Events by Career Cluster

COLORADO TECHNOLOGY STUDENT ASSOCIATION

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CIVIL & ARCHITECTURAL ENGINEERING EVENTS

Architectural Design (HS)
Participants develop architectural plans and related materials for and construct a physical, as well as a computer-generated model, to accurately depict their design.

Fore! (HS)
High school students work closely with elementary school students to design and develop one hole for a miniature golf course.

CAD Architecture (HS)
Participants develop representations of architectural subjects, such as foundation/floor plans, elevation drawings, etc.

Off the Grid (MS)
Participants conduct research on a sustainable architectural design and document their findings in a display and a model.

Construction Challenge (MS)
Participants submit a scale model with a portfolio that documents the use of their leadership and technical skills to fulfill an identified community need related to construction.

Structural Engineering (HS/MS)
Participants research, design, construct, and use destructive testing to determine the design efficiency of a structure.

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INDUSTRIAL & MANUFACTURING ENGINEERING EVENTS

Assistive Technology Design (HS)
For this contest, participants will research, design, and build an assistive technology device/product for a special population within your local community.

Computer Integrated Manufacturing (HS)
Participants design, fabricate, and use CIM to create a promotional product based on that years theme.

CAD Engineering (HS)
Participants develop three-dimensional representations of engineering subjects such as a machine part, tool, device, or manufactured product.

Engineering Design (HS)
Participants develop a solution to a National Academy of Engineering Grand Challenge and provide extensive research into the problem along with appropriate models.

CAD Foundations (MS)
Participants demonstrate their understanding of CAD fundamentals as they create a two-dimensional (2D) graphic representation of an engineering part or object.

Global Logistics (MS/HS)
Participants design, manufacture and package a marketable product through a collaborative effort with two other TSA chapters.

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INDUSTRIAL & MANUFACTURING ENGINEERING EVENTS

Inventions and Innovations (MS)
Participants investigate and determine the need for an invention or innovation of a device, system, or process, and prototype ideas for a possible solution.

Mass Production (MS)
Participants manufacture a marketable product. The team submits a documentation of the activities involved and three identical products made during the manufacturing process.

Technical Design (MS)
Participants demonstrate their ability to use the technical design process to solve a design problem onsite and present the team's solution in a portfolio at the conference.

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ELECTRICAL ENGINEERING EVENTS

Electrical Applications (MS)
Participants take a written test on basic electrical and electronic theory. Semifinalists assemble a specific circuit from a schematic diagram using their own kit.

Microcontroller Design (HS)
Through a demonstration and documentation, the team demonstrates knowledge of microcontroller programming, simple circuitry, product design and marketing.

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MECHANICAL & TRANSPORTATION ENGINEERING EVENTS

Animatronics (HS)
Participants demonstrate knowledge of mechanical and control systems by designing and controlling an animatronics device that will communicate and illustrate a cohesive concept.

Dragster Design (MS/HS)
Participants design, produce a working drawing for, and build a CO2-powered dragster which will compete in time trials.

Catapult Design (MS/HS)
Participants design and produce a working catapult that is adjustable and propels practice golf balls at a scoring target between 15' and 25' away.

Flight Endurance (MS/HS)
Participants analyze flight principles to create a rubber band-powered model aircraft. Model aircrafts are evaluated on their ability to maintain flight for an extended period of time.

Crash Test (MS)
Middle school participants work with elementary students to design and build a “crash test car” that will be tested in multiple head-on and rear-end collisions.

Junior Solar Sprint (MS)
Participants apply STEM concepts, creativity, teamwork, and problem-solving skills as they design, construct, and race a solar-powered model car.

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MECHANICAL & TRANSPORTATION ENGINEERING EVENTS

Mousetrap Tractor Pull (MS)
Participants design and construct a vehicle powered only by a standard mousetrap spring, to pull as much weight as possible.

Robotic Design (MS/HS)
Participants will design, build and test a remote controlled robot to carry out a specific challenge (ex: building collapse).

Mechanical Engineering (MS)
Teams identify and research an engineering process and construct a mechanical system that can be used to address the problem.

Rubber Band Powered Cars (MS/HS)
To allow students to demonstrate their ability to design and construct a vehicle powered only by a rubber band and a bladed-propeller.

Rat Trap Drag Race (HS)
To allow students to demonstrate their ability to design and construct a vehicle powered only by a rat trap spring, to travel a specified distance as fast as possible.

Transportation Modeling (HS)
Participants research, design, and produce a scale model of a vehicle that fits the annual design problem.

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COMPUTER SCIENCE EVENTS

Coding (MS/HS)

Participants respond to an annual coding-related challenge by developing a software program that will accurately address an onsite problem in a specified, limited amount of time.

System Control Tech (MS/HS)

Teams analyze a problem on-site, build, program and explain a computer-controlled mechanical model. Teams also write instructions for evaluators to operate the device.

Cybersecurity (MS/HS)

Participants respond to a cybersecurity challenge by identifying a breach in computer security. Participants will solve onsite challenges in a specified, limited amount of time.

