



## PHY 343 Electronics

### Course Description

The major aim is to give each student experience in the design and integration of circuits into electronic instrumentation. (Same as EGR 343).

### Course Corequisite

Digital Systems Laboratory (PHY 343L)

### Course Prerequisite

Electricity, Sound and Light (PHY 132) or Technical Physics II (PHY 242)

### Specific Course Requirements

### Textbook Requirements

See current semester textbook list at <http://www.physics.sfasu.edu/docs/books.pdf>

### Course Objectives:

Investigate numbering systems, Boolean Algebra, Karnaugh maps, the Quine-McClusky method, decoders, counters, flip-flops, and advanced digital networks. Students also gain experience in computer programming, interfacing, instrumentation control, and PIC programming.

### Student Learning Outcomes

By the end of the course, a successful student will be able to:

- Design and construct digital logic circuits using integrated circuit gates, decoders, counters, and flip-flops.
- Employ Karnaugh Maps and the Quine-McClusky method to solve complex logic problems.
- Develop code for Programmable Integrated Circuits (PIC Chips) and install these programs on chips.

### Course Content

The major aim will be to give each student experience design and integration of circuits into electronic instrumentation. This course covers numbering systems, Boolean Algebra, Karnaugh maps, the Quine-McClusky method, decoders, counters, flip-flops, and advanced digital networks. Students gain experience in computer programming, interfacing, instrumentation control, and PIC programming.

**Course Assessment**

The course assessment may use any or all of the following evaluation tools: exam scores, classroom participation, homework average, quizzes, and team projects. The lecture and laboratory grades are combined and the same grade will be recorded for both lecture and laboratory.