

UCMHS | Ms. Gerstein | Robotics 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:

- Name, identify, and describe the functions of and diagram how to use electronic devices in a circuit
- Use a wireless breadboard to assemble circuits to get power from and interact with the robot's microcontroller.
- Use the microcontroller's features while assessing how to use them to accomplish assigned tasks
- Control a robot with code using proper syntax and logic
- 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.
- Prepare and practice with classroom robots in competitions.

Course Materials

Each day, you will need to bring your Chromebook as well as paper and something to write with. You may take notes however you prefer, as long as you are prepared to do so each day.

To help you track assignments and due dates, assignments will be posted in Google Classroom. Slides and resources will be linked in Google Classroom for your convenience.

I will be posting optional practice exercises as needed.

Classroom Procedures and Expectations

Always obey Rule 0: Don't make me make new rules

Additionally:

- Follow 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 - I will help, but it is *your* responsibility to seek out the information you missed
- 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 use the sign in/out sheet and take the bathroom pass. If the pass is not available, please wait until it is returned. If it's an emergency, let me know. If you

need to leave the room for other reasons, please ask permission and remember to sign out/in.

- If you enter the room late, please enter quietly and give me 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. You may talk quietly or listen to music while doing independent work, as long as it doesn't keep you from doing your work. This does not apply when you are not doing independent work.
- 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.
- Please bring your Chromebook to class each day. You will need a computer to do your coursework, and not having it will affect your participation grade.

Grading Policy

- Grading is based on total points
- You will have a Career Readiness and Preparedness grade for each day you are in class, based on behaving in a way that is professional and appropriate for college courses and the workplace.
- Additional points will come from larger classwork assignments, projects, and quizzes
- Rubrics will be provided for major assignments

Assignment types:

- Exercises: short, simple tasks to practice or review a single topic
- Classwork: more open-ended tasks to build on what I've covered and demonstrate competency in a skill. Not intended to last more than one class period
- Project: Larger challenges with significant room to choose what you want to do. These will require you to combine a variety of skills and potentially use reference materials to try something new
- Quiz: Check understanding of material. Primarily used for vocabulary and basic concepts

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.