

Virginia TSA Competitive Events Addendum

***For Use at the 2024 Virginia TSA
Technosphere State Conference***

An Addendum to the National TSA

2024-2025

Middle School Total TSA Guidelines

AND

2023-2024

High School Total TSA Guidelines



Version 1.1, January 5, 2024

See Virginia TSA Competitive Event Eligibility and Special Awards Guide for eligibility

Technosphere 2024

Technosphere 2024 will take place on May 2 – May 5, 2024 at the Hampton Roads Convention Center. The event will begin on the evening of Thursday, May 2 with some turn-in events and testing. Due to a lot of high school and middle school events now having tiered scoring and the number of events that we run each year it has become necessary to continue the schedule we started last year with beginning the conference on Thursday evening.

Sample schedule for Technosphere 2024:

May 2, 2024, 5:00 PM to 9:00 PM Registration

5:30 PM to 10:30 PM Testing

7:00 PM to 10:30 PM Select turn-in events

May 3, 2024, 9:00 AM Opening Ceremony

10:30 AM to 10:00 PM Select interviews and live events

12:30 PM to 4:30 PM Officer Candidate Campaigning

6:00 PM to 7:30 PM Dinner

May 4, 2024, 9:00 AM Business Meeting

Approx 10:45 AM – 8:00 PM Remainder of live events and interviews

May 5, 2024 9:30 AM Closing Ceremony

MIDDLE SCHOOL PROGRAM

CODE	EVENT	NOTES
MS	Biotechnology	One team per chapter, 2-8 members per team Using the current middle school guide, participants conduct research on a contemporary biotechnology theme posted on the National TSA website, documenting their research and creating a display. See National Themes and Problems (http://tsaweb.org/Themes-and-Problems) Students will drop off their project and documentation at the room and time printed in the Technosphere program.
MS *	CAD Foundations	Qualified members from Regional Fairs have the opportunity to demonstrate their understanding of CAD fundamentals as they create a two-dimensional graphic representation of an engineering part or object. Students must provide all equipment, software and supplies. Students will login to the judges' system at the scheduled time and place of this event in the Technosphere program. The scenario and submission button will be present for the student in the system.
MS *	Career Prep	Qualified members from Regional Fairs and the Fall Events design and produce a cover letter and a chronological or skills resume, based on research. See National Themes and Problems (http://tsaweb.org/Themes-and-Problems) for Career Clusters. Students will upload their work to the judges' system by 11:59 PM on 4/29/24. Semifinal interviews will be on the Friday of Technosphere.
MS *	Challenging Technology Issues	Qualified teams from Regional Fairs prepare and deliver an extemporaneous, debate-style presentation with team members. SEE National Themes and Problems (http://tsaweb.org/Themes-and-Problems). Students will report to the location, day and time, in the Technosphere program for this event.
MS	Chapter Team	One team of 6 members per chapter Using the current middle school guide, participants demonstrate an understanding of parliamentary procedures relative to business meetings. Testing will take place on 5/2/24. All Team members must test at the same time. Computer or laptop device and Internet access will be needed. Semifinalists will have the oral question part on Saturday of Technosphere.
MS	Children's Stories	Two teams of 1-6 members per chapter Using the current middle school guide, participants design an interactive book for a pre-K to second grade aged student that promotes inclusion and teamwork. Students will drop off their book and all documentation at the room and time printed in the Technosphere program.
MS	Coding	Three teams of 2 members per chapter Using the current middle school guide, participants will demonstrate their knowledge of computer science and coding by taking a written test. Semifinalists will further demonstrate their programming knowledge by participating in an on-site challenge. Testing will take place on 5/2/24. All team members must test at the same time. Computer or laptop device and Internet access will be needed. Semifinal challenge date and time will be listed in the Technosphere program.
MS*	Community Service Video	Qualified teams from the Regional Fairs will create and submit a video that depicts an issue or need within your community. Students will upload their work to the judges' system by 11:59 PM on 4/29/24. Semifinal interviews will take place on Friday evening of Technosphere. Time to be announced in Technosphere program.
MS	Construction	One team per chapter, Using the current middle school guide, participants submit a scale

