

Digital Electronics Syllabus

Course Description/Goals:

This course provides a foundation for students who are interested in electrical engineering, electronics, or circuit design. Students explore the foundations of computing by engaging in circuit design processes to create combinational logic and sequential logic (memory) as electrical engineers do in industry. This course is an elective course and is in addition to the four math credits required of STEM Academy students. It will not be included in the calculation of the weighted GPA.

Course TEKS/Objectives:

Digital Electronics is the study of electronic circuits that are used to process and control digital signals. In contrast to analog electronics, where information is represented by a continuously varying voltage, digital signals are represented by two discrete voltages or logic levels. This distinction allows for greater signal speed and storage capabilities and has revolutionized the world of electronics. Digital electronics is the foundation of modern electronic devices such as cellular phones, digital audio players, laptop computers, digital cameras, and high-definition televisions. The primary focus of Digital Electronics is to expose students to the design process of combinational and sequential logic design, teamwork, communication methods, engineering standards, and technical documentation.

<https://tea.texas.gov/about-tea/laws-and-rules/sboe-rules-tac/sboe-tac-currently-in-effect/ch130o.pdf>

Course Outline:

Semester 1	Semester 2
<ul style="list-style-type: none">- Electronics Foundations- Introduction to Circuit Design- AOI Combinational Logic Circuit Design- Alternative Design: Universal Gates and K- Mapping	<ul style="list-style-type: none">- Sequential Logic Circuit Design- Asynchronous Counters- Synchronous Counters- Introduction to State Machines- Application of State Machines

- Introduction to Programmable Logic	
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