

Robotic Engineering

Students will break into teams and design, manufacture, test and evaluate underwater ROV's (remotely operated vehicles).

Introduction to the Engineering Design Process

- Identify the problem
- Research the need or problem
- Develop possible solutions
- Select the best possible solution
- Construct a prototype
- Test and evaluate the solution
- Communicate the solution
- Re-design

Students will create a poster explaining how they used the design process to solve a problem at home.

Learning modules- Students will break into teams and complete a learning module and document the results using a lab report format. Topics include thrust, parabolic flight, buoyancy, electric motors, electric circuits, speed, 3d shapes, and vectors.

Build – Students will work in teams to construct and test a working ROV. Students will utilize the design process to modify the ROV to solve a specific underwater challenge(s).

Student teams will compete in underwater challenge.

Students will document all steps of the design process using an engineering design notebook.

Students will create a poster and present their results to the class.

Students can be evaluated on the following:

Vehicle performance - maneuvering and object recovery

ROV design and modification

Team presentations

Design Notebooks - document planning, design, construction, testing, and learning

STEM concepts

Team cooperation

Adherence to safety

Matt Suarez

7th Grade Overview

Manufacturing Process and Product Design

Students will use a variety of materials to produce a wood bank

Topics:

- Measuring
- Tool safety
- Engineering Design Process
- Manufacturing Process
- Introduction of the problem or need (a problem or need is a statement that describes what the project will be)
- Research the problem or need
- Develop possible solutions
- Select the best solution
- Construct a prototype
- Test and evaluate
- Communicate the solution
- Redesign
- Set up the manufacturing process
- Manufacture a product for the entire class

Example of Problem/Need: Wal-Mart is looking for a unique product that will hold coins and is pleasing to look at.