

High School Themes and Problems

Animatronics

“Time Travelers’ Museum”

Design Problem: Create an animatronic figure or scene from a key moment in American history. The character should "come to life" to explain their world to a young audience. Designed for a children's museum or educational tour.

Architectural Design

[Design Problem](#)

Audio Podcasting

Theme: “History or Mystery” Students create an audio podcast that focuses on a real-life or fictitious historical event from the past.

Biotechnology Design

Topic: Bioconjugation. Bioconjugation is a biochemical technique that has been applied in various fields, such as medicine, diagnostics, biocatalysis, and materials. From chemical warfare to corrective eye surgery, the applications of bioconjugation are vast. Highlight the science behind bioconjugation and demonstrate one of its many uses.

Career Prep

Theme: Choose a career from the Career Clusters Energy & Natural Resources category within one of the following subclusters:

- Resource Extraction
- Conservation & Land Management
- Ecological Research & Development
- Clean & Alternative Energy
- Environmental Protection
- Utilities

Children's Stories

Theme: Students develop and produce a non-fiction, die-cut board book

Coding

The following programming languages may be used to complete the assigned problems:

- C version C17
- C++ version C++20
- C# version 8
- Java version 21.0
- Javascript/Node version 18.19
- Python version 3.9
- Ruby version 3.2
- Rust version 1.75
- Swift version 5.10

Data Science and Analytics

Theme: Identify and use a "Tourism"- related open-source data set for analysis and research. In the scientific poster, cite the source of the data, including the URL/domain and file format.

[Scientific Poster Template](#)

Debating Technological Issues

Theme: Artificial Intelligence and Ethics

- **Subtopic 1:** AI decision-making in judicial systems introduces bias and undermines human moral judgment.
- **Subtopic 2:** The development of artificial general intelligence (AGI) poses a greater existential threat than nuclear weapons.
- **Subtopic 3:** AI-generated art and literature diminish the value of human creativity and cultural authenticity.

Digital Video Production

Theme: "A Twist in Time" Create a story that alters a key historical moment—or imagines a character from the past suddenly appearing in the modern day.

Dragster

No theme for 2026, see official rules for specifications

Drone Challenge (UAV)

[Theme](#)

Engineering Design

Theme: Engineering the tools of scientific discovery

Fashion Design and Technology

Theme: Villain Era with one element of the main garment being 3-D printed.

Geospatial Technology

Theme: Urban Heat Islands and Cooling Solutions

Identify urban heat island (UHI) hotspots in your area using temperature, vegetation, and land use data. Map areas most affected by heat and propose equitable solutions—such as tree planting zones, reflective surfaces, or community cooling centers—especially in vulnerable neighborhoods.

Manufacturing Prototype

Theme: Marble Maze or Puzzle Box

Music Production

Theme: The year 2026 marks the 250th birthday of the United States. Create a musical piece that can be played as the opening number at a July 4th fireworks show.

Photographic Technology

Theme: Photo Essay Series; Create a series of photos that tell a story

Prepared Presentation

Topic: Everyone knows the classic game of rock, paper, scissors: rock beats scissors, scissors beat paper, and paper beats rock. At the end of the day, which is the most revolutionary tool? Develop a presentation in which you select one of these three technologies/tools and describe its impact on human civilization.

Promotional Design

Theme: Create promotional materials for a chapter-hosted event in which TSA alumni return to the chapter to share career stories, run workshops, and mentor students. The promotional items must include:

- an event information flyer
- a social media promotional graphic
- a name badge template
- a promotional item of the participant's choice

Participants should use the following details in the designs:

Event title: "Back to Impact: TSA Alumni Day Celebration"

Date of event: June 2-4, 2026

Chapter name: Bluewater Heights School of Innovation TSA

School mascot: Jets

Address: 870 Trail Bend Road, Bluewater Heights, MD 21903

Robotics

Design Problem

Software Development

Develop a software program that removes barriers and increases accessibility for people with vision or hearing disabilities.

STEM Mass Media

Headline: The green past of the Saharo-Arabian Desert: Cave deposits reveal recurring humid periods over eight million years

Background: A new study led by the Max Planck Institute for Chemistry has uncovered compelling evidence that the Saharo-Arabian Desert—today one of Earth's driest regions—experienced multiple periods of significantly wetter climate over the past eight million years. Researchers analyzed speleothems, or cave deposits, from seven Saudi Arabian caves and found chemical clues indicating repeated monsoonal rainfall that transformed the desert into a habitable landscape for thousands of years at a time.

These wetter intervals likely enabled the migration of mammals, including early human ancestors, between Africa and Eurasia—despite the desert's role as a natural barrier. The study highlights the powerful influence of climate change on human and animal history, as well as the importance of cave formations as records of ancient weather patterns. Using isotopic analysis and radiometric dating, the team also discovered that the decline of monsoonal rainfall was caused by long-term cooling in the Northern Hemisphere, which shifted rain belts southward.

Prompt: Based on the following headline, develop a news broadcast that includes an introduction of the headline, a summary of the information in the news story, and an explanation of potential future implications of the highlighted work.

<https://www.eurekaalert.org/news-releases/1079999>

Structural Design and Engineering

[Problem Statement](#)

[Verification Form](#)

Transportation Modeling

Design Problem: The Sky is Not the Limit- Next-gen space travel.

Video Game Design

Theme: Retro Revival: Reimagine an 8-bit or 16-bit era type of game with a modern twist.

Virtual Reality Simulation (VR)

Design Topic: Design an interactive, walk-through VR museum based on a topic in art, history, or technology.

Webmaster

Topic: Community Resource Hub

Create a website that will serve as a community resource hub to highlight resources available to residents within the community (e.g., non-profits, support services, community events and programs, etc.). Your website should include the following:

- an interactive directory of community resources (resource hub) that allows users to search and filter the resources.
- a highlight section that spotlights at least three of the community resources you have listed in your resource hub.
- a form that users can submit to indicate new resources that should be added to the community resources hub.
- additional content to enhance the community resource hub for end users.