# Robotics Pathway

KLEIN ISD PROMISE2PURPOSE | CTE Career & Technical Education

## BUSINESS & INDUSTRY ENDORSEMENT

| Recommended | Required Level 1 | Level 2 | Level 3 | Level 4 |
|---|---|---|---|---|
| Gateway to STEM | Principles of Applied Engineering | Robotics I | Robotics II | Practicum in Robotics |
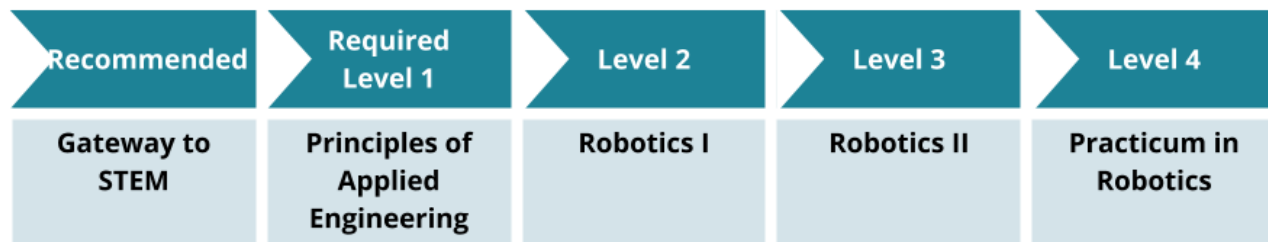
## GATEWAY TO STEM
**\*CONCURRENT ENROLLMENT REQUIRED IN:**
**Semester 1: Design, Modeling and Automation**
**KISD #:**   9487J18          **PEIMS:**   N1303756
**Grades:   8**                         **0.5 Credit/High School Credit**
**Semester 2:  Applied Science and Technology**
**KISD #:**   9488J18          **PEIMS:**   N1303757
**Grades:   8**                         **0.5 Credit/High School Credit**
**Prerequisite:**                 **None**
**Recommended Prerequisite: Strong Math and Science Skills**

This course consists of three units of STEM related content from the Project Lead the Way (PLTW) curriculum. The units to be explored are Design and Modeling, Automation and Robotics and Magic of Electrons. Students work in teams to design orthotics and toys for children with disabilities. Using design software, students create a virtual image of their designs as well as capture research and ideas in an engineering notebook. Through hands-on projects, students explore electricity, the behavior and parts of atoms, and sensing devices. Students use a robotics platform to design, build, and program real-world objects such as traffic lights, toll booths, and robotic arms.
**Required Fee/Materials:**      Yes

## PRINCIPLES OF APPLIED ENGINEERING
**KISD #:**    947018          **PEIMS: 13036200**
**Grades:   9-11**              **1.0 Credit**
**Recommended Prerequisite: Strong Math Skills**

Students will develop engineering communication skills, which include computer graphics, modeling, and presentations, by using a variety of computer hardware and software applications to complete assignments and projects. Students will use Autodesk AutoCAD and other related software applications and a variety of computer hardware to complete assignments and projects.
**Required Fee/Materials:**      Yes

## ROBOTICS I
**KISD #:**    964118          **PEIMS: 13037000**
**Grades:   10-12**             **1.0 Credit**
**Prerequisite:**                 **AC/DC Electronics or Principles of Applied Engineering or Robotics and Program Design**

Students will transfer academic skills to component designs in a project-based environment through implementation of the design process. Students will build robots or use simulation software to test their protypes.
**Required Fee/Materials:**      Yes

## ROBOTICS II
**KISD #:**    964218          **PEIMS: 13037050**
**Grades:   11-12**             **1.0 Credit**
**Prerequisite:**                 **Robotics I**

Students will explore artificial intelligence and programming in the robotic and automation industry. Through implementation of the design process, students will transfer academic skills to component designs in a project-based environment. Students will construct complex robots or use simulation software to test their protypes.
**Required Fee/Materials:**      Yes

## PRACTICUM IN ROBOTICS
**KISD #:**    966418          **PEIMS: 13033000**
**Grades:   12**                **2.0 Credits**
**Prerequisite:**                 **Robotics II**

Students will continue to expand their knowledge of automation with complex programming, differentiated types of robotic components and structure design. Students will have opportunities to participate in competitions to modify prototype designs.
**Required Fee/Materials:**      Yes