Webmaster (HS)

Participants design, build, and launch a website that features the school's career and technology/engineering program, TSA chapter.

Software Development (HS)

Participants use knowledge of new technologies, algorithm design, and teamwork to design, implement, test, and document a software development project of educational or social value.

Website Design (MS)

Participants design, build, and launch a website that features the team's ability to incorporate the elements of website design, graphic layout, and proper coding techniques.

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MEDIA ARTS EVENTS

3D Animation (HS)
Participants demonstrate their knowledge of 3D animation technology and design skills to creatively solve the challenge posted on Themes and Problems.

Comic Book Design (MS/HS)
Participants design and produce a comic book with a design portfolio containing thumbnails, pencil drawings, inks, and color, cover art work.

Board Game Design (HS)
Participants develop, build, and package a board game that focuses on the subject of their choice.

Community Service Video (MS)
Participants create and submit a video that depicts the local TSA chapter's involvement with a community service project (e.g., American Cancer Society) of their choice.

Children's Stories (MS/HS)
Participants create an illustrated children's story of high artistic, instructional, and social value. The story must have a STEM focus.

Digital Photography (MS/HS)
Participants produce a digital photography portfolio addressing an annual theme.

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MEDIA ARTS EVENTS

Digital Video Production (HS)
Participants develop a digital video (with sound) that reflects the theme for the year.

On Demand Video (MS/HS)
Participants write, shoot, and edit a 60–second video onsite during the conference based on a given theme and required props.

Fashion Design (MS/HS)
Participants research, design, and create a portfolio and wearable prototype that reflect the theme for the year. All teams also participate in a fashion show.

Promotional Design (MS/HS)
Participants use computerized graphic communications layout and design skills in the production of a promotional resource for TSA.

Music Production (HS)
Participants produce an original musical piece that is designed to be played during the National TSA Conference opening or closing general sessions.

Scientific Visualization (HS)
Participants use either 2D or 3D computer graphics tools and design processes to communicate, inform, analyze, and/or illustrate a STEM topic, idea, subject, or concept.

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MEDIA ARTS EVENTS

Silent Movie (MS/HS)

Participants use video production skills to script, direct, film and produce a silent movie and then create a musical score to accompany the film.

STEM Animation (MS)

Participants use computer animation to communicate, inform, analyze, and/or illustrate a topic, idea, subject, or concept that focuses on STEM topics. Sound may accompany graphic images.

Theatrical Set Design (HS)

Participants develop a set of architectural plans and related materials for an annual theatrical set design challenge and construct a physical and computer-generated model, to accurately depict their design.

Video Game Design (MS/HS)

Participants develop a game that reflects the theme for the year. The game must have high artistic, educational, and social value and be interesting, exciting, visually appealing, and intellectually challenging.

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LEADERSHIP & RESEARCH EVENTS

Biotechnology (MS/HS)
Participants conduct research on a contemporary biotechnology issue of their choosing, document their research, and create a display.

Chapter Team (MS/HS)
Participants take a written parliamentary procedures test in order to qualify for the semifinals, in which they complete a business meeting within a specified time period.

Challenging Tech Issues (MS)
Participants work together to prepare and deliver a debate-style presentation with participants explaining opposing views of a current technology issue.

Debating Tech Issues (HS)
Participants work together to prepare for a debate against a team from another chapter. The teams will be instructed to take either the pro or con side of a selected subtopic.

Career Prep (MS)
Participants conduct research on a selected technology-related career and use this knowledge to prepare a letter of introduction and a chronological skills resume.

Essays on Technology (MS/HS)
Participants write a research-based essay (using two or more sources provided onsite) that makes insightful connections about a current technological topic.

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LEADERSHIP & RESEARCH EVENTS

Extemporaneous Speech (HS)
Participants verbally communicate their knowledge of technology or TSA subjects by giving a speech after drawing a card on which a technology or TSA topic is written.

Leadership Strategies (MS)
Participants demonstrate leadership and team skills by preparing a presentation based on a selected challenge the officers of a TSA chapter might encounter.

Forensic Science (MS/HS)
Participants take a written test to qualify as semifinalists. Semifinalist teams will examine a mock crime scene to demonstrate their knowledge of forensic science and crime scene analysis.

Medical Technology (MS)
Participants conduct research on a contemporary medical technology issue, document their research within a display, and design a prototype depicting a medical technology solution.

Future Tech Teacher (HS)
Participants investigate technology education preparation programs in higher education and test their potential as a future technology educator.

Prepared Presentation (HS)
Participants deliver an oral presentation, using a digital slide deck, on a topic provided onsite.

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LEADERSHIP & RESEARCH EVENTS

Prepared Speech (MS)
Participants deliver a speech that reflects the theme of the current year's National TSA Conference.

Problem Solving (MS/HS)
Participants use problem solving skills to develop a finite solution to a problem provided onsite.

Tech Bowl (MS/HS)
Participants demonstrate their knowledge of TSA and concepts addressed in the technology content standards by completing a written objective test. Semifinalist teams participate in a question/response, head-to-head competition.

Questions? Contact us!

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