The research presentation is an opportunity to learn more about precision machine, help the class gain more exposure to specific applications of precision engineering, and give you practice making a technical presentation.

The general approach will be to read some paper(s), book, article, or reflect on a project you worked on that is relevant to precision engineering, and present what you learned to the class (see the list of topic areas below). You will work on this assignment with one, or at most, two others in the class. Individual presentations may be allowed if circumstances warrant such an arrangement. See Prof. Furman for prior approval.

Presentations should be approximately 15 minutes long. There will be approximately 5 minutes of questions and answers to follow. Each member of the group must participate in making the presentation.

You will also turn in a hardcopy and softcopy of your presentation. Include a copy of the source materials that you used to develop your presentation if practical. (This probably only makes sense if you use papers or materials from the web. In other words, don’t make a copy of a book if that it was you use to develop the presentation!)

Grading of the presentation will be carried out using the following criteria:

- **Identification of precision engineering concepts** (20%) Your presentation will be judged on how well you identified some precision engineering concept(s) applied in the work you researched.

- **Clarity of presentation** (20%) Your presentation will be judged on how clearly you illustrated the precision engineering principle(s) that was the focus of your presentation. It will be VITALLY IMPORTANT that your presentation include sufficient figures, diagrams, pictures, models, etc., to clearly convey to the audience how the precision engineering concept was applied or embodied in the work you researched. A presentation consisting of words only will NOT be acceptable.

- **Appearance and delivery of presentation** (20%) Your presentation will be judged on the quality of its appearance and delivery. For example, were there misspellings or typographical errors? Was the font size large enough to be easily read by the audience? Did the presenters speak loudly enough to be heard by all? Was the graphic content clear and easy to read? Did the presenters make eye contact with the audience?

- **Quality of documentation** (20%) This aspect focuses on the quality of materials you turn in following your presentation

- **Individual Contribution** (20%) This aspect will address the quality of each team member’s contribution to the presentation.

**Subject Areas for Presentation (NOT an exhaustive list by any means!!)**

Here are some subject areas that have plenty of examples of precision engineering principles:

- Gravity Probe B experiment (Stanford University)
- Ruling Engines
- Optomechanical design
- Optics manufacturing equipment
- Telescope design
• Semiconductor lithography tools
• LIGO or LISA experiments
• Large Optics Diamond Turning Machine (LODTM)
• Extreme Ultraviolet Lithography (EUVL) projection optics
• The National Ignition Facility (NIF) optomechanical design
• Kinematic couplings (see: http://pergatory.mit.edu/kinematiccouplings/)
• Machine tools
• Bearing fabrication
• Machine tool metrology
• Metrology tool manufacturing
• Microtomes
• Watch making
• Instrument making

For other ideas, look through Precision Engineering: An Evolutionary View by Chris Evans, which is on reserve for ME 250 in the library, and references in the course text book.

Here is the schedule you will use for this assignment:

<table>
<thead>
<tr>
<th>Key Dates</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-8-05</td>
<td>Submit names and contact information to Prof. Furman</td>
</tr>
<tr>
<td>9-15-05</td>
<td>Submit presentation topic(s) to Prof. Furman</td>
</tr>
<tr>
<td>9-29-05</td>
<td>Detailed outline of your presentation</td>
</tr>
<tr>
<td>10-13-05</td>
<td>Presentations</td>
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</tbody>
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