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CODE	EVENT		NOTES
	Challenge	2-8 members per team	model, display and portfolio that documents the use of their leadership and technical skills to fulfill a community need related to construction. Students will drop off their project and documentation at the room and time printed in the Technosphere program.
MS	Cybersecurity Foundations	Two individuals per chapter	Using the current middle school guide, students complete a Cybersecurity exam covering general cybersecurity vocabulary and knowledge needed to execute tasks performed by cybersecurity professionals. Semifinalist use a digital presentation to address a cybersecurity issue to a group of hypothetical corporate board members (judges). See National Themes and Problems (http://tsaweb.org/Themes-and-Problems). Testing will take place on 5/2/24. Computer or laptop device and Internet access will be needed. Semifinalists will use the Technosphere program to determine the location and time of their semifinal event.
MS	Data Science and Analytics	Two teams of 2-3 members per chapter	Using the current middle school guide, conduct research on an annual theme or topic, collect data and document the research in a supporting portfolio and a display. Using analytics, participants assess collected data to make predictions and informed decisions. See National Themes and Problems (http://tsaweb.org/Themes-and-Problems). Students will drop off their project and documentation at the room and time printed in the Technosphere program.
MS *	Digital Photography		Qualified members from Regional Fairs and Fall Events produce an album consisting of four digital photographs that represent or relate to a chosen theme. See National Themes and Problems (http://tsaweb.org/Themes-and-Problems). Students will upload into the judges' system by 11:59 on 4/29/24. Semifinalist problem will take place on Saturday of Technosphere.
MS *	Dragster		Qualified members from Fall Events and Regional Fairs design and produce a fast CO ² powered dragster according to stated specifications and using only certain specified materials. Dragsters not meeting building tolerances specified in the Total TSA guide shall be disqualified and will NOT be raced. Cars will be dropped off at the location determined in the Technosphere program.
MS	Electrical Applications	Three teams of 2 per chapter	Using the current middle school guide, participants demonstrate knowledge of basic electrical and electronic theory to take a test. Testing will take place on 5/2/24. Computer or laptop device and Internet access will be needed. Semifinalists will use the Technosphere program to determine the location and time of their semifinal event.
MS *	Essays on Technology		Qualified members from Regional Fairs and Fall Events will write an essay based on a specified subtopic of a broader technological area, using the knowledge and resources gained through their research. Each participant turns in a comprehensive essay. The topic for the 2024 conference is located at: http://tsaweb.org/Themes-and-Problems. Students will upload into the judges' system their outline by 11:59 on 4/29/24. Semifinalists essay will take place on Saturday morning of Technosphere.
MS *	Flight		Qualified members from Regional Fairs and Fall Events create a glider that stays in flight for the greatest elapsed time. Students must

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CODE	EVENT		NOTES
			provide own MATERIALS, tools, and drawings for their glider. Event will be run by the guide just like we are starting from the beginning with the flight of the glider brought to the event.
MS	Forensic Technology	Three teams of 2 members per chapter	Using the current middle school guide, participants take a written test of basic forensic science theory to qualify as semifinalists. Semifinalists demonstrate their ability to use forensic technology and skills by doing a challenge based on the three concepts posted on the National website under themes and problems (http://tsaweb.org/Themes-and-Problems). Testing will take place on 5/2/24. All team members must test at the same time. Computer or laptop device will be needed. Semifinalists will use the Technosphere program to determine the location and time of the semifinal event.
MS	Geospatial Technology	Three teams of 1-5 members per chapter.	Participants develop a portfolio, addressing a problem. See Page 16-17 for more information.
MS	Inventions & Innovations	Two Teams per chapter, One entry per team 3-8 members per team	Using the current middle school guide, participants investigate and determine the need for an invention or innovation of a device, system, or process based on this year's current theme. See National Themes and Problems (http://tsaweb.org/Themes-and-Problems) Students will drop off their project and documentation at the room and time printed in the Technosphere program.
MS	Junior Solar Sprint	Two teams per chapter, one entry per team 2-6 members per team	Using the current middle school guide, participants explore an alternative energy source and experience the automotive design process when they research and conceptualize a design, make drawings, build a model from the design and race solar powered car models. Students will use the Technosphere program to find the time and location of this event for where to drop off their solar car.
MS	Leadership Strategies	Two teams of 3 members per chapter	Using the current middle school guide, participants work in teams to develop a plan of action that addresses a selected challenge that a TSA chapter officer might encounter. Students will use the Technosphere program to find the time and location of this event.
MS	Mass Production	Two teams of 2-8 members per chapter	Using the current middle school guide, participants manufacture a marketable product related to the current year's theme See National Themes and Problems (http://tsaweb.org/Themes-and-Problems) Students will drop off their project and documentation at the room and time printed in the Technosphere program.
MS	Mechanical Engineering	Two teams of 3-6 members per chapter	Using the current middle school guide, participants will demonstrate knowledge of mechanical engineering. See National Themes and Problems (http://tsaweb.org/Themes-and-Problems) . Students will drop off their project and documentation at the room and time printed in the Technosphere program.
MS	Medical Technology	Two teams per chapter 2-8 members per team	Using the current middle school guide, participants use this year's current theme related to medical technology and demonstrate understanding through research from reliable sources and effective presentation or re-creation See National Themes and Problems (http://tsaweb.org/Themes-and-Problems) Students will drop off their project and documentation at the room and time printed in the Technosphere program.
MS	Micro Controller Design	Two teams of 3-5 members per chapter	Using the current middle school guide, participants develop a working digital device with real-world applications. Through a multimedia presentation, product demonstration and documentation, the team demonstrates in detail its knowledge of

