ECE 342 - Electronic Circuits

Instructors:

This course is taught by a couple different professors who are well-known in the field of electronic circuits. In recent semesters, Professors Rosenbaum, Shanbhag, Chiu and Schutt-Aine have taught the class.

Prerequisites:

The official prerequisite is ECE 210 (Analog Signal Processing). Many tools are carried over from ECE 210 to do the circuit analysis in this class, especially for AC small signals analysis.

When to Take It:

342 is offered every semester, and fulfills an electrical engineer's 3/5 curriculum requirement. It is also the gateway to a number of different circuits-related courses. This is a fundamental course for just about any area of electrical engineering since just about anything that an electrical engineer could possibly care about is made possible by circuits. This is also a good course to take early if you are interested in internships in hardware positions.

Class Content:

This course is a basic overview of all the common circuits that electrical engineers will commonly come across. The range of circuits covered in the class includes anything from a rectifier to a CMOS amplifier. Most of the course involves applications of BJTs and MOSFETs. Much of the course deals with the characterization of circuits using models such as the small signal and high-frequency model. Towards the end of the class, most of these concepts come together when analyzing different types of amplifiers. In the process, you will learn about how certain approximations can ultimately make the physics from 340 turn into electronic devices. This course is important for anyone interested in how modern electronics works, and comes with a medium-to-light work load. You need to understand the equations that model these circuits, but the work is more conceptually difficult than computationally difficult.

Work:

The course load for 342 is not too demanding. Homework is usually due weekly and can be decently challenging, but does not take too much of one's time. The first test is mostly review from previous classes, and is generally easier than the later tests.

Life After:

Students who have taken and enjoyed ECE 342 are open to wide range of choices from the different subspecialties of ECE. For this reason, it is wise and feasible to take this course early on. Follow-on courses include, ECE 453 (Wireless Communication Systems), ECE 482 (Digital IC Design) and ECE 483 (Analog IC Design) and ECE 464 (Power Electronics).