

Troy High School Course Profile

Course Title: MECHATRONICS - HONORS (Year: 10-12)

Course Prerequisite: Refer To Registration Presentation

Description:

Mechatronics - H is an introductory course using the Parallax Boe-Bot and associated hardware. Relationships between the field of mathematics, science (physics and electrical circuits), mechanical design, and technology will be explored. The goal of this course is to get students interested in pursuing a field of study in STEM upon graduating from high school. The class is designed to introduce students to basic concepts, or advanced, depending upon their levels of expertise, in robotics, electrical engineering, and mechanical engineering. The class will give students the opportunity to work individually and in groups while completing lab projects. In these labs, students will work on building and testing a Parallax mobile robot (Boe-Bot). The labs will also involve the design of mechanical and electrical systems that will be integrated onto their robots. The students will write programs using the P-Basic programming language and then download them into the robot's on-board microcontroller. These programs will allow the robot to move autonomously while making decisions using the on-board mechanical (servo motors and mechanical components) and electrical systems (external sensors wired into electrical circuits). In short, this class will provide the students with an understanding of how mechanical, electrical, and software systems work together to solve problems.

Prior Skills Needed:

- No prior computer programming necessary, although it really helps.
- Good reading and writing skills.
- Good math and logical reasoning skills.
- Ability to work with other students.
- You should enjoy solving problems, and be willing to troubleshoot and test hardware/software until a solution is found...if you don't like these things you will definitely NOT like this class.

Workload Expected:

- Homework is periodic, not regular.
- Outside of class studying for quizzes and tests.
- Labs are all completed in the classroom.