Course Timeline

Week 1  Fabricating and testing
Week 2  Fabricating and testing
Week 3  Fabricating and testing
Week 4  Fabricating and testing
Week 5  Project completion Plan (ME only)  Final prototype 1 completed
# Course Timeline

<table>
<thead>
<tr>
<th>Week 6</th>
<th>Reworking prototype and testing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 7</td>
<td>Reworking prototype and testing</td>
</tr>
<tr>
<td>Week 8</td>
<td>Reworking prototype and testing</td>
</tr>
<tr>
<td>Week 9</td>
<td><strong>Project completion review</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Poster 1\text{st} Draft Due Tues 5pm</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Poster reviews Wed 12-3pm</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Poster Final Draft Due Fri 5pm</strong></td>
</tr>
<tr>
<td></td>
<td>Video Due Sunday</td>
</tr>
<tr>
<td>Week 10</td>
<td><strong>Presentation rehearsals Tues afternoon</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Design Fair/Showcase on Wed afternoon</strong></td>
</tr>
</tbody>
</table>
Project Completion Plan (ME only)

2 pages max

Testing plan
Revisit Specs (customer needs and engineering requirements)

Which did you list as the most important?
Did you hit those?
What tests have you done thus far?
What tests are you planning on doing to confirm your design hit the mark?
Do you know exactly where you will do the tests, have you scheduled time (if necessary)?

Remaining Fabrication
Challenges that risk the completion of your final prototype?

Gantt Chart for the remaining weeks
Don’t forget all other deliverables for the course on this chart

Don’t forget to list all items and who will be the lead on them (ie. Writing paper, starts week 7 and is led by Frank, completion by Tuesday of week 11)
Example: My project is to develop an electric vehicle

Critical needs identified by our customer were fast acceleration, a sleek design as defined by high marks on aesthetic appeal via focus groups and a quiet operation. Our product will compete with Tesla.

Benchmark – Tesla Model S
- 0-60 in 2.8 seconds
- 85% of the targeted 20-30s age group found it to be appealing
- During full throttle acceleration 62.5Db
Example: Tests and outstanding Fabrication

Proposed Tests:

Acceleration to be performed on the UCSB test track using electronic sensor in the speedometer to track the time to 60mph. Sensor will be provided by Kirk Fields. Test date: next week

A focus group made of 20 people in our targeted age group will be evaluating our car alone and against the Tesla Model S to determine appeal. Test date: tomorrow

During the acceleration test, a sound meter will be positioned on the headrest of the driver to determine decibels. This equipment provided by Kirk Fields. Test date: next week

Outstanding fabrication

The shift knob needs to be polished today and then fabrication is completed
<table>
<thead>
<tr>
<th>Task</th>
<th>Week 5</th>
<th>Week 6</th>
<th>Week 7</th>
<th>Week 8</th>
<th>Week 9</th>
<th>Week 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schedule final presentation</td>
<td>Bob</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Focus Groups</td>
<td>Sally runs two focus groups</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acceleration Tests</td>
<td>Frank, Joe collect supplies</td>
<td>Frank, Joe run tests</td>
<td>Frank, Joe make write up</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fabrication of knob</td>
<td>Eric polishes part</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Create Project presentation</td>
<td></td>
<td>Bob creates presentation</td>
<td>Revisions on Presentation</td>
<td>Project Completion review</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customer review</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Customer review</td>
<td></td>
</tr>
<tr>
<td>Final Design Packet</td>
<td>Sally and Bob write final packet</td>
<td>Sally and Bob - Edits on packet</td>
<td>Packet ready for presentation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Video</td>
<td></td>
<td>Eric begins video</td>
<td>Eric continues video</td>
<td>Eric continues video</td>
<td>Eric Finishes video by Sunday</td>
<td></td>
</tr>
<tr>
<td>Design Fair</td>
<td></td>
<td></td>
<td>Sally creates the poster</td>
<td>Sally makes poster revisions</td>
<td>Poster to Ekta Fair on Wednesday</td>
<td></td>
</tr>
</tbody>
</table>
Design Fair and Showcase

• 6/7 from 2-5pm at Corwin Pavilion
  • Design Fair (poster/demo session) 2-4pm
  • Design Showcase (TED style talks) 4-5pm
• Open to the public
• Lots of potential employers
• Dress to impress
Design Competition
Competition Information

