

# PSC 1050/1051: Color, Light, and Sound

## Syllabus

Fall 2022

Instructor:	Prof. Ch. Elster
URL:	<b><a href="http://www.phy.ohio.edu/~elster/psc1051">www.phy.ohio.edu/~elster/psc1051</a></b>
Text:	<i>Physics in the Arts</i> , P.U.P.A Gilbert, W. Haeberli (required) <i>Laboratory Manual</i> , mandatory for 1051 (download from Lon-Capa)
Class :	material online – study at your own pace
Discussion:	Wednesday at 5:15 pm in Walter 245, starting August 24.
Homework :	via Lon-Capa due every Wednesday at 1 pm and Friday at 11:45 pm (depending on problem type)
Help Sessions:	Wednesdays 6:10 pm after class online via Zoom or Teams (time will be announced)
e-mail:	elster@ohio.edu
e-mail TA's:	Will Poston (wp826418@ohio.edu) TBD

## Overview

Welcome to Color, Light, and Sound! In this semester you will study basic physical principles behind the phenomena of color, light, and sound and their applications. Then you will learn how to use them to solve problems and explain phenomena that happen in nature and our daily lives. You will learn new concepts, principles, and some techniques to solve equations.

At the end of the course students should be able to

- use critical thinking and mathematical principles to describe the relationships between physical phenomena and their properties
- extract information from graphs and charts that describe physical properties of a system
- understand how to analyze, evaluate, and test scientific hypothesis
- use basic scientific language to describe phenomena involving color, light and sound

## Content Materials

You have two main sources for content:

We use *Physics in the Arts* by P.U.P.A. Glibert and W. Haeberli (Academic Press, 2011). While you don't have to be "best buddies" with the textbook, you need at least be acquainted with it and develop a working relationship. For example, there are problems (with solutions in the back of the book). It will help you, if you solve the problems to see if you understood the concepts presented in the chapters.

The second source of content is the *online* material. This consists of text, tutorials,

short video or audio clips to help understanding, and address your different learning styles. Please make sure to click through all different links so that you don't miss anything. The additional material (lecture notes and references) is on the lecture web-site [www.phy.ohio.edu/~elster/psc1051/](http://www.phy.ohio.edu/~elster/psc1051/). This is for **both, PSC 1050 and PSC 1051**. To keep the web address short, I used only one number.

Every Wednesday we will meet in Walter Hall 245 for discussing challenging concepts of the week, work with demonstrations, or start on difficult homework problems.

### Assignments

There will be weekly assignments throughout the course, aimed at helping you understand the material better. They will be delivered through the Lon-Capa system. Those assignments make up a significant fraction (35%) of your final score, so make sure you start on them as early as possible. There will be **no** extension on deadlines for assignments.

There are two types of assignments. The first type consists of you watching some video material and answer questions to what you have watched. The deadline for these assignments is every Wednesday at 1:00 pm, so that we can continue discussions on that material in the discussion session. The second type consists of problem, either multiple choice or numerical. Usually you have up to 10 attempts to get a correct answer. The exception to this are certain multiple choice questions. Please plan ahead when using up your choices. These second type of problems are due every Friday at 11:45 pm. All problems for the following week will open Saturday's at noon.

**When a problem is completed successfully, you are provided with a receipt number.** Please record this number. This is your proof that you completed the work. We will not investigate discrepancies in records without this receipt.

To log into Lon-Capa, go to <http://loncapa.phy.ohio.edu> and enter with your OU ID (lower case) and your password.

Realizing that "life happens", and that sometimes you just need to "let it go", there is a 5% forgiveness factor. An Assignment score of 95% or better will receive the full credit towards your grade. Scores below 95% will be prorated (e.g. 47.5% would be half credit). That said, you are responsible for knowing how to do all the problems, even those you might have chosen not to complete. Technical difficulties are included in the 5% of the score that is forgiven.

### Laboratory

If you take this class as a 4-hour laboratory course, you need to be registered for PSC1051, and pick one of the laboratory sections. Laboratory manuals should be downloaded from Lon-Capa, and a printed copy should be brought to the laboratory session or available to you when working online. You **must** read the material **prior** to the laboratory and have Apps installed on your phone **prior** to the lab when required. Please see the Laboratory Schedule for further details and procedures implemented for the labs.

You must pass 12 labs. There is an extra lab scheduled which must take in case you missed one of the earlier labs. Please refer to the lab schedule for the lab policies.

## Exams

There will be four exams in the course. All exams are in-person exams. Three of those will be scheduled during the semester and will last one hour. These exams will take place during the Wednesday session from 5:15 pm to 6:10 pm. The fourth exam is the comprehensive two-hour final exam to be given during finals week. The exam schedule can be found in the class schedule. Students will be allowed to use one 8x11 sheet of paper with their *handwritten* notes that can be used along with calculators during the exams. It is highly suggested that you start preparing a summary and equation sheet from the start of the semester.

**Electronic Devices in Exams:** You are allowed a dedicated calculator for exams. All other electronic devices are forbidden. This includes music players, electronic dictionaries, tablets and cell phones. You get the idea. No ear-buds will be used during the exam. Simple scientific calculators can be purchased for as little as \$10. Make sure the calculator can handle scientific notation and trigonometric functions.

