



Steve Price, Georgia TSA Executive Director, 678-551-0840 sprice@gatsa.org

The Technology Student Association (TSA) is a national organization for elementary, middle and high school students who are presently enrolled in or have completed technology education classes. Engineering & technology education classes have a twofold mission: to help students gain an understanding of the engineering career field, the development and use of technology and to assist in the development of individual potential. TSA fosters this mission by developing leadership abilities and instilling a sense of pride in one's work. TSA also promotes high standards of technical ability, scholarship and safety. TSA is an organization that values the unique capabilities of students and offers many opportunities for personal growth and success.

Technology Day at the Georgia National Fair provides Georgia TSA (Technology Student Association) members with an opportunity to compete in various competitions to win money for their chapter and participate in a motivational rally to help get you pumped up and excited about the year to come!

Open to all students who are presently or have been enrolled in any technology education class in any middle school or high school in the State of Georgia.



www.GeorgiaNationalFair.com

All exhibitors are required to read and abide by the Georgia National Fair General Rules and Regulations. PLEASE NOTE: IT IS YOUR RESPONSIBILITY TO READ AND UNDERSTAND THE RULES. If you have questions, you may certainly e-mail us at sprice@gatsa.org or contests@gnfa.com. Please help us prevent entry disqualifications.

Advisors are required to register online at [GeorgiaNationalFair.com \(https://www.georgianationalfair.com/p/georgialiving/youth\)](https://www.georgianationalfair.com/p/georgialiving/youth) for all competitions by **September 13, 2021**. Late entries will not be accepted. No substitutions allowed. Required password must be obtained by Sept. 9, 2021.

Exhibitors will be required to turn in a copy of their online registration confirmation to check-in for competitions.

PLEASE NOTE THAT THE COMPETITIONS AND THE RALLY ARE TWO SEPARATE EVENTS AND REQUIRE SEPARATE REGISTRATION.

Rally information is included on the last page of this information. ***IMPORTANT - SEE FAIR GATE ENTRY PROCEDURE AND FEES. For rally questions, please contact Georgia TSA at 678-551-0840 or sprice@gatsa.org.

GEORGIA NATIONAL FAIR TSA SUPERIOR CHAPTER AWARD

1st Place - Superior Chapter - \$500
2nd Place - Reserve Superior Chapter - \$250

Sponsored by the Georgia National Fair

All placings will be put on a point system, example: 1st place=10 pts, 2nd place=9 pts, etc. These points will be calculated by chapter and the chapter with the highest accumulated points after the last competition will receive a GNF Superior Chapter Award plaque and \$500. The second place chapter will receive a GNF Reserve Superior Chapter Award plaque and \$250.

TSA RULES

1. Open to all students who are presently or have been enrolled in any technology education class in any middle school or high school in the State of Georgia.
2. All participating students must report with their teacher/advisor to the East ticket gate for admittance.
3. Top ten entries will be on display in the Miller-Murphy-Howard Building during the remainder of the Fair; other projects may be picked up after 2:30 PM on October 11, 2021.
4. **Winning entries not picked up at the Fairgrounds after the Fair will be available at the GA TSA Locust Grove Office for chapters within driving distance in the Metro/ South Metro Counties. The entries belonging to chapters outside of the Metro/South Metro can retrieve their entries at Fall Leadership Conference '21 – on Jekyll Island. Any entries not picked up at that time will be discarded.**
5. **ONLINE REGISTRATION WITH GEORGIA NATIONAL FAIR IS REQUIRED FOR ALL ENTRIES. DEADLINE IS SEPT. 13, 2021. Late entries will not be accepted.**
6. **Exhibitors will be required to turn in a copy of their online registration confirmation to check-in for competitions. NO SUBSTITUTIONS WILL BE ALLOWED.**

COMPETITIONS

Pre-judged Competitions: Pre-judged Competitions will be turned in at the CORE Conference or electronically submitted by 11:59 PM **September 15, 2021**. These events will be judged during CORE (Chapter Officer Retreat for Excellence) and not at the Rally. None of those events will be accepted or judged at the Rally.

On-site Competitions will be judged at the fair with an interview or live testing and must be turned in October 11, 2021 between 9:00 AM and 10:45 AM.

TSA Events

***Pre-judged Competitions**

- Architectural Design
- Georgia TSA Pin Design
- Program Promotion High School
- Program Promotion Middle School

On-site Competitions

- Alternative Energy Design - Wind Turbine
- Computer Integrated Manufacturing
- Mousetrap Car Challenge
- Robotic Challenge H.S. "Rover Challenge"
- Robotic Challenge M.S. "Rover Challenge"
- Structural Design - Night Stand
- Transportation Modeling

<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>	<u>5th-7th</u>	<u>8th-10th</u>
\$100	\$75	\$50	\$25	\$15	\$10

Sponsored in part by:



ARCHITECTURAL DESIGN CHALLENGE

THIS IS A CHAPTER EVENT AND MUST BE ENTERED with the School Name in the “First Name” field and “TSA” in the “Last Name” field. (ex. Smith High School TSA).

