The final projects are based on a proposal submitted by the teams and approved by the instructor. The project should include a combination of design work and CAD methodology. Projects that are simply an investigation and tutorial on the use of an existing CAD tool are not appropriate.

- Proposals are due by October 13, to be emailed to the instructor.
- Specifications are due October 22, to be emailed to the instructor.
- Interim Progress Updates are due on November 4th, emailed to the instructor. We will discuss progress in class on November 5th.
- Final reports and uploads are due by the end of the day on December 4 (the week of our last class).
- Teams will also present their results in class during the last few class meetings.

Proposal Contents and Format

- A brief (paragraph or two) description of what your project will be.
- A list of your team members.

Specification Contents and Format

- A brief (paragraph or two) description of what your project will be. This may or may not be modified from your proposal.
- A list of specifications that you will target. This will vary substantially from one project to the next. For example, a memory would be specified by its size, arrangement (e.g. 2 kb arranged as 256 8b words), supply voltage range, power consumption, and read and write times. A CAD tool would be specified by its capabilities, options, etc.
- A timeline with your project broken into sub-tasks and the expected time to complete each sub-task. Spend some time on this.

Interim Progress Update

The interim progress update should be one to two slides. Include the following information:

- Your original timeline, taken from the previously submitted specification.
- Progress on the milestones.
- An updated timeline. If any expected completion dates for intermediate milestones has changed, that should be reflected here.
- Any changes in specifications or goals.
Report Contents and Format

Document your project in a report formatted in the IEEE journal style. Templates for both MS Word and LATEX are available on the class “Resources” web page. Figures should be included in the body of the document, not printed separately and stapled to the back. Ensure that figures are readable. Your report should thoroughly explain the motivation for your project, your design process, and the results. The items below represent key parts of the design, but do not constitute an exhaustive list of what your report should explain. The report should include the following sections:

**Introduction** Describe the purpose of the project, what you intended to accomplish, and inform the reader about the upcoming sections. Two to three paragraphs should be sufficient.

**Design and Analysis**
- Discuss your choice of topology.
- Describe and illustrate any algorithms you employed. A flow-chart or pseudo-code may be appropriate here.
- Describe your design calculations and how you arrived at initial estimates for critical design parameters.
- How did you optimize the performance? Discuss design tradeoffs.

**Results**
- Compare your work to existing published work.
- Include a table summarizing performance or capability. This table may also be part of the previous item.
- Any other plots or information you feel would be useful in demonstrating the performance of your oscillator.

**Discussion** What worked well? What worked poorly? Describe limitations of your project. In what contexts or applications would it be most or least useful? What would the next steps be?

**Conclusion** Briefly summarize your effort. What did you learn?

**References** If you used information from any papers, applications notes, or other textbooks, cite those works here. Unlike typical undergraduate classes, I want you to cite anything that you use, including the course textbook or web sites.

Upload Requirements

Upload the following items to a page on the wiki:
- Project report, in PDF plus some editable format (e.g. Word or zip of Latex files).
- Source code.
- Pointer to Cadence design files, stored on /research space. Contact the instructor if you do not have access to any /research space.
- Instructions on how to use any tools or methodology you have created.

The idea is that your project will be useful to others. So, for example, if you’ve designed a memory compiler, you should make available the code and any primitive cells (e.g. 6T cell, etc.) and provide instructions for using the tool.

**Grading**

The criteria and weights listed in Table 1 will be used in calculating project grades.
Table 1: Grading

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale/Difficulty</td>
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</tr>
<tr>
<td>Meeting Objectives</td>
<td>35%</td>
</tr>
<tr>
<td>Report</td>
<td>30%</td>
</tr>
<tr>
<td>Presentation</td>
<td>15%</td>
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