

# Electrical Engineering Syllabus

## Geek Cred at HEC 25/26

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**Objective:** *To develop a well-rounded understanding of the nature of electricity and magnetism, electrical components, circuitry, and basic schematics.*

**Note:** *The following is a detailed outline of the complete course. Activities are subject to change based on the needs of individual classes. E.g. Some classes will struggle with a subject, so we will take an extra week to achieve mastery.*

### **FALL SEMESTER**

Week 1 (Aug 25-29) - What is electricity? *Demonstration of projects. Safety. Will it conduct?*

Week 2 (Sep 1-5) - What is a Magnet? *Metals, electromagnets, generators*

Week 3 (Sep 8-12) - Make an electromagnet

Week 4 (Sep 15-19) - Circuit Journals

Week 5 (Sep 22-26) - Circuit Journals

Week 6 (Sep 29-Oct 3) - Circuit Journals

Week 7 (Oct 6-10) - Circuit Journals

*Fall Break Oct 13-17*

Week 8 (Oct 20-24) -LED Spiders; Introduction to Snap Circuits

Week 9 (Oct 27-31) - Soldering (taking turns); Snap Circuits

Week 10 (Nov 3-7) - Soldering (taking turns); Snap Circuits

Week 11 (Nov 10-14) - Soldering (taking turns); Snap Circuits

Week 12 (Nov 17-21) - Soldering (taking turns); Snap Circuits

*Thanksgiving Break Nov 24-28*

Week 3 (Dec 1-5) - Breadboards - Simple and Parallel Circuits

Week 14 (Dec 8-12) - Breadboards - Series Circuit, Parallel Circuit Challenge

Week 15 (Dec 15-19) - Breadboards - Switch Circuit

### **SPRING SEMESTER**

Week 1 (Jan 12-16) - Review and Experiments: Make a battery

Week 2 (Jan 19-21) - Review and Experiments: Electromagnetic spectrum

Week 3 (Jan 26-30) - Advanced Circuit Journals

Week 4 (Feb 2-6) - Advanced Circuit Journals

Week 5 (Feb 9-13) - Advanced Circuit Journals

*Winter Break Feb 16-20*

Week 6 (Feb 23-27) - LED Throwies; Introduction to Snap Circuits

Week 7 (Mar 2-6) - Soldering (taking turns); Snap Circuits

Week 8 (Mar 9-13) - Soldering (taking turns); Snap Circuits

Week 9 (Mar 16-20) - Soldering (taking turns); Snap Circuits

Week 10 (Mar 23-27) - Soldering (taking turns); Snap Circuits

*Spring Break Mar 30-Apr 10*

Week 11 (Apr 13-17) - Breadboards Review

Week 12 (Apr 20-24) - Advanced Breadboards

Week 3 (Apr 27-May1) - Advanced Breadboards

Week 14 (May 4-8) - Arduino traffic light

Week 15 (May 11-15) - Arduino traffic light

Week 16 (May 18-22) - Arduino traffic light