Enter online at www.GeorgiaNationalFair.com
(<https://www.georgianationalfair.com/p/georgialiving/youth>) by September 13, 2021.

Entries are limited to one per chapter.

DIVISION 40101 ARCHITECTURAL DESIGN CHALLENGE

CLASS
01 Architectural Design Challenge

Design Challenge Background: America is full speed ahead with an effort to return to the moon and eventually to Mars. New space vehicles are being developed to take astronauts to and from both. But unlike the Apollo missions, this time there are plans to set up bases where humans will live and work for extended periods of time. Unlike building living or work spaces on earth, there will be no Home Depot on either where the building materials would be readily available. Likewise the structures would have to protect the occupants from the hostile environment. Where will the power come from, the water, sanitation, even the breathable air? What natural resources, if any, can be used that are already there. Think of the conveniences we take for granted on earth that will have to be created to sustain the expedition teams that will visit and live on the moon and Mars.

OBJECTIVE:

The focus of the 2021 Architectural Design problem is to envision a permanent habitat for space explorers visiting and working on the moon or Mars. The designer will choose either the moon or Mars and design the complex where 12 astronauts will live, and work for long periods of time.

The design must include:

- a. A defined, safe entry and exit
- b. One or more areas where environmental suits are stored and accessed.
- c. One or more Assembly/Gathering spaces
- d. Activity Areas appropriate to support the team's interpretation of the Design.
- e. Support spaces as necessary to sustain the use and function of the facility. Some examples of support spaces are: janitorial, storage, mechanical, electrical, food preparation
- f. Bathrooms / Toilets
- g. Other necessary sections as discovered through the research.

PROCEDURES: Students must submit their display during check-in at CORE on September 17, 2021. Tech Day entrants who cannot attend CORE may ship their entry to Steve Price, GA TSA c/o Kaplan Mitchell Retreat and Conference Center, 70 Darom Lane - Clayton, GA 30525 to arrive by September 15, 2021, or have the entry brought to CORE by another Chapter. GA TSA is not responsible for entries lost in shipping. No entries for Middle or High School challenge will be accepted at Tech Day.

A copy of the online registration confirmation will be required to check-in for competition.

CONTEST RULES:

The design must meet the following criteria:

1. All exhibitors are required to read and abide by the Georgia National Fair General Rules and Regulations.

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2. The participants are to design an architectural floor plan that meets the current year's problem.

3. The floor plan is to be submitted on maximum drawing sheet cut size B (11" x 17") with standard scale as found on Architectural triangular scale, (1/8" = 1' - 0", 1/4" = 1' - 0", etc.). Smaller format is acceptable.

4. A 3-D rendering must be submitted on maximum drawing sheet cut size B (11" x 17"). Smaller format is acceptable.

5. While 3-D modeling may be used to enhance the rendering, the actual habitat must be the original work of the student.

Do not submit a physical 3-D model of your design.

ARCHITECTURAL DESIGN CHALLENGE (continued)

6. A written description of the style and merits of the design concepts must be included and must answer the following questions (1 page).

- a. How does your design meet the main requirements for the intended purpose?
- b. Construction materials and methods shall be clearly defined and should be carefully selected to take into account durability, and overall appropriateness.
- c. What are the advantages of your layout?
- d. Why have you included specific features?
- e. Clearly define Fire and Life Safety measures systems.
- f. Please supply a list of all credits for any third party models used within your rendering.

EVALUATION:

Design (35 pts)

- Does the design incorporate features needed and required for the intended purpose?
- Is the layout logical and functional?
- Are the sizes of the rooms adequate for their purpose?

Quality (25 pts)

- Is the drawing neat and precise?
- Are rooms properly labeled?
- Are dimensions correctly placed?

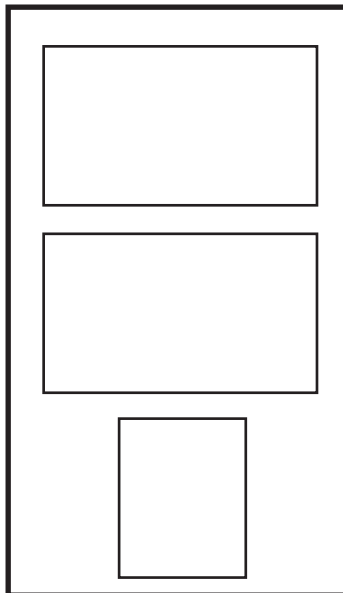
Written Description (25 pts)

- How does your design meet the main requirements for the intended purpose?
- What are the advantages of your layout?
- Why have you included specific features?
- List of credits

Rendering (15 points)

- 3-D Rendering

Sample of Mounting



GEORGIA TSA PIN DESIGN CHALLENGE

THIS IS AN INDIVIDUAL EVENT AND MUST BE ENTERED IN THE INDIVIDUAL'S NAME (ex. Bobby Smith).

Enter online at www.GeorgiaNationalFair.com
(<https://www.georgianationalfair.com/p/georgialiving/youth>) by September 13, 2021.

