



## 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 includes applying scientific, mathematical, and empirical evidence to solve problems through innovation, design, construction, operation, and maintenance of different engineering systems.

#### Courses

<b>9<sup>th</sup> Grade</b>	Introduction to Engineering Design (PLTW)
<b>10<sup>th</sup> Grade</b>	Engineering Science
<b>11<sup>th</sup> Grade</b>	Engineering Design & Development (PLTW)
<b>12<sup>th</sup> Grade</b>	Practicum in STEM - Engineering

#### Aligned Advanced Academic Course(s)

- AP Physics
- AP Calculus
- AP Statistics

#### Work-Based Learning/Expanded Learning Opportunities

<b>Work-Based Learning Activities</b>	<ul style="list-style-type: none"> <li>• Earn industry certification</li> <li>• Work on industry projects</li> <li>• Work with King Core of Engineers</li> </ul>
<b>Expanded Learning Opportunities</b>	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: \$61,138  
Annual Openings: 765  
10-Year Growth: 11%

##### Aerospace Engineers

Median Wage: \$115,694  
Annual Openings: 483  
10-Year Growth: 18%

##### Mechanical Engineers

Median Wage: \$99,937  
Annual Openings: 1,755  
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 – 2024-25



# Engineering Foundations Course Information

## Level 1

### Introduction to Engineering Design (PLTW)

N1303742

**Grade: 9-10**

**Credit: 1**

Students dig deep into the engineering design process, applying math, science, and engineering standards to hands-on projects. They work both individually and in teams to design solutions to a variety of problems using 3-D modeling software, and use an engineering notebook to document their work.

## Level 3

### Engineering Science (Satisfies a science credit)

13037500

**Grade: 10-12**

**Credit: 1**

*Prerequisite: Algebra I and Biology, Chemistry, IPC, OR Physics*

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 & Development (PLTW)

N1303749

**Grade: 11-12**

**Credit: 1**

*Prerequisite: Engineering Science*

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

Industry Based Certifications: Autodesk Associate (Certified User) AutoCAD

## Level 4

### Practicum in Science, Technology, Engineering, and Math - Engineering

13037400

**Grade: 12**

**Credit: 2**

*Prerequisite: Algebra I and Geometry; two Engineering Career Cluster Courses*

This Practicum in Science, Technology, Engineering, and Mathematics is designed to give students supervised practical application of previously studied knowledge and skills. Practicum experiences can occur in a variety of locations appropriate to the nature and level of experience. Although periods should be adhered to in order to provide students with experience, completion of skill sets may be demonstrated throughout the practicum; thus, units do not have to be delivered. This course will focus on Drones.

Industry Based Certifications: FAA Part 107 Remote Drone Pilot