

# Projects Class

---

# Getting Started

# What is a Project?

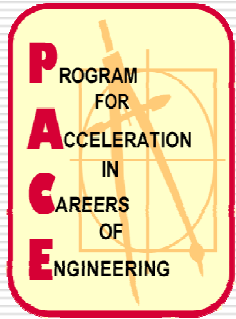
---

- It's more than doing an experiment or building a product
- It's more than obtaining a particular result (especially in science)
- There must be a context to the work
  - What question are you trying to answer? Why is it important?
  - What criteria (requirements) must your product satisfy?
- It's a structured process
  - You should follow a standard methodology
    - The Scientific Method
    - The Engineering Method
    - More on these later

# Why Follow These Methods?

---

- To make efficient use of time and resources
- Reduce mistakes
- Organize your work and your thinking
- Prove validity of results
- Prove what, when, and how you did what you did
  - Academic “credit”
  - Patents



# Projects Class

---

## Planning a Project

# Make a Schedule

---

- Lay out the major tasks you have and assign a timeframe
- Don't forget
  - Background Research
    - What's been done in the field
    - For you, may include learning an established area
  - Rework
    - Don't assume you'll get it right the first time
  - Writing Final Report
  - Creating your presentation
  - Rehearsing your presentation

# Make a Schedule (cont.)

---

- How long for each task?
  - Guess
  - Ask your advisor
  - You can always adjust your schedule later
- Build in slack time
  - Things will take longer than you think
- Take your other work (school) into consideration

# Tips

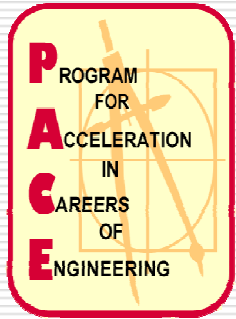
---

- Start Early
- Keep a project notebook and take notes
- Start writing your final report at the beginning
  - As soon as you know what your project is you can write the introduction
  - Writing early helps organize your thoughts and will help you do your project
- Talk to others about what you're doing
  - Talking may help you organize your thoughts
  - They may have useful ideas

# Employ Good Techniques

---

- Work Safely
  - Take your time
  - Observe safety practices specific to your project area
- Use proper technical terminology and notation
- Use appropriate analysis techniques
  - Hypothesis testing
  - Understand probabilistic/statistical concepts (independence, correlation, cause and effect)
  - Base your conclusions on data, not speculation



# Projects Class

---

# Communicating Results

# Reports and Presentations

---

- It is important to communicate the results of your research
  - Helps the scientific community move forward
  - Your work may be one step in a chain. The next person may need it for his or her own work
- Need to communicate clearly and succinctly
- Scientists and Engineers do a lot of writing
  - Unfortunately, many do not do it well

# Organization

---

- ❑ Organize your report or presentation into a Introduction, Body, and Conclusion
- ❑ For scientific papers or presentations, present the main results at the beginning. This is not a mystery novel.
- ❑ Get to the point. State you main points and support them.
- ❑ Report will be more detailed than presentations and are made to be read