DIVISION 40201 GEORGIA TSA PIN DESIGN CHALLENGE

CLASS

01 Georgia TSA Pin Design Challenge

OBJECTIVE: Participants design a lapel pin that can be used to promote Georgia TSA at legislative events and that members can trade at the TSA National Conference Mixer.

Entries are limited to three per chapter.

PROCEDURES: Students must upload their designs via the GA TSA Event Management System Tech Day Registration site no later than midnight September 15, 2021 in a PDF document.

A copy of the online registration confirmation will be required to check-in for competition.

CONTEST RULES:

1. **All exhibitors are required to read and abide by the Georgia National Fair General Rules and Regulations.**

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2. The design must meet the following criteria:

- Any and all use of the TSA emblem must abide by TSA Trademark Policies as outlined in the National TSA webpage at www.tsaweb.org. You cannot alter the logo or its parts. (ie: using standard font in place of the logo letters in the logo)
- There must be no use of copyrighted materials other than the TSA logo.
- Participants will design a TSA pin that can be worn on blazers, jackets, shirts, sweaters, or blouses.
- The pin must include the letters TSA. It must also include either the state shape or the word Georgia or both in the design. Icons that represent our state have been used in previous designs.
- The design of the lapel pin must avoid using the shape of the state filled with art. Please be creative with the shape and make something unique and creative. The state shape may be used in the art, but must not be the shape of the pin.
- The design must be computer generated and submitted as an 8 ½" x 11" document and must include the design in both actual size and in an enlarged version to show detail.
- The actual pin size will range from ¾" to 2". The size and number of letters in the design must be taken into consideration; a letter on a 10 inch piece of paper will be reduced to 1/10 of an inch on a 1" pin. Therefore, fewer letters and greater size is recommended for a more legible pin.

EVALUATION:

Submissions will be screened for rules infractions by the competition committee prior to being judged by all attending participants at CORE. Each registered Chapter will receive colored tickets to vote for the BEST design. Each entry's votes will be counted and ranked to determine Top 10 Placements for Tech Day.

NOTE: Georgia TSA reserves the right to make any changes to the design which may conflict with its production. All pin designs become the property of GA TSA. When a participant enters a design, he or she relinquishes all rights for the sale and use of the design to GA TSA.

PROGRAM PROMOTIONAL CHALLENGE

THIS IS A CHAPTER EVENT AND MUST BE ENTERED with the School Name in the “First Name” field and “TSA” in the “Last Name” field. (ex. Smith High School TSA).

Enter online at www.GeorgiaNationalFair.com

(<https://www.georgianationalfair.com/p/georgialiving/youth>) by September 13, 2021.

DIVISION 40303 PROGRAM PROMOTION CHALLENGE MIDDLE SCHOOL
 40304 PROGRAM PROMOTION CHALLENGE HIGH SCHOOL

CLASS

01 Program Promotion Challenge

OBJECTIVE: Chapter members must work together to create a display that could be used to Promote their school's STEM/Engineering Program offerings which includes their TSA chapter. The display could be used at PTSA or Open House to explain/advertise all that your STEM/Engineering Program has to offer. Program Promotional Challenge will be judged on both the middle school and high school levels. Places will be awarded for this event on each level.

Entries are limited to one per chapter.

PROCEDURES: Students must submit their display during check-in at CORE on September 17, 2021. Tech Day entrants who cannot attend CORE may ship their entry to Steve Price, GA TSA c/o Kaplan Mitchell Retreat and Conference Center, 70 Darom Lane - Clayton, GA 30525 to arrive by September 15, 2021, or have the entry brought to CORE by another Chapter. GA TSA is not responsible for entries lost in shipping. No entries for Middle or High School challenge will be accepted at Tech Day.

A copy of the online registration confirmation will be required to check-in for competition.

CONTEST RULES:

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2. The total assembled maximum display size is 46" in width, 36" in height, and 18" in depth. **Although some pieces on the display may be made from plastic or wood, the main board may not be made from solid plastic such as Acrylic or PVC. However, sign making materials like Coroplast and Fome-Cor are acceptable.**

3. The display must be able to fold flat for transporting and storing. Attachments must be able to be removed and the chapter must provide a labeled container to store the loose attachments in, with specific instructions as to where these are to be placed and how to set up the display. Maximum Container Size: 10"x12"x15"

4. **The use of copyrighted artwork or characters is prohibited and will result in disqualification.**

5. The entry must be a display only. Extra printed materials must not be submitted with the display and will not be judged as a part of the project (ie. brochures, flyers, etc.).

6. Theme of the entry must be “Your School’s STEM/Engineering Program”.

7. Electricity will not be provided for the displays.

8. The top entries will be displayed during the Georgia National Fair; therefore, chapters must be prepared to leave their display in its entirety. The use of expensive accessories (such as laptop computers, tape players, etc.) is strongly discouraged unless the team is prepared to leave the item for the duration of the Georgia National Fair. Neither the Georgia National Fair nor Georgia TSA will be responsible for these items.

