



## ***Manufacturing / Engineering / Robotics Pathway***

***Central Ohio jobs have changed dramatically over the last 30 years. So have the skills needed in a more technological workplace. And for those with the interest and talent to bring technology and brainpower together, advanced manufacturing, engineering and robotics may be good career choices.***

Gahanna-Jefferson's Manufacturing/Engineering/Robotics pathway is designed with both the needs of students and the needs of our economy in mind. As part of an exciting new regional initiative called Innovation Generation, it gives students a chance to explore their interests and apply their knowledge in hands-on experiences while still in high school.

Starting in fall of 2015, The MIT Mobile Fab Lab will let Gahanna-Jefferson students explore their technical interests and use high-tech equipment

such as 3-D printers and laser cutters – the same machines used by central Ohio's advanced manufacturing companies such as Honda, Worthington Industries, Owens Corning and Whirlpool Corporation – all without ever leaving their school.

Students will also have access to courses that provide them with opportunities for open-ended problem solving and application of the engineering design process.

### ***What's in it for me?***

The Innovation Generation pathways, including Manufacturing/Engineering/Robotics, give students both classroom and hands-on experiences that help prepare them for college or a job after high school.

### ***Advanced manufacturing, engineering and robotics jobs pay well. For example:***

Manufacturing engineer,  
median annual pay: \$99,000  
Environmental engineer,  
median starting pay: \$51,700

# **Gahanna-Jefferson Courses**

## **Middle School**

Throughout middle school, students will have an opportunity to explore manufacturing, engineering and robotics through courses designed by the nationally renowned Project Lead the Way program. In addition to building foundational academic and personal skills in students, these early experiences also allow students and families to gain exposure to high school subjects that could be helpful in making career choices. In high school, courses become more specific to the skills needed for a career.

Gahanna-Jefferson's Manufacturing/Engineering/Robotics Pathway starts in middle school, where students can take the following courses:

### **7th Grade – Design and Modeling**

Students apply the design process to solve problems and understand the impact of creativity and innovation on their personal lives. Students learn how to work in teams to design a playground and furniture using Autocad design software.

### **8th Grade – Automation and Robotics**

Students learn about mechanical systems, energy transfer, machine automation, and computer control systems. The VEX Robotics platform is used to design, build and program real-world objects.

## **High School**

In high school, students engage in open-ended problem solving, learn and apply the engineering design process, and use the same industry-leading technology and software used in the world's top companies. Students investigate topics such as aerodynamics and astronautics, biological engineering and sustainability, and digital electronics and circuit design, which give them an opportunity to learn about different engineering disciplines before beginning post-secondary education or careers.

### **Intro. to Engineering**

Students apply the design process to solve problems and understand the impact of creativity and innovation on their personal lives. Students learn how to work in teams to design a playground and furniture using Autocad design software.

### **Principles of Engineering**

Through problems that engage and challenge, students explore a broad range of engineering topics including mechanisms, the strength of structures and materials, and automation. Students develop skills in problem solving, research, and design while learning strategies for design process documentation, collaboration, and presentation..

### **Computer Integrated Manufacturing**

Manufactured items are part of everyday life, yet most students have not been introduced to the high-tech, innovative nature of modern manufacturing. This course illuminates the opportunities related to understanding manufacturing. At the same time, it teaches students about manufacturing processes, product design, robotics, and automation. Students can earn a virtual manufacturing badge recognized by the national Manufacturing Badge system

### **Engineering Design and Development**

The knowledge and skills students acquire throughout the Engineering program come together in EDD as they identify an issue and then research, design, and test a solution, ultimately presenting their solution to a panel of engineers. Students apply the professional skills they have developed to document a design process to standards, completing EDD ready to take on any post-secondary program or career.