## Midterm II Project Schedule

### 3-3:50 pm Thursday, November 19

| | | |
|---|---|---|
| Jock, Jason Christopher<br>Moore, Bryan Adam<br>Wojcik, Kevin Anthony | 3 | Aspherical and GRIN lenses |
| Mikula, Brendon David<br>Rhoby, Michael Raymond<br>Selleck, Kyle Andrew | 10 | Optical Fibers |
| Zarras, Russell Steven<br>Sanders, Nathan Edward<br>Bezanson, Dawn Maria | 11 | CCD |

### 3-3:50pm Tuesday, November 24

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|---|---|---|
| Majewski, Ryan Anthony<br>Guile, Sarah Adell<br>Knowlton, Lindsay Michelle | 8 | Telephoto lens/Astronomical Telescopes |
| Dao, Dung T<br>Sidronio, Yan<br>Wyka, Jeffrey Adam | 9 | Binocular vision (depth perception) |
| Brown, Corbin Curtis<br>Durst, Thomas Stephen<br>Maddock, Joshua Andrew | 13 | CD/DVD or Blue Rays |
| Ford, Michael Alan<br>Gilbert, Jonathan Robert<br>Ouyed, Amir Hassan | | Optical Missile Warning Systems |

# MIDTERM PROJECT

Each member of PHY431 will participate in a specific project. The project output will be treated as equivalent to a second midterm examination. Its purpose is to familiarize you with various optical devices and systems. The project results will be reported in class on November 19 and 24. No written report is required. *The overall goal is to explain an optical system at a level that can be understood by the entire class.*

Here's how it works:

A. Each topic will be researched by 3-member teams. You can 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 choices. I will generate the groups from your inputs and announce by November 3. I can also distribute some material to get you started if you need help.

B. You are expected to use a variety of informational sources: textbooks, journal articles, popular accounts, vendor/manufacturer publications, to mention a few.

C. The report will be prepared in a 5-page graphic format (excluding the title page), i.e. powerpoint-like, suitable for an 8-minute in-class presentation. You must be present at your group's presentation even if you are not contributing to the talk. Each member of a group will receive the same grade: all members are expected to contribute equally.

D. One or all members of the group may participate in the presentation. The grade will not depend on the quality of the delivery but on the quality of 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.

E. The 5 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 discussed in class, e.g., ray optics, lens formulae, …

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 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.

To facilitate the presentations, please give me your talk (it can be powerpoint, word, or pdf) by email, flash-memory, or CD 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. I will post the presentations on the course web site following the talks.

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Name:_____

Student ID:_____

My first 5 choices are:

___, ___, ___, ___, ___

**Topics for PHY431 Midterm Presentations**

1. Single-lens reflex camera
2. Microscope objective: infinity-corrected, plan apochromat
3. Aspherical and GRIN lenses
4. OSLO (ray-tracing software)
5. Fabry-Perot interferometer
6. Human color perception and vision
7. Achromatic lens set (doublet and triplet)
8. Telephoto lens/Astronomical Telescopes
9. Binocular vision (depth perception)
10. Optical Fibers
11. Charge-coupled device (CCD)
12. Green laser pointers
13. CD/DVD
14. Others – Specify topic and provide at least one major reference

**Please fill in and return after class Thursday, Oct. 22.**