EVALUATION:

Go/No Go (DQ offenses):

- Fits within 46" width, 36" height, 18" depth when set up, but folds flat

PROGRAM PROMOTIONAL CHALLENGE (continued)

- Container for “additional materials” no bigger than 10” x 12” x 15” includes set-up/breakdown instructions.
- Main board must be made from Chloroplast or Foam-Core (no solid plastic, wood, etc)
- Must not include copyrighted artwork or characters

Content 50%

- Clearly displays School Name (including school level...MS vs HS)
- Includes Information about STEM/Engineering Courses
- Includes Information about your TSA Chapter
- Includes Information about your School, Community, and/or State involvement
- Other information central to your program not listed here

Design 30%

- Effective Layout – Flow of Information
- Readability/Clarity
- Color Scheme
- Proportionality

Impact 20%

- Overall impression
- Appeal to broad audience, including those who might be unfamiliar with STEM/Engineering programs

ALTERNATIVE ENERGY DESIGN

THIS IS A CHAPTER EVENT AND MUST BE ENTERED with the School Name in the “First Name” field and “TSA” in the “Last Name” field. (ex. Smith High School TSA).

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DIVISION 40401 Alternative Energy Design

CLASS
01 Wind Turbine

OBJECTIVE: The objective is to build a wind turbine fan that will generate the highest voltage.

Entries are limited to one per chapter. (One team member will demonstrate on site.)

PROCEDURES: One (1) Student per team must submit the completed fan during check-in at Reaves Arena at the Georgia National Fair. During turn in, you will sign up for a time to return setup and test your blade system.

A copy of the online registration confirmation will be required to check-in for competition.

CONTEST RULES:

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2. Students will sign up for a time slot and test their own devices in front of the judges. Students will have 30 seconds to set up prior to testing.

3. The device must pass a GO-NO-GO inspection including a safety inspection to insure no harm or damage will occur. Any unsafe devices WILL NOT BE TESTED and be counted as a disqualification.

4. The device must meet the following specs:

- Stand Height: 24 in (must use stand with gear box system provided by GATSA)
- Maximum blade diameter: 18 in
- Maximum number of blades: 12

MATERIALS:

- KidWind Wind Turbine Hub - Part # KW-WTH3 - Part Url is:<http://www.vernier.com/products/kidwind/wind-energy/kw-wth3/>
- Any materials may be used for blades and must be attached by dowel to the hub
- Dowel material is student choice

TESTING:

- Student will attach their hub and blade system to the provided KidWind Stand and Gear System. Only the approved Kidwind Hub will be used. Part Url is:<http://www.vernier.com/products/kidwind/wind-energy/kw-wth3/>
- 4 Box fans will be used to create a wind tunnel (2 fans on bottom with 2 fans on top). Wind tunnel will be 48inx48inx48in cube open on the back

EVALUATION:

- Voltage will be measured using a multimeter attached to the generator leads.
- Student will have three opportunities and the three voltages will be averaged.
- Award places determined by voltage ranking.
- Ties will be broken by testing efficiency of the wind turbine.

First Place Winner
(Machine Challenge)
Nathan Sutton,
Pompano High School

COMPUTER INTEGRATED MANUFACTURING

THIS IS A CHAPTER EVENT AND MUST BE ENTERED with the School Name in the “First Name” field and “TSA” in the “Last Name” field. (ex. Smith High School TSA).

Enter online at www.GeorgiaNationalFair.com
(<https://www.georgianationalfair.com/p/georgialiving/youth>) by September 13, 2021.

DIVISION 40501 Computer Integrated Manufacturing

CLASS
01 Computer Integrated Manufacturing

OBJECTIVE: Participants will use Computer Integrated Manufacturing (CIM) to design and create a product that fits the year’s theme. The product may use additive and/or subtractive manufacturing of any traditional, Computer Numerical Control (CNC), 3D printing, or laser technology available. This year’s theme is to design an award for the Georgia TSA Member of the Year. The name of the recipient of the award is Timothy Parker. The award date is May 1, 2022.

Entries are limited to one per chapter. (There can be up to 4 members on the team)

PROCEDURES: Students should submit the completed product and the display board during check-in at Georgia National Fair at Reaves Arena. Rubric scores will be based on a review of the product and the display.

A copy of the online registration confirmation will be required to check-in for competition.

CONTEST RULES:

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2. Students will comprise a team of up to 4 individuals an award for the Georgia TSA Member of the Year. The name of the recipient of the award is Timothy Parker. The award date is May 1, 2022..

Product: One sample of the manufactured product must be submitted

- The product may use additive and/or subtractive manufacturing of any traditional, Computer Numerical Control (CNC), 3D printing, or laser technology available.
- The product may be a single piece or multiple pieces.
- The finished product may not exceed 10"x10"x10.
- The product may be made of wood, plastic, or metal.
- Stock fasteners may be used. These include (but are not limited to) nuts, washers, screws, etc.
- Parts may be finished (sanded, painted, stained) if necessary.
- The Georgia TSA logo can be incorporated into the product design.