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CODE	EVENT		NOTES
			microcontroller programming, simple circuitry, product design and marketing. See National Themes and Problems (http://tsaweb.org/Themes-and-Problems) Students will drop off their project and documentation at the room and time printed in the Technosphere program.
MS	Off the Grid	Three teams of 4-6 members per chapter	Using the current middle school guide, design a home in a country containing a grassland biome for a family of three (3) with three (2) generations living in the home. The country can be any country containing the grassland biome of your choice. The house must be designed for an area that does not have access to a power grid. In addition, the house must include a renewable energy source, agricultural system for food production, and solve one (1) problem that is specific to the area. Students will drop off their project and documentation at the room and time printed in the Technosphere program.
MS *	PreparedSpeech		Qualified members from the Regional Fairs and the Fall Events deliver an oral presentation that reflects the theme of the current conference. The theme for the 2024 conference is Evolution of Excellence . Students will report to do their speech in the room and time printed in the Technosphere program.
MS	ProblemSolving	One team of 2 members per chapter	Using the current middle school guide, participants use their skills in problem solving to develop a finite solution to a stated problem provided onsite. Students must provide their own tool box containing the required resources <i>printed in the event brief</i> . Students will report to the designated room in the Technosphere program to do this event.
MS *	Promotional Marketing		Qualified members from Regional Fairs and Fall Events participants create/design a three-part TSA Marketing Toolkit that must include items specified in the national Themes and Problems. See National Themes and Problems (http://tsaweb.org/Themes-and-Problems) Students will upload their work to the judges' system by 11:59 PM on 4/29/24. Time and location of the semifinal design challenge will be in the Technosphere program.
MS *	STEMAnimation		Qualified teams from Regional Fairs and Fall Events use computer graphic tools and design processes to communicate, inform, analyze and/or illustrate a topic, idea, subject or concept. Students will upload their animation and all supporting documents into the judges' system by 11:59 PM on 4/29/24. Semifinal presentation/interviews time and location will be in the Technosphere program.
MS *	Structural Engineering		Qualified teams from Regional Fairs and Fall Events will bring their pre-built structures to the conference. Then, semifinalists will build another structure during the time listed in the Technosphere program as well as provide their own tools and supplies.
MS *	SystemControl Technology		Qualified teams from Regional Fairs use a team approach to develop a computer-controlled model solution to an on-site given problem, typically one from an industrial setting. Students will report at the time designated in the Technosphere program for this event.
MS	TechnologyBowl	One team of 3 members per chapter	Using the current middle school guide, participants demonstrate their knowledge of TSA leadership skills and the systems of

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CODE	EVENT		NOTES
			technology. Each team member must take the test. Testing will take place on 5/2/24. All team members must test at the same time. Computer or laptop device will be needed with ability to connect to the internet. Semifinals will take place on Saturday afternoon with the time and location listed in the Technosphere program.
MS	TechnicalDesign	Five teams per chapter 2 members per team	Using the current middle school guide, teams will be given a design brief that includes a problem statement and specific criteria and constraints. Participants will utilize the technical design process to solve the problem. Students will drop off their project and documentation at the room and time printed in the Technosphere program.
MS	VEX IQ Robotics	Four teams per chapter 2-6 members per team	The 2024 competition will be VEX IQ Full Volume . http://www.tsaweb.org/Vex-Robotics-Competition NOTE: ALL TEAMS MUST ALSO REGISTER AT Robotevents.com
MS	Video Game Design	One team per chapter 2-6 members per team	Using the current middle school guide, participants develop a game that focuses on the subject of their choice. The game should be interesting, exciting, visually appealing and intellectually challenging. The game should have high artistic, educational and social value. Students will upload an URL of their game and all supporting documents into the judges' system by 11:59 PM on 4/29/24. Semifinal presentation/interviews will take place on Friday or Saturday of Technosphere. Information will be in the program.
MS	Vlogging	Two teams of 2-6 members per chapter	Using the current middle school guide, participants use digital video technology to create original content around a pre-determined Technology theme See National Themes and Problems (http://tsaweb.org/Themes-and-Problems). Students will upload the video series URL and all supporting documents into the judges' system by 11:59 PM on 4/29/24. Semifinal portion time will be in conference program.
MS	WebsiteDesign	One team of 3-6 members per chapter	Using the current middle school guide, participants design, build and launch a website that features the design problem found at the following link: http://tsaweb.org/Themes-and-Problems Students will upload a URL of their website and all supporting documents into the judges' system by 11:59 on 4/29/24. Semifinal interviews will take place on Friday of Technosphere.

