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From the State Advisor

Dear Chapter Advisors:

Welcome back to a great new year with tons of exciting changes for our organization as we celebrate our 30th Anniversary! This letter will outline some of the things you can expect this year along with dates and deadlines you’ll need to keep your chapter on track.

Mark Your Calendar

The 30th Annual Colorado TSA State Conference will be February 18-20, 2016. Due to renovations at the Marriott Denver Tech Center, we will be moving to the Hyatt Denver Tech Center, located just a block or so north of the Marriott at 7800 East Tufts Avenue, Denver, CO 80237. For you veterans, the Hyatt is located just a block or so north of the Marriott. The address is 7800 East Tufts Avenue, Denver, CO 80237.

Call to Conference

The Call to Conference serves several important functions. First, it is a comprehensive guide for you as an advisor to the state conference. It includes all the information (including information about the hotel) you will need to get your team ready for the conference. Second, it contains the rules and rubrics for STATE-ONLY events. Keep in mind that the state-only rules undergo yearly review and revision (much like the national rules) and minor revisions and updates may have occurred. Regardless of what level (middle or high school) you are, advisors and students should REVIEW AND CAREFULLY READ ALL THE EVENT GUIDELINES AND SPECIFICATIONS THOROUGHLY! Do not assume the rules are the same as last year! As a reminder, updates and clarifications to national competitive event rules are made throughout the year and are posted online at the national TSA website at http://www.tsaweb.org/Updates-and-Clarification. Please visit this website often to stay on top of all updates and clarifications.

This year, we have increased the number of entries in some events to help get more students involved. For the Pin Design and T-Shirt Design contests, for example, we have increased the number of entries to one per student! So every one of your members should be able to submit designs for the pin and t-shirt contests! Check the eligibility lists later on in this document for more information.

Following the success of last year’s trial, we again have created several versions of the Call to Conference/State Competitive Events Guide – each one geared to a specific stakeholder in our organization – one for advisors, one for students, and one for parents.

- The ADVISOR EDITION -- the most comprehensive document, containing all the official conference forms (including hotel reservation forms, medical release, code of conduct forms, etc.), chapter deadline information, competitive event rules for the state-only events (which have been reviewed and revised as needed) as well as links to the update page, and the student documentation style guide.
• The STUDENT EDITION – this edition contains everything STUDENTS need for the state conference including competitive event rules for the state-only events (which have been reviewed and revised as needed) as well as links to the update page, and the documentation style guide.

• The PARENT EDITION – this edition contains information on the conference PARENTS need to know, including where and when to pick up students from the conference and the forms they will need to complete for COTSA.

Parent Attendance

Colorado TSA understands the importance and value parents have to our members. We appreciate their encouragement, enthusiasm and support. However, with the enormous growth we have experienced, we have also seen a rise in the numbers of parents/family members of student attendees coming to our conference – such a significant increase in numbers that we do not have the capacity or facilities to accommodate them at our conference. For the safety of our students, volunteers, COTSA staff and hotel staff, access to all TSA events is restricted to officially registered and badged conference participants ONLY. Just like any professional conference, any individual who is not an officially registered participant in the conference and does not have an official TSA 2016 Conference registration badge WILL NOT be admitted to any TSA event at the conference hotel.

We understand that people do come to pick up their students after the awards ceremony to help chapters save money on transportation costs, and that is acceptable. However, we cannot have large numbers of parents and family members clog the lobby, restaurant or atrium areas of the hotel waiting for their students. If parents and family members come to pick up your TSA members, they will have to wait outside the hotel in the hotel parking lot in designated parking spaces. They cannot wait in the hotel loading zones or fire lanes.

We regret having to take this measure, but we are guests of the Hyatt and we need to be respectful of their facilities as well as comply with local fire codes and laws. In the long run, this will make our conference a safer and more pleasant place to be.

State Conference

Our organization continues to grow at an incredible rate; last year was our largest state conference ever and with that growth came some very difficult growing pains. To that end, the COTSA Advisory Committee, the State Officers and I are working with the hotel to ensure a fun, safe and successful conference. A schedule is NOT included in this guide; we are still finalizing details. A tentative schedule will be emailed to advisors, chapter presidents and posted on the COTSA website as soon as we have ironed out all the wrinkles.

Additionally, many more events are now EARLY SUBMISSION. That means that something for these events must be submitted by the February 1, 2016 deadline. Please refer to the eligibility charts later in this guide for more information on which events are Early Submit and what needs to be submitted. We have developed an online form where students can upload their files (PDFs for documentation and URLs for videos and multimedia presentations). The links are provided in the competitive events guide. Students will need their state conference ID number when they go to upload files, however. Which means they must be registered for the state conference in order to upload an entry.
Judges

This year, we are requiring that each chapter in attendance at the State Conference provide a minimum of two judges – a practice that mirrors that of the National TSA Conference. With the growing number of students and contests, it’s becoming increasingly difficult to recruit judges to help at the state conference, therefore we need your help. We would prefer the judges NOT be chapter advisors, but rather key stakeholders in your school community – administrators, community leaders or advisory committee members. Parents are welcome, but we must be certain that they do not judge a competition in which their own student may be competing.

Competitive Event Guide

This year, the National Middle School Competitive Event guide underwent revision/updating and there are several new events and you will find that several events have been eliminated or combined with other events to make completely new events.

If you are involved in the middle school program as an advisor, mentor, parent or student, I cannot stress to you enough how critically important it is that you thoroughly read through ALL of the competitive event guide. Even though on first blush an event may not appear to have changed, a careful read of the rules may uncover a small rule change that could prevent a student from being able to compete! PLEASE – READ THE GUIDE CAREFULLY!

Because of the rule changes, several of our state events have also changed and the rules have been modified and updated to reflect those changes. Again, carefully read through those rules at the back of this guide.

One way to stay on top of the rule clarifications and updates is to frequently visit the Updates and Clarifications page on the national TSA website: http://www.tsaweb.org/Updates-and-Clarification.

Documentation Style Guide

Included in this guide is the Documentation Style Guide to help students create project documentation required for many competitions. The guide helps you format your documentation so that it meets all TSA guidelines – both national and state! Make sure your projects are not disqualified because of improperly formatted documentation!

State Officer Outreach

The COTSA State Officer team wants you and your students to know they are always available to assist you as you build and manage your TSA chapter. They do this in several ways. First, all advisors are being asked to provide the name and contact emails of their chapter president. That way, a state officer can make a personal contact with your team and help them answer questions about the state conference, competitive events, running for state office, and more.

Second, the State Officers are also available (depending on school schedules) for chapter visits. The state officers and I are available to come visit your chapter and meet your students, answer questions, and help you get them excited for the year ahead. If you would like to schedule a state officer/state advisor visit, please contact me.
Deadlines!

Please make note of all the deadlines listed in this Call to Conference. There is no flexibility with any posted deadlines and there are no exceptions! Failure to meet stated deadlines may prevent your chapter from participating in this year’s conference!! Please use the information in this document to keep track of your chapter’s progress toward the deadlines throughout the year; we have provided you a chart showing the important dates.

Forms

Included in this document are the forms required by the state association and the hotel for participation in the state conference. Please have all conference attendees complete these forms and return them to you. Once you have collected all the forms for your chapter, you will need to submit all the forms IN PDF FORM to the state office. DO NOT SEND PAPER COPIES to the state office! We are attempting to streamline the paperwork process and reduce delays in getting paperwork in on time. NOTE: If your paperwork and/or payment are not received by the deadlines stated in this document, YOUR CHAPTER WILL NOT BE ALLOWED TO PARTICIPATE IN THE CONFERENCE! We understand that it takes time to process checks and get forms back, so please PLAN AHEAD!!

Social Media

I encourage you and your students to participate with COTSA on social media. Please join us on Facebook and Twitter to get all the latest news and updates (Twitter: Colorado TSA; Facebook: Colorado Technology Student Association; and Instagram: colorado_tsa) and share pictures and stories! Plus, visit our web page for updates at: www.cotsa.cccs.edu.

I wish you the best of luck this year and look forward to working with all of you. If you have any questions or comments, please feel free to contact me at (720) 858-2794 or via email at: tony.raymond@cccs.edu.

Best regards,

Tony Raymond, COTSA State Advisor
About COTSA

The Colorado Technology Student Association is a national non-profit national organization of students engaged in science, technology, engineering and mathematics (STEM). Open to students enrolled in or who have completed technology education courses, TSA's membership includes more than 225,000 middle and high school students in approximately 2,000 schools spanning 49 states. TSA is supported by educators, parents and business leaders who believe in the need for a technologically literate society. Members learn through exciting competitive events, leadership opportunities and much more. The diversity of activities makes TSA a positive experience for every student. From engineers to business managers, our alumni credit TSA with a positive influence on their lives.

TSA chapters take the study of STEM (science, technology, engineering, mathematics) beyond the classroom and give students the chance to pursue academic challenges among friends with similar goals and interests. Together, chapter members work on competitive events, attend conferences on the state and national levels and have a good time raising funds to get there. Chapter organization develops leadership, as members may become officers within their state and then run nationally. Our chapters are committed to a national service project and are among the most service-oriented groups in the community.

Our state association, the Colorado Technology Student Association (COTSA) has been dedicated to developing leadership and personal growth in students for the past 30 years. At the state level, we are guided by a dedicated group of community, business and industry leaders, teachers, and administrators who are dedicated to ensuring that our students receive the best possible experience as a result of their involvement in TSA.

For more information about TSA or the Colorado Association, please visit our national website at http://www.tsaweb.org or http://www.cccs.edu/cotsa or contact the COTSA State Advisor, Mr. Tony Raymond, at 720-858-2794 or via email at tony.raymond@cccs.edu.
State Conference

Each year, the Colorado Technology Student Association holds an annual statewide conference which brings our student members together with business an industry in a competitive showcase that recognizes both technological skill and leadership development.

This Call to Conference and State Competitive events guide contains the information needed to prepare for this year’s state conference, including outlines of all of the national events for both middle and high school as well as several contests which have been developed specifically for students in grades 6-12 (and in some cases even for elementary students) by experienced technology education teachers.

This year’s state conference will be held February 18-20, 2016 at the Hyatt Regency Denver Tech Center, 7800 East Tufts Avenue, Denver, CO 80237. Please note that this is a different venue than in recent years. We had to relocate the conference due to renovations at our old venue.

The theme for the State Conference this year will be: “Building a Legacy.” Please Note: This theme is the same as the TSA National Conference. Competitive event themes are posted on the national website at: http://www.tsaweb.org/Themes-and-Problems.

Student Safety

Student safety is of utmost concern to us. Therefore, we must insist that chapter advisors ensure that students have all the proper safety equipment, including safety glasses, tools and materials they need to compete successfully and safely. Please refer to the rules in the competitive event guides for specific details.

Website

You can access the COTSA website at http://www.cotsa.cccs.edu. Please use this source to access any needed information or forms. The website is updated frequently and contains news and updates!

State Officer Application

There are many opportunities to serve in leadership roles in TSA: Students can be local chapter officers where they serve as leaders in their school. They can also serve as state officers where they work with the state officer advisor and the state advisor at the state level. Here they serve the entire state through their work with the fall leadership conference, state conference and the national conference. If you have a student who is interested in becoming a state officer, please encourage them to do so! Students interested in being a state officer must complete and submit the state officer application available on the COTSA website under For Students by 11:59 p.m. on February 1, 2016. All applications and letters of reference must be received by this deadline to be considered. Please be mindful that recommendation forms required from adults must be sent from the adults’ own email accounts. Recommendations not sent from the proper emails will be rejected and the state officer application will not be accepted.
National Affiliation

Schools wishing to become members of TSA must become an affiliated chapter of the organization. The affiliation process is detailed on the national TSA website at http://www.tsaweb.org/Affiliation-and-Dues.

In order to compete in events at the state conference, your chapter must be affiliated with the national office! Chapters and individuals not registered (with all documentation completed and both state and national dues paid) with National TSA will not be allowed to compete at the state conference. Chapters MUST affiliate with National TSA in order to receive the official TSA Competitive Events Guide for either middle or high school.

State Conference Registration

In order to register for the Colorado TSA State Conference, AN ADVISOR must affiliate the chapter with National TSA as detailed above. Once you have received confirmation that your chapter has officially affiliated with National TSA, you may register for the state conference. Registration for the conference MUST also be completed online. There will be NO ON SITE REGISTRATION.

The online registration is quick and easy, and it allows an advisor to edit a chapter’s competitions at the click of a mouse. All conference registration and changes must be completed by midnight on January 15, 2016. THERE WILL BE NO EXCEPTIONS!!

To register for the state conference, go to: http://www.registermychapter.com/tsa/co/Main.asp, and click on CONFERENCE REGISTRATION. All registration materials, including online registration, printed housing lists, liability forms, MUST be completed and turned in along with payment to the state office or hotel PRIOR to the deadlines published in this guide! No forms or payments will be accepted at the conference. NO EXCEPTIONS WILL BE ALLOWED! If a chapter has not paid the conference registration fee by the published deadline, they will NOT be permitted to participate in the conference.

Payment can be made by check, money order, or credit card. No purchase orders will be accepted. Once online registration is completed, the computer system will allow chapter advisors to print out a copy of the registration invoice. Advisors won’t get another copy.

Payment can be made by check, money order, or credit card. No purchase orders will be accepted. Once online registration is completed, the computer system will allow chapter advisors to print out a copy of the registration invoice. Advisors will NOT get another copy.
**Fees:**

- Early Bird Registration (registration completed prior to January 8, 2016): $85
- Late Registration (registration after January 8, but before January 15): $90

ALL ATTENDEES, including students, teachers, advisors, parents and chaperones who are actively taking part in the conference activities are required to pay the registration fee. Only officially registered and badged conference participants will be allowed in to TSA conference activities. We will not be able to provide any accommodations for guests/family wishing to attend the awards ceremony on Saturday. Parents coming to pick up their students following the awards ceremony must wait outside the hotel in the hotel parking lot in properly marked and designated parking spaces. Waiting in fire lanes and loading zones will not be permitted. **NOTE: Parents of elementary buddies will need to check in at conference headquarters to receive special credentials at Conference Headquarters on Saturday and may stay through the awards ceremony.**

**ALL PAYMENTS for conference registration must be received by FEBRUARY 1, 2016 in order for a chapter to participate.**

**Meals and Special Needs**

Registration includes admittance to all conference activities, and includes a box lunch during the competition on Friday. Please note: When registering online, advisors will have the option to indicate (via the SPECIAL NEEDS window) if an attendee has a special dietary need. It is the advisor’s responsibility to indicate if a special meal (e.g., gluten free, vegetarian, etc.) is required. Additionally, it’s also good to confirm with the State Advisor any special needs requests. NO ADDITIONAL SPECIAL MEALS WILL BE PREPARED OTHER THAN THOSE REQUESTED IN ADVANCE! If you wish to purchase extra meal tickets for Friday, they can be ordered during the registration process for $35.00.

Additionally, we are arranging to have the Food Truck Festival again this year which will be able to provide an affordable dinner option for your chapters on the Friday evening of the conference!

**Payment Options**

Payment for conference registration must be made no later than February 1, 2016 in order for a chapter to be allowed to participate in the conference. No payments will be accepted on site! Purchase orders cannot and will not be accepted as a form of payment for registration. Payment for REGISTRATION ONLY can be made via check or credit card. Payment for hotel rooms is handled directly with the hotel.

**Payment By Check**

If you are paying by check, make the check payable to COLORADO TSA. Mail the check AND a copy of the invoice generated by the registration system to: Colorado TSA, 9101 E. Lowry Blvd., Denver, CO 80230.
**Payment by Credit Card**

Advisors wishing to pay for conference registration (NOT HOTEL ROOMS!) with a credit card, may do so through the COTSA secure PayPal account. Keep in mind that there is a 4% convenience fee that will be added to your invoice total when paying by credit card. To make a payment via this method, you will first need to complete the chapter’s registration. Once the registration process is finished, click on VIEW REGISTRATION. Please double-check to make sure the registration is correct. If it is, PRINT A COPY FOR YOUR RECORDS! And make sure you note the amount due to Colorado TSA.

From there, click on the hyperlink or go to the payment website at: [http://bit.ly/1NykrOz](http://bit.ly/1NykrOz). This is a secure PayPal site (we just shortened the address for ease of use), or you can go to [http://cotsa.cccs.edu/for-chapter-advisors/](http://cotsa.cccs.edu/for-chapter-advisors/) and click on either of the two PAY NOW buttons (the second one will take you to the PayPal site for payment).

On both payment websites, enter the requested information. When it asks for an “invoice number” (for Intuit Payments) or “special instructions to the seller” (in the case of PayPal), type in the name of your school so your payment can be properly applied to your school. Enter the amount shown on the invoice which was printed earlier and then submit the payment. Print a copy of the receipt for your records.

**Hotel Reservations**

The conference hotel is the Hyatt Regency Denver Tech Center, Hyatt Regency Denver Tech Center, 7800 East Tufts Avenue, Denver, CO 80237. Each chapter is responsible for payments for it’s rooming reservations directly with the hotel.

The Hyatt’s process for reserving rooms will be ONLINE this year. At the time of printing of this document, the link is not yet active. As soon as the link is active, it will be sent via email to the chapter advisors and made available on the COTSA website.

Hotel rooms at the Hyatt are $139/room/night with quad occupancy. There will be tax applied as well if a tax exemption certificate is not on file with the hotel. Tax exemption for state tax will only be honored if payments are made with direct school district funds and if the tax exempt form is completed and turned in. The forms required by the hotel are included on the following pages.

Our contact for housing at the hotel is: Inge Brazelton, Senior Sales Manager, (303) 714-4616; [inge.brazelton@hyatt.com](mailto:inge.brazelton@hyatt.com).

**PLEASE NOTE:** For safety, security and liability reasons, conference attendees should stay as guests of the hotel.
Hotel Forms

When preparing your forms for the hotel, in addition to the Housing Form and the Housing Rooming list, the hotel will also need the following forms in order to make your stay tax exempt. The Denver Claim for Exemption Form and Credit Card Affidavit forms are on the following pages.

1. Sales Tax Certificate

![Certificate of Exemption for Colorado State Sales/Use Tax](image1)

2. Denver Claim for Exemption Form

![Claim for Exemption from Denver Sales, Use, or Lodger's Tax for the Following Description](image2)

3. Credit Card Affidavit (paying by credit card only)

![Affidavit of Sale Paid by Government Credit Card](image3)

**No personal forms of payment**

The tax exempt organization must be paying directly for your stay to be exempt.
CLAIM FOR EXEMPTION FROM DENVER SALES, USE, OR LODGER’S TAX
FOR USE BY HOTELS, MOTELS, AND RESTAURANTS
FOR THE FOLLOWING DESCRIBED EVENT

Organization’s Name ____________________________________________________________

Date of Event _____________________________ Phone (___) _________________________

Authorized Representative ______________________ Title ____________________________

Address _______________________________________________________________________

Description of Event ____________________________________________________________

Basis of Exemption: Religious____ Charitable____ Governmental____

DO NOT HAVE YOUR CUSTOMER COMPLETE THIS FORM IF EVENT IS A FUND RAISER.
NO EXEMPTION IS ALLOWED FOR FUND RAISING EVENTS.

Indicate if all of the following statements are True for this event:

True      False

___ ___ The purchase is included under and is part of the regular religious or charitable
functions and activities of the organization, or is purchased in a governmental capacity.

___ ___ The transaction is billed directly to the organization and payment is made directly from
organization funds. (Purchases of food or lodging by individuals do not qualify for the
exemption even though the individual may be reimbursed by the organization or government.)

___ ___ The participants at the event have not and will not reimburse the organization in any
way for any portion of the event such as by purchase of a ticket, payment of a
registration fee, or my making a contribution toward the cost of participation. This
statement must be marked “false” if event is a fundraiser.

The exemption does not apply to food, beverage, or lodging where the recipient of the
food, beverage, of lodging reimburses the organization in any way, such as by the purchase
of a ticket, payment of a fee, or making a contribution toward the cost of participation.

ALL OF THE ABOVE MUST BE TRUE FOR THE PURCHASE TO QUALIFY FOR EXEMPTION

The undersigned declares and affirms that the above statements are true and accepts liability for
the tax should the transaction not qualify for exemption.

Name ___________________________ Title ___________________ Date ________________________

FOR HOTEL/MOTEL/RESTAURANT USE TO VERIFY EXEMPTION:
DENVER TREASURY DIVISION – TAX COMPLIANCE, AUDIT UNIT – CITY OF DENVER – 640-3489
DENVER TAX EXEMPT STATUS VERIFIED BY: ______________ YES__ NO__ DATE_____
NAME OF PERSONAT CITY:
IMPORTANT: This form does not relieve the vendor of its obligation to verify that all conditions for
exemption have been met. All exempt transactions are subject to audit. And the vendor may be held
responsible for transactions exempted in error.

