Electronics I

Course Syllabus

Teacher:
Mr. Joseph Bachman
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Room: 309

Years Offered: Sophomore, Junior, and Senior

Text: *Electricity & Electronics*
Author: Gerrish, Dugger, Roberts
Publisher: Goodheart-Willcox Company, Inc.
Edition: 10th

Course Description:
This course is a foundation for entering careers, hobbies, and everyday participation in a culture grounded in electronics. As students engage in this course, they will learn the basic theories and principles that are fundamental to electronics through the development of exciting class projects. Methods for accomplishing this will include the building of circuits through breadboarding, soldering, reading a digital multimeter, and utilizing electrical design software. Students will build engaging projects such as a light detector, a clap-on/clap-off circuit, scrolling LED’s, and a light sensing robot. Students will also be given the opportunity to program a microprocessor towards a given task.

Supplies Needed:
1. Folder with Pockets
2. Lined Paper
3. #2 Pencil
4. Scientific Calculator (Optional)

Grading:
Student grades will be attained via a point based system where all points are weighted equally.

Grading Scale:
A- Excellent 92-100%
B- Good 83-91%
C- Average 74-82%
D- Poor 65-73%
F- Below
   Passing 0-64%

Suggestions for Success:
Many great outcomes will come out of this course as you exhibit a positive outlook, good attendance, hard work, and work well with others.
Class Expectations:
- Observe all policies outlined in the MTHS school handbook.
- Exhibit a good attitude, good attendance, and work hard.
- Encourage success by being prepared for class each day with proper materials and rest.
  The class should have a dedicated class folder, paper, pencil, & current projects out at the start of class to be considered on time.
- Late grades will be taken for work that is not turned in on time.
- No food or drink is allowed at the computer work stations.
- Maintain a clean and organized working environment.
- Personal digital devices are not allowed during instructional time unless approved for a class project.
- Computer use at MTHS is a privilege not a right and students should not be on the internet without permission. Passing periods should be used for checking skyward or email.

Course Outline:

Course Lecture Topics:
1. Electrical Safety
2. Electrical Component Identification
3. Introduction to Voltage, Current, Resistance, & Schematic Symbols
4. Resistor ID
5. Ohms Law
6. Series & Parallel Circuits
7. Measuring E, I, & R with a Digital Multimeter’
8. Breadboarding
9. Introduction to Alternating Current
10. Transistor Theory
11. Analog vs. Digital Waves
12. Magnetism
13. DC Motor Theory

Course Labs:
1. Soldering Practice
2. Basic Dimmer Circuit
3. Off Road Motor Circuit Design Challenge
4. Light Detector Circuit
5. Motor Design Challenge
6. 555 Timer Circuits
7. Multimeter Labs
8. Burglar Alarm Circuit
9. Microprocessor Programing Labs
10. Scrolling LED’s with a Microprocessor
11. Clap-on/ Clap-off Circuit