Display: A 20"x30" foam core, two-dimensional display must be submitted, containing the following items:

- The name of the event (Computer Integrated Manufacturing)
- The name and description of the product created.
- A CAD drawing of the product (This may be a working drawing, an isometric, or an assembly drawing,)
- At least five pictures of the product being manufactured. Pictures should include captions that explain the manufacturing process of the product (must accompany each picture).

EVALUATION:

CRITERIA	Minimal performance 1-4 points	Adequate performance 5-8 points	Exemplary performance 9-10 points
Product: Theme	The effort is basic, with only a loose association to the product theme.	The effort adequately addresses the product theme.	The effort to address the product theme exceeds expectations.
Product: Additive or subtractive manufacturing piece (x2)	Finished product is poorly constructed and/ or doesn't match the CAD drawing on the display.	The product quality could be improved or the product doesn't match the CAD drawing.	Product is attractive and neat and demonstrates quality construction; product matches the CAD drawing indicated on the display.
Display: Components	Four or more components are missing from the display.	Two or three of the required components are missing from the display.	The display contains the name of the event, name of the product, a description of the product, a CAD drawing, at least five photographs and captions describing the manufacturing process.
Display: Drawing	The CAD drawing is poorly executed with key elements missing.	A CAD drawing is included, but components are missing from the drawing.	An accurate CAD drawing is included in the display.
Display: Photographs	Photographs that show the manufacturing process are not included in the display.	Some photographs are missing	Five or more photographs of the manufacturing process of the finished product.
Display: Manufacturing Process	Captions for pictures are non-existent or do not explain the manufacturing process.	Some captions are included; captions may not include details of the manufacturing process.	Captions are included for at least five pictures that thoroughly describe the manufacturing process.

MOUSETRAP CAR CHALLENGE

THIS IS A CHAPTER EVENT AND MUST BE ENTERED with the School Name in the “First Name” field and “TSA” in the “Last Name” field. (ex. Smith High School TSA).

Enter online at www.GeorgiaNationalFair.com
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DIVISION 40601 MOUSETRAP CAR CHALLENGE

CLASS

01 Mousetrap Car Challenge

OBJECTIVE: The objective is to build a vehicle that is powered solely by a standard-sized mouse trap that will travel and stop closest to a finish line located 12 feet from the start line in the shortest amount of time.

Entries are limited to one per chapter. (There can be up to 4 members on the team.)

PROCEDURES: Students must submit the completed car during check-in at Reaves Arena at the Georgia National Fair. During turn in, you will sign up for a time to return and run your car.

A copy of the online registration confirmation will be required to check-in for competition.

CONTEST RULES:

1. **All exhibitors are required to read and abide by the Georgia National Fair General Rules and Regulations.**

PLEASE NOTE: IT IS YOUR RESPONSIBILITY TO READ AND UNDERSTAND THE RULES. If you have questions, you may certainly e-mail us at sprice@gatsa.org or contests@gnfa.com. Please help us prevent entry disqualifications.

2. Students will comprise a team of up to 4 individuals to create a Mousetrap Car/Vehicle.

3. The vehicle MUST be powered by a single VICTOR brand mouse trap measuring: 3 7/8" L x 1 3/4" W. The mouse trap spring CANNOT BE ALTERED to add power in any way.

4. The vehicle may not start with additional potential and/or kinetic energy other than what is stored in the mouse trap spring. Vehicles MUST be self-starting. Rubber bands or any other elastic materials may not be used in the launch mechanism.

5. The vehicle must steer itself and may not receive a push in any direction in order to avoid a collision.

6. The vehicle must have 3 or 4 wheels that make contact with the race surface.

7. The timing of the vehicle will begin when any part of the vehicle passes over the start line and will end when the vehicle comes to rest.

8. The distance from the target will be measured from the point of the vehicle that first passed the start line to the finish line or target.

9. The overall dimensions of the Mousetrap Car cannot exceed 20" L x 10" W x 12" H. The measurement will be taken while car is in resting position.

TESTING:

The course will be smooth level floor and non-carpeted. The winner will be the vehicle that has obtained the lowest score in either of the two attempts. Any ties will be decided by a single runoff between the tied vehicles.

EVALUATION:

The scoring will be the total of the time in seconds added to the distance from the finish line in centimeters.

Score=time(s) + distance from finish line (cm). The lowest number is the best car.

ROBOTIC ROVER CHALLENGE

THIS IS A CHAPTER EVENT AND MUST BE ENTERED with the School Name in the “First Name” field and “TSA” in the “Last Name” field. (ex. Smith High School TSA).

Enter online at www.GeorgiaNationalFair.com
(<https://www.georgianationalfair.com/p/georgialiving/youth>) by September 13, 2021.

DIVISION 40703 ROBOTIC ROVER CHALLENGE MIDDLE SCHOOL
40704 ROBOTIC ROVER CHALLENGE HIGH SCHOOL

CLASS

01 Robotic Rover Challenge

OBJECTIVE: Design and build a robotic rover that will navigate an obstacle course, deliver a payload, and return to the starting point in the shortest time. Robots must meet the criteria and constraints set forth.

