

High School Themes and Problems

Animatronics	Design Challenge: Create an Animatronic exhibit for a science center
Architectural Design	Click here for the design problem.
Biotechnology Design	Theme: The use of biotechnology in medicine
Children's Stories	Theme: Create a pop-up book in which the pop-ups illustrate the story. The story should include the use of non-renewable energy resources.
Coding	<p>The following programming languages may be used to complete the assigned problems:</p> <ul style="list-style-type: none"> • C (version C11) • C++ (version C++14) • C# (version 6.0) • Java (version 10) • Javascript (NodeJS version 8.10) • Python (version 3.6) • Ruby (version 2.5) • Swift (version 4.2) <p>Additional languages may become available as we near the conference.</p> <p>Participants will be presented with a series of coding problems that must be completed on site at the conference. Evaluation will be based on the successful completion of the problems and the time in which it takes students or teams to complete all the challenges.</p> <p>In addition to the specific HS Coding competition rules and regulations, students also must adhere to TSA's general rules (found in the HS competitive events guide).</p> <p>The USA Computing Olympiad website and the ACM-ICPC International website are helpful resources for the Coding event. Additional resources that can be used to prepare for the event are listed below:</p> <ul style="list-style-type: none"> • https://icpc.baylor.edu/compete/preparation • https://www.codechef.com/ • http://www.usaco.org/index.php?page=contests • http://blog.hackerearth.com/2013/09/competitive-programming-getting-started_11.html • https://www.quora.com/What-is-the-best-strategy-to-improve-my-skills-in-competitive-programming-in-2-3-months
Computer Integrated Manufacturing (CIM)	Design Challenge: Create an original design and build a birdhouse. No kits are permitted - the design must be completely original.
Debating Technological Issues	<p>Debate: Internet as a necessity, not a luxury.</p> <p>Sub Topic 1: The government should prioritize improving or initiating internet connections in rural areas.</p> <p>Sub Topic 2: School districts must provide hotspots to all students.</p> <p>Sub Topic 3: Small businesses must receive subsidized internet from the government.</p>

High School Themes and Problems

Digital Video Production	Design Challenge: Interview with your future self
Engineering Design	The annual design challenge for the 2021 National TSA Conference is unchanged from the 2020 National TSA Conference due to the broadness of the topic. Student members may not use an entry that has already been submitted. The design challenge is to identify a need in a developing country, and design a project that will enable that community to fulfill that need (for ideas, check out: Engineers Without Borders and other similar organizations that are helping people build better, safer communities).
Fashion Design and Technology	Design Challenge: In the professional workforce, proper work attire is essential. Students consider the challenges faced in workplace fashion and create proper, professional workplace attire. For example, someone working in an industry surrounded by harmful chemicals would need a uniform to protect them from that environment. Technological elements must be included in the construction of the garment.
Geospatial Technology	Problem Challenge: Research a local, regional, state, or national transportation issue.
Photographic Technology	Theme: Nature
Promotional Design	Design Challenge: Since Perkins vs legislation requires that each school have a Program Advisory Committee populated by local individuals from business and industry, contestants must create a packet of promotional items, with the intent of recruiting those business and industry leaders to serve on the local committee.
Structural Design and Engineering	Click here for the problem statement. HS Structural Team Verification and Analysis Form
Transportation Modeling	Theme: The History of Supersonic Aircraft.
Video Game Design	Theme: An adventure game.
Webmaster	<p>Theme: Medical On Demand</p> <p>Context: Due to recent global events, consumers and the healthcare industry were forced to change their medical screening practices. Virtual appointments via mobile interfacing and webcam communications have been used for patients that were unable to or restricted from physically seeing a doctor.</p> <p>Challenge: Create a fictional medical telecommunications company and design a website. The website should serve as a guide for information about the company and their communication services provided. Present an overview of services as if you were a consumer. Provide the type of solutions your company creates, sells, and/or serves. Sections of the site may include photos, product descriptions, renderings, company history, contact, and news updates.</p>