

Homework 3

*Instructor: Prabal Dutta**Due: Nov 6, 2012 – 10:40 AM***Background**

The goal of this homework assignment is to become familiar with the process of designing a printed circuit board using a commercial CAD package (called Eagle). This tool is installed on CAEN workstations and it is also available as a free download. In addition, the Michigan Embedded Systems Hub (MESH) offers tutorials regularly, so check the website for available lessons (<http://www.eecs.umich.edu/hub/lessons.html>). A Google calendar provides the schedule of classes (<http://www.eecs.umich.edu/hub/calendar.html>). An Eagle reference page is available as well (<http://www.eecs.umich.edu/hub/lessons/Reference.pdf>).

Part 1: Part Editor and Schematic Capture

This part covers two aspects of the Eagle CAD tools: component creation and schematic capture. Eagle's grid and text command set, selecting, moving and connecting components, and designing custom components are parts of this problem. This problem also provides a quick overview of voltage regulator topology, bypass capacitors in digital integrated circuits, and datasheet basics. Complete both parts 1 (**except** §8 Self Check) and 1a, following: <http://www.eecs.umich.edu/hub/lessons/lesson1.zip>.

Customize your schematic by placing some text of your own choosing on the schematic. This might include your name and uniqueness, class, date, revision, etc.

Part 2: Board Layout and CAM Files

This part covers two more aspects of the Eagle CAD tools: board layout and computer-aided manufacturing (CAM) file generation). Explore the physical aspects of layout including layers, routes and polygons, capacitive coupling, thermals, and gerber/drill file generation. Complete all parts of the following **except** §8 (on stencils): <http://www.eecs.umich.edu/hub/lessons/lesson2.zip>.

Customize your board by placing the following information on the **silkscreen layer**:

```
<Firstname> <Lastname>  
EECS 373 - HW3  
2012-<MM>-<DD>  
Rev A
```

Part 3: Submission

Make sure that the files you submit follow the naming convention specified in the Lesson files (e.g. Lesson1_UNIQUE_NAME).

- Submit the files you generated in Parts 1 and 2.
- Submit PDFs of the schematic and boards you generated in Parts 1 and 2.
- Submit all of these files via email to prabal@eecs.umich.edu and cioannou@umich.edu with the subject line: [EECS 373] Homework 3.