- **Time/Date:** Wed, June 7th from 2-4pm (Arrive at 1pm for set-up, class photos)
- **Location:** Corwin Pavilion
- **Format:** Each team will have a booth with electrical power access, table, and their poster. You will have a dedicated time to showcase your project to the judges (25 minutes per interdisciplinary team, 12 minutes per ECE team, 8 minutes per ME team). If possible, you should work a demo of your product into what you present. If applicable, you may have supplementary props and/or a laptop with pictures, images, videos, but ABSOLUTELY NO SLIDES! Judges will likely interrupt you with questions, so be prepared to think on your feet!
- **Judging Criteria:**
  1. Quality of the engineering work and of the resulting final product.
  2. How well were the goals of the project achieved?
  3. Quality of presentation / demonstration.
Competition Information

- Projects will be judged by a panel of faculty and industry judges
- There will be three separate competitions, each with 1-3 awards:
  - Mechanical Engineering (3 awards)
    - Most Innovative Project
    - Most Marketable Project
    - Best Technical Project
  - Electrical and Computer Engineering (2 awards)
    - Most Innovative Project
    - Best Technical Project
  - Multidisciplinary Projects (1 award)
    - Best Multidisciplinary Project
Poster Information / Overview

▪ Size: 36” x 48” (ECE and Multidisciplinary), 30” x 40” (ME)
▪ Content: Refer to template and instructions. Note:
  ▪ You may use provided template or come up with your own design
  ▪ Must include (i) Team member names, (ii) Title, (iii) Your logo, (iv) Sponsor logo, (v) UCSB College of Engineering logo, and (vi) Acknowledgements
  ▪ Background color cannot be black
  ▪ Images must be at least 150dpi (preferably at least 300dpi)
▪ General Tips:
  ▪ Use a minimum of text (bullet point descriptions are encouraged)
  ▪ Make text large enough to be readable from a distance of 5 to 6 ft
  ▪ Use graphs, charts, photographs, and illustrations as much as possible
  ▪ Use graphics to communicate your points quickly and to demonstrate your work
  ▪ Ideal poster will serve both as a stand-alone poster and as a reference for your presentation
Insert project logo and tagline here

**Background**
Insert background info about your project, motivation, etc. Include a figure if applicable.

**Overview**
Insert brief description of product, problems that it solves, bullet points of key features, etc.

**System Block Diagram or Design Specs**
Insert block diagram or design spec

**Overview / Product Name**
Insert picture of final product

**Hardware / Key Components**
- **Label**
  - **Picture:** Key Comp #1
  - **Label**
    - **Picture:** Key Comp #2
  - **Label**
    - **Picture:** Key Comp #3

**Key Result #1 (e.g., thermal test, drop test, etc)**
Describe key result (consider bullet point list).

**Key Result #2 / References / Conclusion**
Insert figure

**Sponsor Logo**
Acknowledge everyone that helped you with your project (sponsors, mentors, instructors, TA’s, etc).

Acknowledgements:
Acknowledge everyone that helped you with your project (sponsors, mentors, instructors, TA’s, etc.).
Poster Deadlines / Submission / Printing

- Tues 5/30: Submit first draft by 5pm, share over Google Drive to capstone.ece188@gmail.com
- Wed 5/31: Poster reviews 12-3pm
- Sun 6/4: Submit final draft by 5pm, share over Google Drive as above.
- Mon 6/5: All posters will be printed. Contact Ekta Prashnani (ektaprashnani@gmail.com) with questions
- Tues 6/6: Practice sessions at Corwin Pavilion in the afternoon
Project Completion Review / Customer Review (Final Presentation)
Project Completion Review

Content:
Tell us about your design
What motivated the design
Don’t forget to include the design specifications which came from
   *Customer needs, Engineering Characteristics, competitive benchmarking*
Show us the test results, how does your product stack up to the competition?
Get into the details of how your product works
Utilize video, pictures, diagrams

Design: Spend a few weeks really preparing for this review. Take pride in your story and design. Think about how to sell it!
Leading up to the presentation

Have a backup plan and a backup to the backup plan
  Bring your own computer that you trust
  Bring a USB stick
  Have it on the cloud

Buy your very own clicker (trust me, you’ll have to make presentations in the future, they’re $10)
Pro Tips

Try not to organize presentations chronologically

This is amazingly common with students

Remember to tell a story but don’t make it a cliff hanger

Present the system first before getting into the nitty gritty

Talking about the design evolution is great and shows how much work you did but...