NOTE (*): Only those students and/or teams finishing in the top three places at each Regional Fair may enter the same specific events at Technosphere, unless already qualified during the fall events.

It is essential that students and advisors routinely check the TSA website (www.tsaweb.org) for updated information about TSA competitive events. This information is found on the website under Competitions/Updates and Clarification. When students participate in any TSA competitive event, they are responsible for knowing of updates, changes, or clarification related to that event.

Check the Virginia TSA Website for updated versions of the Addendum!

Special Awards and Recognition Programs

C-1	Chapter Excellence (Middle)	Chapters may not receive this award two years in a row.
C-3	Community Service Award (Middle)	Virginia Only. One entry per chapter.

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| C-5 | Member of the Year (Middle) | Virginia Only: One individual per chapter. State Officers are not eligible for this award. |
| C-7 | Advisor of the Year (Middle) | Advisors may not receive this award two years in a row. |
| C-9 | Century Award Virginia Only. | Chapters affiliating CAP, or 100+ members. |
| C-11 | Commendation Award Virginia Only | All schools in division affiliated. |

Note: Individuals, chapters and/or school divisions applying for recognition awards must submit the required paperwork on or before the deadline for Technosphere registration. They must also register the award within the online registration system

HIGH SCHOOL PROGRAM

CODE	EVENT	TEAMS	NOTES
HS	Animatronics	One team per chapter, 2-8 members per team	Using the current high school guide, participants will produce an animatronics device and display. Design problem will be provided at http://tsaweb.org/Themes-and-Problems Students report to sign-up for presentation/interview at the place printed in the Technosphere program.
HS	Architectural Design	Two teams per chapter 1-8 members per team	Using the current high school guide, participants develop a set of architectural plans and related materials. Design problem will be provided at http://tsaweb.org/Themes-and-Problems. Students will upload the chapter's documentation portfolio to the judges' system by 11:59 PM on 4/29/24. Students will the drop off their projects at the room and time printed in the Technosphere program on the first night of the conference. Semifinal interview time will be in the Technosphere program.
HS	Audio Podcasting	One team per chapter, 2-8 members per team	Using the current high school guide, participants use digital audio technology to create original content around a pre-determined technology theme. Theme will be provided at http://tsaweb.org/Themes-and-Problems. Students will upload all components including the URL of their entry to the judges' system by 11:59 PM on 4/29/24. Semifinal interview time will be found in the Technosphere program.
HS	Biotechnology Design	One team per chapter 2-8 members per team	Using the current high school guide, participants select a contemporary biotechnology problem that relates to the current year's published area of focus. Design problem will be provided at http://tsaweb.org/Themes-and-Problems. Students will drop off their project and documentation at the room and time printed in the Technosphere program.
HS *	Board Game Design		Qualified teams from Regional Fairs develop, build and package a board game that focuses on the subject of their choice that is intellectually challenging. Students will drop off their game and portfolio at the room and time listed in the Technosphere program.
HS	Chapter Team	One team of 6 per chapter	Using the current high school guide, participants demonstrate an understanding of parliamentary procedure relative to business meetings. Testing will take place on 5/2/24. All team members must test at the same time. Computer or laptop device will be needed. Semifinals will be on Saturday.
HS	Children's Stories	One team per chapter 1-6 members per team	Using the current high school guide, a team creates a children's book that illustrates the theme. Theme will be provided at http://tsaweb.org/Themes-and-Problems Students will drop off their book and documentation at the room and time printed in the Technosphere program.
HS	Coding	Two teams of 2 individuals per chapter	Using the current high school guide, semifinalist respond to an annual coding-related design challenge by developing a software program that will accurately address an onsite problem in a specified amount of time. See National Themes and Problems (http://tsaweb.org/Themes-and-Problems) Testing determines the semifinalists. Testing will take place on 5/2/24. Both team members test together. Computer or laptop needed. Semifinalist will report to the room and time of this event that is printed in the Technosphere program.