Entries are limited to one per chapter with up to three members on each team.

PROCEDURES: Students must submit the completed robot for inspection during check-in at the Georgia National Fair at Reaves Arena. Go/No Go criteria will be used to determine eligibility.

A copy of the online registration confirmation will be required to check-in for competition.

CONTEST RULES:

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2. Robots must pass a GO-NO-GO inspection including a safety inspection to insure no harm or damage will occur. Any robot not passing full Go-No-Go inspection will be disqualified. Challenges to a “No-Go” decision must be made before removing the robot from the holding site. Any robot handled or moved after the initial submission will not be re-evaluated by the judges.

3. Criteria and Constraints:

- Robot can use no more than 6 motors: VEX, FLL, or any DC Motor.
- Acceptable robot construction materials include VEX, FLL, or other robotic platform parts or custom created parts (3D printed, Laser, CNC, etc)
- Robots must fit within a 14” cube (WxDxH). They may expand beyond their starting size constraints. A box jig will be used to test compliance. The robot must fit in a box that reflects max dimensions.
- Robots may not be modified during the event. They can be repaired with referee approval. No significant changes can be made during the repair. The robot must be re-inspected before it will be allowed to compete. Teams may be requested to submit to random inspections by event personnel. Refusal to submit to the inspection will result in disqualification. Referees or inspectors may decide that a robot is in violation of the rules. This will result in a disqualification.
- The robot must be student constructed and NOT from a preassembled kit. For example, RC devices from a box may not be used.
- Any weight added to the robot must be securely attached to the robot.

First Place Winner
Robotic Rover Challenge
Nathan Sutton,
Pawnee High School

ROBOTICS CHALLENGE (continued)

The Track:

The track is 24" wide. It will be constructed of a wooden base with the various obstacles diagrammed below.

Device (Go or No-Go)

- Does the robot meet the maximum motor specifications (no more than 6)?
- Is the robot made from VEX, FLL, or a metal chassis?
- Is the robot within the size specifications?
- Is the robot a custom built robot?

Robots will be placed at the starting line and the payload (tennis ball) will be loaded. Time will be started when the team is instructed to begin.

The course will be considered completed when the payload is successfully deposited into the specified receptacle (8" x 8" x 5" box) and the robot fully returns to the starting area. Time will be recorded at this point.

During the run, the driver must remain at their station until released by the referee.

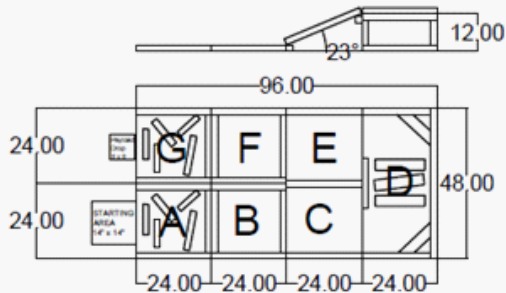
There may be only one driver per run.

If a robot leaves the course, the run is over and the time will be recorded as a DNF.

Once a team begins a run, no interventions may be made.

If at any time the robot operation is deemed unsafe or has damaged the playing track surface or sled, the referees will stop the pull and the offending team will not be allowed to finish their pull.

The top 10 robots will be left for display at the Georgia National Fair. However, the battery, remote control, and microcontroller, in example VEX Cortex Microcontroller, will be allowed to be removed from the robot. The chassis and drivetrain (wheels and motors) will not be allowed to be removed. Robots will be returned to schools after the Georgia National Fair.



- A - 2' x 2' x 2" Fixed, randomly placed dowel rods up to 1.25" Diameter
- B - 2' x 2' x 2" Sand Pit
- C - 23 Degree Up Ramp
- D - 3.5" w x 1.25" h Speed Bumps
- E - 23 Degree Down Ramp
- F - 2' x 2' x 2" Golf Ball Pit
- G - 2' x 2' x 2" Fixed, randomly placed dowel rods up to 1.25" Diameter



STRUCTURAL DESIGN CHALLENGE

THIS IS A CHAPTER EVENT AND MUST BE ENTERED with the School Name in the "First Name" field and "TSA" in the "Last Name" field. (ex. Smith High School TSA).

Enter online at www.GeorgiaNationalFair.com
(<https://www.georgianationalfair.com/p/georgialiving/youth>) by September 13, 2021.

DIVISION 40801 STRUCTURAL DESIGN CHALLENGE

CLASS

01 Friction Fit Night Stand

OBJECTIVE: Design and build a cardboard nightstand that will support 90lbs. You will use the engineering design process and keep track of brainstorming, iterations, sketches, and prototyping process. Your nightstand and an engineering notebook will all be submitted as part of this competition.

Entries are limited to one per chapter (there can be up to 4 members on the team).

