ME 2110 – Final Contest Timeline and Final Report Preparation

March 30, 2015

C.J. Adams
Head TA
Agenda

• Overview of the next 2 weeks
• Final Contest Timeline
• Design Review Overview
• Final Report Overview
• Final Presentation Overview
• Q&A
## Schedule – Time to Sober Up

### April

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<td>Lecture</td>
<td>Final Report Preparation</td>
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<td>BIG CONTEST</td>
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<100 hours until the Final Contest

5:00pm: Judging
6:15pm: Contest
ME2110 - Creative Decisions and Design

The hospital will stop rotating. If even the smallest piece of your victim is inside a hospital door, then you will be awarded **15 pts**. If the victim is completely inside the hospital door, then you will be awarded **25 pts**. The landing pad is a hole in the middle of the hospital that is approximately 18 inches in diameter. If you can pick up and deliver the victim to the landing pad (including the volume of space above the pad), then you will be awarded **40 pts**.

**Tiebreaker.**

In the case of a tie score, the following tiebreakers will be applied in order until one team is declared victorious: 1) The team that scored the most points from rescuing the victim. 2) The team that collected the most supplies. 3) Coin toss.

The methods of scoring are summarized in Table 1.

**2.5 Grading**

The 15% of your grade that comes from your machine performance is divided into five components, as shown in Table 2.

**Syllabus**

**Course Requirements (100%):**

1) In-Lecture Quizzes 10%
2) Homework 15%
3) Class Participation 5%
4) Introductory Project 15%
5) Major project 55%
   - Planning Report and Presentation (5%)
   - Evaluation Report and Presentation (5%)
   - Machine Performance (15%)
   - Presentation to Judges (5%)
   - Final Oral Presentation (10%)
   - Final Report (15%)
6) Give at least one oral presentation P/F
7) Electronics, machining, and pneumatics training P/F

**Search and Rescue Handout**

<table>
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<tr>
<th>Maximum Points</th>
<th>Test</th>
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<tbody>
<tr>
<td>1</td>
<td>Individual Preliminary</td>
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<tr>
<td>2</td>
<td>Individual Final</td>
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<tr>
<td>2</td>
<td>Team Preliminary</td>
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<td>2</td>
<td>Qualifying</td>
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<tr>
<td>8</td>
<td>Search and Rescue Missions</td>
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Grade left to go within the next 2 weeks: **43%**
- Only 8% based on device performance
LAST WEEK – Qualifying Round & Seeding

• Exactly like the final contest
• Average scores used to rank the teams within your section and seed the final contest bracket

• Preliminary Report due in Studio
THIS WEEK – Open Studios

• Studio sections have priority on track in 2212 during their studio time

• Extended Open Hours schedule on website (Sat. 3/28 – Thurs. 4/2)
Competition Night – Friday, April 3rd

• You will **not** be able to test on the tracks the day of competition
• Dress Up!!
• Prepare for the Design Review
• Arrive at the **MRDC** at 4:30 pm to check in
• Judging begins at 5 pm
• Contest starts at 6:15 pm in the **MaRC Building**
• You can leave once your team is eliminated
• **Have Fun!**
* Teams should not gather in the Atrium or stairwell area on the 1st floor. The only teams allowed in the 1st floor Atrium are those competing or 'On Deck' waiting to compete in the next match.

* Teams should wait for their turn to compete in the Auditorium or the lobbies on the 2nd, 3rd, and 4th floors. Viewing of contest rounds can be done from the 3rd and 4th floor catwalks.

* The competition bracket will be displayed using the projector in the Auditorium. At this location, you may view the bracket as the contest progresses.

* Keep the stairs clear for teams and guests traveling up and down.

Return to the Auditorium or upstairs once your round is complete.
Design Review

• Judged on:
  – Ingenuity (Design Process and Creativity)
  – Aesthetics (Machine, Poster, Team)
  – Presentation (Technical Communication)

• Judges include industry sponsors, faculty, and students
1. State how many points you expect to score
2. State what your machine is going to do, and how reliably it completes objectives
3. Show which subsystems obtain which points
4. Demonstrate a subsystem (maybe)
5. Be ready to explain A) What’s clever, B) What’s unreliable, C) Why you chose this design, D) How much did it cost
Poster Presentation Tips