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HS *	CAD- Architecture		Qualified members from Regional Fairs must provide all equipment, software and supplies. The event time limit will be four (4) hours. Students will report to the room and time of this event printed in the Technosphere program.
HS *	CAD- Engineering		Qualified members from Regional Fairs must provide all equipment, software and supplies. The event time limit will be four (4) hours. Students will report to the room and time of this event printed in the Technosphere program.
HS	Data Science and Analytics	One team of two members per chapter	Using the current high school guide, participants collect data, conduct an analysis of the data, and make a prediction about the outcome. Use template found in National Themes and Problems (http://tsaweb.org/Themes-and-Problems) Students will upload the documentation portfolio to the judges' system by 11:59 PM on 4/29/24. The top 24 will report to the room and time printed in the Technosphere program for the on-site presentation. Semifinalist (12) will then report to the room and time in the Technosphere program for the semifinals.
HS *	Debating Technological Issues		Qualified teams from Regional Fairs will be instructed to take the Pro or Con side of the selected subtopic. The theme for 2024 is posted at http://tsaweb.org/Themes-and-Problems Students will report to the room and time of this event that is printed in the Technosphere program.
HS *	Digital Video Production		Qualified teams from Regional Fairs and Fall Events develop a digital video/film that focuses on the given year's theme. The theme for 2024 is found at http://tsaweb.org/Themes-and-Problems . Students will upload a URL of their video and all supporting documents to the judges' system by 11:59 PM on 4/29/24. Semifinal interviews will take place on Friday of Technosphere, time and place to be printed in the Technosphere program.
HS *	Dragster Design		Qualified members from Regional Fairs and Fall Events design, produce working drawings for, and build a CO ₂ - powered dragster. Dragsters not meeting building tolerances specified in the Total TSA Guide will be disqualified and will NOT race. Cars will be dropped off at the location listed in the Technosphere program.
HS	Drone Challenge (UAV)	Two teams of 2 to 6 members	Using the current high school guide, participants design, build, assemble, document and fly an open-source Unmanned Aerial Vehicle. Challenge is provided at http://tsaweb.org/Themes-and-Problems. Time and place for this event will be located in the Technosphere Program.
HS	Engineering Design	One team of 3 to 5 students per chapter	Using the current high school guide, participants work as part of a team to develop a solution to the design challenge which is posted on the National TSA website at http://tsaweb.org/Themes-and-Problems . Students will drop off their project and documentation at the room and time printed in the Technosphere program.
HS *	Essays on Technology		Qualified members from Regional Fairs and Fall Events will write a synthesis essay to make insightful connections based on a current technological topic. Participants will be provided with a prompt and a series of two (2) or more articles on a current technological topic. Students will report to the room and time of this event printed in the Technosphere program.

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HS *	Extemporaneous Speech		Qualified members from Regional Fairs and Fall Events give a three to five-minute speech. See national guidelines. Students will report to the room and time of this event that is printed in the Technosphere program.
HS	Fashion Design	Two teams of 2 to 4 members per chapter	Using the current high school guide, participants' research, design and create a portfolio and wearable prototypes based on the theme for the year. The theme for 2024 is posted at http://tsaweb.org/Themes-and-Problems . Students will drop off their project and documentation at the room and time printed in the Technosphere program. Semifinal time will also be listed in the program.
HS *	Flight Endurance		Qualified members from Regional Fairs demonstrate flight principles with a rubber band powered model aircraft. Students build and test their aircraft before the event date. Students bring documentation portfolio with all components, and assembled aircraft for testing to the location listed in the Technosphere program.
HS	Forensic Science	Two teams of 2 members from each chapter	Using the current high school guide, participants will take a written test. Semifinalists will examine a mock crime scene and demonstrate their knowledge of forensic science. Testing will take place on 5/2/24. Semifinalist will report to the place and time listed in the Technosphere program.
HS	Future Technology Teacher	Three individuals per chapter	Using the current high school guide, participants create research and prepare a video showing an application for the classroom and create a lesson plan/activity that correlates to the standards for technological and engineering literacy https://www.ITEEA.org/STEL . Semifinalists communicate their design process through a presentation of their lesson plans. Students will upload all components of their video and all supporting documents to the judges' system by 11:59 PM on 4/29/24. Semifinalist will report to the place and time listed in the Technosphere program.
HS	Geospatial Technology	Two teams per chapter. Maximum of 5 members per team.	Using the current high school guide, participants interpret geospatial data in multiple formats and formulate projections about the area of interest in response to the annual theme. The theme for 2024 is posted at http://tsaweb.org/Themes-and-Problems Students will drop off their project and documentation at the room and time printed in the Technosphere program.
HS *	Manufacturing Prototype		Qualified members from the Regional Fairs design, fabricate, and use Computer Integrated Manufacturing (CIM) to create a product that addresses the annual theme found on the TSA website under Themes and Problems. See National Themes and Problems (http://tsaweb.org/Themes-and-Problems) for the 2024 theme. Prototype and documentation will be dropped off onsite to a specific location that will be in the Technosphere Program. Semifinalist location and time for the sales pitch/demonstration will also be in the program.
HS *	Music Production		Qualified teams from the Regional Fairs and Fall Events produce an original musical piece that is designed to be played during the national TSA conference opening or closing general session. Students will upload their work to the judges' system by 11:59 PM on 4/29/24. Semifinalist will report to the location and time listed in the Technosphere program.

