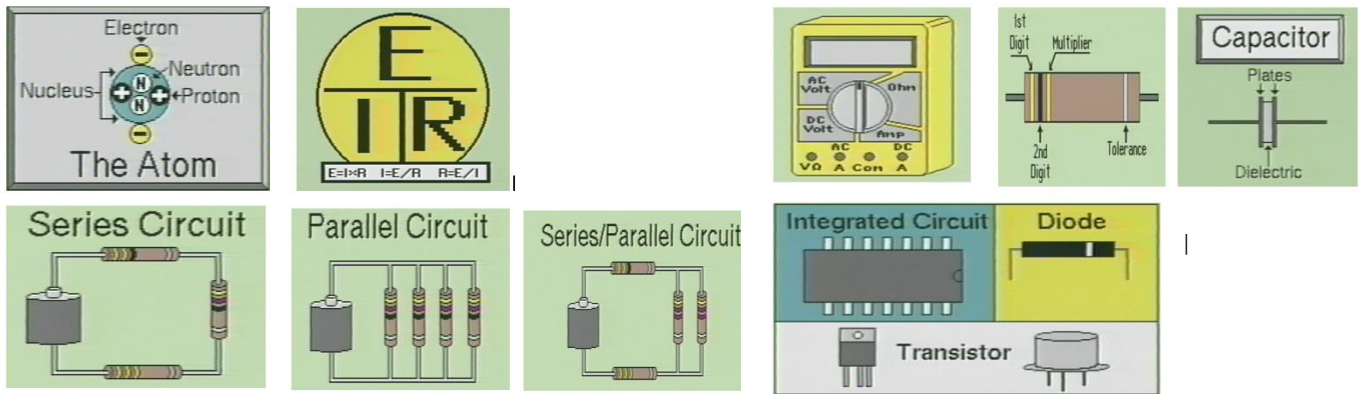


Electricity Syllabus



- Relationship Building (Student Information, Expectations, All About Me)
- Safety
- The Electron, Atom Structure, Conductors, Insulators
- Electrical Quantities and Units, Unit Conversions, Scientific and Engineering Notation
- Voltage, Amperes, and Resistance
- Ohm's Law
- Kirchhoff's Laws
- Power
- Circuit Components (Diodes, Capacitors, Transistors, LEDs)
- Basic Circuits
- Complex Circuits Analysis (Series, Parallel, and Series Parallel)
- Magnetism
- Soldering concepts
- Instruments and Measurements, Digital Multimeter
- Integrated Circuits – Digital Electronics
- Reading and Writing
- Presentations
- Inquiry Research
- History
- STEM (Science, Technology, Engineering, and Math)
- Collaboration
- Projects
- Team Work

Electricity - Course Outline

Course Topics
Safety
Scientific Notation & Engineering Notation
Algebra
Introduction to Basic Electricity
Digital Volt Meter (DVM)
Soldering
Schematics
Prototyping with Bread Boards
Resistors
Ohm's Law
Power
Power Grid Simulation
Capacitors
R-C Circuits
Diodes
Inductors & Electromagnetism
R-L and R-L-C Circuits
Transistors
Integrated Circuits
Electronic Sounds
Solar Power
Residential Electricity
Projects (Optional) <ul style="list-style-type: none"> Tron.ix 1 (Exploratory Program for Basic Electronics) Tron.ix 2 (Basic Digital Concepts) ~ Digital Electronics - Integrated Circuits AOI Combinational Logic; Combinational Logic; Sequential Logic Traffic Light Control Digital Clock Rocket Launch Control Calculator Arduino Microprocessor (How does a Computer work) Robots

Course Expectations

Students will demonstrate:

- An ability to apply knowledge of Mathematics, Science, and Engineering
- An ability to design and conduct experiments, as well as to analyze and interpret data
- An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- An ability to function on multi-disciplinary teams
- An ability to identify, formulate, and solve Engineering problems
- An understanding of professional and ethical responsibility
- An ability to communicate effectively
- The broad education necessary to understand the impact of Engineering solutions in a global, economic, environmental, and societal context
- A recognition of the need for, and an ability to engage in life-long learning
- A knowledge of contemporary issues
- An ability to use the techniques, skills, and modern Engineering tools necessary for Engineering practice

Students will read at least 100 pages of technical material

Sample Course Activities/Projects/Problems/Assessments

- Analysis of Electronic Circuit Components
- Application of Algebraic concepts to circuitry
- Creating Electronic Circuits using Schematic Diagrams and Soldering
- Designing and Testing Electronic Circuits on a Prototype Bread Board
- Team and Individual Electronic Circuits Projects
- Presentations

Lesson Protocol

- Opening Do Now Activity: Anticipatory Activity or Review of previous learning
- Teacher Input/Q&A
 - Check for understanding
- Teacher Models Steps/Processes
 - Check for understanding
- Guided Practice: Students apply Steps/Processes with guidance
 - Check for understanding
- Independent Practice: Students work in teams or independently to complete material
- Closing Activity: Summarize learning and final check for understanding

Grading/Assessment Criteria

Category	% of Grade
Assessment	
Activities, Projects, Problems	50%
Journal, Presentations	10%
Exams / Homework Enrichment	20%
Classwork (Participation, Behavior, Effort, Collaboration)	20%
Total	100%
Note/Late Assignment Policy	
<ul style="list-style-type: none"> ➤ <i>Grading Rubrics will be provided.</i> ➤ <i>Assignments must be presented to the instructor for grading.</i> ➤ <i>Assignments not submitted will be recorded as "ZERO".</i> ➤ <i>One point from earned grade will be deducted each day that an assignment is submitted late.</i> 	

Grading System

Letter Grade	Percentage	Adjustment TBA
A	90-100	
B	80-89	
C	70-79	
D	60-69	
F	0-59	

Class Policies

Behavioral Standards/Expectations

Students are expected to be punctual for class and ready for work.

Students are expected to follow class rules as well as school rules, which are implemented in the classroom.

Attendance

Tardy to Class

The Parents/Guardians of students who are habitually tardy will receive a telephone call after the third time student is tardy. Students are required to make up work missed due to being tardy.

Missed Exams/Assignments due to excused absences

Students who will be away from school for any period of time must inform me so that I can prepare assignments that the student can complete during time away from school.

There is no credit for missed assignments if students have been found to be cutting class. The assignments will be required to be completed and will be corrected; however, should the student want credit for these assignments she/he will be required to complete additional work.

Students will be allowed to make up work due to excused absences.