TPS 008 (1/94)
Instructions for Use of Affidavits

These instructions are applicable for both the Charitable or Religious Affidavit and the Governmental Affidavit.

Both of the affidavits require that the goods are sold directly to the charitable, religious or governmental agency and payment is made directly from those organization’s funds. Please be sure this is the case before asking for completion of the appropriate affidavit. This affidavit is intended to assist the vendor in maintaining documentation that will be needed to verify whether a transaction is exempt. The sale is not exempt from taxes simply because this affidavit is completed. The responsibility for proper collection of the taxes remains with the vendor.

The ordinance provides that if the vendor and purchaser disagree on the application of the tax, the vendor must collect the tax. The vendor should give the purchaser a receipt showing the taxes collected. The purchaser then has 60 days to file a claim for refund directly with the City for recovery of the tax. The claim for refund form can be obtained from the Treasury web site.

The affidavits need to be completed in their entirety. Be sure information is complete, accurate and legible. Review the information being sure the Driver’s License Number and customer’s name are correct. Also the digits that are required from the credit cards are correct. Only record and keep those digits from the credit card that the affidavit requires. The signature of the customer should be the same as on the driver’s license.

Charitable organizations must include a copy of the letter provided to them by the City stating they may make purchases without payment of the tax. Churches usually will not have a letter. The Church may be exempt upon accurate completion of the Charitable or Religious Affidavit.

For purchases by the federal government using a credit card please see City and County of Denver Tax Guide Topic 91 entitled “Credit Cards from Governmental Organizations”. It explains which of the credit cards can be used for purchases of tangible personal property. It also explains how the numbering system can be used to identify if the federal government is paying for the purchase (not taxable) or the individual is paying for the purchase (taxable).
# AFFIDAVIT OF SALE PAID BY GOVERNMENT CREDIT CARD

- I affirm that this purchase qualifies for the Denver and Colorado sales tax exemption for sales to the United States government, the State of Colorado, its departments and institutions, and its political subdivisions (county and local governments, school districts and special districts); is a government purchase used only in an official governmental capacity; and will be paid directly by a government agency.

- I have checked the applicable boxes below regarding information about payment for this purchase.

- I accept that I remain directly liable for the sales or use tax assessment, and any applicable penalty or interest, if my purchase is found to not qualify for the exemption.

- I understand that the vendor may request this affidavit for every purchase.

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<th>Please Print or Type</th>
<th>Driver License Number (include state)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Name</td>
<td></td>
</tr>
<tr>
<td>Agency Name</td>
<td>Colorado Tax ID Number or FEIN</td>
</tr>
<tr>
<td>Customer Address</td>
<td>Agency Phone</td>
</tr>
<tr>
<td>City</td>
<td>State</td>
</tr>
<tr>
<td></td>
<td>ZIP Code</td>
</tr>
</tbody>
</table>

### Check All that Apply

**FEDERAL GOVERNMENT PURCHASES:**

- Credit card used is a GSA Smart Pay2 card and is designated as such on the face of the card.
- Credit card used is a Fleet card, outlined in green, with a picture of a road and a flag.
- Credit card used is a Purchase card, outlined in red, with a picture of a keyboard and a flag.
- Credit card used is a Travel card, outlined in blue, with a picture of an airplane and a flag, and the 6th digit on the credit card is 0, 6, 7, 8, or 9.
- Credit card used is an Integrated card, outlined in gold, with a picture of an eagle and a flag.
- Credit card is issued to an agency within the Department of the Interior.

**STATE AND LOCAL GOVERNMENT PURCHASES:**

- For State of Colorado cards, the agency exemption number is printed on the card. The # is 98-________________
- The card states “For Official State Use Only” or “Tax Exempt.”
- The card is a Purchasing Card and is designated as such on the card.

**FOREIGN AND DIPLOMATIC EXEMPTION CARDS**

- The card is State Department issued with the name/photo of the bearer and a blue, yellow, red, green, or red/green band across the bottom, and states on the face of the card what purchases qualify for exemption.
- It does not matter what form of payment is used when these cards are presented.

Signature of Customer: ____________________________ Date: ____________________________

11/10

---

2015-2016 Colorado TSA Call to Conference and State Competitive Events Guide
CITY AND COUNTY OF DENVER - TREASURY DIVISION

- Please check the box for the picture that matches the credit card used to make the purchase.
- Write in the first six digits and the last four digits from the credit card used to make the purchase.
- **DO NOT WRITE THE COMPLETE ACCOUNT NUMBER.**

FEDERAL SMART PAY CREDIT CARD PROGRAM


XX  XXXX  ________

Please attach this form to the signed Affidavit of Sale Paid by Government Credit Card
Affidavit of Non-Taxable Sale to Tax-Exempt Organization

The undersigned declares, under penalties of perjury, that the tangible personal property or taxable service purchased without payment of otherwise applicable Colorado sales (tax) es from

<table>
<thead>
<tr>
<th>Vendor name:</th>
<th>Hyatt Regency Denver Tech Center</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vendor address:</td>
<td>7800 E. Tufts Avenue, Denver, CO 80237</td>
</tr>
</tbody>
</table>

Is to be paid from the tax-exempt organization's funds and that said organization has not and will not receive any reimbursement through either direct payment, collection or "donation" from any person (s) for the use or consumption of said tangible personal property or service.

<table>
<thead>
<tr>
<th>Signature</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Name of Tax Exempt Organization

<table>
<thead>
<tr>
<th>Sales Tax Exempt Number</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Deadlines

PAYMENT AND REGISTRATION DEADLINES ARE NOT FLEXIBLE! Failure to meet these deadlines may result in late fees and/or your chapter being unable to compete!

<table>
<thead>
<tr>
<th>Deadline Date</th>
<th>Task To Be Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>January 1, 2016</td>
<td>Deadline to complete National affiliation process. Your chapter must be affiliated BEFORE you can registering for the state conference. To affiliate go to: <a href="http://www.tsaweb.org">http://www.tsaweb.org</a></td>
</tr>
<tr>
<td>October 26, 2015 -</td>
<td>STATE CONFERENCE REGISTRATION BEGINS!</td>
</tr>
<tr>
<td>January 16, 2016</td>
<td>* Early Bird Registration (registration completed prior to Jan. 8, 2016): $85</td>
</tr>
<tr>
<td></td>
<td>* Late Registration (registration after Jan. 8 but before Jan. 15, 2016): $90</td>
</tr>
<tr>
<td></td>
<td>Go to: <a href="http://www.registermychapter.com/tsa/co">http://www.registermychapter.com/tsa/co</a>. All substitutions, additions and changes must be completed by midnight January 15, 2016.</td>
</tr>
<tr>
<td>January 8, 2016</td>
<td>Early Bird registration ends! Registration goes up after January 8, 2016!</td>
</tr>
<tr>
<td>January 15, 2016</td>
<td>REGISTRATION CLOSES AT MIDNIGHT - NO REGISTRATIONS OR CHANGES CAN BE MADE AFTER THIS DATE!</td>
</tr>
<tr>
<td>January 9, 2016</td>
<td>Online room reservations need to be completed. If you are claiming tax exemption you need to include:</td>
</tr>
<tr>
<td></td>
<td>• Sales Tax Certificate (see page 13 of this guide)</td>
</tr>
<tr>
<td></td>
<td>• Denver Claim for Exemption Form (see page 14 of this guide)</td>
</tr>
<tr>
<td></td>
<td>• Credit Card Affidavit (see page 16 of this guide)</td>
</tr>
<tr>
<td></td>
<td>• Affidavit of Non-Taxable Sale to Tax-Exempt Organization (see page 17 of this guide)</td>
</tr>
<tr>
<td></td>
<td>All hotel information should be sent to:</td>
</tr>
<tr>
<td></td>
<td>Hyatt Regency Denver Tech Center</td>
</tr>
<tr>
<td></td>
<td>ATTN: Inge Brazelton</td>
</tr>
<tr>
<td></td>
<td>7800 E. Tufts Avenue</td>
</tr>
<tr>
<td></td>
<td>Denver, CO 80237</td>
</tr>
<tr>
<td></td>
<td>Email: <a href="mailto:inge.brazelton@hyatt.com">inge.brazelton@hyatt.com</a> // Fax: 303.714.4671</td>
</tr>
<tr>
<td>February 1, 2016</td>
<td>All state officer applications must be completed and submitted ONLINE and must be received by Dr. Raymond, including reference letters.</td>
</tr>
<tr>
<td>February 1, 2016</td>
<td>All forms and registration payments are due by this date or your chapter will not be allowed to complete! Payments can be via check or online with a credit card.</td>
</tr>
<tr>
<td></td>
<td>PAYMENT BY CHECK: Colorado TSA, 9101 E. Lowry Blvd., Denver, CO 80230</td>
</tr>
<tr>
<td></td>
<td>PAYMENT BY CREDIT CARD: Payments can be made at: <a href="http://bit.ly/1NykrOz">http://bit.ly/1NykrOz</a></td>
</tr>
<tr>
<td>Feb. 18-20, 2016</td>
<td>State Conference</td>
</tr>
<tr>
<td>June 28 - July 2, 2016</td>
<td>National TSA Conference - Gaylord Opryland, Nashville, TN</td>
</tr>
</tbody>
</table>
State Officers

In addition to educating students about technology and its role in our global society, TSA strives to prepare the youth of today for the world of tomorrow by providing various leadership training and development opportunities for its members.

Colorado TSA encourages its members to take an active role in the organization by becoming a State Officer! State officers are critical elements to our association. Receiving extensive leadership training, the state officers serve as ambassadors of our organization and make frequent visits to schools promoting TSA. They are also integral to the planning, preparation and execution of the Fall and State conferences.

If you are a high school student and have attended at least one COTSA state conference (even as a middle school student), then you are eligible to run for state office!

The state officer applications and forms, plus additional information can be found online at: http://bit.ly/1KfmYNc. The form can also be accessed on the COTSA webpage at www.cotsa.cccs.edu under For Students.

For more information contact Dr. Myka Raymond, COTSA State Officer Advisor at myka.raymond@gmail.com, or via phone at 720-886-5112.
Judging

Judging at the COTSA State Conference is a very important task and one we need everyone’s help doing - especially with the growth we have seen in our state association!

In an effort to mirror the processes at the National level, we are requiring each chapter in attendance at the state conference to provide a minimum one judge for every 10 students that chapter brings to the conference (of course, we always welcome more!). For example, if a chapter registers 20 students for the state conference, they are required to provide two (2) judges; if a chapter registers fewer than 10 students, they would only need to provide one judge.

Chapters may designated parents, administrators, community leaders or members of the program’s advisory committee as judges. Having every chapter provide someone to help judge events will help us increase the efficiency of the state conference. Besides, this is a great way to involve your school and community in the good work you are doing as a TSA Chapter!

Chapter advisors should not serve as judges. Beginning this year, we are asking chapter advisors to serve as event coordinators of the various competitive events. As an event coordinator, advisors will be responsible for helping set up the event (i.e., set up of equipment), obtaining supplies from conference HQ, answering questions the judges may have about the event’s guidelines, and helping verify scores and potential rule violations. This role will allow more flexibility for chapter advisors to help supervise their students.

Advisors: If there is an event you would like to coordinate, contact Dr. Myka Raymond, the COTSA Conference Coordinator at myka.raymond@gmail.com or Tony Raymond, Colorado TSA State Advisor at tony.raymond@cccs.edu. If you have not judged or coordinated an event before, please consider which events you would feel comfortable working with and email either of the above individuals with your preferences. We would like to have all judges in place as early as possible to aid in the conference planning process.

If you know of anyone who would like to assist with judging please send their contact information to the State Advisor specifying in which events they have an interest.

Both Event Coordinators and contest judges will be required to attend the JUDGING ORIENTATION SESSIONS which will be held during the conference just prior to the start of contests. These orientations are designed to ensure that:

- Judges have read all rules and are familiar with them.
- Judges are clear on expectations for judging the event and scoring.
- All judges can have their questions answered BEFORE there is an issue.
- Provide instructions on how to properly complete score sheets.
- Provide instructions on when scores are due in conference headquarters.
- Judges are connected to their specific Event Coordinator in case questions arise during competition.
- IMPORTANT NOTE: Even if someone has been a judge in an event before, they will still need to attend a Judging Orientation Session!
COTSA Alumni

The Alumni of the Colorado Technology Student Association is a dynamic group of individuals who have participated as student members of our organization. Each year, this dedicated group of people volunteer their time to help out at the state conference! We couldn’t put on as successful an event as we do without their help!

We are always looking for ways to reconnect with alumni and keep them involved in our organization! If you know of any former students who are interested in staying involved with Colorado TSA, please have them contact the State Advisor or Lexi Schilling, the COTSA Alumni Coordinator via email at amduf-ficy@gmail.com. Interested individuals can also connect with our alumni by visiting the Alumni Facebook page at http://www.facebook.com/pages/Colorado-Technology-Student-Association-Alumni/280880062723.

Advisors are also encouraged to have all of their graduating seniors contact the alumni coordinator early on in the year so they can stay in touch even after graduation!

Website and Social Media

Colorado TSA maintains an active web presence through its web page and social media, including pages on Facebook as well as Twitter. Everyone is welcome to join our online ranks!

Do you have photos of your chapter doing community service, working on projects, or participating in meetings or just having fun? If so, send them to Tony Raymond, the COTSA State Advisor, for posting on the Facebook and web pages! We’d love to see what your chapter is up to, and it’s a great way for you to network with your fellow TSA members. Send your photos to: tony.raymond@cccs.edu. Please include name(s), location(s), and date(s) for each photo.

For news, updates, forms, and association-related information, you can check out our website at http://www.cotsa.cccs.edu!
Awards & Recognition

There are a number of opportunities for students and advisors to be recognized through TSA, and we strongly encourage both students and advisors to take advantage of these great programs! For application forms and complete information, please visit the national TSA website at the following addresses:

- [www.tsaweb.org/Student-Achievement-Awards](http://www.tsaweb.org/Student-Achievement-Awards)
- [www.tsaweb.org/Student-Scholarships](http://www.tsaweb.org/Student-Scholarships)
- [www.tsaweb.org/Adult-Achievement-Awards](http://www.tsaweb.org/Adult-Achievement-Awards)

Achievement Awards (Gold/Silver/Bronze)

The TSA Achievement Program (bronze, silver, and gold awards) is designed to motivate and recognize student members for high effort in a school’s technology education program. The TSA Achievement Program is an opportunity for every TSA member to strive and receive recognition for accomplishments and is designed to encourage excellence in the areas of leadership development, understanding technology, school/community service, and career/personal planning. This program is also planned so the highest awards represent outstanding individual performance. This noncompetitive, self-initiated program encourages students to develop appropriate attitudes and increase their knowledge and skills through involvement in technology education programs and activities.

Chapter Excellence Award

The Chapter Excellence Award recognizes those chapters who have developed and implemented a successful program of work including chapter involvement (at local, state, and national conferences, with the community, and other TSA chapters); financial leadership activities; leadership activities; and involvement with alumni.

Dr. Bob Hanson Distinguished Student Award

The recipient of the Distinguished Student Award is selected on the basis of valued service to the community and to TSA Both past and present contributions are considered. Criteria for eligibility include: Active member in good standing with TSA for a minimum of one school year; active participation in TSA at the local, state, or national level; and recognition by fellow students, teachers, or administrators of technology education programs as a student who has achieved prominence and distinction.

TSA Technology Honor Society

The TSA Technology Honor Society recognizes TSA members who excel in academics, leadership, and service to their school and community. The TSA Technology Honor Society is an opportunity for student members to be recognized for their efforts and is designed to recognize TSA members who exemplify the high ideals of academics.
Advisor of the Year

Students are encouraged to submit the name of their chapter advisor to the state office for the Annual Advisor of the Year award. The honoree is recognized at the state conference and then again at the National Conference for their outstanding work with TSA.

Outstanding Recognition Award

The recipient is selected on the basis of valued service contributing to the growth of TSA. Both past and present contributions are considered (as verified by responsible parties). The criteria are as follows:

- The organization(s) that the recipient represents has supported TSA in some capacity at the local, state, or national level for a minimum of three years
- Active participation, as evidenced by attendance at the conferences, membership on committees, judging student events, etc.
- Efforts to advance TSA, as evidenced by encouraging business personnel and industrial leaders to support TSA activities

Distinguished Service Award

The recipient is selected on the basis of valued service to TSA. Both past and present contributions are considered (as verified by responsible parties). The criteria are as follows:

- Associated with TSA in some capacity for a minimum of three years
- Active participation as evidenced by attendance at the conferences, membership on committees, judging student events, etc.
- Involvement with advancing TSA as evidenced by work in professional education groups, publications, research, etc.
- High standard of attainment as shown by establishment of new TSA chapters, program expansion or innovation, or by achievement of student members who have achieved prominence and distinction
- Recognition by fellow professionals as indicated by similar awards from local, district, state or regional groups.

Honorary Life Award

Recipient has supported TSA in a significant way for a minimum of five years and is a person from whom TSA may reasonably expect continued interest in its activities.
Distinguished Alumni Award

The recipients (three per year) of this award are alumni of TSA who have demonstrated commitment and service to TSA beyond graduation. The criteria are as follows:

- Graduated from high school at least three years prior, after being a member in good standing with TSA for a minimum of two years
- Active participation since graduation, as evidenced by attendance at the conferences, membership on committees, judging student events, or other service of value to TSA.

Jesse Kitchens Memorial TSA Scholarship

This Colorado-based scholarship is granted to a TSA member to help with their college education in memory of Jesse Kitchens, a COTSA member. Members must be in good standing, display dedication and passion for TSA. More information can be found on the COTSA webpage at http://www.cotsa.cccs.edu.

TSA “Teach Technology” Scholarship

The purpose of the TSA Teach Technology Scholarship is to support the technology education profession by encouraging TSA students to pursue careers as K-12 technology teachers. Applicants must meet the following criteria:

- Participated in an active TSA chapter for a minimum of two (2) consecutive years.
- Served as a TSA officer at the local, state and/or national level for a minimum of one (1) academic year.
- Attended and participated in at least one (1) TSA conference at the state or national level.

William P. Elrod Memorial Scholarship

The scholarship is awarded for outstanding service in the field of technology to a TSA student who is college, university or career and technical school bound and who is in good academic standing, OR to a TSA alumnus/a currently enrolled in an undergraduate program or a career and technical school.

Johnson & Wales University Scholarship

Johnson & Wales University offers $1000-full tuition National Student Organizations scholarships to TSA members. For more information and apply online at http://www.jwu.edu
Goodheart-Wilcox State Advisor of the Year Award

The recipient will have demonstrated significant support on behalf of TSA for a minimum of five years and is an individual from whom TSA may reasonably expect reliable and continued interest in its activities.

TSA Star Recognition

This award is a state-level award that provides recognition to those Colorado TSA chapters and members who actively assist new or lapsed TSA chapters in becoming active members. It is through these efforts that TSA continue to grow! Has your chapter assisted a new or inactive TSA chapter (middle or high school) with the affiliation process for this year? If so, we want to know about it so that your chapter receives Star recognition! Each chapter that helps a new chapter affiliate receives Star lapel pins and is recognized on the COTSA website. Pins are awarded on the following criteria:

- White Star Recognition 1 to 2 new TSA chapters
- Blue Star Recognition 3 to 5 new TSA chapters
- Red Star Recognition 6 or more new TSA chapters
COTSA Official Forms

On the next few pages, are several forms that need to be completed and turned in by the deadlines listed in this guide. These forms CANNOT AND WILL NOT BE ACCEPTED ON SITE AT THE CONFERENCE!!! IF YOUR CHAPTER DOES NOT HAVE THESE FORMS TURNED IN BY THE DEADLINE, THEY WILL NOT BE ALLOWED TO COMPETE IN THE CONFERENCE. All forms, unless stated otherwise, are due to the State Advisor via the COTSA State Conference Form Upload Site (located at: http://goo.gl/XaszpB, no later than FEBRUARY 1, 2016.

Medical Release Form

This form must be completed by EVERY conference participant, including advisors, chaperones and observers. This information is critical in the event of an emergency and needs to be kept by the advisor at the state conference. DO NOT TURN THESE FORMS INTO THE STATE OFFICE. These forms are to be kept by the chapter advisor in the event of an emergency.

Personal Liability Form

This form is to be completed by EVERY conference participant, including advisors, chaperones and observers. This form is to be turned in to the state advisor.

