

EE 380
Intermediate EE Project Lab

Spring 2019
Randall/Mitchell

Web site: <http://csserver.evansville.edu/~mr63>

EE 380 is an open ended two credit hour EE projects lab in which students design and construct projects related to the required 300 level EE courses. These courses fall into 3 general categories: Electronics (EE 342/343), Digital Systems (EE 354/454), Linear Systems and controls (EE 310/311/360) for the EE's and COES may choose a project from small computer software (EE 356).

Each student in this class will complete two projects selected from two different areas of study plus a team project. Project suggestions will be posted to the website for each category.

In addition to the three open ended projects discussed above. Special topics days will be held during the semester. These special topics days will be required by all students enrolled in EE380.

Topics:

BJT Amplifiers
Signal Conditioning
BJT and MOS devices used as switches
Schematic Design Software
PCB Design Software

Team Project:

Teams will be made up of 4-5 students, each student will be assigned a significant portion of the project and is responsible for making sure that this portion of the project is complete. Example:

Joe	Project Manager/PCB Design/Population
John	Circuit Design, Testing
Jane	3D Modeling and Production
Steve	Documentation/Data Analysis

Teams will meet on a weekly basis with the instructor to verify that the project is moving toward completion. A Gantt chart should be created by the team in the first week of the project that will be used over the course of the project to monitor team progress.

Team members will not all necessarily receive the same grade. Individual project grades will be assessed based on the quality of the final project, Instructors feedback, and peer review.

Notebooks: Each student will keep a notebook, in which all design and construction activity will be recorded. Notebooks are available from the EE Department office. In addition to normal journal listing each student MUST keep a time card in his/her notebook recording all time that is spent on each project. The “Time Card” will be kept in the front 4 pages of the notebook and will consist of a table with date, project title, start time, stop time, and total number of hours. The time sheet should account for all time spent working on this class.

The project notebook will be a log of all activities related to the project. Each entry in the notebook should list the following:

1. Date and time of activity
2. A summary of results.
3. Special notes on what is to be done next.
4. Sketches of plans. These can be very informal hand sketches. Stick drawings are fine. Record enough information so that when you refer to it later you know what you meant. You may include "pasted in sketches". Some of these may be computer generated or come from class handouts.
5. Software listings. When you write software, print a listing and paste it in the notebook. Add handwritten comments as to what the software does and what it was for.
6. Project designs. See note on *Project Design* below.

Global awareness report: Each student will be expected to write a 1 to 2 page paper over a topic that will be given in class. The paper should look at the global, economic, environmental, and societal ramifications do to the topic given. The paper will be graded as pass fail, and students must complete the paper to receive a passing grade in the class. The paper should include a work cited page. Any plagiarism will result in a failing grade in the class. Your work is subject to “Turn It In” for this reason.

Project Design: Each project must have a complete design before construction of the project begins. For hardware projects, a typical design will consist of a complete schematic with all of the parts appropriately labeled. (You must also assure that all of the parts are available.) For software projects, a project design will consist of the pseudocode for the program. In most cases the project design will fit on a single page. In all cases, the project design must contain enough information and detail that it could be handed to another student in the class and that student could complete the project.

Breadboards, components, and tools: Each student is expected to have her own breadboard and tools. Components will be furnished by the stockroom. For special designs components will be ordered for students with appropriate lead time. Breadboards and tools may be purchased at local stores such as Hutch and Sons or Radio Shack or online at places such as JameCo or DigiKey. Some breadboards are available through the EE office. A typical breadboard suitable for this class should have 1,500 to 2,500 tie points and 3 or 4 binding post. (JameCo part number 136901 has 1,600 tie points and 4 binding post and is available from www.jameco.com for \$21.95.)

Project Verification: Each project will require verification from the Instructor (Mr. Mark Randall and Dr. Marc Mitchell) you will be required to not only show that your project works and meets project specifications, but must also be prepared to answer questions about your design. At the time of verification you must have a completed schematic or complete code listing available to the instructor. The instructor may ask questions about specific portions of the schematic/code and you should be ready to answer. Project Verification will be worth up to 80% of your grade for the project and will be assigned at completion of the Verification process. Projects are to be a student's own work, use of another students/persons design will be considered cheating.

Project Collaboration: Each student is expected to do her own work on each project. While students are encouraged to discuss projects with each other, all project design and construction must be done on an individual basis. Any student who provides design or construction assistance to another student will be considered to have violated the honor code. Information on construction parts availability, specifications sheets, and reference materials should be shared freely.

Cheating and plagiarism: Cheating and/or plagiarism will not be tolerated. If a student is caught/suspected of cheating and it is his/her first incident he/she will receive a failing grade for the work and a letter will be placed on file in the department office detailing the situation along with a copy of the work. If a student is caught/suspected of cheating a second time they will receive a failing grade for the class, additional documentation will be put on file in the department office, and a report will be filed with the Dean of Engineering and Dean of Students.

Project Documentation: An additional resource will be posted on the website detailing the final report specifications.

Grading: Each project will be graded according to the following point allocation:

Notebook	- 5 pts
Final Project Report	- 15 pts
Creativity	- 10pts
Project Verification	- 70 pts
Total points per project	- 100 pts

Team Project 40% of final grade
Projects 2 and 3 are worth 25% each
And Attendance at Special Project Sessions 10%

NOTE: All submitted projects MUST include a signed verification sheet to be graded. ALL PROJECTS MUST BE FINISHED IE. Working as described in the project description. To be awarded a passing grade for the project.

Each project will have a due date and a late date. Projects handed in by the due date will be graded on the scale outlined above. Projects handed in by the late date will be graded

on the scale above but 10 points will be deducted. **No project will be accepted after the late date.** Projects can be done in any order but the team project *may not* be the last project.

Due dates for the projects are as follows:

Class Meeting: This class has no formal lecture, class will meet on Tuesday at 8:00 am weekly in KC136. The instructor will be available for questions and technical help during this time. The instructor is also available for consultation during office hours.

Lab Procedure: Students may obtain a lab pass to work after hours in the project labs. Otherwise, the project labs will be open from 8:00am until 5:00pm. An instructor will be available at least 4 hours per week on a regularly scheduled basis in the lab for assistance. Students who need additional help on projects should make an appointment during regular office hours to see an instructor individually.