

Connecting Classrooms, Careers and Postsecondary

**Innovations in Science and Technology
Projects and Essential Questions****Course 1: The Nature of Science and Technology**Project 1: Science of Survival

Essential Question: How can we best use existing power sources found in the wilderness to create electrical power for modern communication devices?

Project 2: Earthquake Resistant Shelter

Essential Question: How can we design shelters that survive earthquakes?

Project 3: Cleaning Up the Water Supply

Essential Question: Which contaminants impact drinking water quality and how can we remove them from drinking water?

Project 4: Wave Energy

Essential Question: How can the energy found in ocean waves be captured and used to generate electricity?

Project 5: Laser Security

Essential Question: How can electronics and sensors be combined to create a system capable of establishing a perimeter and monitoring it with other devices?

Project 6: Mail Delivery System

Essential Question: How can we design a method for transporting mail from the street side mailbox to the house?

Course 2: Core Applications of Science and TechnologyProject 1: When the Levee Breaks

Essential Question: What is the best way to solve flooding while mitigating pollution?

Project 2: Addicted to the Grid

Essential Question: How could we design a way to generate electricity for use during off grid situations?

Project 3: Biodiesel Byproduct

Essential Question: How can we transform the byproducts from biodiesel processing into a marketable secondary product?

Project 4: Strength Through Recycling

Essential Question: Why are recycled materials a viable option for manufacturing products that will be exposed to impact loading?

Project 5: Bioinformatics and Forensics

Essential Question: How can we use science and technology to solve crimes?

Project 6: Improved Medical Device

Essential Question: How can we design a crutch modified to meet the needs of a specific population?

Course 3: Impacts of Science and Technology

Project 1: Did You Hear That

Essential Question: How can we design a system to warn users of headphones and ear buds that the current sound level is too high?

Project 2: Stand and Deliver

Essential Question: What is the best way to design a bicycle anti-theft device for security situations affecting a university student?

Project 3: Lemons to Lemonade

Essential Question: How can we devise a way to convert biodegradable waste into a useable energy source?

Project 4: You Are What You Eat

Essential Question: How could we design an automated irrigation system for a greenhouse?

Project 5: 21st Century or Bust

Essential Question: How can 3D software and a 3D printer be used to design and build a school memento?

Project 6: Want to Play a Game

Essential Question: How can an educational video game be designed to teach a concept currently taught in print?

Course 4: Creativity and Innovations

Project 1: Envision This: A Remote Sensing Project

Essential Question: How can we design a photo-realistic map rendering of an area that is difficult to access?

Project 2: Toy Research and Development

Essential Question: How can a toy be redesigned to improve its safety, reliability, or durability?

Project 3: Ethanol Fuel

Essential Question: How can waste materials be efficiently used to make ethanol?

Project 4: Vacation Automation

Essential Question: How can microcontrollers and sensors be used to create a smart pet feeder and/or watering device?

Project 5: Scaffold Ascension

Essential Question: How can we build a safe Scaffolding Ascension System?

Project 6: Tracking Cattle

Essential Question: How can we analyze cattle movements using GPS?