; F = < 55%

Note that this policy is only intended as a guide and is subject to change (with notification).

ACADEMIC INTEGRITY POLICY

- I. Montgomery Community College is dedicated to providing a quality comprehensive educational program designed to meet the diverse and changing educational, social, economic, and cultural needs of the community. The College is committed not only to learning and the advancement of knowledge, but also to the development of ethically sensitive and responsible persons. It seeks to achieve these goals through a sound educational program and through regulations and policies governing student life that encourage responsibility and respect for the rights and viewpoints of others.
- II. The College believes in the premise that students are adults who are responsible for their own actions and who should be free to pursue their educational objectives in an environment that promotes learning, protects the integrity of the academic process, and protects the College community.

In accordance with the Academic Regulations students are required to adhere to the Student Code of Conduct. Students should spend some time reviewing the policy as stated in the catalog, student handbook, and online. Students in the Physics courses are encouraged to work together in labs and on problem assignments, BUT submitted work should reflect the students own work. Plagiarizing another person's work (including a solution manual), or giving and/or receiving inappropriate help on assignments, lab reports or examinations is cheating.

It is expected that you will treat and be treated with respect in the class. This will include not using cell phones, and other devices that can be disturbing to the instructor and members of the class.

Any student who may need an accommodation due to a disability, please make an appointment to see me during my office hour. In order to receive accommodations, a letter from Disability Support Services(R-CB122; G-SAI75; or TP-ST120) will be needed. Any student who may need assistance in the event of an emergency evacuation must identify to the Disability Support Services Office; guidelines for emergency evacuations are at: www.montgomerycollege.edu/dss/evacprocedures.htm.

LECTURE TOPIC SCHEDULE, AND READINGS

The following list will be used as a guide for the semester. This schedule will allow us to study the material outlined in the course guide. Remember it is a **guide only**, it is subject to change with notice from the instructor.

WEEK OF	READING	LABORATORIES	NOTES
1/21	Measurements	Scientific Introduction and Measurements	
1/28	waves	Hooke's Law	Quiz #1
2/04	Sound	Oscilloscope	
2/11	Sound II	Hearing	Quiz #2
2/18	Instruments	Hearing cont'd	
2/25 #3	Sound reproduction	Musical instruments	Quiz
3/04	Sound reproduction	Sound reproduction	
3/11	Spring Break		
3/18	Light (E & M wave)	Plane reflection and refraction	Quiz #4
3/25	Reflection, etc.	Lens and mirrors	
4/01	Interference	Interference pattern	Quiz #5
4/08	Optical devices	Photography lab	
4/15	Optical devices	Color lab	
4/22	Lighting	Photoshop	Quiz #6
4/29	Color	Review/make-up	
5/06		Final Exam May 13, 2019 8:00 - 10:00 am	