Photo Release Form

This form must be completed by EVERY conference participant, including advisors, chaperones and observers. This form grants us the rights to take pictures at the conference to promote Colorado TSA.

Attendee Conduct & Practices Signature Form

This form is to be completed by EVERY conference participant, including advisors, chaperones and observers. It is to be turned in to the state advisor.

The above forms (with the exception of the medical release forms) are to be submitted to the COTSA State Office via the COTSA State Conference Form Upload Site (located at: http://goo.gl/XaszpB, no later than FEBRUARY 1, 2016. Please do not mix the release forms or copy them back-to-back for your students to fill out! When they are returned, chapter advisors will need to separate them and scan each type of form into a separate, multi-page document (e.g., all the personal liability forms from a chapter are in their own multi-page document; all the photo release forms are in a different multi-page PDF document, and all the conduct and practices forms are in their own different, multi-page document). Please note that forms that are not separated into their respective types will not be accepted and could keep a chapter from participating at the state conference! DO NOT SEND HARD COPIES OF THE FORMS TO THE STATE OFFICE! Chapter advisors should upload the PDF versions of the required files via our uploads page and retain the originals for their own records.
Housing Forms

All rooming reservations must be done ONLINE this year via the hotel’s Passkey system. At the time of printing, the link to the reservation system is still unavailable. The link will be posted to the COTSA website and will be emailed to advisors as soon as it is available.

In addition to booking rooms online, should chapters wish to claim tax exemption, they must submit the Claim for Exemption from Sales, Use or Lodgers Tax Form (which exempts you from some taxes, if applicable); and Affidavit of Sale made to a Charitable or Religious Organization. Those forms are to be sent directly to the hotel.

Relay for Life Donation Form

In an effort to help our national charitable partner, the American Cancer Society, Colorado TSA is providing conference attendees the opportunity to donate to this worthy cause. If any conference participant would like to donate, they simply need to complete the form located in this guide. All American Cancer Society Donation Forms/Checks are to be sent via USPS to the COTSA State Office and not submitted online. Send all ACS donations to: Colorado TSA, c/o Tony Raymond, 9101 E. Lowry Blvd., Denver, CO 80230. Make checks/money orders payable to American Cancer Society.
Medical Release Form

REQUIRED BY ALL STUDENTS & ADULTS
ATTENDING THE COTSA STATE CONFERENCE
(TO BE KEPT BY EACH CHAPTER ADVISOR - PRINT CLEARLY)

Student: ____________________________________________
Advisor: ____________________________________________
School: _____________________________________________

Medical Information

Date of Birth: ________________________________________
Known allergies (drugs or otherwise): ______________________
Date last tetanus shot administered: ______________________
Medication currently being taken: _________________________
Describe any history of heart condition, diabetes, and asthma, epilepsy, or rheumatic fever, etc.: _________________
Physical restrictions (swimming, running, etc.): __________
Relative’s name: _____________________________________
Best Contact Number: ( ______ ) ________________
Physicians name: _____________________________________

Insurance Information

Medical Insurance Co.: _________________________________
Identification / Policy No.: _____________________________
Subscriber’s Name: __________________________________
Phone: ( ______ ) _________________________________
Subscriber’s place of employment: ______________________

I, __________________________ (parent/guardian) hereby authorize any physician member of the Department of Emergency Medicine of an accredited hospital or any member of the medical staff of an accredited hospital to render medical treatment, which is in his/her judgment may be deemed necessary in the care of

(child/student) while attending the Colorado Technology Student Association State Conference (including time traveling to and from the conference).

Parent / Guardian signature __________________________ Date __________________________

ADVISORS – PLEASE NOTE:
This form is to be kept by you, the local chapter advisor, at the conference and
given to the appropriate medical authorities in a medical emergency!!
Personal Liability Form

REQUIRED BY ALL STUDENTS & ADULTS ATTENDING THE COTSA STATE CONFERENCE

ALL FORMS MUST BE UPLOADED TO
COTSA STATE CONFERENCE FORM UPLOAD SITE (http://goo.gl/XaszpB)
NO LATER THAN FEBRUARY 1, 2016.

Name of Participant: ____________________________________________
Date of Birth: _________________________________________________
School: _______________________________________________________
School Address: ________________________________________________
Home Phone: (_______)__________________________________________
School Phone: (_______)________________________________________

"I hereby agree to release the Colorado Technology Student Association (COTSA) and the Colorado Community College System, its representatives, agents, servants, and employees from liability for any injury to the above named person at any time while attending the Colorado State Technology Student Association’s State Conference, including travel to and from the conference, excepting only such injury or damage resulting from willful acts of such representatives, agents, servants, and employees."

"I do voluntarily authorize the Colorado Technology Student Association’s State Conference chair, assistants and/or designees to administer and/or obtain routine or emergency diagnostic procedures and/or routine or emergency medical treatment for the above named person as deemed necessary in medical judgment."

"I agree to identify and hold harmless the Technology Student Association, Inc., the Colorado Technology Student Association, the Colorado Community College System and said conference chair and/or assistants and designees for any and all claims, demands, actions, rights of action, and/or judgments by or on behalf of the above named person arising from or on account of said procedures and/or treatment rendered in good faith and according to accept medical standards."

____________________________________________________________________
Adult/Parent or Guardian (if child or student) Date

____________________________________________________________________
Participant Date
Photo Release Form

REQUIRED BY ALL STUDENTS & ADULTS ATTENDING THE COTSA STATE CONFERENCE

ALL FORMS MUST BE UPLOADED TO
COTSA STATE CONFERENCE FORM UPLOAD SITE (http://goo.gl/XaszpB)
NO LATER THAN FEBRUARY 1, 2016.

I hereby consent to and authorize the use and reproduction by Colorado TSA, the Colorado Community College System (CCCS), or anyone authorized by Colorado TSA or CCCS, of any and all photographs/digital images/videotapes/recordings of:

Attendee’s Name
from the February 18-20, 2016 Colorado State Technology State Conference at the Hyatt Regency Denver Tech Center for use by Colorado TSA and/or the Colorado Community College System (CCCS), its employees, officers and agents, and the right to copyright and/or use, reuse and/or publish, republish photographic pictures, digital images, video tapes and recordings in conjunction with the above named individual’s own name.

I also give permission for these photographic/digital images/videotapes/recordings to be used in its entirety and/or edited version as deemed necessary by Colorado TSA and/or CCCS (to include usage of images on Career and Technical Student Organization (CTSO) websites, including, but not limited to Facebook).

Furthermore, permission is also given for the photographs/digital images/videotapes/recordings completed on February 18-20, 2016 to be used by Colorado TSA and/or CCCS at any time in the future without further clearance from me.

I understand that these photographs/digital images/videotapes/recordings may be used for marketing purposes (including websites) by Colorado TSA and CCCS. I have read the foregoing release, authorization and agreement, before signing below, and warrant that I fully understand the contents thereof.

I hereby grant permission for photographing, videotaping and/or recording.

Signature of Parent/Guardian* or Individual Date
* If individual is under 18 years of age.

Address: __________________________________________________________________________

City: ______________________________ State: ______________________ Zip: ______________________

NOTE: Any student who is subject to harassment due to the publishing of photos (either in publications or on the websites) should contact the State Advisor immediately.
1. The term “attendee” shall mean any student or adult attending the conference and taking part in its activities.
2. Identification badges must be worn at all times by persons in conference attendance.
3. There shall be no defacing of public property. Any damages to the property or furnishings in the hotel rooms or buildings must be paid by the individual(s) or school(s) responsible.
4. Attendees shall keep their advisors informed of their activities and/or whereabouts at all times.
5. Attendees should be prompt and prepared for all activities.
6. Attendees should be financially prepared for all possibilities.
7. All attendees must stay at conference hotel.
8. No attendee shall remain in the sleeping room of the opposite gender unless the door is open at all times.
9. No attendee shall remain in the sleeping room of the opposite gender past curfew.
10. No conference attendee shall possess any alcoholic beverages, narcotics or firearms, in any form at any times, under any circumstances.
11. Smoking will not be permitted.
12. No attendee shall leave the conference hotel (except for authorized events) unless permission has been received from chapter advisors.
13. Attendees are required to attend all general sessions and activities assigned, including workshops, all general sessions, competitive events, committee meetings, etc., for which they are registered, unless engaged in some specific assignment taking place at the same time.
14. Chapter advisors will be responsible for their attendees’ conduct.
15. Attendees violating any of the conduct rules will subject their entire delegation to being removed from the conference or disqualified from competition.
16. The Colorado State Conference committee reserves the right to dismiss any delegate from the conference for inappropriate actions.

Attendee:

I have read and completely understand the COTSA State Conference Attendee Conduct Practices and Procedures Code. I do hereby agree to follow the procedures and practices described. I fully understand that this is an educational activity and will, to the best of my ability, apply myself for the purpose of learning and will uphold the finest qualities of a person representing my school.

<table>
<thead>
<tr>
<th>Attendee Signature</th>
<th>Date</th>
</tr>
</thead>
</table>

Parent/Guardian, Advisor/ Teacher, & Principal:

I approve the student named above to attend the 2016 Colorado Technology Student Association State Conference in Denver, CO on February 18-20, 2016.

<table>
<thead>
<tr>
<th>Parent/Guardian Signature</th>
<th>Advisor/Teacher Signature</th>
</tr>
</thead>
</table>
ACS Contribution Form

During the school year, TSA chapters all across the country are encouraged to include in their Program of Work an activity that benefits the National TSA National Service Project - our work with the American Cancer Society. Chapters can engage in a number of activities, including participating in a Relay for Life event. Relay for Life is the ACS’s signature event that offers chapters and schools a fun, healthy opportunity in the fight against cancer. The money raised by the individual chapters helps the vital research, education, advocacy, and patient services of the American Cancer Society.

In addition to recognizing chapters at the national conference for their overall contributions to the ACS, individuals can also help our National Service Project and contribute to the American Cancer Society directly.

If you would like to help Colorado TSA support the efforts of the American Cancer Society by making a donation, please do so using the form below and include your donation (with checks or money orders made payable to the American Cancer Society) with your student’s registration form.

Thank you for your time, commitment and generosity.

Name:  

School:  

Donation Amount:  □ $15  □ $25  □ $50  □ $100  □ Other ________________
Do you need help with your documentation for your project? Look no further!

The COTSA Documentation Style Guide on the following pages has been developed to help all TSA members put together outstanding documentation portfolios for their projects.

The guide is in its entirety on the next few pages! Print these out and keep them handy as you prepare your projects for competition!

**IMPORTANT CHANGE:** All entries require documentation materials (comprising a “portfolio”), now require that a clear front report cover is to be used to hold all the documentation together. Please visit [http://www.staples.com/Oxford-Clear-Front-Report-Covers/product_SS1003226](http://www.staples.com/Oxford-Clear-Front-Report-Covers/product_SS1003226) for a sample report cover.

For early submission events, portfolios must be in PDF format and uploaded using the COTSA Submission site at: [http://bit.ly/1Jgrfg1](http://bit.ly/1Jgrfg1). However, students should also plan on bringing a hard copy of the documentation portfolio to the state conference in the event the contest entry advances to a finalist round.
Style Guide Introduction

In today’s technological world, communication takes a variety of forms – one of which is writing. Any successful technological endeavor will have with it a set of documents that detail its inception, development and evaluation. The projects for TSA are no different!

Most competitive events require the creation of a documentation portfolio. Each event that does require a portfolio will require that certain specific items be included – for example, some projects may require drawings or photographs while others won’t; some may require photo release forms while others may require work logs. Still, despite their differences, they do have a lot in common. It is the intent of this guide to help you create high quality documentation portfolios for your projects – regardless of the competitive event – for both state AND national conference submission.

PLEASE REVIEW AND FOLLOW THIS GUIDE WHEN PREPARING YOUR DOCUMENTATION PORTFOLIOS!

Before we begin, it is critical that you are reminded to follow each specific contest’s rules and regulations closely! Don’t rely on this guide alone to create the documentation! This guide is not designed to tell you what to include for each contest, but rather, help you format and create professional looking portfolio for your project.

General Guidelines

When preparing any documentation portfolio, the first thing you need to know is that it must be typed. Handwritten documentation is NOT acceptable. Yes, there will be items in the documentation that will be required to be handwritten or hand drawn, but those items are few and far between. In general, it’s a good rule of thumb to only submit documentation that has been word processed. There are a few reasons for this:

- You have spell/grammar check. While it’s not always accurate and will not pick up on all your mistakes (like using “THEIR” instead of “THERE”), at least you have the opportunity to eliminate the bulk of spelling and grammar mistakes.
- It’s easier to read. The judges are usually “old folks” and they have a hard time reading chicken scratch. If you want to win, you’ll need to make sure your documents are legible!
- You can edit a computer document. What happens if, in the process of proofreading your documentation, you discover you need to add in a chart or graph in the middle of text, or correct a spelling mistake in the critical paragraph that sums up all your work? If you have a handwritten document, that means either a complete re-write or a messy addition. Storing your document on your computer means you can go back and edit the document until it’s just right to print!
- In most cases, documentation that is hand-written, unless otherwise specified, will be assessed penalty points or disqualified. The assessment of penalty points could very well take an otherwise-stellar project out of medal contention. And after all the work you put into a project, it would be a shame to see it penalized because of handwritten documentation!
Specific Guidelines

Do you need documentation?

The first thing you need to figure out is if you even need to prepare documentation portfolio at all. The answer is probably yes, but there are a few events (dragster, for example) that do not require a full portfolio. If your project does not require a documentation portfolio, make sure you turn in only what the contest guidelines call for and nothing more—and nothing less. If you turn in more than is required, there is a good chance that all the additional material will NOT be considered by the judges—or worse, assessed penalty points because it is “extra material.” If you turn in less than is required, at best you could receive a penalty and at worst, your project could be disqualified. In any case, it’s a good idea to read over the rules (ALL THE RULES) for an event before you begin and assemble whatever materials you’ll need to complete the project as you go—including a portfolio!

DO NOT wait until the last minute to assemble your documentation. Start the portfolio when you start your project so you can accurately record things as you do them (like work logs) rather than trying to re-create them later!
The Rules? What are the rules? Where do I find them?

The rules for all of the competitive events are located in the Competitive Events guides, of which there are two:

- National TSA Competitive Events Guide (there is one for the high school and one for the middle school; use the right one for your level).
- Colorado TSA State Competitive Events Guide (this one contains all the rules for both the middle and high school events that are only offered at the state level).

The competitive events are listed alphabetically in each of the books and are broken into several sections:

- **National Competitive Events Guide**
  - Overview – A brief summary of the event.
  - Purpose – This tells you the goal of the event – what you are supposed to learn/do.
  - Eligibility – This tells you how many individuals/teams from your chapter/state can compete in a contest.
  - Time Limits: This tells you how long certain portions of the contest will take.
  - Attire – This section tells you what the uniform requirements are for the contest. This is what you must wear to compete in the event at the state or national level. If you are not wearing appropriate attire, you will be assessed a rules violation or disqualified.
  - Procedure – This section tells you how the contest will work.
  - Regulation – These are the “rules” for the event. It explains in detail what you should include in your project – a display, a documentation portfolio, a model, etc.
  - Evaluation – This tells you how the project will be graded. Use this with the rubric to see exactly what the judges will be looking for.
  - Notes – Specific notes for you that relate to the project.

- **COTSA State Competitive Events Guide**
  - Purpose – This tells you the goal of the event – what you are supposed to learn/do.
  - Eligibility – This tells you how many individuals/teams from your chapter can compete in a contest.
  - Specific Regulations - These are the “rules” for the event. It explains in detail what you should include in your project – a display, a documentation portfolio, a model, etc.
  - Procedure – This section tells you how the contest will work.
  - Evaluation – This tells you how the project will be graded. Use this with the rubric to see exactly what the judges will be looking for.
When do you need to start the documentation portfolio?

You need to start building the documentation portfolio as you begin work on your project. Most contests will require you to keep a work log or include preliminary drawings you create as you work through the process. Do not wait until you are finished with the project to create your portfolio! If you do, you’re liable to leave out crucial information that could mean the difference between winning a medal or not.

Where do you look to see if you need a portfolio?

Look at the rules for your competitive event. Find the REGULATIONS or SPECIFIC REGULATIONS section. Here you will see EXACTLY what is required for the contest, including information on the documentation portfolio. Below is an example from the High School National Competitive Events Guide showing the Regulations Section.
The Portfolio

- For all entries that require documentation materials (comprising a “portfolio”) all pages should be secured in a clear front report cover. An example of the cover is shown below, or you can visit [http://www.staples.com/Oxford-Clear-Front-Report-Covers/product_SS1003226](http://www.staples.com/Oxford-Clear-Front-Report-Covers/product_SS1003226) for a sample report cover.

- For early submission events, portfolios must be in PDF format and uploaded via the COTSA State Conference Early Submission Entry Form at: [http://goo.gl/r0zz1F](http://goo.gl/r0zz1F). You will need to enter your contestant ID# and a contact email address.

- **DO NOT use 3-ring binders:** while they may have been acceptable in the past, they will no longer be acceptable for submissions at the state and national conferences.

- You may use page protectors. Using them may prevent pages from being accidentally ripped or torn out or worse yet, lost.

- Do not double-side the pages in the protectors unless it specifically says to do so in the competitive event rules.
The Documentation

Ok, now that you know what you should have to put your documentation into, you can dive into the meat of the project…the documentation. Your documentation has the ability to either make or break your project, so you should spend just as much time on it as you do the rest of the project, if not more!!

Remember that all the documentation in your portfolio should be word processed. DO NOT include handwritten documentation unless it is specifically called for in the event guidelines. Some events may require you to submit notes and sketches – those pieces of documentation are acceptable if handwritten.. However, the remainder of the documentation must be typed on a computer and printed on an ink jet or laser printer.

The documentation should be printed on 8.5” x 11” paper unless otherwise stated by your event guidelines.

The documentation should be printed single-sided unless otherwise stated by your event guidelines.

All entries must be in English. Unless otherwise specified, no identifying information -- other than an ID# -- is to be included on an entry. Exceptions to this rule are those events that require content aligned with a school or community (Children’s Stories, Construction Challenge and Community Service Video).

Remember to proofread your document. Have several people proofread it and check for grammar and spelling before you submit it. The spell-check/grammar-check in your computer is good, but it’s not perfect, so don’t rely solely on it. The computer may not pick up on the wrong usage of words such as “HEAR” vs. “HERE” or “THEIR” vs. “THERE”. The misuse of words in your documentation could cost you points and that could translate into a lost medal or trophy!

Here the specifications you should use in creating your documentation:

Font Size:

• Use only 11 or 12 point type. Do not shrink your type to fit on a page; and conversely, do not increase the size of your type to fill a page. Instead, use concise language to get your text to fit! Don’t be afraid to edit!

• Do not mix and match type sizes in your document. Keep all text the same size unless specifically instructed to do so for your competition.
Font Style:

- Throughout your documentation, be consistent in the use of fonts and typefaces, both in style and in size. Don’t mix and match fonts. It’s visually unappealing and makes the portfolio look unprofessional. Pick ONE typeface and stick with it throughout all of the documentation.

- Use a standard type font such as Times New Roman or Arial. Yes, it may be “boring,” but if you have to do some last minute work on a computer that isn’t yours, they may not have that fancy typeface you’re using. You are more likely going to find Arial or Times New Roman than anything else (and that will help prevent you from reformatting the entire document!). Besides, using one of these two fonts will make your documentation easier for the judges to read.

- Do not use Word Art! Just because you can, doesn’t mean you should. For headings, subheadings, and titles, use a bolded, bolded/italic version of the same font you used for the body text.

Character Spacing:

- Put only one (1) space after punctuation ending a sentence. Thanks to computers handling spacing for you, you only need one. And stay consistent in the use of spaces in the document.

- Use one (1) space after a semicolon (;) comma (,) or colon (:).

- Use one space between any state abbreviation and zip code.

Line Spacing:

- Unless otherwise specified in a competitive event’s guidelines, all text should be single-spaced with a double-space put in between paragraphs.

- When using bulleted lists, single space individual items; double space between numbered items just like the items in this bulleted list).

Margins:

- In general, unless otherwise stated in the competitive event guidelines, all margins should be 1” (one inch).

- Do not shrink or stretch the margins. Don’t increase the size of your margins to help stretch the length of your document, and don’t decrease them to shorten a lengthy document. Fudging the margins makes the document look unprofessional and messy. It is far better to edit the text to fit the space instead.
Page Numbers:

- Include page numbers. This will help judges easily find information in your documentation.
- Page numbers should be in the same font size and style as used throughout the documentation.
- Page numbers should be 0.5” from the bottom of the page at the right margin starting on page 2.