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HS	On Demand Video	One team of 2-8 members per chapter	Using the current high school guide, participants write, shoot, and edit a sixty (60) second video during the conference. Participants have 36 hours to complete the entire video. Students will be able to go into the judges' system on 5/3/24 at 6 AM to see the prompt. The team will then upload their video shot onsite by 6 PM on 5/4/24.
HS *	Photographic Technology		Qualified members from Regional Fairs and Fall Events capture images and process photographic and digital prints that depict the current year's theme. The theme for 2024 is posted at http://tsaweb.org/Themes-and-Problems Students will upload into the judges' system by 11:59 on 4/29/24. Semifinalists will have 24 hours to upload the semifinal problem.
HS *	Prepared Presentation		Qualified members from Regional Fairs and Fall Events deliver an oral presentation, using a digital slide deck, on a topic based on the year's current conference theme. Students will see the Technosphere program for sign-up times and location and presentation times. State or national conference theme?
HS	Principles of Technology (Virginia Only)	One team per chapter 2-5 members per team	Teams that register by the Technosphere deadline will receive detailed information about what they will need for this event. See Page 18 for more information.
HS *	Promotional Design		Qualified members from Regional Fairs and Fall Events use computerized graphic communication layout and design skills in the production of a promotional resource for TSA. The theme for 2024 is posted at http://tsaweb.org/Themes-and-Problems . Times for preliminary and semifinal rounds will be listed in the Technosphere program. This is a turn-in event unlike in the fall and Regionals when you uploaded it.
HS	Senior Solar Sprint	Two teams per chapter 2-6 members per team	Using the current high school guide, participants explore an alternative energy source and experience the automotive design process when they research and conceptualize a design, make drawings, build a model from the design and race solar powered car models. Students will use the Technosphere program to find the time and location of this event.
HS	Software Development	Two teams per chapter 2-6 members per team	Using the current high school guide, participants use knowledge of cutting-edge technologies, algorithm design, problem-solving principles, effective communication and collaborative teamwork to design, implement, test, and document a software development project of educational or social value. Students will sign-up for times at the room and time printed in the Technosphere program.
HS	STEM Careers (Virginia Only)	Three individual members per chapter	See Page 19. Students will upload their work into the judges' system by 2 PM on 5/3/2024
HS *	Structural Engineering and Design		Qualified teams from Regional Fairs and Fall Events will build their structure and bring it to the conference. Students will drop off their project and documentation at the room and time printed in the Technosphere program. Then, semifinalist will build another structure during the time listed in the Technosphere program as well as provide their own tools and supplies.
HS *	System Control Technology		Qualified teams from Regional Fairs work as part of a team to develop a computer-controlled model solution to a problem. Students will report to the place and time listed in the Technosphere program for this event.

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HS	Technology Bowl	One team of 3 per chapter	Using the current high school guide, each team member must take the test. Finalists will compete in an oral question round of 16 teams. Testing will take place on 5/2/24. All members will test at the same time. Semifinals will compete on Saturday. Only students who test are on the team for the oral round.
HS	Technology Problem Solving	One team of two per chapter	Using the current high school guide, participants work together to develop and create a solution to a problem using limited materials. Teams must provide their own tools as specified. Teams will report to the place and time listed in the Technosphere program.
HS *	Transportation Modeling		Qualified members from Regional Fairs use engineering skills to design and fabricate a scale model. The theme for 2024 is posted at http://tsaweb.org/Themes-and-Problems . Students will drop off their project and documentation at the room and time printed in the Technosphere program.
HS	VEX Robotics	Four teams per chapter 2-6 members per team	The 2024 VEX Competition is called Over Under. NOTE: ALL TEAMS MUST ALSO REGISTER AT: Robotevents.com
HS *	Video Game Design		Qualified teams from Regional Fairs develop a game that focuses on the theme posted on the National website http://tsaweb.org/Themes-and-Problems . The game should be interesting, exciting, visually appealing, and intellectually challenging, with high artistic, educational, and social value. Students will upload their work to the judges' system by 11:59 PM on 4/29/24. Semifinalist will report to the place and time listed in the Technosphere program.
HS	Virtual Reality Visualization (VR)	Two teams per chapter, individual entries are permitted How many per team?	Using the current high school guide, participants use video and 3D computer graphics tools and design processes to communicate, inform, analyze and/or illustrate a given topic, idea or concept based on the 2024 theme for this event. http://tsaweb.org/Themes-and-Problems . Students will drop off their entries at the time and location listed in the Technosphere Program.
HS	Webmaster	One entry per chapter 3-5 members per team	Using the current high school guide, participants design a website that follows the design brief found at the following Link: http://tsaweb.org/Themes-and-Problems Students will upload their work to the judges' system by 11:59 PM on 4/29/24. Semifinalist will report to the place listed in the Technosphere program.

