



SCHOOL DISTRICT OF MONROE

Preparing for the Future, One Child at a Time

Technology Education - Automation and Robotics

Course Description:

The curriculum for this elective course is developed from the [Wisconsin Standards for Technology and Engineering](#). Students will be exposed to and practice skills related to: measurement, safety, engineering, problem solving, gear ratios, mechanisms, VEX building, and RobotC programming. Students will learn to solve problems, conduct research, analyze data, work in teams, and take responsibility for their work, actions, and learning. Grades are determined by quizzes, tests, projects and daily work. The information in this course overview outlines what students should understand and be able to do by the end of the semester.

Mastery Standards:

Students will think and work creatively to develop innovative solutions to problems and opportunities. (4C1)

Students will communicate and collaborate with others to accomplish tasks and develop solutions to problems and opportunities. (4C3)

Apply measurement systems in the planning and layout process. (AC1.b)

Develop effective resolutions for a given problem, decision or opportunity using available information. (AC2.a)

Students will analyze the core concepts of technology. (BB1)

Analyze and demonstrate the attributes of design. (ENG1)

Unit	Description of Unit and Learning Targets
<p>Unit Title: Vocabulary</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> How does understanding the meaning of words help students comprehend what they are doing? 	<p>Students will.....</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> Work creatively with others to develop solutions and products. Work collaboratively with others. Determine the meaning of words as they are used in a text, including technical meanings.
<p>Unit Title: Measurement</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> How do you choose the correct measuring device and measure parts accurately? 	<p>Students will...</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> Work creatively with others to develop solutions and products. Work collaboratively with others. Read a tape measure/ruler to 1/16" properly. Simplify fractions. Add and subtract fractions.
<p>Unit Title: Engineering Notebook</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> What is the engineering design process? What do engineers do to clearly document & communicate their work? 	<p>Students will...</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> Work creatively with others to develop solutions and products. Work collaboratively with others. Organize their notebooks with the following information: table of content, notes from lessons, sketches for projects, and vocabulary.
<p>Unit Title: Mechanisms</p>	<p>Students will...</p>

<p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> • How can I design my robot to accomplish the tasks successfully? • How can I alter my robot to better meet the needs of my challenge? 	<p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> • Work creatively with others to develop solutions and products. • Work collaboratively with others. • Use gear ratios to solve real-life problems. • Use the characteristics of mechanisms to use the best one in specific situations.
<p>Unit Title: Computerization of Mechanisms</p> <p><u>Essential Questions:</u></p> <ul style="list-style-type: none"> • How do you program a robot to complete basic tasks? • How do sensors make completing tasks more precise? 	<p>Students will...</p> <p><u>Learning Targets:</u></p> <ul style="list-style-type: none"> • Work creatively with others to develop solutions and products. • Work collaboratively with others. • Design, build, wire and program simple programs using motors and sensors. • Troubleshoot a malfunctioning system. • Describe the purpose of pseudocode within a computer program.