PROCEDURES: Students must submit the completed nightstand and engineering book during check-in at the Georgia National Fair at Reaves Arena. Go/No Go criteria will be used to determine eligibility. A timesheet will be provided for sign-up at check-in for interview times after the top twelve are established. Rubric scores will be based on a review of the engineering book and interviews.

A copy of the online registration confirmation will be required to check-in for competition.

CONTEST RULES:

All exhibitors are required to read and abide by the Georgia National Fair General Rules and Regulations.

PLEASE NOTE: IT IS YOUR RESPONSIBILITY TO READ AND UNDERSTAND THE RULES. If you have questions, you may certainly e-mail us at spruce@gatsa.org or contests@gnfa.com. Please help us prevent entry disqualifications.

Criteria and Constraints (Nightstands not meeting these criteria will result in a disqualification.):

1. The Nightstand must be made entirely out of cardboard and be friction fit (no glue, tape, etc).
2. The Nightstand must have a functional drawer.
3. The height of the nightstand must be between 26" and 30" from the floor.
4. The length and width of the nightstand must be a maximum of 20" x 20".
5. The drawer must be functional and must accommodate your engineering design notebook.
7. The Nightstand must be friction fit with a mass of no more than 8 lbs.
8. The Nightstand must support a mass of 90 lbs without showing major signs of stress.
9. The entry must include an engineering notebook contained in a Clear-Front Report Cover. No other formats will be accepted.

EVALUATION:

The nightstand must pass a GO-NO-GO inspection:

- Is the nightstand made entirely out of cardboard and friction fit(no glue, tape, or non-cardboard parts)?
- Does the nightstand have a functional drawer of appropriate size?
- Is the top of the nightstand between 26" and 30" from the floor?
- Is the width of the nightstand no more than 20"?
- Is the length of the nightstand no more than 20"?
- Does the nightstand have a mass of no more than 8 lbs.?
- Does the nightstand support a mass of 90 lbs. without showing major signs of stress?

Any device receiving a "No" answer to any of the above requirements will result in the device NOT BEING FURTHER EVALUATED.

STRUCTURAL DESIGN CHALLENGE (continued)

Engineering Rubric:

- Has the objective been clearly identified? Score 0 - 5
- Drawings have been included that show an overall design process. These drawings appear throughout the book and clearly show a progression of brainstorming, iterations, prototyping, and testing. Score 0 - 5
- Daily logs have been included that represent at least 5 days worth of work. Score 0 - 5
- A clear prototype testing process is shown to evaluate various iterations of the nightstand. Score 0 - 5

Interview Rubric:

CRITERIA	Minimal performance 1-4 points	Adequate perfor- mance 5-8 points	Exemplary performance 9-10 points
Organization	Participant(s) seem(s) unorganized and unprepared for the presentation/interview.	Participant(s) is/are generally prepared/organized in the overall presentation/interview.	The presentation/interview is logical, well organized, and easy to follow.
Knowledge	Participant(s) seem(s) to have little understanding of the concepts of the design challenge; vague answers to interview questions are provided.	An understanding of the concepts of the design challenge, and answers to questions, are adequate.	There is clear evidence of a thorough understanding of the design challenge; questions are answered well.
Articulation	The presentation and interview provide an unclear, unorganized, and or illogical description of the project.	The presentation and interview offer a somewhat logical and easy-to-understand project description.	The presentation/interview provides a clear, concise, and easy-to-follow description of the project.
Delivery	The team/individual is verbose and/or uncertain in the presentation/ interview; participant posture, gestures, and lack of eye contact diminish the delivery.	The team/individual is somewhat well-spoken and clear in the presentation/ interview; participant posture, gestures, and eye contact result in an acceptable delivery.	The team/individual is well-spoken and distinct in the presentation/ interview; participant posture, gestures, and eye contact result in a polished, natural, and effective delivery.

TRANSPORTATION MODELING

THIS IS AN INDIVIDUAL EVENT AND MUST BE ENTERED IN THE INDIVIDUAL'S NAME (ex. Bobby Smith).

Enter online at www.GeorgiaNationalFair.com
(<https://www.georgianationalfair.com/p/georgialiving/youth>) by September 13, 2021.

DIVISION 40901 Transportation Modeling

CLASS

01 Transportation Modeling - The History of Supersonic Aircraft (chose one example)

OBJECTIVE: Using only certain materials and following required specifications, participants' research, design and produce a scale model of a vehicle that fits the annual design problem and that takes appearance and realism into consideration. The design theme is The History of Supersonic Aircraft. Choose one example to research and present in your display.

Entries are limited to three individuals per chapter and one entry per individual.

PROCEDURES: Entries must be started and completed during the current school year. Students must submit the completed car during check-in at Reaves Arena at the Georgia national Fair. During turn in, you will sign up for a time to return and be interviewed.

A copy of the online registration confirmation will be required to check-in for competition.

CONTEST RULES:

1. **All exhibitors are required to read and abide by the Georgia National Fair General Rules and Regulations.**

PLEASE NOTE: IT IS YOUR RESPONSIBILITY TO READ AND UNDERSTAND THE RULES. If you have questions, you may certainly e-mail us at sprice@gatsa.org or contests@gnfa.com. Please help us prevent entry disqualifications.