NOTE (*): Only those students and/or teams finishing in the top three places at each Regional Fair may enter the same specific events at Technosphere, unless already qualified during the fall events.

It is essential that students and advisors routinely check the TSA website (www.tsaweb.org) for updated information about TSA competitive events. This information is found on the website under Competitions/Updates and Clarification. When students participate in any TSA competitive event, they are responsible for knowing of updates, changes, or clarification related to that event.

Check the Virginia TSA Website for updated versions of the Addendum.

Special Awards and Recognition Programs

C-2	Chapter Excellence (High)	Chapters may not receive this award two years in a row.
C-4	Community Service Award (High)	Virginia Only: One entry per chapter
C-6	Member of the Year (High)	Virginia Only. One individual per chapter. State Officers are not eligible for this award.
C-8	Advisor of the Year (High)	Advisors may not receive this award two years in a row.

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| C-10 | Century Award Virginia Only. | Chapters affiliating CAP, or 100+ members. |
| C-12 | Commendation Award Virginia Only | All schools in division affiliated. |

Note: Individuals, chapters and/or school divisions applying for recognition awards must submit the required paperwork on or before the postmark deadline for Technosphere registration. They must also register the award within the online registration system.

Geospatial Technology
(Virginia Middle Schools ONLY Special Event)

OVERVIEW

Participants develop a portfolio containing maps, data, and appropriate documentation, that demonstrates their abilities to use geospatial data to develop solutions to environmental and social issues, and present the solutions.

PURPOSE

Participants are encouraged to explore and gain an understanding of how geospatial data and related technology are used to prepare a profile of a geographic area of interest and solve a problem in a spatial context. They demonstrate an understanding of geospatial technology software, data acquisition and its use in developing solutions.

ELIGIBILITY

Participants are limited to one team of 2-5 members per chapter.

TIME LIMITS

- A. Entries must be started and completed during the current school year.
- B. Teams will sign up to present their solutions to the judges.

ATTIRE

Business Casual dress as described in Competitive Events Attire is the minimum requirement.

PROCEDURE

- A. Participants check in their entries at the time and place stated in the conference program.
- B. Entries are reviewed by evaluators.
- C. Participants are provided with the problem and are allowed two hours to complete their entry.
- D. A presentation file of the solution is saved as a PDF.
- E. All winning entries, digital and hard copy, become the property of TSA, Inc.

REGULATIONS

- A. Participants supply their own computer work station with USB drive, power strip/surge protector, and software. A laptop computer is recommended. Anyone who does not provide these items will not be allowed to compete in the on-site event.
- B. The portfolio items [Maps, data and documents] must follow these guidelines:
 - 1. The portfolio items are developed in color on white 8½" x 11" paper.
 - 2. The notebook items must incorporate the selected theme. The content of the notebook items must be appropriate for viewing at the Virginia TSA conference. The title page with the event title, the title of the project and, the conference city, state, and the year; one (1) page. The Table of Contents provides location of documents and maps.
 - 3. Maps, data and documents need to be collected abiding by the parameters listed below. The name of the software used must be included,
 - 1 Documents –Uploaded to the judges' system.
 - a. Data dictionary for GIS files is required (see example below). The data dictionary should be an excel spreadsheet that includes, data, provider, and availability of metadata (yes or no).
 - b. Map Analysis – A document should accompany each map with an explanation of the map and methods used to create the map.
 - c. Explanation of the solution and how it was developed.