Below is an example of what a page of text in a documentation portfolio should look like:
What’s Inside the Documentation

Here’s what you should include in your documentation portfolio, along with any specific items the event guidelines call for:

The Cover Page:

Every portfolio should have a cover page. This will help a) make sure your project is placed in the right area to be judged; b) aid the judges when they are evaluating your notebook/project.

The cover should be blank, except for:

• The Event Title
• The Conference city and state (this will need to be changed if the project progresses from the state conference to the national conference)
• The Year
• DO NOT PUT YOUR NAME OR ANY OTHER IDENTIFYING INFORMATION. For state, including your ID number or TEAM ID number is acceptable. For nationals, do not include any identification whatsoever. When you turn in your project at nationals, you will receive a sticker with an ID number (one that is completely different from your state conference ID number) to put on it.

That’s it – plain and simple. DO NOT include any art, graphics, sketches, logos, or other information - not even the official TSA logo! Yes, it may be dull and boring, and it may not look all that attractive, but each competitive event calls for a simple cover to identify the portfolio and the event to which it belongs. That’s all. Nothing more. If you do not provide the correct cover page, the entry may not be placed in the proper area for judging or it may not be judged at all!

At the right is an example of what a cover page should look like:
The Title Page:

The title page is different from the Cover Page. The title page is the start of the written documentation and appears as the FIRST page, INSIDE the portfolio after the cover page. Here are the specifications for a Title Page:

- The Title Page is one (1) page in length and should not include any graphics (including Word art), logos, sketches or other identifying information.

- The Title Page should include:
  - The Event Title
  - The Conference City and State
  - The Year of the Conference
  - The Team/Chapter ID Number – This number should have been provided to your chapter advisor after registration for the state conference. This number will change if the project progresses from the state conference to the national conference. Do not put your name, school name, or any other identifying information other than your ID number. When submitting the entry at the national conference, you will need to remove the state ID number. At the national conference, when turning in an entry, you will be supplied with a sticker to affix to your entry to identify it as your own.

At the right is an example of what a Title Page should look like:

Digital Photography

Denver, Colorado

2014

2039-1 / 2039123

TEAM NUMBER

INDIVIDUAL ID NUMBER
**Table of Contents:**

Most documentation notebooks will require a Table of Contents. Here are the specifications for the Table of Contents:

- The Table of Contents can be as many pages as needed.
- The Table of Contents heading should be centered at the top of the page, followed by a double-space.
- The items in the table of contents should include all the items called for in the event’s guidelines and they should be in the same order as called for in the guidelines.
- The names of the items in the table of contents should be flush left.
- The page numbers should be right-aligned with leader lines.

An example of a table of contents is shown below.

![Table of Contents Example](image)
Tables:

Tables are useful in showing data and you should use them where appropriate. However, unless they are formatted neatly and consistently, the data becomes lost or unusable. Here are the formatting guidelines for tables:

- Use bold type for titles and column headings
- Column headings should be centered over column.
- Tables using one- and two-line column headings should be aligned at the center of the cell.
- Unless specifically required by your event’s guidelines, gridlines should be used.
- Include the dollar sign ($) when showing dollar amounts in columns.
- All columns containing numbers should be right-aligned or decimal aligned.
- All columns containing text should be left aligned (with the exception of column headings).
- The body of the table should be single-spaced.
- Tables should be centered on the page horizontally unless otherwise indicated.

At the right is an example of how a table should look:

```
<table>
<thead>
<tr>
<th>Column Heading</th>
<th>Column Heading</th>
<th>Column Heading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Text goes here</td>
<td>Text goes here</td>
<td>$100.00</td>
</tr>
<tr>
<td>The table is centered on the page. Note that text can only take up one line.</td>
<td>Text can also go here.</td>
<td>$200.00</td>
</tr>
<tr>
<td>Use gridlines for any table you create.</td>
<td>And so is this.</td>
<td>$500.00</td>
</tr>
<tr>
<td>Make sure you align your decimal places.</td>
<td>And this is, too!</td>
<td>$400.00</td>
</tr>
</tbody>
</table>
```

Unless specifically required by your event’s guidelines, gridlines should be used.

All columns containing text should be left aligned.

The body of the table should be single-spaced.

Tables should be centered on the page horizontally unless otherwise indicated.

Include the dollar sign ($) when showing dollar amounts in columns.

All columns containing numbers should be right aligned or decimal aligned.
**Resumes:**

Some contests require you to turn in a resume. Here are tips to create a clear, readable resume that can be read by optical character recognition scanners some employers use. Even though you won’t have your resume scanned by a machine in TSA competition, it’s still a good idea to keep these pointers in mind when creating a resume:

- Use a single, non-decorative font (Arial or Times New Roman are the most common)
- Be sparing in your use of boldface, italics and underlining.
- When it comes to bullets, do not use round hollow bullets as they can be misread by scanners some employers use. They could be misread as the lowercase letter “o” or the digit zero. Instead, use round, solid bullets.
- Avoid using any shading or boxes on your resume.
- Be careful that you do not have letters that touch each other. Scanners have trouble interpreting text when characters touch or overlap.
- Do not use ampersands (&) percent signs (%) or foreign characters as the scanner may not read them properly.
- Try not to use lines or other graphic elements on your resumes. Scanners have a tough time translating them.
- Do not use a multi-column format. Scanners read text left to right and cannot distinguish between columns like the human eye can.
- Begin each line at the left margin and do not justify the right margin.

On the next page is a sample of how a resume might look. You do not have to use the exact format of the sample presented here; it’s only there to help get you started. There are many other examples of resumes available on the Internet or through resources available through your teacher.
References/Sources/Works Cited:

You will be required to cite where you got information you used in the creation of your projects. If you think you can just cut/copy/paste from the Internet – think again. That’s plagiarism and it will get you disqualified faster than anything! Yes, take the information…read it…digest it…analyze it…even quote it…but don’t forget to cite where you got it! (And no, www.google.com is not a reference. Google is a search engine. It's the website Google takes you to that's the source - and even then, it may not be the original one!)

In TSA documentation, you must use MLA format (MLA stands for Modern Language Association). If you want to really get into the MLA format, you can visit this website: www.mla.org/style. However, below is a quick reference checklist for you. The checklist, provided courtesy of FBLA-PBL, shows how each of the various sources should be cited in a References section in your documentation. (FBLA-PBL Format Guide. Reston, VA. FBLA-PBL, 2014).

REFERENCES – MLA STYLE

• Sample Book Reference:

• Sample Book Reference without Author:

• Sample Magazine Reference:

• Sample Magazine Reference without Author:

• Sample Internet Reference:

• Sample Encyclopedia:

Continued on next page
• **Sample Interview Reference:**
time/europe/magazine/2003/0224/cover/interview.html

• **Sample Booklet/Pamphlet Reference:**

• **Sample DVD Reference:**

• **Sample Radio/Television Reference:**
  WBFO, Buffalo. 13 Nov. 2002.

• **Sample Government Pubs Reference:**
  from Think Tank 2000- Advancing the Civil and Human Rights of People with Disabilities
  from Diverse Cultures. Washington: GPO, 2000
Catapult Design*
* OPEN TO HIGH SCHOOL STUDENTS

I. OVERVIEW

Participants design and produce a working catapult, within specified guidelines, that is adjustable and propels hollow plastic practice golf balls (weighing about 14.5 grams each) at a scoring target between 15’ and 25’ away.

II. ELIGIBILITY

Participants are limited to three (3) teams of up to four (4) individuals per state.

III. TIME LIMITS

A. Entries must be started and completed during the current school year.

B. The catapult and design portfolio must be picked up at the designated time at the conclusion of the event.

IV. PROCEDURE

A. Participants check in their entries at the time and place stated in the conference program.

B. Catapults are inspected by evaluators to determine among other things, safety. Catapults that meet all Go/No-Go regulations will be approved for the performance stage of the event. Any unsafe devices will be disqualified. (Unsafe catapults include those with parts that detach during operation or those with a dangerous rotation or throwing motion, either of which could cause harm or damage.) Judges will make a final determination about the operational safety of a catapult.

C. If an entry’s catapult is approved for the performance stage of the event, the entry’s design portfolio will be evaluated.

D. A time sheet will be provided for sign up at check-in.

E. Students must be present for the performance stage of the event.

F. Teams will receive a bucket of three (3)-dozen hollow plastic practice golf balls (each weighing approximately 14.5 grams) for the performance stage.

G. Students must bring and wear safety glasses for this stage of the event.

H. One (1) team member will use a 25’ tape measure for measuring and recording the distance from the catapult to the target as it is set for the given test day.
I. The team will be given five (5) minutes to adjust its catapult for accuracy to that distance.

J. Teams will position their catapult on the “firing line” and wait for the command to fire.

K. Multiple teams with different colored hollow plastic practice golf balls will launch at the same time.

L. When teams receive their bucket and the fire command is given, they will have one (1) minute to launch as many hollow plastic practice golf balls as possible to accumulate as many points as possible in the net. Each team must cease firing at one (1) minute. No shots made after time has been called will count.

M. The center of the scoring net (red circle) will be approximately 15’ from the launching area. The scoring net will consist of a golf chipping target and three (3) color-coded scoring sections. The red center target is 10” in diameter, the green is 25” in diameter, and the blue target is 40” in diameter.

N. Scoring is as follows: red target, 5 points; green target, 2 points; blue target, 1 point.

O. Hollow plastic practice golf balls must enter the target on the fly and be fully in the scoring net to score points. No points will be earned for bounced-in or half-in/half-out hollow plastic practice golf balls.

P. Ties will be broken as follows: 1) the team with the highest score and least amount of hollow plastic practice golf balls in the target, and/or 2) the team with the shortest time recorded to score the most points.

Q. Final ranking will be determined from points earned 1) for the design portfolio and 2) the catapult’s performance.

R. Lack of catapult compliance may result in disqualification.

S. Team members must collect all hollow plastic practice golf balls once judges complete recording points and before leaving the event area.

It is essential that students and advisors routinely check the TSA website (www.tsaweb.org) for updated information about TSA general rules and competitive event guidelines. This information can be found on the website under Competitions/Competition Updates. When students participate in any TSA competitive event, they are responsible for knowing of all updates, changes, and clarifications related to that event.
V. REGULATIONS

A. Each team must record its research and development process—from inception through testing and modification—to the performance stage for competition. This documentation should be submitted as a design portfolio, complete with sketches, pictures, and descriptions of the processes, successes, and failures related to the designed catapult.

B. Documentation materials (comprising the “design portfolio”) are required and should be secured in a clear front report cover. The report cover must include the following single-sided, 8½” x 11” pages, in this order:
   - Title page with the event title, the conference city and state, the year, and the team/chapter ID number; one (1) page
   - Table of contents
   - Materials list; one (1) page
   - Details of the research and inspiration to help determine the design for a catapult
   - A design log (that includes testing and adjustment notes) from the start date to the present; pages as needed
   - Sketches and pictures of the design process; pages as needed

C. Participants must bring and wear safety goggles during the performance stage of the event.

D. Teams must provide their own tape measure (at least 25’ length).

E. The catapult may be no larger than 2’ tall x 2’ long x 1.5’ wide.

F. The base of the catapult should accommodate the provided ballast. The ballast will be one (1) 50-pound bag of playground sand, provided by TSA on site.

G. The catapult must operate completely within the given area; the launch arm may extend beyond the front of the catapult only while launching.

H. The catapult may have any type of spring mechanism to power the arm, but all parts must be contained within the 2’ tall x 2’ long x 1.5’ wide maximum footprint prior to launch.

I. The catapult’s total weight must not exceed fifteen (15) pounds.

J. All parts of the catapult must initiate behind the launch line, but parts may extend over the line during and after the last launch.

K. The catapult cannot have wheels.

L. The catapult must be made entirely from PVC pipe, with the exception of the launch mechanism, firing mechanism, fasteners, and safety items. These items may be wood or metal and must be constructed in a safe way, so as not to damage the device, the testing area, or cause harm to others.
M. The following may not be used:
   • Glass
   • Flammable, corrosive, or explosive materials
   • Compounds that produce odors or gases

N. The catapult must have at least a five (5)-foot pull cord to launch from a safe distance.

O. When the catapult is on display or not in the performance stage, it must be fully disabled and unable to be readied for firing.

P. Catapult Go or No-Go Compliance - A catapult that receives a "No" answer to any of the requirements below will not advance to the performance stage of the event.
   • Does the team have safety goggles? (Yes/No)
   • Can the catapult be weighed down with a sand bag? (Yes/No)
   • Is the catapult within the size specifications? (Yes/No)
   • Is the catapult built with the correct materials? (Yes/No)
   • Does the catapult launch with a pull cord? (Yes/No)
   • Does the catapult have a safe launching mechanism? (Yes/No)
   • Is the catapult safe to operate? (Yes/No)

VI. EVALUATION

Evaluation is based on the portfolio and points earned for the catapult's performance. Please refer to the official rating form for more information.
## CATAPULT DESIGN

### 2016 OFFICIAL RATING FORM

**HIGH SCHOOL**

A catapult that is marked No-Go for any of the requirements below will not advance to the performance stage of the event.

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>Minimal Performance</th>
<th>Adequate Performance</th>
<th>Exemplary Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Team members must have safety goggles</td>
<td>Go</td>
<td>No-Go</td>
<td></td>
</tr>
<tr>
<td>The catapult can be weighed down with a sand bag</td>
<td>Go</td>
<td>No-Go</td>
<td></td>
</tr>
<tr>
<td>The catapult is the correct size</td>
<td>Go</td>
<td>No-Go</td>
<td></td>
</tr>
<tr>
<td>The catapult is built with the correct materials</td>
<td>Go</td>
<td>No-Go</td>
<td></td>
</tr>
<tr>
<td>The catapult launches with a pull cord.</td>
<td>Go</td>
<td>No-Go</td>
<td></td>
</tr>
<tr>
<td>The catapult has a safe launching mechanism</td>
<td>Go</td>
<td>No-Go</td>
<td></td>
</tr>
<tr>
<td>The catapult is safe to operate</td>
<td>Go</td>
<td>No-Go</td>
<td></td>
</tr>
</tbody>
</table>

### Design Portfolio

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>Minimal Performance</th>
<th>Adequate Performance</th>
<th>Exemplary Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portfolio (X1)</td>
<td>Portfolio is unorganized and missing three or more components.</td>
<td>Portfolio has most components, and it is somewhat organized.</td>
<td>One or no components are missing in the portfolio, and content and organization are clear.</td>
</tr>
<tr>
<td>Research (X1)</td>
<td>There is little evidence of research to help determine the design for a catapult.</td>
<td>Some research is present to help determine the design for a catapult.</td>
<td>Ample and thorough research to help determine the design for a catapult is evident.</td>
</tr>
<tr>
<td>Design log (X2)</td>
<td>Design log lacks information about the design process (including testing and adjustments) for the final catapult.</td>
<td>Design log adequately conveys the design process (including testing and adjustments) for the final catapult.</td>
<td>Design log provides thorough and quality information about the design process (including testing and adjustments) for the final catapult.</td>
</tr>
<tr>
<td>Sketches and pictures (X1)</td>
<td>Sketches and/or pictures do not help illustrate the design process.</td>
<td>Sketches and/or pictures are appropriate and help illustrate the design process.</td>
<td>Sketches and/or pictures are of excellent quality and thoroughly illustrate the design process.</td>
</tr>
</tbody>
</table>

### Catapult Performance

<table>
<thead>
<tr>
<th># Hollow Plastic Practice Golf Balls</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red target - 5 points each</td>
<td></td>
</tr>
<tr>
<td>Green target - 2 points each</td>
<td></td>
</tr>
<tr>
<td>Blue target - 1 point each</td>
<td></td>
</tr>
</tbody>
</table>

**SUBTOTAL (50 points)**

Rules violations (a deduction of 20% of the total possible points) must be initialed by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

Indicate the rule violated: ________________

(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.)

**TOTAL SCORE**

Comments:

I certify these results to be true and accurate to the best of my knowledge.

Evaluator:

Printed name: Signature:
Crash Test*
*OPEN TO MIDDLE SCHOOL STUDENTS

I. PURPOSE
This event is designed to stimulate elementary students’ interest in TSA by encouraging middle school TSA members to share their love and interest in technology. For this contest, one elementary student (grades 1-5 or 6 - SEE ELIGIBILITY SECTION BELOW) will work with a middle school student to design and build a “crash test car” that will be tested in multiple head-on and rear-end collisions. The survivability of the passenger, a regular raw egg, will be a determining factor in the car’s success.

II. ELIGIBILITY FOR ENTRY
This event is open to Middle School TSA Chapters. Entrants are limited to TEN (10) teams of two (2) students per chapter. Each team MUST have 1 elementary student, and 1 middle school student. Students in 6th grade can be considered elementary students ONLY IF 6th grade is part of the elementary school in which they are currently enrolled. Students in sixth grade who are part of a K-8 or K-12 school would be considered middle school students. Contact the state advisor if there are any questions regarding eligibility.

III. SPECIFIC REGULATIONS
A. The theme for 2016 will be: Limousine
B. All entries must be designed and constructed before the conference.
C. Vehicles must be turned into the event coordinator at the beginning of the conference to be displayed. Students may not pick up their vehicles until the end of the conference.
D. The crash test vehicle:
   • Must comply with the current year’s published theme.
   • Must have seating capacity for at least TWO passengers (although only one egg will be used for testing purposes). Seating should be able to accommodate not only the egg, but the “body bag” (Ziploc™ snack size bag) as well.
   • Cannot use pre-made containers for the passenger compartment (for example, Rubbermaid™, Tupperware™, Gladware™ or similar containers). However, portions of the passenger compartment may pre-made (for example, a single cup from an egg carton, or a plastic steering wheel from a model car kit).
   • The safety systems and the vehicle body should not have metal components
   • Must have a windshield through which the driver can be clearly seen.
   • Must have at least one clearly identifiable safety system for occupant protection.
   • Must have both front and rear bumpers.
   • Must have a steering wheel within reach of the driver.
   • Must have a reusable way to get the driver in and out of the vehicle after each impact. The egg will be checked for survivability after every crash.
Must have a flat bottom with four 1.5” strips of Velcro (the soft side) firmly attached. This will keep the vehicle on the testing sled.

Should NOT have any wheels. The wheels are provided in the form of a testing sled. (See attached schematic for the testing sled specifications.)

Must be between 3”-4” in width
Must be between 7”-12” in length
Has no restriction on height.

E. No commercially produced kits are allowed. The car must be primarily designed and built by the elementary student with guidance from the middle school student.

F. The vehicle will be placed on a testing sled which will serve as the wheels for the vehicle. A schematic of the sled is provided with these regulations.

G. The ramp is made from a standard 1” x 10” x 3/4”, with 1” x 2” x 3/4” boards as side rails. The end block is a composite hardwood block 9” wide, 8” high and 6-1/2” thick. It is reinforced on the sides with 3/4” solid wood. The guard rails will assist the vehicle down the ramp, but will NOT prevent the vehicle from leaving the track. A schematic of the ramp is included with these regulations.

H. A drawing of the vehicle done by the elementary student must accompany the vehicle. It should be as accurate to the final model as possible.

I. The elementary student should be the primary lead in the design and construction of the vehicle.

J. The middle school student must present a portfolio documenting the project. The portfolio should include:
   - Photos of the project
   - An essay describing the project and each person’s part in it
   - A time log documenting the time spent with the elementary student on the project.

IV. PROCEDURE

A. Participants will turn in their vehicles and design briefs to the display area at the beginning of the conference.

B. At the time of testing, each vehicle will be given a single, raw egg and a “body bag” (a single snack-sized Ziploc™ bag) to contain any potential egg innards should the shell crack during testing.

C. The sled, with the car attached, will be rolled down the testing ramp. At the end of the ramp will be a barrier (which may or may not have protrusions) into which the car will crash.

D. After the car has impacted the barrier, the egg must be removed to check for cracks. If the egg is broken, the crash was unsuccessful and testing will be stopped. If the egg remains unbroken, testing will continue.
E. The starting edge of the ramp will begin at 4’ from the floor. After each successful test, the starting edge of the ramp will be raised 2’, until the ramp is near vertical. If the vertical test is successful, the ramp will be lowered back to the 4’ level and the car will be repositioned BACKWARDS on the sled and the tests will be repeated. If the backwards test is successful, the ramp will be lowered back to the 4’ level and the car will be repositioned forwards on the sled and the tests will be repeated with unknown “Road Obstacles.”

