

Robotics

Union County Magnet High School | Ms. Gerstein | Technology Elective

About the Course

The robotics elective will introduce basic electronics and circuit design to students as part of a method for programming a small robot to move autonomously within a confined area. By learning to program a robot to read and respond to sensor values, students will be able to customize their robot's behaviors. The experience of working with the robot will increase students' understanding of how industry is incorporating robotics in every aspect of our world and allow the students to participate in a field of growing importance.

Course Goals and Objectives

Students will be able to:

1. Name, identify, and describe the functions of and diagram how to use electronic devices in a circuit
2. Use a wireless breadboard to assemble circuits to get power from and interact with the robot's microcontroller.
3. Use the microcontroller's features while assessing how to use them to accomplish assigned tasks
4. Control a robot with code using proper syntax and logic
5. Confront problems requiring complex robot maneuvers. After analysis, brainstorm to invent solutions and evaluate the impact of cost, time, and achievability for each. Design a proposal and produce drawings for how to build the best prototype that solves the problem.
6. Prepare and practice with classroom robots in competitions.

Course Materials

All work for this course can be performed on the school-issued Chromebooks. Students without a Chromebook will be able to borrow a laptop to work with. If students wish to install the software to work on other computers, setup guides can be provided. All work can be completed with free software. We will be using Codebender and Google Docs for classwork.

Classroom Guidelines

- Adhere to all MHS rules and policies
- Respect your classmates' opinions and contributions
- Take responsibility for your actions in and out of class
- Obtain all missed notes and assignments if you have been absent - this is your responsibility.
- Turn in all required work on time and in a professional manner
- Participate appropriately in class - contribute to discussions and activities and behave professionally
- If you need to use the restroom or get water, please sign the sign out sheet and take a bathroom pass. If the bathroom pass is not available, please wait until it is returned. Sign back in when you return. If you need to leave the room for other reasons, please ask permission and remember to sign out and sign back in.
- If you enter the room late, please enter quietly and give Ms. Gerstein your late pass before sitting down.
- You will be expected to behave professionally and will be treated accordingly. Seating will not be assigned unless necessary. As long as you are staying focused, you may talk with others near you and listen to music while doing independent work. This does not apply during class discussions, quizzes, or lectures.
- If you need assistance or have conflicts with other assignments, it is your responsibility to seek help in a timely manner. Do not wait until the day before a major project is due to ask for help with it.
- Please bring your Chromebook to class each day. You will need a computer to do your coursework.

General Grading Policy

Grading will be based on a mix of participation, classwork, quizzes, and projects. Rubrics will be given for major assignments. Grading is done using total points.

Assignment Submission

All assignments are to be submitted in the required format no later than the required date and time. Late submissions will be subject to a penalty of 10% of the total grade for each day they are late. In order to communicate effectively, proper spelling and grammar are required.

Acknowledgement

By signing this, I agree that I have read and understand the course description, classroom guidelines, and grading policy and will abide by these rules.

Student Name _____

Student Signature _____ Date: _____

Parent/Guardian Signature _____ Date: _____