2. Files uploaded to the judges' system must be a PDF or an URL
 - a. Maps can either be exported as jpeg from the GIS software or the file structure can be setup so that the judges can open the project. Maps must be student generated with all appropriate map parts.
 - b. Documents that explain the project and maps.
 3. Data types
 - Location map of your project in relationship to state
 - Elevations
 - Watershed identification (regional to local)
 - Demographics and its effect on land use within the area
 - Location factors that impact the issue presented
 - Any local unusual geographic attributes, i.e. karsts, caves, lakes
 - Slope and aspect
 4. The portfolio is identified using only the participant's conference identification number.
- C. All on-site work is developed, saved as a PDF file on an external drive (USB flash drive) and submitted using only the team's conference identification number.
- D. Solutions will be presented as a PowerPoint presentation via zoom and teams will be interviewed by evaluators for approximately five (5) minutes.

EVALUATION

Evaluation is based on interpretation of the pre-conference design brief, the execution of a thorough, relevant, and understandable solution/presentation, submission of requested materials, solution for the on-site problem, and interview.

STEM INTEGRATION

This event has connections to the STEM standards noted below. Please refer to the STEM integration section of this guide.

Science, Technology, Engineering, Mathematics

PRIMARY LEADERSHIP SKILLS

Leadership skills promoted in this event:

- COMMUNICATION — Students will organize and produce a well-written notebook
- CREATIVE THINKING — Students visualize an issue to develop problem solutions
- PROBLEM SOLVING – Students identify and acquire data needed to develop solutions.
- EVALUATION — Students review and critique work throughout the development of the project.

Suggested leadership lessons: *Evaluation Imagination* and *Seven Components Of Effective Evaluation*

Additional leadership skills promoted in this event: DECISION MAKING, EVALUATION, organization, teamwork

TSA AND CAREERS

This competition has connections to one or more of the career areas featured in the TSA AND CAREERS section of this guide. Use *The 17 Career Clusters* chart and the *TSA Competitions and Career Clusters* grid as resources for information about careers.

CAREERS RELATED TO THIS EVENT

Programming and Software Development

Logistics Planning and Management Services

Transportation Systems/Infrastructure Planning, Management

Geospatial Technology Middle School Design Brief 2023-24
will be released to registered schools after registration closes.

Principles of Technology Challenge (Virginia ONLY Special Event)

Overview: The Principles of Technology Challenge is a team event in which students demonstrate their knowledge of physics, technology and mathematics. The problems used in the competition stem from the principles and concepts embedded in Principles of Technology I and II (9811 and 9812). Each team of students will work as a group to solve a series of problems.

Purpose: The purpose of the contest is to recognize high school students who have studied the Principles of Technology courses and are able to apply their knowledge to real world mechanical, electrical, thermal and fluidics problems.

Eligibility: Entries are limited to one (1) team per TSA chapter. The team must consist of two (2) to five (5) chapter members.

Time Limits: Each team will have two (2) hours to complete the event.

Procedure:

- A) Participants must register for the event in accordance with procedures established for Technosphere.
- B) The team members take the written test together and provide one answer sheet.
- C) After completing the written test, each team will be given a series of problems to solve.

Equipment: Each team must provide the following items of equipment for the onsite problem:

- a. Hand held calculator with no programs installed (may be 4 function scientific or graphing)
- b. Spring scales
- c. Protractors
- d. Principles of Technology student resource guide or any locally approved high school physics textbook
- e. Weight sets
- f. Lead sets
- g. Power supplies
- h. Digital multimeter
- i. Specific heat unknown samples
- j. Thermometers
- k. Graduated cylinders

Regulations: Each team will work independently without assistance from evaluators, teachers, or observers.

Evaluation: Each team's written test score and score for the solution of the problem will be averaged to determine the final score.

STEM Careers High School:

In this event, a student will complete a thorough investigation one of the many types of engineering and what an internship would look like in that particular career. The student will then take that particular career in a specific field of engineering, and research and document that. They will then make a video describing their documentation, making references to STEM skills that they would need for this career.

Regulations

1. Title Page with career and what part of engineering it falls under.
2. Table of contents
3. Description of a STEM-related job shadow/internship experience and what the outcome of the experience would look like, including STEM skills; three (3) single-sided pages
4. Description of research about the STEM skills selected and developed, and the related STEM career pathway; two (2) single-sided pages
5. Skill demonstration video. The video will be no more than 3 minutes in length.

Evaluation

Evaluation will be based on the participant's documentation and video.

The Engineering fields in which careers can be chosen are:

1. Aerospace Engineering
2. Biomedical Engineering
3. Chemical Engineering
4. Civil Engineering
5. Electrical Engineering
6. Mechanical Engineering

The event will be due by **May 3, 2024** to the judges' system.