

## **Optical Engineering 421/521**

### **Review for Final Exam**

The exam follows the same format as previous midterms. Some differences are:

- You are allowed 120 minutes. Everybody is expected to finish!
- You are allowed to use your own calculator.
- You can bring one sheet of equations, material constants, ...  
(standard size sheet of paper, one side)

The exam is comprehensive, covering anything I discussed in class. Review the material from homework and midterms. Similar problems are given on the final exam.

Review the objectives from each class. These are posted. You should know everything listed there, and you should have all of the skills listed.

In addition to the material covered on the two midterms, make sure that you know about

Mounting optical components:

- issues with clamping, preload
- issues with bonding, thermal stresses, strength
- Hertz contact stresses for point and line contact
- Concepts for prism mounting
- Concepts for mounting lenses
- Stress calculations for overconstrained conditions
- Concepts for mounting mirrors, including calculations of self weight deflections
  - o Axial support
  - o Lateral support
- Use of flexures, choosing geometry, calculating stiffness.

I do not expect you to have all of the equations for everything! There are some simple relationships and rules of thumb which you must have (either in your head or on your sheet of notes.) I will provide equations for anything that is complicated (beam bending, Miles Equation, ...)

Some helpful tips:

- Use your rules of thumb. If you captured the right things, you'll ace the exam.
- Read the questions carefully. They may be similar to a question that you are expecting, but may have significant differences.
- Try to be neat and organized with your solutions. If you make a mistake half-way through a problem you can get ½ credit.
- If your solution seems complicated, stop and think. You're probably doing something wrong.