Design Fair

• 12:00 – 6:00 p.m., Thursday, May 1.

• Room opens at 7:00 a.m. for set-up

• Groups needing extra floor space:
  – NE and SE corners

• Groups needing electrical power:
  – South wall and center aisle
  – Bring extension cords, just in case

• Groups NOT needing electrical power:
  – North wall
Design Fair, cont.

- Presentations:
  - Have an “elevator pitch” ready
  - Have a 5-min. informal talk ready

- Team binder is optional
Friday’s class

- Poster design awards
- Instructor evaluations
Project Deliverables

- Due by 5:00 p.m., May 5, Roberts 306
  - Team Notebooks
  - Design Journals
Final Exam

• 8:00 a.m., Friday, May 9, Roberts 101

• To receive full credit:
  – Show up on time
  – Give thoughtful responses

• No studying expected!
Today’s Agenda

- Design Communication
- Design Ethics
An Engineering Design Process

Client Need

Problem Definition

Conceptual Design

System-level Design

Detail Design

Design Communication

Final Design
The project is not complete until the results are communicated.
General Tech Comm Guidelines

• Know your purpose.
• Know your audience.
• Choose and organize content around your purpose and audience.
Write / speak clearly, precisely and objectively.

Think visually.

Pay attention to aesthetics.

Be ethical.
Design Drawings

• Purpose: Tell someone else how to make the designed artifact.

• Conventions differ by discipline.

• Multiple types required.
  – e.g., in mechanical design: layout drawings, detail drawings, assembly drawings
Citicorp Center

- 153 E. 53rd Street, New York City, NY.
- Architect Hugh Stubbins Jr.
- Completed in 1977.
- 59 Stories
Engineering Challenge

- Structural engineer William LeMessurier
- Building had to be over St. Peter’s Lutheran Church site
- Solution: 4 columns centered on the building’s sides
- Innovative structure + mass damper
Late discovery....

After the building was occupied, prompted by a student question after a presentation about the building, LeMessurier makes a shocking discovery....
His Error

Quartering winds overlooked in the wind load analysis of a construction change from welded to bolted joints.

100 yr. storm 16 yr. storm
What should he do?

- Fix is to weld 2” thick steel plates (weighing 200+ lbs.) over the 200 bolted joints.
- What’s at stake?
- Would it make a difference if the insurance co. or building owner had said, “keep it quiet?”
Consequences

- Who should pay for it?
- LeMessurier’s reputation?
NSPE Code of Ethics

• Deliberate unethical acts are one thing.
• Need to be especially careful of unintentionally unethical decisions.
Some Common Violations

- Not notifying employer or client of known hazard.
- Approving documents that violate professional standards.
- Disclosure of information without consent of (former) client or employer.
- Failure to include all information in reports.
Design frequently involves ethical decisions.

Know the NSPE Code of Ethics.