F. Testing of the vehicle ends with either a cracked egg or completion of 16 trials (8 forward and 8 backward).

G. Vehicles will be returned to the display area at the end of the competition.

VI. EVALUATION

Each vehicle will receive points based on how many impacts the car is able to withstand, the accuracy of the drawing, and on the design portfolio. The following rubric will be used. In the event of a tie, ranking will be determined by the most innovative design. The Event Coordinator will make this determination.
SCHEMATICS - CRASH TEST SLED

SCHEMATICS - CRASH TEST RAMP
<table>
<thead>
<tr>
<th>Specifications</th>
<th>Minimal Performance 1-4 points</th>
<th>Adequate Performance 5-8 points</th>
<th>Exemplary Performance 9-10 points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drawing</td>
<td>Drawing is not neat, does not reflect design of the car, or is missing. Not to scale. Measurements aren’t included.</td>
<td>Drawing is neatly prepared and accurately reflects the design of the car, but is not to scale. Measurements are included.</td>
<td>Drawing is neatly prepared and accurately reflects the design of the car. The drawing is to scale. Measurements are included.</td>
</tr>
<tr>
<td>Portfolio</td>
<td>Portfolio is missing three or more items or is not present.</td>
<td>Portfolio is missing one of the following: documentation proving the elementary student was the primary lead in the design and construction; photos, essay describing the project and each person’s part in it, or a time log documenting time spent with the elementary student.</td>
<td>Portfolio is complete with documentation proving the elementary student was the primary lead in the design and construction of the vehicle. Photos of the project are included as well as an essay describing the project and each person’s part in it. A time log documenting the time spent with the elementary student on the project is included.</td>
</tr>
<tr>
<td>Design Specs - Construction</td>
<td>The car meets design specs for height, width and length. It fits on the test sled properly.</td>
<td>The car doesn’t meet one of the design specs for length, width or height, or may not fit test sled.</td>
<td>The car does not meet three or more design specs for length, width, or height, or does not fit the test sled.</td>
</tr>
<tr>
<td>Design Specs - Construction Part II</td>
<td>The car has seating for at least 2 passengers. Car has unobstructed view through the windows. Steering wheel is accessible by the driver.</td>
<td>The car has seating for at least two passengers. There may be an obstruction of the windows or controls may not be accessible by the driver.</td>
<td>The passenger area does not provide comfortable seating. There is an obstruction of the windows and the controls are not accessible by the driver.</td>
</tr>
<tr>
<td>Design Specs - Appearance</td>
<td>The car has a clear windshield, front and back bumpers, a steering wheel and more than one safety system.</td>
<td>The car is missing one of: a clear windshield, front and back bumpers or a steering wheel. There is only one safety system.</td>
<td>The car is missing three or more of the following: a clear windshield, front and back bumpers or a steering wheel. There is no safety system.</td>
</tr>
<tr>
<td>Design Specs - Appearance</td>
<td>The car is neatly done, using a proper amount of glue, tight fitting pieces, and cuts are clean. Car is painted well. The car follows published theme.</td>
<td>Car is neatly done, but there is one need for improvement: glue usage, tight fitting pieces, or clean cuts. Car is painted or decorated. Follows theme.</td>
<td>Car has needs for improvement in three areas: glue usage, tight fitting pieces, or clean cuts. Car is not decorated.</td>
</tr>
</tbody>
</table>

Rules violations (a deduction of 20% of the total possible points) must be initiated by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right. Indicate the rule violated: ________________________

(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.) TOTAL SCORE

Comments:

I certify these results to be true and accurate to the best of my knowledge.

Evaluator: ____________________________

Signature: ____________________________

Printed name: ____________________________
Creativity Challenge - HS
* OPEN TO HIGH SCHOOL STUDENTS

I. GOAL

To stimulate elementary students’ interest in TSA by encouraging high school TSA members to share their love and interest in technology.

II. PURPOSE

In this ON-SITE event, one elementary student (grades 1-5 or 6 - NOTE: SEE ELIGIBILITY SECTION BELOW) will work with a high school student in an on-site design problem. NOTE: This is a non-competitive event and does not earn points for your school toward the Chapter of the Year award. All High School and Elementary buddies will be recognized at the award ceremony.

III. ELIGIBILITY FOR ENTRY

This event is open to High School TSA Chapters. Entrants are limited to 10 teams of two students per chapter. Each team MUST have 1 elementary student, and one high school student. Students in 6th grade can be considered elementary students ONLY IF 6th grade is part of the elementary school in which they are currently enrolled. Students in sixth grade who are part of a K-8 or K-12 school are considered middle school students. Contact the state advisor if there are any questions regarding eligibility.

III. PROCEDURE/SPECIFIC REGULATIONS

A. Participants report to the event area at the time/place listed in the conference program.

B. The teams allowed 1 hour and 30 minutes to design and construct a solution.

C. Each solution is tested as soon as the construction phase is completed.

D. All work must be completed in the event area during the time specified for the event.

E. All materials are provided. Only the materials issued to each team by the event coordinator may be used in the development of the solution.

IV. EVALUATION

Each team’s solution is evaluated objectively. A finite measure, such as elapsed time, horizontal or vertical distance, and/or strength, is used to determine the best solution. Solution designs will be used to break ties. Only as a last resort does the event coordinator use subjective measurement, such as originality, to evaluate solutions.
Creativity Challenge - MS

*OPEN TO MIDDLE SCHOOL STUDENTS*

**I. GOAL**

To stimulate elementary students’ interest in TSA by encouraging middle school TSA members to share their love and interest in technology.

**II. PURPOSE**

In this ON-SITE event, one elementary student (grades 1-5 or 6 - NOTE: SEE ELIGIBILITY SECTION BELOW) will work with a middle school student in an on-site design problem. NOTE: This is a non-competitive event and does not earn points for your school toward the Chapter of the Year award. All Middle School and Elementary buddies will be recognized at the award ceremony.

**III. ELIGIBILITY FOR ENTRY**

This event is open to Middle School TSA Chapters. Entrants are limited to 10 teams of two students per chapter. Each team MUST have 1 elementary student, and one middle school student. Students in 6th grade can be considered elementary students ONLY IF 6th grade is part of the elementary school in which they are currently enrolled. Students in sixth grade who are part of a K-8 or K-12 school would be considered middle school students. Contact the state advisor if there are any questions regarding eligibility.

**III. PROCEDURE/SPECIFIC REGULATIONS**

A. Participants report to the event area at the time/place stated in the conference program.

B. The teams allowed 1 hour and 30 minutes to design and construct a solution.

C. Each solution is tested as soon as the construction phase is completed.

D. All work must be completed in the event area during the time specified for the event.

E. All materials are provided. Only the materials issued to each team by the event coordinator may be used in the development of the solution.

**IV. EVALUATION**

Each team’s solution is evaluated objectively. A finite measure, such as elapsed time, horizontal or vertical distance, and/or strength, is used to determine the best solution. Solution designs will be used to break ties. Only as a last resort does the event coordinator use subjective measurement, such as originality, to evaluate solutions.
Fore!

* OPEN TO HIGH SCHOOL STUDENTS

I. GOAL

To stimulate elementary students’ interest in TSA by encouraging high school TSA members to share their love and interest in technology.

II. PURPOSE

The local parks and recreation department has recently begun work on renovating the municipal golf course. Prior to the renovation, there was an 9-hole themed miniature golf course which had become dated and unattractive. As part of the renovation, the Department of Parks and Recreation has the opportunity to update the course; they want to design and build an attractive course that is appealing to all of the city’s residents and have put out a call for design ideas for a new 9-hole golf course.

Your design team, consisting of one elementary student (grades 1-5 or 6 - NOTE: SEE ELIGIBILITY SECTION BELOW) and one high school student, has been hired to design and develop one hole for the proposed miniature golf course.

III. ELIGIBILITY FOR ENTRY

This event is open to High School TSA Chapters. Entrants are limited to 10 teams of two students per chapter. Each team MUST have 1 elementary student (grades 1-5 or 6), and one high school student.

Students in 6th grade can be considered elementary students ONLY IF 6th grade is part of the elementary school in which they are currently enrolled. Students in sixth grade who are part of a K-8 or K-12 school would be considered middle school students. Contact the state advisor if there are any questions regarding eligibility.
III. SPECIFIC REGULATIONS

Your team will present, drawings of your design creation, a list of necessary materials, a constructed, playable table top model of your creation which was designed and constructed before the conference. The elementary student should be the primary lead in the design and construction of the model.

A. Golf course holes must be turned into the event coordinator at the beginning of the conference to be displayed. Students may not pick up their models until the end of the conference.

B. Portfolio: The high school student must present a portfolio documenting the project. Included in this portfolio should be:
   • A list of materials (including cost)
   • Photos of the project
   • An short essay describing the golf course hole and each person’s part in the project. Included in this essay should be an explanation of how the par of the hole was determined.
   • A time log documenting the time spent with the elementary student on the project.
   • A colored blueprint/schematic of the hole with all parts clearly labeled.

C. Model
   • The golf course hole model must be a playable tabletop model not to exceed 24” x 24”.
   • The model must include a “tee” area.
   • The model must include a cup 1” in diameter.
   • The model must include a marble to serve as a miniature golf ball.
   • The team must design and develop a “putter” or launch mechanism to hit the ball on the hole.
   • In order to minimize costs, the model should be constructed primarily from recyclable materials.

IV. PROCEDURE

A. Participants will turn in their golf course holes and design portfolios to the display area at the designated time.

B. Each golf course hole will be demonstrated by the design team. The team’s “putter” or launch mechanism will be used to propel the golf ball through the course.

C. Golf courses will be returned to the display area at the end of the competition.

V. EVALUATION

Each golf course hole will be evaluated using the following rubric. The project will receive points based on the design portfolio prepared by the high school student. In the event of a tie, ranking will be determined by the most economically-produced model. The Event Coordinator will make this determination.
###Minimal Performance 1-4 points

- The portfolio may be missing two or more of the following items and/or the information presented is not complete:
  - A list of materials used in the creation of the hole.
  - Photographs detailing the work of the TSA member AND the elementary student in the creation of the model.
  - An essay describing in detail the golf course hole and each person’s part in the project.
  - A time log documenting the time spent with the elementary student.
  - A blueprint/schematic of the hole will all part/features clearly labeled.

###Adequate Performance 5-8 points

- Portfolio is complete and includes:
  - A list of materials used in the creation of the hole.
  - Photographs detailing the work of the TSA member AND the elementary student in the creation of the model.
  - An essay describing in detail the golf course hole and each person’s part in the project.
  - A time log documenting the time spent with the elementary student.
  - A blueprint/schematic of the hole will all part/features clearly labeled.

###Exemplary Performance 9-10 points

- Portfolio is complete and easy to read and is clearly understandable. It includes:
  - A detailed list of materials used in the creation of the hole.
  - Multiple photographs detailing the work of the TSA member AND the elementary student in the creation of the model.
  - A short essay describing in detail the golf course hole and each person’s part in the project.
  - A detailed time log documenting the time spent with the elementary student.
  - A colored blueprint/schematic of the hole will all part/features clearly labeled.

###Specifications

####Minimal Performance 1-4 points

- The model hole:
  - Fits within the 24" x 24" dimensions
  - Includes a "tee" area
  - Includes a cup 1" in diameter
  - Includes a marble to serve as a ball.
  - Has a student-developed putter/launch mechanism to hit the ball on the hole.
  - Is constructed from recycled materials.

####Adequate Performance 5-8 points

- The model includes/meets all but ONE of the following:
  - Fits within the 24" x 24" dimensions
  - Includes a "tee" area
  - Includes a cup 1" in diameter
  - Includes a marble to serve as a ball.
  - Has a student-developed putter/launch mechanism to hit the ball on the hole.
  - Is built from recycled materials.

####Exemplary Performance 9-10 points

- The model hole:
  - Fits within the 24" x 24" dimensions
  - Includes a "tee" area
  - Includes a cup 1" in diameter
  - Includes a marble to serve as a ball.
  - Has a student-developed putter/launch mechanism to hit the ball on the hole.
  - Is constructed from recycled materials.

###Model

- The model is missing three or more items from the following:
  - Fits within the 24" x 24" dimensions
  - Includes a "tee" area
  - Includes a cup 1" in diameter
  - Includes a marble to serve as a ball.
  - Has a student-developed putter/launch mechanism to hit the ball on the hole.
  - Is built from recycled materials.

- The model accurately follows the drawings. The model is complete with greens, walkways, bumpers, tees, holes, flags and obstacles. The goal is apparent. The hole is well constructed.

- The model makes poor use of the space; design indicates simple two-dimensional design. No special features such as tunnels or uneven topography are included.

- The model is complete but there may be some difference between plans and actual model. Model includes greens, walkways, bumpers, tees, holes, flags and obstacles. Goal is apparent. The hole is well constructed.

- The model is incomplete. Many parts of the model are missing. The hole is not well constructed.

- The hole makes poor use of the space; may include one feature such as a tunnel or uneven topography.

- The hole adequately uses the space provided; may include one feature such as a tunnel or uneven topography.

####Rules violations (a deduction of 20% of the total possible points) must be initialed by the evaluator, coordinator and manager of the event.

Indicate the rule violated: ________________

(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.)

**TOTAL SCORE**

**Comments:**

I certify these results to be true and accurate to the best of my knowledge.

Evaluator: ___________________________

Signature: _________________________

Printed name: ___________________
Giant Jenga Tournament

* OPEN TO MIDDLE AND HIGH SCHOOL STUDENTS

I. GOAL

To stimulate teamwork and communication skills through a creative problem-solving challenge.

II. PURPOSE

Part of developing a student who will be prepared for the challenges ahead in the 21st century is the development of teamwork and communication skills. Through this competitive event, played in tournament style, teams work to test those leadership skills as they work as a team to build a teetering block tower made of 2x4 blocks as high as possible without having it fall over.

Each of the blocks have been donated by the various TSA chapters in Colorado and may bear some sort of decoration on its edges and ends. The purpose behind having chapters contribute personalized blocks signifies that while each of our TSA chapters may look slightly different, together, we are very similar and all fit together to build a strong organization. Each COTSA chapter is encouraged to submit blocks to the COTSA State Office for this event.

III. ELIGIBILITY FOR ENTRY

This event is open to Middle and High School TSA Chapters. Entrants are limited to four (4) teams of two (2) to four (4) students per chapter.

IV. SPECIFIC REGULATIONS

A. A Jenga set consists of 54 wooden blocks. Each block is made from a standard 2x4 and is 10.5” long.

B. The initial Jenga tower has 18 levels of three blocks each. The blocks are placed adjacent to each other along their long side and perpendicular to the previous level (so, for example, if the blocks in the first level lie lengthwise north-south, the second level blocks will lie east-west).

C. A “move” consists of taking one -- and only one -- block from any level (except the one below the incomplete top level) of the tower, and placing it on the topmost level in order to complete it.

D. Blocks may be bumped to find a loose block that will not disturb the rest of the tower. Any block that is moved out of place must be returned to its original location before removing another block. The turn ends when the next person to move touches the tower or after ten seconds, whichever occurs first.

E. The match ends when the tower falls in even a minor way—in other words, any piece falls from the tower, other than the piece being knocked out to move to the top.

F. The winning team will be the team to successfully remove and place a block without causing the tower to fall or a brick to fall from the tower.
V. PROCEDURE

A. The tournament will be bracketed prior to the conference and initial matches will be determined at random.

B. A coin toss will be made to determine the team that will move first in a match.

C. Blocks may be bumped to find a loose block that will not disturb the rest of the tower. Any block that is moved out of place must be returned to its original location before removing another block.

D. The turn ends when the next person to move touches the tower or after ten seconds, whichever occurs first.

E. The match ends when the tower falls in even a minor way—in other words, any piece falls from the tower, other than the piece being knocked out to move to the top.

VI. EVALUATION

The match ends when the tower falls in even a minor way—in other words, any piece falls from the tower, other than the piece being knocked out to move to the top. The winning team will be the last team to successfully remove and place a block on top of the tower without causing the tower to fall or a brick fall from the tower.
Integrated Autonomous Vehicle

*OPEN TO MIDDLE AND HIGH SCHOOL STUDENTS*

**I. PURPOSE**

The purpose of the challenge is for students to design, build, and operate an integrated autonomous vehicle. This vehicle must be able to navigate a defined course in both tele-operated (human-controlled) as well as autonomous (computer-controlled) modes. Through this challenge students will develop an understanding of the relationships between sensors and embedded controllers. Students will be required to utilize computational thinking principles to plan, control, and manipulate the motion of a vehicle.

This challenge encourages students to integrate the use of sensors and programming to develop a closed-loop feedback control system. Students will develop fluency in the vocabulary and concepts around microcontrollers and embedded computing. Students are required to document, present, and demonstrate the use of the engineering design cycle.

**II. ELIGIBILITY FOR ENTRY**

Eligibility is limited to two (2) teams of three (3) members per chapter. This event is open to high school and middle school students.

**III. VEHICLE / ROBOT**

A. **SIZE:** The vehicle shall not exceed a rectangular footprint of 10" wide x 10" long.

B. **WEIGHT:** The gross weight of the vehicle with battery shall not exceed 20 lbs in weight.

C. **SAFETY:** Any vehicle deemed unsafe by the judges will be removed from competition, only to return at the judge’s discretion.

D. **CONTROL SYSTEM \ MICROCONTROLLER:** Vehicles may use any commercially available robotics control systems including, but not limited to: Lego RCX/NXT/EV3, VEX, Parallax, Arduino, Raspberry Pi, Beaglebone Black, or PCDuino.

E. **REMOTE \ TELE-OP CONTROL:** The vehicle shall integrate a method to manually operate and control that utilizes a non-physical interface. This system includes any publicly available radio modules in the ISM Band (WiFi, Bluetooth, XBee) or by Infrared (IR) remote.

F. **BILL OF MATERIALS / BUDGET:** Each team shall submit a complete bill of materials / budget for the cost of their vehicle/robot. Present retail value of all parts, hardware, material, and electronics should be included using the attached spreadsheet. This includes all robot controllers, kits, sensors, batteries, and wires. Common items or salvaged recycled goods such as cardboard, popsicle sticks, soda cans, scrap wood should be included on the Bill of Materials (BOM) but should be listed at a cost of $0.00. Teams will be rewarded for being resourceful and cost effective.

2015-2016 Colorado TSA Call to Conference and State Competitive Events Guide
G. SENSORS: Integration of sensors is highly encouraged. There are many commercial-off-the-shelf (COTS) sensors available that are compatible with any of the control systems / microcontrollers mentioned above. All electrical wiring, including sensors, must be clearly documented in the design notebook.

IV. PLAYING FIELD

A. FIELD DIMENSIONS: The field will be built on a 4’ x 8’ sheet of ¾” plywood sheet. The surface of the field is painted matte white. Lanes on the field are nominally 11.375” wide. Due to build tolerances, these may vary by as much as +/- 1 inch.

B. FIELD VARIANTS: There will be three unique field variants for students to compete on. Each field has a score multiplier that reflects the relative difficulty of the challenge.

C. PRACTICE FIELD: Classroom or practice fields may be constructed of plywood and 1x4” pine to match the challenge course. See drawing FIELD_DWG.pdf for specific course layouts and diagrams. This year the challenge has changed from previous years, please read the descriptions carefully if you’ve competed before. The teams can choose which field to run on. The fields will give the opportunity to complete runs and score highest possible score.

D. BEACONS: A team may provide navigation beacons as a means to mark the course. Beacons may be infrared, visible spectrum or sonic. Sonic beacons in the audible range are subject to the judges’ approval and any beacon deemed disruptive will be removed from the challenge (e.g., a continuous tone at 9 kHz). Once the beacon is placed it may not be moved until after the team placing it has completed its run.

E. MARKERS AND FIDUCIALS: Teams may add flat, marking features on the course to aid in navigation. Fiducial markers shall be no larger than 4” wide x 4” long x 0.125” tall. The number of fiducial markers shall not exceed the number of intersections in the course.

F. TRACKING LINE: Each course will feature a ¾” black strip of electrical tape centered along the maze to provide contestants with the opportunity of integrating a line following algorithm. The tracking line terminates in 90 degree turns at each intersection of the maze.

G. FIELD PERIMETER: Barrier walls 3-½” tall will line the edge of the plywood. The barrier walls are constructed from standard 2” x 4” lumber.

H. FINISH ZONE: An area approximately 11.375” x 12” marked in RED shall designate the finishing area for each challenge. Completion of the race shall be determined when any point of the vehicle crosses into the FINISH ZONE.

I. PAYLOAD PEDESTAL: A payload shall be placed on a pedestal on the field. The pedestal will be a 1-½” SCH 40 PVC Coupler (Home Depot SKU: SKU # 29399). The bottom of the payload will rest at a height of 2.25” from the bottom of the playing field. The payload pedestal will sit just outside the starting area for the vehicle.