• Draw attention, capture, and close
• All team members should be able to present the same overview of the design
• Think about how to best display your device
• Don’t waste too much time/space explaining the contest
Posters and Design/Planning Tools

• Don’t Show:
  – Full HoQ
  – Full Spec List
  – Eval. Matrices
  – Planning Tools

• Maybe Show:
  – Morph Chart
  – Function Tree
  – Important Design Requirements
  – Critical Specs
Dressing Up (You and the Poster)

- Have a theme
- You can dress up in costume, but keep it tasteful
- Look cohesive as a team
- Print posters using the Library Plotter
Painting Your Device

• Use the Paint Trailer in the MRDC loading dock
Painting Your Device

- Use the Paint Trailer in the MRDC loading dock
Final Report

• Final Report
  – Less than 10 pages of text (1.5 spacing)
  – Figures and Tables should be included at the end in Appendices
  – Include Table of Contents
  – Use feedback from Preliminary Report
Describing Design Tools

• Cite the tool.
• State how the tool has been used to address the assigned task.
• Do NOT describe how the tool works.
• Present details by citing key entries/results contained within the tool.
• State how the information in the tool was used and what was gained from it.
Final Report – Suggested Outline

Cover Page
Abstract
Table of Contents
I. Introduction
II. Design Objectives
III. Design Overview
IV. Alternative Designs
V. Discussion
VI. Conclusions
Figures and Tables
Abstract

• State Problem or Need

• Project Goals

• Project Results
  – Final Competition results
  – Judging Results

• What specifically is presented in the report
Introduction

• Problem Definition
  – State the main objectives (needs)
  – What key constraints existed?

• Engineering Challenges
  – NOT the same as the rules or constraints
  – NOT the same as the contest tasks

• What is contained in the report
  – …“Section III describes the Rescue Robot design.”…
Design Objectives

• Describe:
  – Problem Understanding Analysis
  – Design Specifications
  – Functional Decomposition

• State and briefly justify your assumptions
Design Overview

• Present the complete machine
  – How many points are expected to be scored?
  – What are the subsystems?
  – Describe operation of the device (use a flowchart)
  – Full system figures
    • Give overall dimensions
    • Use multiple figures to describe function and motion, *e.g.* before and after views
    • Label subsystems
  – How much did the machine cost? (show Bill of Materials)
Subsystem Description

- Subsections of Design Overview Section
- Divide descriptions up by subsystem
  - Give details of each subsystem
    - What function or goal does this address?
    - What are its features?
    - How does it work?
  - Use “zoomed” figures or separate figures for each subsystem
    - Label critical dimensions
Alternative Designs

• Describe *at least* three (3) concept alternatives
  – 1-2 Paragraphs
  – 1-2 Figures (before and after deployment, or illustrate motion)
Discussion

• Exists to justify system and analyze the results

• HOW was the design selected?
  – Why did you choose the one you did? (Concept Eval.)

• WHAT were the results?

• WHY did the device perform well (or poorly)?
  Analyze the results in light of the HOW.
Results (WHAT)

• Present Numerical Results
  – Judging
  – Competition

• How did this performance differ from the expected performance?
  – What were the performance specifications?
  – Justify the expected performance
    • Engineering analysis
    • Tables of scores from prototyping trials
  – Identify differences between expectation and performance, and possible causes
Analysis (WHY)

- Discuss in terms of the design process
- What assumptions were correct?… incorrect?
- What items were weighted too heavily?… too lightly?
- Discussion of design strengths and weaknesses
  - Where and how did these manifest in your design process?
- What would you change and/or improve on your design?
Conclusion

• Outlines what was just presented in the report
  – Should not introduce any new information

• Include relevant numerical results
  – Final Competition
  – Judging

• Make a CONCLUSION
  – *i.e.* The design failed because… or the design succeeded for these reasons…
Final Presentation

- Less than 10 minutes (~10-11 slides)
- One speaker
- Clearly labeled figures
- Content is similar to final report
- Follow guidelines in Lectures from Dr. Donnell
Suggested Contents

• Title Slide
• Problem Definition
• 2-3 main design tools (the most important to YOUR design process)
• Chosen Design (complete system)
• Chosen Design subsystems
• Alternative concepts
• Highest order evaluation matrix you used
• Results and Analysis
Remember Me’s

• Your studio instructor determines your grade
• Test your device and competition prep. thoroughly
• Start your report and presentation now
• Ask your TA and instructor for advice!
Questions?