



Southmoreland School District Robotics/NXT Curriculum Overview

Robotics/NXT Overview:

This course will provide students an introduction to robotics used in industry. Students will apply this content by developing program solutions to challenges in the robotics field. Students in this course will use autonomous and remote controlled robots to develop solutions using a variety of sensors and applications. The programming platform is introductory and graphic based versus scripted coding.

Module Titles:

Module 1: Introduction to Robotics

Module 2: Robotic Fundamentals

Module 3: Robotic Programming

Module 4: Robotic Sensors & Programming Logic

Module Overviews:

Module 1: Introduction to Robotics

Students explore various robotic applications within this booming and exponentially growing industry. With an introduction to the engineering design process, students discuss various historic eras and the evolution of these various applications. Students also discuss career opportunities within the field.

Module 2: Robotic Fundamentals

Students identify the various parts of the robot including the microprocessor, actuators, manipulators, and power supply. Subsequently, these translate into simple robotic behaviors and pseudocode that will aid in the programming process helping the robot navigate through a variety of challenges.

Module 3: Robotic Programming

Students translate developed pseudocode into actual robotic code. A graphic based programming language is utilized while following the design process, making several refinements to improve code throughout the challenges. Students will work on perfecting turns, motor speeds and timing to navigate a series of labyrinth challenges.

Module 4: Robotic Sensors & Programming Logic

Students understand the various sensors that are included on automated devices, including sound, ultrasonic, touch, and light. A series of codes is implemented, including loops and “if/else commands” depending on data collected from each sensor. Robotic decisions are made based on that live data.