J. PAYLOAD DEPOSIT AREA: A 6” x 6” square box made from 1” x 2” Furring strips shall mark the location of the payload deposit. The Payload Deposit area will be centered along the TRACKING LINE in the FINISH ZONE.
V. THE CHALLENGE

A. TRIALS: Each vehicle will have the opportunity to make three (3) timed runs on a course. The maximum time allowed to complete the course is 3 minutes.

B. SCORING / TIMING: Each trial shall be scored based on the time and the difficulty of the course according to the following formula:

\[
\text{TimeScore} = \frac{180 \text{ seconds} - \text{CourseTime(s)}}{180 \text{ seconds}} \times [\text{CourseMultiplier}] \times 50 \text{ points} + \text{PayloadBonus}
\]

CourseTime shall be taken at the point when any part of the vehicle crosses over into the RED FINISH ZONE. Teams may still continue to deliver the PAYLOAD into the PAYLOAD DEPOSIT AREA so long as the total time does not exceed 3 minutes.

C. FALSE STARTS: A false start shall be defined as any movement across the starting line by a vehicle before being signaled or otherwise permitted by the judge. A FALSE START results in a 20 point score deduction.

D. FIELD PROGRESS BONUS: For each corner passed teams will receive a +10 point bonus to their score. The entire body of the robot must fully pass through the intersection for a FIELD PROGRESS BONUS to be awarded.

E. INTEGRATED AUTONOMOUS: One of the three (3) trials for each team shall be manually student-operated by the remote control. All other rounds shall be fully autonomous. Autonomous mode must be initiated by a single button push on their vehicle.

F. FIELD OPTIONS:
   • FIELD A: rectangle (right turns only). Multiplier = 1.00
   • FIELD B: turns (left turns only). Multiplier = 1.25
   • FIELD C: multiple turns (right and left) and a T-intersection (one route shorter than the other). Multiplier = 1.50
G. PAYLOAD BONUS: Teams will have the choice of taking a payload through the course. The payload is a standard tennis ball measuring nominally 2.63” in diameter and 2 oz. in weight. Points for manipulating and moving the payload will be awarded as follows:

- Moving or manipulating the payload: +5 points
- Successfully picking up the payload: +5 points
- Moving the payload to the end: +10 points
- Depositing the payload successfully: +15 points
- Any PAYLOAD tasks completed autonomously: 2x autonomous multiplier bonus.

H. CELL PHONES & OTHER TECHNOLOGY: The use of cell phones during competition is strictly prohibited unless being used to control the vehicle. Use of cell phones by spectators is also prohibited. If a judge sees a cell phone in the contest area they will ask that it be put away; if a judge sees the cell phone a second time, the person will be asked to leave the contest area.

VI. TECHNICAL DOCUMENTATION / PRESENTATION

A. Technical Documentation. The entire design process should be made available electronically through a website or blog. You may use Instructables, Google Sites, wix.com, blogger, wordpress, or your favorite web authoring tool. Through this webpage, you should document the entire engineering design process, illustrating your progress from design inception, iteration and testing, re-design, and final delivery / evaluation (competition day). A link to the technical documentation must be provided via the COTSA State Conference Early Submission Entry Form at: [http://goo.gl/r0zz1F](http://goo.gl/r0zz1F) by February 1, 2016. Contestants will need to enter their contestant ID# and a contact email address. Any links submitted after the February 1 deadline will not be considered for competition. The technical documentation should include:

- Bill of Materials (BOM) / Budget: A complete list of all parts, materials, and components used on the vehicle. Additional bonuses will be awarded to teams that use readily available materials and low-cost solutions.
- Technical drawings: Complete mechanical engineering drawings of the vehicle shall be provided.
- Drawings may be done by hand or using computer-aided design (CAD).
- The drawings should include at a minimum an orthographic or isometric sketch and three section views illustrating the front, top and side profiles of the vehicle with appropriate geometric dimensioning and tolerancing.
- Photos / Images / Video: Include photos and images of the design process. We encourage you to leverage the use of digital media to capture your design process.
- Electrical schematics: Drawings of the wiring, power system and sensors shall be provided. Use color coding and labels on your schematic where appropriate.
- Pseudo-code / algorithm: Contestants should include a flow chart, diagram or illustration of their program and program flow.
- Code: Original source code your program. Your program should be fully documented and commented to allow judges to interpret your algorithm and program flow.
- Data Tables and Calculations: Tables of original experimental data illustrating the iterations, trials and calculations should be included and properly documented with dates and times of the experiments.
B. Presentation. During the presentation time, each team will be expected to summarize their design and the design process to the judges. Teams should plan out and rehearse a 2- to 3-minute presentation on their vehicle. Note: A projector will NOT be available, but teams are encouraged to bring visual aids, models, or a poster. Suggested topics to include:

- Engineering design process.
- Brainstorming and various ideas teams investigated.
- Data, calculations and iterations taken.
- Key highlights and features of their vehicle / robot.
- Reflection and evaluation of their design success.
- Discussion of obstacles encountered.
- Possible changes / improvements for next year.
- Overview of material captured in their design notebook.

C. Q&A - Teams should be prepared for a question & answer session following their short presentation. Questions will focus primarily around the engineering design process, design choice, and rationale. Students should be prepared to defend the features and design choices of their vehicle.

D. Code Review - Students may be asked to step through the logic of their program with judges. Judges will be looking for demonstration of understanding of the control system and algorithm implemented on the robot.

**VII. EVALUATION**

The following rubric will be used. In the event of a tie, a tie-breaking rounds may be held until a winner is determined.
# INTEGRATED AUTONOMOUS VEHICLE

## 2016 OFFICIAL RATING FORM

### MIDDLE & HIGH SCHOOL

#### Specifications

<table>
<thead>
<tr>
<th>Budget</th>
<th>$0-$100</th>
<th>$100 - $200</th>
<th>$200 - $300</th>
<th>$300 - $400</th>
<th>&gt; $400</th>
</tr>
</thead>
<tbody>
<tr>
<td>Points</td>
<td>50</td>
<td>40</td>
<td>30</td>
<td>20</td>
<td>10</td>
</tr>
</tbody>
</table>

#### Technical Drawing

- A professional level of detail, all drawings are accurate. Elevation, plan, and cut/callouts are ready to ship to a fabricator.
  - 40 points

- Drawing is well detailed, dimensions are accurate and thorough, cut sheets are well detailed and accurate.
  - 30 points

- Drawing is vague, dimensions are present, but not complete, or are vague or callouts / cut sheets are vague or lacking detail.
  - 20 points

- Drawing did not represent accurately the vehicle, no cut sheets or detail callouts. Dimensions not shown or not accurate. No electrical schematic.
  - 10 points

#### Technical Interview

- Team is able to demonstrate advanced understanding of all areas of the vehicle and the challenge, including alternate design strategies.
  - 20 points

- Team is able to converse freely about engineering, programming, physics, and mechanics of their vehicle.
  - 15 points

- Team is vague or unable to explain specific parts, and the principles behind their operation for their vehicle.
  - 10 points

- Team is unable to explain function, operation, programming, or construction of the vehicle.
  - 5 points

#### Programming/Documentation

- Programming shows a high level of expertise, creativity. May use unexpected data structures or a high level language, or both.
  - 20 points

- Programming is presented clearly with discussion of senior arrays, loops, branches, or subroutines.
  - 15 points

- Programming documentation is presented, but lacks detail or is unable to be discussed by the programmer.
  - 10 points

- Little or no programming documentation.
  - 5 points

#### Course Time

The course scores (3) are added together and combined with the preceding scores. Highest total score wins.

\[
\text{TimeScore} = \left(\frac{\text{Total Time (s)} - \text{CourseTime (s)}}{180}\right) \times \text{CourseMultiplier} \times 50 \text{ pts} + \text{PayloadBonus}
\]

<table>
<thead>
<tr>
<th>Trial 1</th>
<th>Trial 2</th>
<th>Trial 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>(180 s - ________) / 180 * ______ * 50 pts + ______ = _______</td>
<td>(180 s - ________) / 180 * ______ * 50 pts + ______ = _______</td>
<td>(180 s - ________) / 180 * ______ * 50 pts + ______ = _______</td>
</tr>
</tbody>
</table>

Rules violations (a deduction of 20% of the total possible points) must be initialed by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right. Indicate the rule violated: ________________________

(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.)

#### TOTAL SCORE

Comments:

---

Participant/Team ID# ___________________________

---

2016 OFFICIAL RATING FORM

---

I certify these results to be true and accurate to the best of my knowledge.

Evaluator: ____________________________

Signature: ____________________________

Printed name: ____________________________
Mousetrap Tractor Pull

*OPEN TO MIDDLE SCHOOL STUDENTS*

I. PURPOSE

To allow students to demonstrate their ability to design and construct a vehicle powered only by a standard mousetrap spring, to pull as much weight as possible.

II. ELIGIBILITY FOR ENTRY

This event is open to Middle School TSA chapters. Entrants are limited to SIX (6) per school.

III. SPECIFIC REGULATIONS

A. All entries must be designed and constructed before the conference.

B. Vehicles must be turned into the event coordinator at the beginning of the conference to be displayed. Students may not pick up their vehicles until the end of the conference.

C. Every entrant shall submit a complete set of sketches for the mousetrap vehicle detailing each part with basic dimensions. These sketches are to be completed on 8-1/2” x 11” paper.

D. Although the mousetrap may be altered, a standard mousetrap spring may be the only power source for the vehicle. The mousetrap spring must accompany the vehicle the full length of the track. Only a standard mousetrap may be used. *No rat traps.*

E. Vehicle Specifications:
   - The vehicle may be no longer than 16” at any time during the pull.
   - The vehicle may be no wider than 10” at any time during the pull.
   - The vehicle must have a fixed hook or eye in which a cup hook may be attached. It should be centered in the very back and 1/2” above the ground.

F. The track will be 3 feet long. The vehicle must pull dead weight 2 feet. The surface that both the vehicle and the sled will travel on will be wood.

G. The ‘sled’ will be a wooden device in which weight can be loaded. The weight sled may not be lifted at any time during the pull.

H. No kits are allowed; the participant must create the vehicle from scratch.

IV. PROCEDURE

A. Participants will turn in their vehicle to the display area at the beginning of the conference.

B. Each vehicle will be given the opportunity to pull an appropriate starting weight. Those that successfully pull that given weight will then enter Round 2. The process will be repeated with weight being added to the sled in each round until only one vehicle remains.

C. Participants must launch their own vehicles.
V. EVALUATION

The following rubric will be used to evaluate the vehicle. In the case of a tie, ranking will be determined by the most innovative design. The Event Coordinator will make this decision.
Participant/Team ID# ________________________

MOUSETRAP TRACTOR PULL

2016 OFFICIAL RATING FORM MIDDLE SCHOOL

Pulling Trials: Record information about the trials.

<table>
<thead>
<tr>
<th>Trial 1 - Weight</th>
<th>Trial 2 - Weight</th>
<th>Trial 3 - Weight</th>
<th>Trial 4 - Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Trial 5 - Weight</th>
<th>Trial 6 - Weight</th>
<th>Trial 7 - Weight</th>
<th>Trial 8 - Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Trial 9 - Weight</th>
<th>Trial 10 - Weight</th>
<th>Trial 11 - Weight</th>
<th>Trial 12 - Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Trial 13 - Weight</th>
<th>Trial 14 - Weight</th>
<th>Trial 15 - Weight</th>
<th>Trial 16 - Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Trial 17 - Weight</th>
<th>Trial 18 - Weight</th>
<th>Trial 19 - Weight</th>
<th>Trial 20 - Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Trial 21 - Weight</th>
<th>Trial 22 - Weight</th>
<th>Trial 23 - Weight</th>
<th>Trial 24 - Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

Calculate points for pulling trials: Multiply the # of the highest successful trial by 2 (e.g., Trial 16 = 16 x 2 = 32 = Total Trial Points)

<table>
<thead>
<tr>
<th>Minimal Performance 1-4 points</th>
<th>Adequate Performance 5-8 points</th>
<th>Exemplary Performance 9-10 points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drawing</td>
<td>Design Specs - Overall</td>
<td>Design Specs - Mousetrap</td>
</tr>
<tr>
<td>Drawing is not neat, is not on 8.5” x 11” paper, is not accurate, or is missing. It is not to scale. Measurements are not included.</td>
<td>The vehicle does not meet two or more design specs for length, width, or height or does not have a hook for pulling the sled.</td>
<td>The vehicle is not powered only by a single, standard mousetrap.</td>
</tr>
<tr>
<td>Drawing is neatly prepared on 8.5” x 11” paper and accurately reflects the design of the vehicle, but is not to scale. Measurements are included.</td>
<td>The vehicle does not meet one of the design specs for length, width or height, or the fixed hook is not properly positioned.</td>
<td>N/A</td>
</tr>
<tr>
<td>Drawing is neatly prepared on 8.5” x 11” paper and accurately reflects the design of the vehicle. It is to scale. Measurements are included.</td>
<td>The vehicle meets design specs for height, width, and length. It has a fixed hook properly positioned at the back of the vehicle.</td>
<td>The vehicle is powered only by a single, standard mousetrap.</td>
</tr>
</tbody>
</table>

Rules violations (a deduction of 20% of the total possible points) must be initialed by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right. Indicate the rule violated: ________________________

(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.)

TOTAL SCORE

Comments:

I certify these results to be true and accurate to the best of my knowledge.

Evaluator:

Printed name:

Signature:
Pin Design
* OPEN TO MIDDLE AND HIGH SCHOOL STUDENTS

OVERVIEW:

A long-standing tradition at the national TSA conference has been the trading of state-specific lapel pins. In this competition, participants will design a color lapel pin that can be used by Colorado TSA to exchange at the next national conference. Winning pin designs will be developed into trading pins for the upcoming national TSA conference.

NOTE: Due to the complexity and the large number of entries in this event as well as the limited duration of the state conference, this event has an early submission deadline! Contestants should submit their entries as a single, multi-page PDF document via our upload form located at http://goo.gl/r0zz1F by February 1, 2016. You will need to enter your STATE CONFERENCE ID# when submitting your entry. Entries that are not submitted electronically or are not received by the deadline will NOT be considered for competition.

I. PURPOSE

Provide a means for TSA members to demonstrate their ability to communicate design and layout skills.

II. ELIGIBILITY FOR ENTRY

Entries are limited to 1 per student. Open to HIGH SCHOOL and MIDDLE SCHOOL students.

III. SPECIFIC REGULATIONS

A. The pin design is an individual event. No recognition will be given for a group effort.

B. Only one entry per student is eligible for competition. If a student submits more than one entry, the first submission will be the one considered for competition.

C. The entry must be started and completed during the current school year.

D. The design must be a color computer-generated design. Hand-drawn designs will be disqualified.

E. When submitting a design, contestants should prepare a single, multi-page PDF document (8.5" x 11") that contains:
   • **Design:** A single page showing the design in both actual size (not to exceed 1-1/4" x 1-1/4") and an enlarged version (not to exceed 6" x 6") to show detail. The design may be presented either in portrait or landscape layout. (Please note that the actual pin size may not exceed the 1-1/4" in any direction. Contestants are reminded that the size and number of letters in the design should be taken into consideration; a letter on a 10" piece of paper will be reduced to 1/10" on a 1" pin. Therefore, fewer letters and greater size is recommended for a more decipherable pin.) This page should also include the contestant's individual ID number. Nothing else should appear on this page. This page will be printed by the state office and displayed at the state conference. The
• **Description:** A one (1) page description of the design process (including research efforts, design plans, creation process and self evaluation). This would include an explanation of the designer’s inspiration. This description should also include software programs used, artwork/graphic/photo sources used in the production of the graphic.

• **References:** All entries must be the original work of the participant. Computer generated type fonts and public domain computer clip-art may be used. All ideas, text or images from sources other than the designer must be cited (copyrighted or not). Cited works should be in MLA format (see the Documentation Style Guide in this book for formatting examples!).

• **Letters of Permission:** If copyrighted material is used, separate written permission must be included as well. Failure to follow this procedure will result in disqualification. If the artwork is completely original, this must be stated in the description.

F. The PDF document is then to be submitted ELECTRONICALLY via our submission upload page at: [http://goo.gl/r0zz1F](http://goo.gl/r0zz1F). You will need to enter your contestant ID# and a contact email address.

G. All submissions are to be received by 11:59 p.m. FEBRUARY 1, 2016.

H. The pin must include the official TSA logo letters, the Colorado TSA logo or the official TSA logo. The TSA emblem can be used only in accordance with trademark policies that appear on the national TSA website ([www.tsaweb.org](http://www.tsaweb.org)). From the homepage, click on About TSA and then Trademark Policies. The TSA logo may be used with or without the registered trademark symbol (the circle R).

K. The pin design must also represent the state in some way - either through theme, shape, colors or subject (e.g., mountains).

L. All entries in this event become the property of Colorado TSA and may or may not be used in future promotional materials and publications. Colorado TSA reserves the right to modify the winning designs for production purposes.

**V. PROCEDURE**

A. Registration: Event participants must register and follow the guidelines for the event in accordance with the procedures established for the conference.

B. ALL designs must be submitted electronically in PDF format to be considered for competition.

**V. EVALUATION**

A. Middle School level and High School level winning designs will be recognized at the awards ceremony. However, winning pin designs may or may not be selected to be the pins that represent Colorado as the trading pins at national competition. A Middle School and a High School pin will be produced for trading at the national conference.

B. Copies of previous winning pin designs shall not be used.

C. The following rubric will be used in the evaluation of entries.
## PIN DESIGN

**2016 OFFICIAL RATING FORM**

### Specifications

<table>
<thead>
<tr>
<th>Minimal Performance 1-4 points</th>
<th>Adequate Performance 5-8 points</th>
<th>Exemplary Performance 9-10 points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Evaluators:</strong> Using minimal (1-4 points), adequate (5-8 points) or exemplary (9-10 points) performance levels as a guideline, record the scores earned for the event criteria in the column spaces to the far right.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Inspiration for Graphic Design</strong> Little or no discussion of the inspiration for the graphic is included; no, or illogical, order of the design process is evident.</td>
<td>General overview of the design process is included, as is a basic description of the inspiration for the graphic.</td>
<td>An organized and logical overview of the entire design process, which details inspiration for the graphic design, is included.</td>
</tr>
<tr>
<td><strong>Design Process</strong> Explanation does not discuss the technical development of the graphic; software packages used are not mentioned; frequent grammar and spellings errors are evident; MLA format is not used, and/or the citations are inadequate.</td>
<td>General overview of the technical development of the graphic (which mentions by name the primary software packages used in the design) is included; a few grammar and spelling errors are evident; MLA format is used for an adequate number of resources.</td>
<td>Detailed and concise description of the technical development of the design (with discussion of all software packages used in the design) is included; proper grammar and spelling are evident; MLA format is used for the citations.</td>
</tr>
<tr>
<td><strong>Relevance</strong> Brief and weak explanation of how the graphic design correlates to the challenge is included, and/or the explanation is illogical.</td>
<td>The challenge is discussed in the explanation, but questions arise in trying to understand the correlation between the challenge and the design.</td>
<td>Explanation of relevance (i.e., how the final graphic design relates to the challenge) is clear and complete.</td>
</tr>
<tr>
<td><strong>First Impression of Graphic</strong> Design is messy and/or damaged; it includes three (3) or more of the following: dull/rough edges, hard to read fonts, smudges, smears on the graphic, extraneous markings.</td>
<td>Design has several good points, but some details detract from the overall quality; it includes two (2) or fewer of the following: dull/rough edges, hard to read fonts, smudges, smears on the graphic, extraneous markings.</td>
<td>Graphic is striking, elegant and includes one (1) or none of the following: dull/rough edges, hard to read fonts, smudges, smears on the graphic, extraneous markings.</td>
</tr>
<tr>
<td><strong>Usefulness</strong> Graphic has no correlation to the state TSA affiliate it is intended to relate to; design does not work for the intended purpose.</td>
<td>Design generally works for its intended purpose, but it may be a little too big or too small in size; design correlates to the intended state TSA affiliate.</td>
<td>The design is a perfect size for the intended purpose; there is strong evidence for correlation of the design to the TSA affiliate.</td>
</tr>
<tr>
<td><strong>Dominance</strong> Eyes are drawn away from what should have been focal point by some other component of the graphic.</td>
<td>An attempt is made to use a graphic component that will draw attention to the design’s main idea, but the result is confusing.</td>
<td>The design’s main components draw eyes to the appropriate location and/or focal point of graphic.</td>
</tr>
<tr>
<td><strong>Balance and Proportion</strong> Design seems unbalanced; too little and/or too many graphic elements are included, and they are out of proportion.</td>
<td>Design is somewhat balanced but some graphic elements are too large and/or too small; the design is not proportioned.</td>
<td>All design elements included are balanced and equally proportioned.</td>
</tr>
<tr>
<td><strong>Use of Graphic Design Principles</strong> Design principles (alignment, consistency, contrast, unity, white space) are not incorporated into the graphic, and/or they are considered as an afterthought.</td>
<td>Graphic is missing two (2) or fewer design principles (alignment, consistency, contrast, unity, white space), but the overall layout is aesthetically pleasing.</td>
<td>Graphic is aesthetically pleasing and all design principles are incorporated into the design and layout.</td>
</tr>
<tr>
<td><strong>Graphic Elements</strong> Design uses more than the number of colors specified, gradients and/or photographs. Design colors are not separated. Design does not utilize metal color of the pin in the design.</td>
<td>Design incorporates no more than the maximum number of colors specified. Colors may not be separated by a distinct border. The design may include gradients and/or photographs.</td>
<td>Design incorporates no more than the maximum number of colors specified. Colors are separated by a distinct border. The design does not use gradients. The design does not incorporate any photographs. Design incorporates the metal color of the pin in the design.</td>
</tr>
</tbody>
</table>

**Proof of permission to use copyrighted image(s) must be included. Clip art must be documented. Failure to provide this information will result in DISQUALIFICATION. No permission is needed for the use of the TSA logo by affiliated chapters.**

**Rules violations (a deduction of 20% of the total possible points) must be initialed by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right. Indicate the rule violated.**

(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.)

