



2024-2025

Rapid City
Stevens High School

Introduction to Engineering

RCAS Policies/Procedures:

Students will be required to follow all RCAS policies and procedures. To view the RCAS High School Student Handbook, click [handbook](#).

Course Description:

Explore how engineers make a difference and improve lives, while using modern engineering tools, such as geographic information systems, 3-D solid modeling software, and prototyping equipment. Work on your own and as part of a team to develop solutions to community and global challenges that the next generation of engineers will face.

Textbook:

None

Required Resources:

Project Lead the Way (Engineering Essentials)

“Limited Choice” Resources: (students will be asked to choose at least one title from this list)

Student Choice:

Will student be asked to choose additional reading material from the classroom or school library?

No

Essential Questions:

- What specific fields within engineering make up the industry, and how can students examine these fields?
- How can students investigate and learn about various engineering systems?
- Can student apply the engineering process to a product?
- Can students demonstrate effective communication?
- Will students be able to examine testing procedures used on materials in engineering?
- How can students pursue career exploration and development?
- Will students be able to plan, manage and perform the processing of materials into intermediate or final products and understand related professional and technical support activities such as production planning and control, maintenance, and manufacturing/process engineering?
- In what ways can students implement manufacturing technology safety practices?
- How can students apply ethical and sustainable practices in the workplace as the relate to today's society?
- Can students utilize the appropriate tools and equipment utilized in the manufacturing industry?
- Can students differentiate among a variety of manufacturing industries?
- Can students design and create a product using the engineering design process?

Essential Learning Intentions:

- Career Readiness (CAR): STEM professionals use professional skills and knowledge to pursue opportunities and create sustainable solutions to improve and enhance the quality of life of individuals and society.
- Communication (COM): Successful engineering professionals demonstrate effective communication with a variety of audiences using multiple modalities.
- Collaboration (COL): Successful engineering professionals demonstrate an ability to function on multidisciplinary teams.
- Ethical Reasoning and Mindset (ERM): Successful engineering professionals exhibit personal and professional characteristics and behaviors that involve considerations of the impact of their work on individuals, society, and the natural world.
- Critical and Creative Problem-Solving (CCP): The skills necessary for students to generate ideas and solutions to problems.
- Technical Knowledge and Skills

- Every career field requires technical literacy and career-specific knowledge and skills to support professional practice.
- Algorithms and Programming (AAP): Computational thinking is a critical part of a problem-solving process that supports the ability to interpret complex, open-ended problems across all disciplines.
- Foundations in Math and Engineering Science (FMS): Engineering practice requires an understanding of mathematical principles and scientific phenomena to solve problems.
- Modeling (MOD): Modeling is used to represent ideas and simulate objects, processes, or systems to help us understand, evaluate, and predict the behavior of real phenomena