# Engineering

The Engineering career cluster focuses on planning, designing, testing, building, and maintaining of machines, structures, materials, systems, and processes using empirical evidence and science, technology, and math principles. This career cluster includes occupations ranging from mechanical engineer and drafter to electrical engineer and to mapping technician.

## Program of Study: Engineering Foundations

The Engineering Foundations program of study focuses on occupational and educational opportunities associated with a wide range of skills applied in the Engineering industry. Students will design, test, and evaluate projects related to engines, machines, and structures. This program of study incudes applying scientific, mathematical, and empirical evidence to solve problems through innovation, design, construction, operation, and maintenance of different engineering systems.

### Courses

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|---|---|
| 9th Grade | Principles of Applied Engineering |
| 10th Grade | Engineering Science |
| 11th Grade | Engineering Design and Presentation |
| 12th Grade | Practicum in Engineering |

### Work-Based Learning/Expanded Learning Opportunities

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|---|---|
| **Work-Based Learning Activities** | • Earn industry certification<br>• Work on industry projects<br>• Work with King Core of Engineers |
| **Expanded Learning Opportunities** | SkillsUSA |

### Aligned Industry-Based Certifications

- Autodesk Associate (Certified User) Inventor for Mechanical Design
- FAA Part 107 Remote Drone Pilot

### Example Postsecondary Opportunities

**Apprenticeships**

- Industrial Engineering Technician Apprenticeship

**Associate Degrees**

- Manufacturing Engineering Technology/ Technician
- Robotics Technology/Technician

**Bachelor's Degrees**

- Electrical and Electronics Engineering
- Engineering, General

**Master's, Doctoral, and Professional Degrees**

- Electrical and Electronics Engineering
- Engineering, General

**Additional Stackable IBCs/License**

- Professional Engineer (PE License)
- Engineer in Training Certification (EIT)

### Example Aligned Occupations

**Civil Engineering Technologists and Technicians**
Median Wage: $60,297
Annual Openings: 899
10-Year Growth: 11%

**Civil Engineers**
Median Wage: $82,483
Annual Openings: 2,223
10-Year Growth: 18%

**Mechanical Engineers**
Median Wage: $103,189
Annual Openings: 1,455
10-Year Growth: 19%

Successful completion of this program of study will fulfill requirements of the STEM Endorsement if the math and science requirements are met or the Business & Industry endorsement.

Approved Statewide Program of Study. C. E. King High School – 2026-27

# Engineering Foundations
## Course Information

### Level 1

**Principles of Applied Engineering** **13036200**

**Grade: 9-10** **Credit: 1**

Principles of Applied Engineering provides an overview of the various fields of science, technology, engineering, and mathematics and their interrelationships. Students 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. Upon completing this course, students will have an understanding of the various fields of engineering and be able to make informed career decisions.

### Level 3

**Engineering Science (Satisfies a science credit)** **13037500**

**Grade: 10-12** **Credit: 1**

*Prerequisite: Algebra I and Biology, and at least one credit in a course from the Engineering career cluster*

Students enrolled in the Engineering Science course 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.

**Engineering Design and Presentation** **13036500**

**Grade: 11-12** **Credit: 1**

*Prerequisite: Algebra I and at least one credit in a course from the Engineering career cluster*

Students enrolled in Engineering Design and Presentation demonstrate knowledge and skills of the design process as it applies to engineering fields and project management using multiple software applications and tools necessary to produce and present working drawings, solid model renderings, and prototypes. Through implementation of the design process, students transfer advanced academic skills to component designs. Additionally, students explore career opportunities in engineering, technology, and drafting and learn what is required to gain and maintain employment in these areas.

Industry Based Certifications: Autodesk Associate (Certified User) Inventor for Mechanical Design

### Level 4

**Practicum in Engineering** **12756080**

**Grade: 12** **Credit: 2**

*Prerequisite: Algebra I AND Geometry and a minimum of two credits with at least one course in a Level 2 or higher course from the Engineering career cluster*

Practicum in Engineering is designed to give students supervised practical application of knowledge and skills. Practicum experiences can occur in a variety of locations appropriate to the nature and level of experiences such as employment, independent study, internships, assistantships, mentorships, or laboratories. To prepare for careers in engineering, students must attain academic knowledge and skills, acquire technical knowledge and skills related to the workplace, and develop knowledge and skills regarding career opportunities, entry requirements, and industry expectations. To prepare for success, students need opportunities to learn, reinforce, apply, and transfer their knowledge and skills and technologies in a variety of settings.