The audience grows tired of waiting...thinking, okay so what...what are we talking about
Example (what to try to avoid)

SLIDE 1
Customers needs show that the system needs to be:
1. Fun
2. Sturdy (handles loads of 300 lbs)
3. Easy to access (footprint less than 100 square inches)

SLIDE 20

SLIDE 5
1. Rope testing

Last slide
Customers needs show that the system needs to be:
1. Fun
2. Sturdy (handles loads of 300 lbs)
3. Easy to access (footprint less than 100 square inches)
Elevator pitches in presentations

You may use a visual display with the elevator pitch in a presentation format

If you’re telling a story, then, great, no slide
If you’re going to describe technical elements or the layout of the device, use a visual
Go commando!

No note cards, papers to read from
Leave it all on the floor!
Signup (ME only)

https://docs.google.com/spreadsheets/d/19EtB4KOFIBLR2FmZgvR9NOwZUBRNRr9-XqlJUchQA_M/edit#gid=0

Instructions:

Talk with advisor and sponsor

Determine if one time will work for both or if you need to travel

Block off time for travel and email us to let us know what you’re thinking

ESB IS NOT BOOKED YET! When you email us, we will try to book. I sent a link for ESB rooms. It’s a good idea to check if it is open
Video due Sunday June 4
Video specifics

To be shown in front of a crowd of 400-600 people
30 seconds max
Demonstrate your prototype working
Think of this as a commercial on television—sell us on your idea, why it’s important
Condensed elevator pitch
Design Package: Due during the final presentation
<table>
<thead>
<tr>
<th>Include in design package (Y/N)</th>
<th>Item</th>
<th>Responsible team member(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Documents</strong></td>
<td>Updated Project description and target specifications (from first quarter report)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Assembly drawing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sub-assembly drawings (list)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Detail drawings (list)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Plumbing schematic(s) (list if more than one)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>System and sub-system block diagram(s)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Operational flowchart(s)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Circuit schematic(s), wiring diagram(s)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bill of materials</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Budget</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Schedule for completing fabrication and testing in spring quarter</td>
<td></td>
</tr>
<tr>
<td><strong>Prototypes and testing</strong></td>
<td>Design questions that you have answered or plan to answer with prototype testing (list)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Describe the new prototypes that you built or plan to build this quarter</td>
<td></td>
</tr>
<tr>
<td><strong>Analysis and modeling</strong></td>
<td>Design questions that you have answered or plan to answer with modeling and analysis (list)</td>
<td></td>
</tr>
</tbody>
</table>
Modifications

Update all sections with any new information or findings
Update drawings to remove the fabrication plans / update them to most current
Grading

Quality of Packet

Quality of Engineering Analysis or testing
  That informed design
  That compared actual performance with target specs

Quality of the solution
  Fully explained and depicted with CAD images

Documentation
  Professional drawings with appropriate tolerances
Data Dump
Data Dump

ME: Box folder to be set up for your to dump all CAD files and everything else for the sponsor / future use

ECE: Google Drive

Multi: Both
## Summary of dates

<table>
<thead>
<tr>
<th>Day</th>
<th>Date</th>
<th>Event</th>
<th>Group(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friday</td>
<td>5-May</td>
<td>Project Completion plan - midnight</td>
<td>ME</td>
</tr>
<tr>
<td></td>
<td>5/22-6/2</td>
<td>Final Presentation</td>
<td>All</td>
</tr>
<tr>
<td></td>
<td>5/22-6/2</td>
<td>Design Packet</td>
<td>All</td>
</tr>
<tr>
<td>Tues</td>
<td>30-May</td>
<td>Poster First draft due - 5pm</td>
<td>All</td>
</tr>
<tr>
<td>Weds</td>
<td>31-May</td>
<td>Poster reviews - 12-3pm</td>
<td>All</td>
</tr>
<tr>
<td>Sunday</td>
<td>4-Jun</td>
<td>Submit final poster draft - 5pm</td>
<td>All</td>
</tr>
<tr>
<td>Sunday</td>
<td>4-Jun</td>
<td>Video submitted to Sean</td>
<td>All</td>
</tr>
<tr>
<td>Tues</td>
<td>6-Jun</td>
<td>Practice poster sessions at Corwin 1-5pm</td>
<td>All - optional</td>
</tr>
<tr>
<td>Tues</td>
<td>6-Jun</td>
<td>Practice Showcase session 2-4pm</td>
<td>Multidisciplinary</td>
</tr>
<tr>
<td>Weds</td>
<td>7-Jun</td>
<td>Design Fair and Showcase 2-5</td>
<td>All</td>
</tr>
<tr>
<td>Friday</td>
<td>9-Jun</td>
<td>Data Dump to Box Folder</td>
<td>All</td>
</tr>
<tr>
<td>Friday</td>
<td>9-Jun</td>
<td>Beach day - 1pm</td>
<td>All - optional</td>
</tr>
</tbody>
</table>