Technological Systems
At-A-Glance

Intended Audience: Grade 8   **Course Length: 18 weeks**

Technological System: Teaches students how systems work together to solve problems and capture opportunities. A system can be as small as two components working together or can contain millions of interacting devices. We often break down the macro systems into less complicated microsystems to understand the entire system better. Electronic systems are interacting with natural systems as humans increasingly rely on the use of monitoring devices for medical reasons. Electrical systems are interacting with mechanical and fluid power systems as manufacturing establishments become more and more automated.

Technological Systems: How They Work: Technological Systems are designed and engineered following specific criteria. Systems vary in type and must be maintained to properly function.

- **Systems Model:** Technological Systems are developed to meet specific criteria and must be able to function to complete the system's loop.
- **Designing a System:** Systems are designed with a specific purpose, and controls are placed within systems to address their performance.
- **System Testing and Evaluation**: Systems must be continuously tested and evaluated to innovate and improve existing solutions to problems and malfunctions.
- **Where Do Systems Come From?**: Technological systems evolve to meet the needs and wants of individuals and society.

Introduction to Computer Science: Computer science skills are critical in the development of technological and engineering literacy.

- **Coding Using Drawing and Block Programs:** Coding is how we communicate with a central processing unit. Creating code using a specified application will allow users to control a robot.
- **Programming:** Computer program languages such as Javascript allow programmers to create complex programs.
- **Practicing Programming:** Robotics provides safer methods of completing technological systems such as manufacturing.
- **Introduction to Computer Science Challenge:** Technology can help to create new devices, products, and systems.
- **Robot Maze Challenge:** Robotic systems are able to complete tasks with more efficiency and less effort than humans.

Technological System Interactions: Technological systems are designed to meet a specific need and can address this need through a variety of functions, processes, and interactions with other systems.

- **Developing Helpful Systems:** Knowledge from a variety of fields is used in the development of products and systems, and the completed system can be used in multiple applications.
- **Impacts of Technological Systems:** Technology can have both positive/negative impacts on the environment/economy.
- **Maintaining and Troubleshooting Systems:** Processes within systems serve different functions and can cause problems with the performance of the system if there is a malfunction.
- **Systems Communications:** Technical information comes from a variety of sources and is used to maintain systems and understand how they work.
- **Systems Functions, Processes, and Developments**: Systems are designed with human needs and wants in mind.

Technological Systems in the Designed World: Communicating your design is important to the process of creating and communicating systems.

- **Drawing your Design**: Communicating your design is important to the technological systems process.
- **Drafting your Design:** Digital forms of drafting are more efficient methods of communicating technological systems designs.
- **Assembly Drawings:** Present the entirety of the product or system by allowing the viewer to see how the components fit.
- **Energy and Power Systems:** Needed for humans and technological creations to perform tasks. Systems should be designed with an appropriate energy source in mind.
- **Storm the Castle Challenge:** Communication through drawing allows for those viewing the drawing to understand the product or system. Drawings can also lead to the production of models or prototypes to further communicate the idea.