**TOTAL SCORE**

### Comments:

I certify these results to be true and accurate to the best of my knowledge.

**Evaluator:**

**Printed name:**
Rat Trap Drag Race
* OPEN TO HIGH SCHOOL STUDENTS

I. PURPOSE
To allow students to demonstrate their ability to design and construct a vehicle powered only by a standard rat trap spring, to travel a specified distance as fast as possible.

II. ELIGIBILITY FOR ENTRY
This event is open to High School TSA Chapters. Entrants are limited to SIX (6) per school.

III. SPECIFIC REGULATIONS
A. All entries must be designed and constructed before the conference.
B. Vehicles must be turned into the event coordinator at the beginning of the conference to be displayed. Students may not pick up their vehicles until the end of the conference.
C. Although the rat trap can be altered, a standard rat trap spring may be the only power source for the vehicle.
D. The rat trap spring must accompany the vehicle the full length of the track.
E. Vehicle Specifications:
   • The vehicle may be no longer than 16” at any time during the race.
   • The vehicle may be no wider than 10” at any time during the race.
F. The track will be 15’ long.
G. The surface the vehicles will travel on will be hotel-grade carpet.
H. If the vehicle does not meet the specifications, it will have points deducted from the final score.
I. Only a standard rat trap may be used.
J. No kits are allowed; the participant must create the vehicle.

IV. PROCEDURES
A. Participants will turn in their vehicle to the display area at the beginning of the conference.
B. Participants must launch their own vehicles
C. Each vehicle will be launch once and timed. The top 16 vehicles will go to the next round.
D. The subsequent rounds are single-elimination, head-to-head races with the winner advancing through the bracket.
E. Vehicles will be returned to the display area at the end of the competition.
V. EVALUATION

The rubric on the following page will be used in the evaluation of this event. In the case of a tie, ranking will be determined by the most innovative design. The Event Coordinator will make this decision. In the case of a tie, ranking will be determined by the most innovative design. The Event Coordinator will make this decision.
**RAT TRAP DRAG RACE**

**2016 OFFICIAL RATING FORM**

**High School**

**Specifications**

**Trials:** Record information about the time trial and placement on initial bracket

**Time:** ________________  **Placement on initial bracket:** ________________

<table>
<thead>
<tr>
<th></th>
<th>Minimal Performance 1-4 points</th>
<th>Adequate Performance 5-8 points</th>
<th>Exemplary Performance 9-10 points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Drawing</strong></td>
<td>Drawing is not neat, is not on 8.5&quot; x 11&quot; paper, is not accurate, or is missing. It is not to scale. Measurements are not included.</td>
<td>Drawing is neatly prepared on 8.5&quot; x 11&quot; paper and accurately reflects the design of the vehicle, but is not to scale. Measurements are included.</td>
<td>Drawing is neatly prepared on 8.5&quot; x 11&quot; paper and accurately reflects the design of the vehicle. It is to scale. Measurements are included.</td>
</tr>
<tr>
<td><strong>Design Specs - Overall</strong></td>
<td>Vehicle does not meet the design specs for width and length and is out of spec for the duration of the race.</td>
<td>Vehicle does not meet one of the specs for width or length. It remains in spec during the race.</td>
<td>The vehicle meets design specs for width and length. It remains in spec during the race.</td>
</tr>
<tr>
<td><strong>Design Specs - Rat Trap</strong></td>
<td>The vehicle is not powered only by a single, standard rat trap spring.</td>
<td>N/A</td>
<td>The vehicle is powered only by a single standard rat trap spring.</td>
</tr>
<tr>
<td><strong>Design Specs - Appearance</strong></td>
<td>Vehicle has three needs for improvement: glue usage, tight fitting pieces, and cuts are clean. Vehicle is not decorated or themed.</td>
<td>Vehicle is neatly done, but there is one need for improvement: glue usage, tight fitting pieces, and cuts are clean. Vehicle is painted or decorated. Theme is not clear. Theme/Decoration may occasionally interfere with operation of the vehicle.</td>
<td>The vehicle is neatly constructed, using a proper amount of glue, tight fitting pieces, and cuts are clean. Vehicle is decorated/themed. Theme/Decoration does not interfere with the operation of the vehicle.</td>
</tr>
</tbody>
</table>

**Race Final Placement**

<table>
<thead>
<tr>
<th>Place</th>
<th>1st Place: 50 points</th>
<th>4th Place: 35 points</th>
<th>9th-12th Place: 20 points</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2nd Place: 45 points</td>
<td>5th-6th Place: 30 points</td>
<td>13-16th Place: 10 points</td>
</tr>
<tr>
<td></td>
<td>3rd Place: 40 points</td>
<td>7th-8th Place: 35 points</td>
<td>17th Place or beyond or Did Not Finish: 0 points</td>
</tr>
</tbody>
</table>

| Trials: Record scores in the column spaces below. |

<table>
<thead>
<tr>
<th>Trials</th>
<th>Record information about the time trial and placement on initial bracket</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIME</td>
<td>________________  PLACEMENT ON INITIAL BRACKET: ________________</td>
</tr>
</tbody>
</table>

**Rules violations (a deduction of 20% of the total possible points) must be initialed by the evaluator, coordinator and manager of the event.**

Record the deduction in the space to the right. Indicate the rule violated: ________________

**Comments:**

Vehicle does not meet the design specs for width and length and is out of spec for the duration of the race.

Vehicle does not meet one of the specs for width or length. It remains in spec during the race.

The vehicle meets design specs for width and length. It remains in spec during the race.

I certify these results to be true and accurate to the best of my knowledge.

Evaluator: ___________________________  Signature: ___________________________

Printed name: ___________________________
Rubber Band Powered Cars

*OPEN TO MIDDLE AND HIGH SCHOOL STUDENTS*

I. PURPOSE

To allow students to demonstrate their ability to design and construct a vehicle powered only by a rubber band and a bladed-propeller.

II. ELIGIBILITY FOR ENTRY

This event is open to Middle School and High School Chapters. Entrants are limited to THREE (3) per school.

III. SPECIFIC REGULATIONS

A. All entries must be designed and constructed before the conference.

B. Cars must be turned into the event coordinator at the beginning of the conference to be displayed. Students may not pick up their cars until the end of the conference.

C. Student must make car from scratch in the year it is raced. (No kits)

D. Racers may use any commercial wheels, axles and bladed propellers (as shown in the illustration at the right.)

E. Vehicle Specifications:
   - The vehicle should resemble a commercially produced automobile (a sedan, pickup truck, or sports car for example) and not just be of simple stick & propeller configuration.
   - The vehicle body must be completely enclosed - not just have a profile of a vehicle shape.
   - The car may not exceed 24 inches in length.
   - The car may not exceed 8 inches in width.
   - The car may not exceed 10 inches in height.
   - The car will be powered by a single 7” x 1/8” rubber band (also known as a file band) attached to the bladed propeller (as illustrated above).
   - The car must be designed so that an eyelet is placed at the front of the car, 1/4” from the floor.
   - The car must be powered solely by the rubber band and bladed propeller; the rubber band should NOT be used an a manner other than to provide power to the propeller.
F. The track will be 20' long x 15" wide. The surface of the track will be hardwood flooring (hotel dance floor).

G. The cars will race against the stopwatch. Each car will race three times, and an average speed will be calculated.

H. If the vehicle does not meet the specifications, it will have points deducted from the final score.

IV. PROCEDURES

A. Participants will turn in their car to the display area at the beginning of the conference.

B. Participants must launch their own cars.

V. EVALUATION

The vehicle will be evaluated using the following rubric. In the event of a tie, ranking will be determined by the most economically-produced model. The Event Coordinator will make this determination.
### RUBBERBAND POWERED CARS

#### 2016 OFFICIAL RATING FORM

**MIDDLE AND HIGH SCHOOL**

**Specifications**

**Time Trials:** Calculated by: Distance (in inches) traveled / Time (in seconds)

<table>
<thead>
<tr>
<th>Speed Trial 1:</th>
<th></th>
<th></th>
<th></th>
<th>sec. =</th>
<th>/second</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed Trial 2:</td>
<td></td>
<td></td>
<td></td>
<td>sec. =</td>
<td>/second</td>
</tr>
<tr>
<td>Speed Trial 3:</td>
<td></td>
<td></td>
<td></td>
<td>sec. =</td>
<td>/second</td>
</tr>
</tbody>
</table>

**TOTAL =** _______________ / 3 = (_____________/sec) x 10 = PUT TOTAL HERE >>

<table>
<thead>
<tr>
<th>Minimal Performance 1-4 points</th>
<th>Adequate Performance 5-8 points</th>
<th>Exemplary Performance 9-10 points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Drawing</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drawing is not neat, is not on 8.5&quot; x 11&quot; paper, is not accurate, or is missing. It is not to scale. Measurements are not included.</td>
<td>Drawing is neatly prepared on 8.5&quot; x 11&quot; paper and accurately reflects the design of the vehicle, but is not to scale. Measurements are included.</td>
<td>Drawing is neatly prepared on 8.5&quot; x 11&quot; paper and accurately reflects the design of the vehicle. It is to scale. Measurements are included.</td>
</tr>
<tr>
<td><strong>Design Specs - Overall</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vehicle does not meet the design specs for length, width or height and does not have an eyelet screw at the front of the car.</td>
<td>Vehicle does not meet one of the specs for length, width or height, or it may not have an eyelet screw correctly placed at the front of the car.</td>
<td>The vehicle meets design specs for length, width and length. It has an eye screw placed at the front of the car 1/4&quot; from the floor.</td>
</tr>
<tr>
<td><strong>Design Specs - Rubberband</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The vehicle is not powered only by a single, 7&quot; x 1/8&quot; rubber band.</td>
<td>N/A</td>
<td>The vehicle is powered by a source other than the specified 7&quot; x 1/8&quot; rubber band.</td>
</tr>
<tr>
<td><strong>Design Specs - Appearance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vehicle has two or more needs for improvement: glue usage, tight fitting pieces, and cuts are clean. Vehicle is not decorated or themed.</td>
<td>Vehicle is neatly done, but there is one need for improvement: glue usage, tight fitting pieces, and cuts are clean. Vehicle is painted or decorated. Theme may not be clear. Theme/decoration may occasionally interfere with operation of the vehicle.</td>
<td>The vehicle is neatly constructed, using a proper amount of glue, tight fitting pieces, and cuts are clean. Vehicle is decorated/themed. Theme/decoration does not interfere with the operation of the vehicle.</td>
</tr>
</tbody>
</table>

**Rules violations** (a deduction of 20% of the total possible points) must be initialed by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right.

**Indicate the rule violated:**

**Race Final Placement**

<table>
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<tr>
<th>1st Place: 50 points</th>
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<tr>
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<td>7th-8th Place: 35 points</td>
<td>17th Place and beyond or Did Not Finish: 0 points</td>
</tr>
</tbody>
</table>

(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.)

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**Comments:**

---

I certify these results to be true and accurate to the best of my knowledge.

Evaluator: _____________________________

Signature: _____________________________
T-Shirt Design
*OPEN TO MIDDLE AND HIGH SCHOOL STUDENTS*

OVERVIEW:

Participants in this event develop and submit electronically in PDF format a T-shirt design, which can be adopted as the Colorado state delegation T-shirt to be worn at the National TSA conference.

**NOTE:** Due to the complexity and the large number of entries in this event as well as the limited duration of the state conference, this event has an early submission deadline! Contestants should submit their entries as a single, multi-page PDF document via the COTSA State Conference Early Submission Entry Form located at [http://goo.gl/r0zz1F](http://goo.gl/r0zz1F) by February 1, 2016. Contestants will need to enter their STATE CONFERENCE ID# when submitting your entry. Entries that are not submitted electronically or are not received by the deadline will NOT be considered for competition.

I. PURPOSE

Provide a means for TSA members to demonstrate their ability to communicate design and layout skills.

II. ELIGIBILITY FOR ENTRY

This event is open to Middle School and High School Chapters. Entries are limited to one (1) entry per student.

III. SPECIFIC REGULATIONS

A. The T-shirt design is an individual event. No recognition will be given for a group effort.

B. The student should develop a design for the back of the T-shirt as well as an accompanying design for the front left pocket area of the Shirt.

C. The student should create a design for the back of the shirt (it must fit on a standard 8.5” x 11” piece of paper in portrait orientation).

D. The student should also create a design for the left chest area of the front of the shirt not to exceed 5” x 5”.

C. The design of the shirt may have a maximum of three (3) colors. This does not include the color of the shirt (for example, if a white shirt is used, white can be incorporated into the design along with three other colors).

D. The design should reflect the current year’s national conference theme which can be found at [http://www.tsaweb.org/Themes-and-Problems](http://www.tsaweb.org/Themes-and-Problems).
E. The following information MUST be included in the design:
   • The words “TSA National Conference”
   • Date of the National Conference
   • Location of the National Conference (City & State)
   • The theme for the National Conference
   • Either the Colorado TSA logo, or the official TSA logo
   • The type face(s) may be original in design or may consist of a traditional-type style(s). The required alphanumeric characters may be incorporated as an integral part of the illustration.

F. Public domain computer clip art may be included in the design. Use of copyrighted or registered artwork in design is prohibited without verified permission from the original artist/publisher.

G. Students DO NOT have to print out the design or prepare a mock up of the shirt. Contestants should submit their entries electronically as a single, multi-page PDF document via the COTSA State Conference Early Submission Entry Form located at http://goo.gl/r0zz1F by February 1, 2016. Contestants will need to enter their STATE CONFERENCE ID# when submitting your entry. Entries that are not submitted electronically or are not received by the deadline will NOT be considered for competition.

H. When submitting the designs, students should submit a SINGLE, MULTI-PAGE PDF FILE, containing the following items:
   • Design: A full-color design for the back of the shirt (no larger than 8.5” x 11” - portrait orientation). This page should also include the contestant’s individual ID number. Nothing else should appear on this page.
   • Design Part II: A full-color design for the front of the shirt (no larger than 5” x 5”). This page should also include the contestant’s individual ID number. Nothing else should appear on this page.
   • Blackline Masters: Clean blackline masters for EACH COLOR used in the design. These will be used to create the screen print separations.
   • Documentation: A one (1) page description of the design process (including research efforts, design plans, creation process and self evaluation). This would include an explanation of the designer’s inspiration. This description should also include software programs used, artwork/graphic/photo sources used in the production of the graphics.
   • References: All entries must be the original work of the participant. Computer generated type fonts and public domain computer clip-art may be used. All ideas, text or images from sources other than the designer must be cited (copyrighted or not). Cited works should be in MLA format (see the Documentation Style Guide in this book for formatting examples!).
   • Letters of Permission: If copyrighted material is used, separate written permission must be included as well. Failure to follow this procedure will result in disqualification. If the artwork is completely original, this must be stated in the description.

I. All submissions are to be received by FEBRUARY 1, 2016.

J. Copies of previously submitted (winning or non-winning) designs shall not be used.
IV. PROCEDURE

A. Registration: Event participants must register and follow the guidelines for the event in accordance with the procedures established for the conference.

B. All winning entries will become the property of Colorado TSA. Colorado TSA reserves all rights to use and modify the designs for use on the state delegation t-shirt.

V. EVALUATION

The designs will be evaluated using the following rubric. In the event of a tie, ranking will be determined by the Event Coordinator.
<table>
<thead>
<tr>
<th>T-SHIRT DESIGN</th>
<th>2016 OFFICIAL RATING FORM</th>
<th>Specifications</th>
<th>MIDDLE &amp; HIGH SCHOOL</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Design Specifications</strong></td>
<td></td>
<td>Minimal Performance</td>
<td>1-4 points</td>
<td>Adequate Performance</td>
</tr>
<tr>
<td><strong>Artwork</strong></td>
<td>T-shirt design is poorly prepared, is not in color, or has more colors than specified. Design is NOT presented in PDF format, or does not show both front/back designs of shirt.</td>
<td>T-shirt design in color. Design consists of no more than three colors (not including the color of the shirt). Design is not presented in PDF format or may show only the front or back design of the T-shirt.</td>
<td>T-shirt design is prepared neatly and in color. Design consists of no more than three colors (not including the color of the shirt). The design is presented in PDF format and shows both front and back designs of T-shirt.</td>
<td></td>
</tr>
<tr>
<td><strong>Artwork</strong></td>
<td>Artwork is not clear and all elements are not readable/recognizable. Design may be missing two or more of the following: • The words ‘TSA National Conference’ • The Colorado TSA logo or official TSA logo • Dates of the National Conference • Location of the National Conference • The theme of the design reflects some aspect of Colorado and Colorado TSA • The words ‘Colorado TSA’</td>
<td>Artwork is clear and all elements are readable/recognizable. Design may be missing one of the following elements: • The words ‘TSA National Conference’ • The Colorado TSA logo or official TSA logo • Dates of the National Conference • Location of the National Conference • The theme of the design reflects some aspect of Colorado and Colorado TSA • The words ‘Colorado TSA’</td>
<td>Artwork is clear and all elements are distinct and easily readable/recognizable. Design includes: • The words ‘TSA National Conference’ • The Colorado TSA logo or official TSA logo • Dates of the National Conference • Location of the National Conference • The words ‘Colorado TSA’</td>
<td></td>
</tr>
<tr>
<td><strong>First Impression of Graphic</strong></td>
<td>The artwork does NOT reflect, interpret or in some other way communicate the theme of the national conference. Design also does not include some element that reflect, interprets or in some other way communicates a sense of the specified theme as outlined in the rules.</td>
<td>N/A</td>
<td>The artwork reflects, interprets, or in some other way communicates the theme of the design reflects some aspect of Colorado and Colorado TSA.</td>
<td></td>
</tr>
<tr>
<td><strong>Usefulness</strong></td>
<td>Design is messy and/or damaged. It includes three (3) or more of the following: dull/rough edges, hard to read fonts, smudges, smears on the graphic, extraneous markings.</td>
<td>Design has several good points, but some details detract from the overall quality; it includes two (2) or fewer of the following: dull/rough edges, hard to read fonts, smudges, smears on the graphic, extraneous markings.</td>
<td>Graphic is striking, elegant and includes one (1) or none of the following: dull/rough edges, hard to read fonts, smudges, smears on the graphic, extraneous markings.</td>
<td></td>
</tr>
<tr>
<td><strong>Dominance</strong></td>
<td>Eyes are drawn away from what should have been focal point by some other component of the graphic.</td>
<td>An attempt is made to use a graphic component that will draw attention to the design’s main idea, but the result is confusing.</td>
<td>The design’s main components draw eyes to the appropriate location and/or focal point of graphic.</td>
<td></td>
</tr>
<tr>
<td><strong>Balance and Proportion</strong></td>
<td>Design seems unbalanced. Too little and/or too many graphic elements are included, and they are out of proportion.</td>
<td>Design is somewhat balanced but some graphic elements are too large and/or too small; the design is not proportioned.</td>
<td>All design elements included are balanced and equally proportioned.</td>
<td></td>
</tr>
<tr>
<td><strong>Use of Graphic Design Principles</strong></td>
<td>Design principles (alignment, consistency, contrast, unity, white space) are not incorporated into the graphic; and/or they are considered as an afterthought.</td>
<td>Graphic is missing two (2) or fewer design principles (alignment, consistency, contrast, unity, white space), but the overall layout is aesthetically pleasing.</td>
<td>Graphic is aesthetically pleasing and all design principles are incorporated into the design and layout.</td>
<td></td>
</tr>
<tr>
<td><strong>Graphic Elements</strong></td>
<td>Design uses more than the number of colors specified, gradients and/or photographs. Design colors are not separated.</td>
<td>Design incorporates no more than the maximum number of colors specified. The design may include gradients and/or photographs.</td>
<td>Design incorporates no more than the maximum number of colors specified. The design does not use gradients. The design does not incorporate any photographs.</td>
<td></td>
</tr>
</tbody>
</table>

Proof of permission to use copyrighted image(s) must be included. Clip art must be documented. Failure to provide this information will result in DISQUALIFICATION. No permission is needed for the use of the TSA logo by affiliated chapters.

