Mustang Central PLTW

Automation and Robotics

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Course description

Automation and Robotics: This unit begins with students learning how to create and use an engineering notebook, which will be used throughout the PLTW course. They will learn about engineering and the STEM courses (science, technology, engineering, and math).The Students will trace the history, development, and influence of automation and robotics. They learn about mechanical systems, energy transfer, machine automation and computer control systems. Students use a robust robotics platform to design, build, and program a solution to solve an existing problem.

Course objectives

Enrich Leadership abilities
Provide Opportunities for growth in STEM
Encourage All Student Success via Competition
Develop Self Evaluating Students

Pre Requirements are Helpful not Necessary

Design and Modeling
Upper Math
Beginners Programing RobotC

Classroom Expectations

Students are expected to participate in all curriculum activities, including collaborative group projects for problem-based learning. Students are to be prepared for class, which includes class supplies. Behavior rules are posted in the classroom handbooks (Please see the 7 th and 8th grade Class Handbook)

Materials Needed

Journal / Composition Book

Grading Scale:

While participation is mandatory, journals and peer reviews are included

94-100 A
90-93 A-
87-89 B+
84-86 B
80-83 B-
77-79 C+
74-76 C
70-73 C-
<70 D

Week 1

- An introduction to Syllabus
- Class materials review
- Logging in and Roster

Week 2

- What is Automation and Robotics?
- Students will investigate & understand various mechanisms.
- Summarize ways that robots are used in today's world.
- Investigate a career related to automation and robotics.

Week 3

- Students will apply their knowledge of mechanisms to solve a unique problem.
- Students will design, build, wire, and program both open and closed loop systems.
- Students will use motors and sensors appropriately to solve robotic problems.

Week 4

- Students will troubleshoot a malfunctioning system using a methodical approach.
- Experience the responsibility of a mechanical, electrical and computer engineer through completion of robotic problems.

Extra Notes: *These week are as Time Permits. Each class accomplishments vary the length of each challenge.*

Week 5-9

- Windmill Construction
- Survival Challenge
- Pull Toy Construction
- Automation Through Programming
- Simulated Factory Assembly Line
- Competitive Challenge