Foundations of Technology and Engineering At-A-Glance

Intended Audience: Grades 9-10

Foundations of Technology and Engineering prepares students to understand and apply technological concepts and processes that are the cornerstone for the high school technology and engineering program. Group and individual activities engage students in creating ideas, developing innovations, and engineering practical solutions. Technology content, resources, and laboratory/classroom activities apply student applications of science, mathematics, and other school subjects in authentic situations.

- **Computer Science Principles byDesign**: develop technological skills in solving problems, documenting the engineering design process, and computer coding.
  - Block Coding Principles
  - Variables and Functions
  - Computer Programming Logic
  - Sensors and Mathematics
  - 3D Modeling with Onshape

- **The Engineering Design Process**: a systematic iterative problem solving method that produces solutions to meet human wants and desires.
  - Engineering Design Process
  - Criteria and Constraints
  - Design Principles
  - Prototypes and Modeling
  - Collecting and Processing
  - Applying the Design

- **The Designed World**: A byproduct of the engineering design process, which transforms resources (tools/machines, people, information, energy, capital, and time) into usable products and services.
  - Energy and Power
  - Manufacturing
  - Construction
  - Information and Communication
  - Agriculture and Transportation
  - Telemedicine

- **Systems**: The building blocks of technology and users must properly maintain, troubleshoot, and analyze systems to ensure safe and proper function.
  - Core Technologies: Every system and product is made up of one or more of the nine core technologies: bio-, electrical, electronic, fluid, material, mechanical, optical, structural, and thermal technology.
  - Systems Model: The Universal Systems Model
  - Reverse Engineering
  - Troubleshooting

- **Lunar Plant Growth Chamber**: The engineering design process is a comprehensive, valuable tool that can be used to provide solutions to complex challenges, on Earth and beyond.
  - Space Exploration
  - Intermodal Transportation
  - Transportation Cycle
  - Decision Making and Management

For More Information
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Foundations of Technology