

<p>Course: Engineering Level 1: Engineering Design #86005500 Level 2: Engineering Principles #86005200 Level 3: Computer Integrated Manufacturing #86005600</p>	
<p>Credit for Graduation: 1.0 Credit - Meets Performing Arts or Practical Arts Requirement</p>	
<p>Pre-requisite: Recommend strong interest in fields of Computer Science/Engineering.</p>	
<p>Description: This course provides students with content and skills essential to the design and operation of robotics including: electronics, sensors, engineering principles, physics, actuators, programming, simulation and modeling, and critical thinking skills.</p> <p>The first semester we focus on the Engineering Design process using CAD software Autodesk Inventor to design 3D components. The goal is to earn an Industry Certification for their transcript.</p> <p>The second semester we work on programming and building robots to act as autonomous cars. They must navigate mazes, not run into other vehicles, and reach their intended destination.</p> <p>Students in their 2nd year compete in the VEX robotics competition (vex.com). They work in teams of 3-5 students to design and build a robot for the specific years challenge. They must use CAD to design their robot, document their process in an engineering notebook and program the robot using C++.</p>	<p>Expectations:</p> <ul style="list-style-type: none"> • Become certified in 3D CAD software using Autodesk Inventor • Learn a programming language <ul style="list-style-type: none"> ○ 1st year: JavaScript ○ 2nd year: C++ ○ 3rd year: Python • Design and build a functioning part for a school project or effectively use project laser cutter or 3D printer • Participate in a robotic competition <ul style="list-style-type: none"> ○ Keep an engineering notebook ○ Follow the engineering design process. ○ Design, manufacture, and program a robot to compete • Work as a team to solve challenges.
<p>Resources/Materials: CAD Autodesk Inventor, VEX robotics, Lego EV3, 3D printing and laser cutting</p> <p>Website: https://www.leonschools.net/Page/23471</p>	