

Group Projects: November 15 & 17

You will complete a research project on “How Things Work” in the areas of optical science and technology in groups of three. Each group will be responsible for delivering a 12-minute oral presentation. Everyone must take part in the presentation. All members of a group will receive the same score for the presentation; that is, the presentation is assessed as a whole and everyone receives this score.

Your presentations will be ‘peer reviewed’. The average score after dropping the lowest and highest ones will account for 20% of your group project grade. The grade given by the instructor will account for 70%. The oral presentation is thus only 90% of your grade for this project.

The final 10% is individual, and refers to your teamwork. Every person in the group will provide the instructor with a suggested grade for every other member of the group, and the instructor will assign a grade that is informed by those suggestions.

Once formed, groups cannot be altered or switched, except for reasons of extended hospitalization.

Extra credits will be given to individuals with outstanding performance.

The project results will be reported in class on November 15 and 17.

The purpose is to familiarize you with various optical devices and systems. You are expected to explain an optical system or instrument at a level that can be understood by the entire class.

Here’s how it works:

- A. You should indicate topical preferences on the separate page just handed out (in decreasing order); clearly, there is no way to guarantee that you’ll get your top choice. I will generate the groups from your inputs and announce by **October 20**.
- B. You are expected to use a variety of informational sources: textbooks, journal articles, popular accounts, vendor/manufacture publications, to mention a few. I can also distribute some material to get you started.
- C. The presentation slides will be prepared in a 6-page graphic format (excluding the title page), i.e. powerpoint-like, suitable for a 12-minute in-class presentation. Each member of a group will receive the same grade for the presentation report: all members should contribute equally. No written report is required.
- D. The 6 + 1 (title) slides should follow a standard format:
 1. Title, participants, 3-sentence synopsis describing the topic.
 2. Qualitative description of the subject: what it does, how it does it, why it’s useful, how you use it, what variants exist, etc. A general picture of the object would be helpful here. Introduce terminology if needed later.
 3. Quantitative description. If an optical system, describe and illustrate its operation. Use concepts covered in class and our textbook. This section must contain a mathematical description: this means actual numbers and equations! Include discussion of performance criteria, i.e., how accurate, sensitive, etc. This part will be heavily weighted in determining the grade. You will probably need to use at least two pages for this section.

4. References. They must include at least one book and one journal article, plus any technical notes or catalog descriptions used. The URL of any web information must be cited.
- E. The grade will depend on both the quality of the delivery and the information presented. The audience will have 2-3 minutes for short questions following the talk, which can be answered by any member of the team.

To facilitate the presentations, please give me your talk (it can be powerpoint, word, or pdf) by email or flash-memory before noon on your presentation day. I'll load them in sequence on my laptop. There is no need to bring your computer to class, but you are permitted to use your own laptop. I will post your presentations on the course web site.

Please fill in and return at the beginning of class on Tuesday, Oct. 18.

Name: _____

My first 5 choices are:

_____, _____, _____, _____, _____

Provide at least one reference each for your top 3 choices. (web links are permitted)

Topics for PHY431 Group Projects/Presentations

How *** work(s)**

1. digital cameras (phone cameras)
2. optical microscopes
3. scanning electron microscopes
4. Fresnel lens
5. 3-D Glasses/Movies/TVs
6. space telescopes (eg. Hubble, Spitzer, Kepler mission, and James Webb)
7. flat panel displays
8. CD/DVD/BluRay players
9. GPS (the Global Positioning System)
10. color vision
11. fluorescent lamps
12. invisibility cloaks (?)
13. Others – specify the topic and provide additional references

Identify other classmates you would like to work with if any:

- 1.
- 2.