All exams are based on the material covered in lectures, the book, and assignments. **No make-up exams will be given without a University excused absence and prior consent of the instructor.**

## Grading

Your final score is determined by your overall performance in the course. Influential factors include homework assignments, exams, and for PSC 1051 the laboratory. The weighting factors of the individual components are:

Grading Chart	1050	1051
EXAM 1 (September 24)	10%	10%
EXAM 2 (October 22)	10%	10%
EXAM 3 (November 12)	15%	15%
FINAL [comprehensive] (Dec. 6, 4:40 pm)	30%	25%
Assignments	35%	25%
Laboratory	0%	15%

Final grades of the course will be assigned according to the following scale. I reserve the right to curve up the grade, but will not curve down. For example, if everyone gets a score of 88% or better, is guaranteed at least an A-.

A- to A	88% or better
B- to B+	74% to 87%
C- to C+	62% to 73%
D- to D+	50% to 61%
F	49% and below

## Tentative Schedule

The schedule is tentative. In case there are changes you will be notified via email or Lon-Capa. Have in mind the weeks for the exams will **not** change.

Week of:	Chapter	Contents	Laboratory	Exam
Aug 22		Basics 1	E1	
Aug 29		Basics 2	E2	
Sept 5	1	Light 1	No Lab	
Sept 12	1	Light 2	E3	
Sept 19	2	Reflection and Mirrors	E4	
Sept 26	2,3	Refraction and Lenses	E5	Exam 1
Oct 3	4,5	Eye and Camera,	E6	
Oct 10	6,7,9	Color I	E7	
Oct 17	7,8	Color II	E8	
Oct 24	10,11	Harmonic Motion, Waves	E9	Exam 2
Oct 31	12,13	Waves and Resonances,	E10	
Nov 7	14,17,18	Sound, Stings, and Tubes	E11	
Nov 14	13,15,19	Sound Quality, Doppler Effect	E12	Exam 3
Nov 21		Thanksgiving Week	E13	
Nov 29	21	Acoustics, Musical Instruments	Make-up Lab	
Dec 5		Final Exam: Dec 5, 4:40 pm		Final

## Misconduct

We are required to remind you that academic misconduct is a Code A violation of the Ohio University Code of Student Conduct. If you are found to be involved in academic misconduct regarding this course, you will receive an F on the pertinent work and possibly for the entire course and/or a referral to the Office of Community Standards and Student Responsibility. University Judiciaries may impose additional sanctions. Procedures for judicial actions will be invoked as described in the Student and Faculty Handbooks. See the O.U. Undergraduate Catalog.

## Preferred Name Policy

Remember that OU permits you to specify a preferred name on documents that do not require your legal name. You can change the name that appears on the class list through the MyOHIO portal site. After having done so, please let the instructor know if any class materials are using the wrong name.

## Contingency Plans

In the event of a major campus emergency, course requirements, deadlines, and grading percentages are subject to changes that may be necessitated by a revised calendar or other circumstances beyond the instructor's control. We will make sure this information is communicated through e-mail and Lon-Capa.

## Lon-Capa Instructions

The homework and on-line reading materials can be accessed using a web browser. Homework and pre-class assignments are given under

*<http://loncapa.phy.ohio.edu>*

Your username is your 8-character OU ID (for example ml931098). the username is **case sensitive**. Make sure the first two letters are lower case. Use your OU password to access the system. Your browser will have to have "cookies" and "Javascript" enabled. If you have problems logging in, visit *<http://loncapa.phy.ohio.edu/help>*. Further instructions can be found there. Once you are logged in, select the course in which you want to work. Additional help can be found online once you are logged into the system.

## Copyright

The activities and all materials associated with this class and developed by the instructors are copyrighted in the name of the individual instructors on this date, August 24, 2022.

## Accessibility Services

Any student who suspects they may need an accommodation based on the impact of a disability should contact the class instructor privately to discuss the student's specific needs and provide written documentation from the Office of Student Accessibility Services. If the student is not registered as a student with a disability, they should contact the Office of Student Accessibility Office.

## Finding Help

Where can you turn if you feel you need a little help?

- There will be **two** Help Sessions by TAs, one in person after the Wednesday meeting, and one online. The time of the online Help Session will be announced in Lon-Capa. Please be reminded, that the TA's will wait for you at the announced hour. If nobody joins their in-person or Zoom/Teams session within **10 min**, they will leave and end the session, unless you have arranged to meet them later during their assigned hour. However, keep in mind that they are not there to do the problems **for you**. They will try and help explain things and suggest directions for you to investigate.
- You may send me e-mail for an appointment with a subject header "PSc 1050/1051 ..", or come to my office hours. As stated above, I will not be able to do your homework problems for you, I can only point to directions to investigate.
- Find friends to work and study with. You are encouraged to work in small groups as long as you do it responsibly. Sometimes working through the material with friends can be very helpful for you understanding. However copying your friends material will not help you at all.
- Find a friend who has taken physics or chemistry courses, who might be able to help with a few of the technical issues, like calculator usage or some math.
- The Academic Advancement Center has a Math Help Lab.