2. The device must pass a GO-NO-GO inspection including a safety inspection to insure no harm or damage will occur. Any unsafe devices WILL NOT BE TESTED and be counted as a disqualification.

- Vehicle scale model is present.
- The entry reflects the current year design theme.
- The model is inside the display and the entire display is less than 16"x16"x16".
- Glass or liquids are not involved in the entry.

3. Chapter entries must include a scale model and a display.

4. Model and display must meet the following specifications:

Model:

- The scale model must accurately reflect the annual design problem (see above).
- The model main body itself must be made from scratch by the member entering the event.
- **Using pre-manufactured model vehicle body parts is prohibited. (Including Hoods, Fenders, wings, propellers, frames, etc.)**
- *It is permissible to use pre-manufactured parts such as body strengtheners, plastic canopy, exhausts, mirrors, head and tail lights, windshields and antennae. They may be attached to or enclosed within the vehicle and may be constructed from materials other than wood, excluding glass or liquids. These parts must be fastened securely.
- *It is permissible to use 3D Printers in the production of the parts of this model.
- The finished vehicle size must fit inside the display space of 16"x16"x16".
- The themed vehicle model must have an actual length that measures at least 6".
- The designer must choose a scale for the vehicle so that it meets the size requirement. The chosen scale must an actual length that measures at least 6".

TRANSPORTATION MODELING (continued)

Wheels:

- Dimensions must be consistent with the scale of the body.
- Wheels must roll.

Display:

- The model must be presented for evaluation on a display not to exceed 16" tall x 16" deep x 16" long (including the model). No electrical access will be provided for displays. Use of Dry Cell batteries is permissible but must be contained within the stated display space.

Judging Rubric

Go-No-Go

The display size is no more than 16"x 16"x 16".

EVALUATION:

Entries are evaluated by a combination of points earned from the model, and display.

Paint/Finish/Overall

- Paint/Finish/Overall Aesthetics.....(40 pts)
- Graphics.....(10 pts)
- Accompanying Display(30 pts)
- Interview.....(20 pts)



Steve Price, Georgia TSA Executive Director, 678-551-0840 sprice@gatsa.org

Technology Day Rally October 11, 2021
Reaves Arena, Georgia National Fairgrounds
Deadline for registration for all events is Sept. 13, 2021

For additional rally information, contact Steve Price, Georgia TSA Executive Director
 (678-551-0840 sprice@gatsa.org)

Contest Registration - Deadline: Sept. 13, 2021 on Georgia National Fair Website

Rally Registration – (GA TSA Rally Registration and Wristband Orders Deadline: Sept. 13, 2021 via the GA TSA EMS Registration System via www.gatsa.org)

Rally Registration Fee: \$20.00

GNF Rides Armbands: \$25.00

All Buses must Park in the East Gate parking lot. All students must report with their teacher/advisor to the EAST TICKET GATE for admittance. Each chapter attending the TSA Tech Day Rally must pre-register with Georgia TSA and pay the \$20 Tech Day registration fee for Advisors, Chaperones, and Students. Bus drivers get in free. Anyone attending that has not pre-registered will not be on the list from EMS and will have to pay the \$14 fair entry fee at the East Gate prior to entering the Fair. Fair personnel will verify the group's entrants outside the East Gate for admittance.

Fair midway armbands must be pre-purchased for \$25 with pre-registration and will be available for pick up during CHECK-IN at Reaves Arena. One advisor from each chapter is required to check in at the designated table upon arrival at Reaves Arena. (Please do not have your chapter members in line for checking in inside Reaves Arena.) Those that do not check in will cause their chapters to be listed as no-shows in the official records. Those chapter advisors that still owe the registration payment will be directed to a separate line to settle the account with the Georgia TSA bookkeeper.

Schedule for October 11th

9:00 - 10:45 AM	Registration/Event Check-in and Time Slot sign up
11:00 - 12:00 PM	TSA Rally
12:00 PM	Interviews, Live Events and Judging continue
<u>Approximately 2:00 PM</u>	Ribbons placed on top ten; other entries may be removed at <u>approximately 2:30 PM</u>

There will be no second session. At approximately 2:00PM – ribbons will be placed on Top 10 entries. Winning entries will be put on display in the Miller-Murphy-Howard Building for the remainder of the fair. All other entries must be picked up by the owner. **Please do not remove entries until all ribbons have been placed.** Any exhibit/entry left behind (that does not place) will be discarded. Event and Superior Chapter Winners will be announced and receive their Plaques during Leadercon'21 (Fall Leadership Conference).

Winning exhibits and their ribbons must be picked up at FLC on Saturday afternoon after the Technical Sessions, with the following exceptions - Due to limited space for transportation, only South Georgia Chapter winning entries will be transported to FLC for pick up. North GA and Metro Atlanta Area Chapters may retrieve their winning entries from the Stockbridge, GA office of GA TSA. Please contact Mr. Price for arrangements.