Rules violations (a deduction of 20% of the total possible points) must be initiated by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right. Indicate the rule violated: ________________________________

<table>
<thead>
<tr>
<th>(To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary.)</th>
<th>TOTAL SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comments:</td>
<td></td>
</tr>
</tbody>
</table>
Underwater ROV

*OPEN TO MIDDLE AND HIGH SCHOOL STUDENTS*

I. PURPOSE

The challenge is a test of the accuracy, robustness and design of an Underwater Remotely Operated Vehicle (ROV). The vehicle will navigate a course laid out in the hotel swimming pool that will be disclosed at the State Conference. The course will consist of an obstacle course with items like tunnels, hoops, pylons, and payloads to deliver. Although there are no specific size limitations stated, the ROV should be able to maneuver through a 18”x18” opening easily, and should be able to carry a 4” square ring made of ½” PVC pipe. When competitors arrive the specifics of the course will be explained and practice runs will be allowed before the team runs the course and is scored. Please review the rubric carefully.

II. ELIGIBILITY FOR ENTRY

This event is open to Middle School and High School Chapters. Entries are limited to TWO (2) of 2-6 members per chapter.

III. SPECIFIC REGULATIONS

A. All entries must be turned in at the designated time. Each team is responsible for signing up for a technical interview time. The whole team will attend the technical interview.

B. Every entry shall include technical notebook, along the lines of the new TSA portfolio guidelines. The notebook shall contain:
   • A title page with the event title, state conference information, including date of conference.
   • A typewritten description of the vehicle, including the building system/components used and the design or engineering process used in designing and building the ROV. Photos or pictures may be included, and special features of the vehicle/programming and student driver interface (remote control) should be documented.
   • A set of technical drawings of the vehicle. The drawings will be standard orthographic, plan view, or other standard technical drawing format. Cutouts, exploded views, and multiple views are encouraged. Drawings may be done either by hand, or CAD generated.
   • At least one (1) page of schematic drawings representing the vehicle’s electrical and control systems. Block diagrams are acceptable, but more points will be awarded for more detailed schematics.
   • A programming log if applicable, including a printout of the complete program for operation. Comments in the program log are encouraged.
   • A Safety Assurance Affidavit, signed by your advisor, stating that the ROV was Designed and built during this current school year, and that they believe it is safe to run in the pool.
C. Vehicles may be constructed from a kit or may be built from scratch, more points will be awarded for student designed models vs. one built or modeled from a kit. Kits might include the SeaPerch kit (which can be seen at: http://www.seaperch.org). If building the ROV from scratch, note that a 12-volt power supply will be supplied at the event, other sources of power may be used, but you must supply your own if anything other than 12V DC is needed. 12V DC is the maximum voltage allowed.

D. Each team will be expected to discuss project flow, performance and engineering aspects of their vehicle. Discussions may or may not be limited to the technical interview. Due to the highly technical nature of the challenge, expect the judges to ask the team questions.

E. Vehicles deemed unsafe by the judges will be removed from competition. If any part of the vehicle is removed, falls off, or leaks into the pool or tank, the vehicle will be automatically removed and disqualified. Any exposed wire connections will be seen as unsafe, and will result in the ROV being disqualified. Glass of any sort, including glass light bulbs that might shatter due to thermal shock will also be seen as unsafe and will result in disqualification.

F. Ultrasonic, infrared, touch, motion, light sensors, and distance encoders may be used. Cameras may be used, and a viewing device to see the image from the camera. No images may be used other than that from the ROV mounted camera.

IV. THE COURSE

Competitors should come prepared to get wet, and may wear shorts or swim suits if desired. Tasks may or may not have to be performed in a specific order. The exact course layout will be disclosed at the conference.

Three students are allowed “On Deck” at the time of the run, navigating the obstacle course. They are not allowed to touch the robot or manipulate it in any way other than using their designed controls. The students will be designated: One (1) Pilot and two (2) Deck Hands. The Pilot is the only one allowed to control the ROV. The two Deck Hands are allowed to coach, direct, and tell the Pilot what to do, but may not touch the remote controls or have any control of the ROV in any way. The Deck hands are allowed to help with cord management, hold monitors, laptops, etc. The pilot’s view of the course may be obstructed for extra points; the Deck Hand’s view will not be obstructed. The pilot may have another device to view an image from the ROV, but only images that come from the ROV are allowed to be viewed.

Tasks may include:
• Passing through one or more rings/hoops/gates, and then backing through the same route. Picking up a ring, hoop or small object and delivering it. There may be multiple objects to collect, with points earned for each object collected and delivered home.
• Entering and illuminating a cave. The ROV’s lighting system must be switchable (it must be able to be turned on and off, at the appropriate times). The lighting system may be operated either manually or automatically (there may be a photo sensor to detect whether or not the light source on the ROV is turning on and off).
V. AUTONOMOUS OPERATION

Competitors may opt for an additional challenge of autonomous operation. Competitors must ask the judges specifically for this extra challenge. This challenge will consist of an autonomous attempt to retrieve a ring from testing pool. Three attempts will be given and each attempt will end at the return to the surface of the ROV. For example, the judges will signal the team to begin the attempt, the robot will descend and make its attempt to secure the ring. When the robot returns to the surface, with or without the ring, the attempt is over. Each attempt has a one minute time limit. Extra points will be awarded for Autonomous operation.

VI. EVALUATION

The vehicle will be evaluated using the following rubric. In the event of a tie, ranking will be determined by the most economically-produced model. The Event Coordinator will make this determination.
### UNDERWATER ROV

**2016 OFFICIAL RATING FORM**

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Minimal Performance 1-4 points</th>
<th>Adequate Performance 5-8 points</th>
<th>Exemplary Performance 9-10 points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Technical Interview</strong></td>
<td>Team knew little of the intricacies of the technical nature of their product.</td>
<td>Team was well informed, able to discuss in detail the engineering and logical framework of their design.</td>
<td>Team exceeded the judges' expectations with regard to the level of detail of their design. This might include the ability to present calculations, interactive design stages and advanced construction or control system.</td>
</tr>
<tr>
<td><strong>Portfolio and Drawings</strong></td>
<td>Portfolio is not complete, not organized well, or lacks description of engineering process. Drawings lack sufficient detail and measurements. Schematics are incomplete, or do not represent the electrical system.</td>
<td>Portfolio has required components but may not clearly describe the design or build process. Drawings may be missing measurements or important vie. Schematics lack some important details.</td>
<td>Portfolio is complete and well organized. Design process is clearly communicated. Drawings and schematics are complete and have sufficient detail.</td>
</tr>
<tr>
<td><strong>ROV Construction &amp; Design</strong></td>
<td>ROV is not constructed well, has exposed wire connections, components not waterproofed or other deficiencies. <strong>(NOTE: Brushless motors are considered waterproof without any additional coatings or casings)</strong></td>
<td>ROV appears well built, and wire connections and motors are waterproofed but may have been produced or designed from a kit. <strong>(NOTE: Brushless motors are considered waterproof without any additional coatings or casings)</strong></td>
<td>ROV is clearly well-designed and built, has extra features, all connections and motors are waterproofed. ROV is designed by students and is not from a kit. <strong>(NOTE: Brushless motors are considered waterproof without any additional coatings or casings)</strong></td>
</tr>
</tbody>
</table>
| **Technical Performance & Obstacle Course** | Completed Obstacle 1  
Points: _________  
Time: _________  
Points for tasks completed: Up to 20 points (points doubled if driver's view of course is obstructed by a blind or scrim at teams request). Time recorded in the event of a tie. | Completed Obstacle 2  
Points: _________  
Time: _________  
Points for tasks completed: Up to 20 points (points doubled if driver's view of course is obstructed by a blind or scrim, at teams request). Time recorded in the event of a tie. | Optional Autonomous Operation  
Points: _________  
Time: _________  
Points for tasks completed: Minimum of 5 points will be awarded for autonomous operation, all points for completed tasks will be doubled. |

Rules violations (a deduction of 20% of the total possible points) must be initiated by the evaluator, coordinator and manager of the event. Record the deduction in the space to the right. Indicate the rule violated: ____________________

To arrive at the TOTAL score, add any subtotals and subtract rules violation points, as necessary: ________________

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I certify these results to be true and accurate to the best of my knowledge.

Signature:

Evaluator: ____________________

Printed name: ____________________
Event Summaries - Middle School

The following descriptions are only brief summaries about the events available to middle school students. For detailed information about each of the national events, please consult the official Middle School National TSA Conference Competitive Events Guide. State-only event rules are detailed earlier in this guide. Please be sure to carefully read the event descriptions, regulations and procedures as some events have had updates and changes!

**IMPORTANT UPDATE:** Several events have **EARLY ELECTRONIC SUBMISSION** deadlines. Events which have early submission deadlines are noted in these summaries. For those events, unless otherwise stated, contestants are to submit a single, multi-page PDF document containing all required documentation, related links (to download videos or game files, for example), and contest entries (like Pin and T-Shirt designs) via the COTSA State Conference Early Submission Entry Form located at: [http://goo.gl/r0zz1F](http://goo.gl/r0zz1F) by 11:59 p.m. February 1, 2016. Contestants will need to enter their STATE CONFERENCE ID# when submitting their entries. Entries for events which have early submission deadlines that are not submitted electronically or are not received by the deadline will **NOT** be considered for competition.

For multimedia and video early submissions, entries will be required to be uploaded to YouTube on an unlisted channel and the URL (along with required documentation in PDF format) is to be submitted via the COTSA State Conference Early Submission Entry Form located at: [http://goo.gl/r0zz1F](http://goo.gl/r0zz1F) by 11:59 p.m. February 1, 2016. Contestants will need to enter their STATE CONFERENCE ID# when submitting their entries. Entries for events which have early submission deadlines that are not submitted electronically or are not received by the deadline will **NOT** be considered for competition.

Be aware that contest updates and clarifications may occur throughout the school year and are available at: [http://www.tsaweb.org/Updates-and-Clarification](http://www.tsaweb.org/Updates-and-Clarification). Advisors and students are urged to check this site periodically throughout the year to prevent a disqualification at the state or national conferences! Themes for the various events are available at: [http://www.tsaweb.org/Themes-and-Problems](http://www.tsaweb.org/Themes-and-Problems).

**NOTE:** With each event, you will find the number of entries allowed. This number of entries is only applicable to the Colorado TSA State Conference; the number of entries permitted at the National TSA Conference are listed in the National TSA Competitive Events Guide.
MIDDLE SCHOOL NATIONAL EVENTS

Biotechnology (NEW NAME!)

Participants conduct research on a contemporary biotechnology issue of their choosing, document their research (student-performed research or a re-creation or simulation of research performed by the scientific community), and create a display. If appropriate, a model or prototype depicting an aspect of the issue may be included in the display. Finalist teams create a presentation and are interviewed about their topic.

Limited at State to: Three (3) teams of two (2) to six (6) students per chapter.

CAD Foundations (NEW EVENT!)

Participants in this event have the opportunity to demonstrate their understanding of CAD fundamentals as they create a two-dimensional graphic representation of an engineering part or object. (Examples might include a machine part, tool, device, or manufactured product.)

Limited at State to: Two (2) students per chapter.

Career Prep

Participants conduct research on a selected technology-related career and use this knowledge to prepare a letter of introduction and a chronological skills resume. Finalists participate in a mock interview. In 2016, students choose one (1) of these careers: Civil engineer, IT manager, Computer programmer, Project manager. NOTE: Due to the complexity and the large number of entries in this event as well as the limited duration of the state conference, this event has an early submission deadline! Contestants should submit resume, letters and related materials as a single multi-page PDF file via our upload form located at: http://goo.gl/r0zz1F by 11:59 p.m. February 1, 2016. Contestants will need to enter their STATE CONFERENCE ID# when submitting your entry. Entries that are not submitted electronically or are not received by the deadline will NOT be considered for competition.

Limited at State to: Limited to one (1) entry per student.

Catapult Design (NEW EVENT!)

Participants design and produce a working catapult, within specified guidelines, that is adjustable and propels hollow plastic practice golf balls (weighing about 14.5 grams each) at a scoring target between 15’ and 25’ away.

Limited at State to Three (3) teams of two to four (2-4) students per chapter.

Challenging Technology Issues

Team members work together to prepare and deliver an extemporaneous, debate-style presentation with participants explaining opposing views of a current technology issue. The issue is randomly selected on site.

Limited at State to: Three (3) teams of two (2) per chapter.
Chapter Team

Participants take a written parliamentary procedures test in order to qualify for the semifinals, where they perform an opening ceremony, dispose of three (3) items of business, and perform a closing ceremony within a specified time period.

Limited at State to: One (1) team of six (6) per chapter.

Children’s Stories (NEW EVENT!)

A team creates an illustrated children’s story that will incorporate educational and social values. The story may be written in a genre of choice. Examples are fables, adventures, non-fiction, fiction, and fairy tales. The story must revolve around the theme chosen for the given year. The theme will be posted on the TSA website (http://www.tsaweb.org) under Competitions/Themes and Problems. Finalists will be given up to twelve (12) minutes to read their stories and share their illustrations with judges, and an additional five (5) minutes to answer judges’ questions. NOTE: Due to the complexity and the large number of entries in this event as well as the limited duration of the state conference, this event has an early submission deadline! Contestants should submit entry as a single multi-page PDF file via the COTSA State Conference Early Submission Entry Form located at: http://goo.gl/r0zz1F by 11:59 p.m. February 1, 2016. Contestants will need to enter their STATE CONFERENCE ID# when submitting your entry. Entries that are not submitted electronically or are not received by the deadline will NOT be considered for competition.

Limited at State to: Three (3) teams of one to six (1-6) students per chapter. Finalist teams will have two (2) of those team members make the final presentation.

Community Service Video

Participants create and submit a video that depicts the local TSA chapter’s service with the American Cancer Society (ACS), national TSA’s community service partner. NOTE: Due to the complexity and the large number of entries in this event as well as the limited duration of the state conference, this event has an early submission deadline! Contestants should upload the entry to YouTube as an UNLISTED video (as an unlisted video, the video will not appear in any of YouTube’s public spaces such as search results, your channel, or the Browse page. Only people with whom you share the link will be able to view it). Once the video is uploaded, go to the COTSA Early Submission form located at: http://goo.gl/r0zz1F and submit the URL (along with required documentation in PDF format). All entries must be received by 11:59 p.m. February 1, 2016. Contestants will need to enter their STATE CONFERENCE ID# when submitting your entry. Entries that are not submitted electronically or are not received by the deadline will NOT be considered for competition.

Limited at State to: One (1) entry per chapter with no more than six (6) students per entry.

Construction Challenge

Participants identify a community need related to construction and then plan and implement a course of action that involves students and community members.

Limited at State to: Three (3) teams of two (2) per chapter.
Digital Photography

Participants produce a digital album consisting of color or black and white digital photographs that represent or relate to a chosen theme and place the album on a storage device for submission. Finalists produce a series of digital photographs taken at the conference site and edited appropriately for the on-site task. The theme for 2016 is “Family.”

**NOTE: Due to the complexity and the large number of entries in this event as well as the limited duration of the state conference, this event has an early submission deadline! Contestants should upload the entry as a single, multi-page PDF document via the COTSA State Conference Early Submission Entry Form located at: [http://goo.gl/r0zz1F](http://goo.gl/r0zz1F). All entries must be received by 11:59 p.m. February 1, 2016. Contestants will need to enter their STATE CONFERENCE ID# when submitting your entry. Entries that are not submitted electronically or are not received by the deadline will NOT be considered for competition.**

**Limited at State to: Two (2) students per chapter.**

Dragster

Participants design, produce working drawings for and build a CO2-powered dragster.

**Limited at State to: Three (3) students per chapter.**

Electrical Applications

Participants take a written test of basic electrical and electronic theory to qualify as finalists. Finalists assemble a specific circuit from a schematic diagram using a provided kit and make required electrical measurements. Finalists explain their solution during an interview.

**Limited at State to: Three (3) students per chapter.**

Environmental Engineering (NEW EVENT!)

Participants conduct research on the environmental engineering topic posted on the TSA website at: [http://www.tsaweb.org](http://www.tsaweb.org) under Competitions/Themes and Problems, document their research, and develop a multimedia presentation on the topic. Finalists create a presentation and will be interviewed. For 2016, the theme is: “Water supply and treatment.”

**NOTE: Due to the complexity and the large number of entries in this event as well as the limited duration of the state conference, this event has an early submission deadline! Contestants should submit their portfolio and multimedia presentation as a single zipped (.zip) or similar compressed file via the COTSA State Conference Early Submission Entry Form located at: [http://goo.gl/r0zz1F](http://goo.gl/r0zz1F) and submit the entry, providing the link to the video in the space provided. All entries must be received by 11:59 p.m. February 1, 2016. Contestants will need to enter their STATE CONFERENCE ID# when submitting your entry. Entries that are not submitted electronically or are not received by the deadline will NOT be considered for competition.**

**Limited at State to: One (1) team per chapter (up to 6 students), but limited to 2-3 student representatives for finalist interview.**
**Essays on Technology**

Participants conduct research in specified subtopics of a broader technological area and, using the knowledge and resources gained through that research, write an outline on the one (1) subtopic that is designated on site. Finalists write an essay on-site. The topic for the 2016 conference is “Developments in robotics technology in the past 50 years” with the subtopics of: Industry, Medicine, and Personal Use.  

*Limited at State to: Three (3) individuals per chapter.*

**Flight**

Participants study the principles of flight and design in order to fabricate a glider that stays in flight for the greatest elapsed time. The glider must be designed to be launched from a catapult that is provided on site. The design process is documented in a portfolio that is submitted for evaluation.  

*Limited at State to: Six (6) students per chapter.*

**Forensic Technology (NEW EVENT!)**

Participants take a written test of basic forensic science theory to qualify as finalists. Finalists demonstrate their ability to use forensic technology and skills to collect from and analyze a mock crime scene.  

*Limited at State to: One (1) team of two (2) individuals per chapter.*

**Geospatial Technology**

Based on a design brief provided by TSA, participants develop a notebook containing maps, data, and appropriate documentation. Semifinalists make a presentation for an on-site problem that demonstrates their abilities to use geospatial data to develop solutions to environmental and social issues.  

*Limited at State to: One (1) team of two (2) to five (5) members per chapter.*

**Inventions and Innovations**

Teams investigate and determine the need for an invention or innovation of a device, system, or process and then brainstorm ideas for a possible solution. Team entries must include documentation of the team’s work; a display; and a model/prototype. Finalists make an oral presentation to a panel of evaluators (who act as venture capital investors) to persuade the panel to invest in their invention/innovation. Evaluators interview the participants.  

*Limited at State to: Three (3) teams of three (3) to six (6) individuals per chapter.*

**Junior Solar Sprint**

Participants demonstrate their knowledge of science, technology, engineering, and mathematics (STEM) concepts, creativity, teamwork, and problem-solving skills as they design, construct and race a solar-powered car.  

*Limited at State to: One (1) team of two (2) to four (4) students per chapter.*
Leadership Strategies

Participants demonstrate leadership and team skills by preparing a presentation based on challenges that officers of a TSA chapter might encounter.

*Limited at State to: Three (3) teams of three (3) per chapter.*

Mass Production *(NEW EVENT!)*

Participants manufacture a marketable product related to the current year’s theme, noted on the TSA website *(http://www.tsaweb.org)* under Competitions/Themes and Problems. The team submits a documentation portfolio of the activities and the product—three (3) identical—made during the manufacturing process. For 2016, the theme is: A desk organizer that includes the TSA logo.

*Limited at State to: One (1) team of two (2) to six (6) students per chapter. Two (2) members of a team must be present at a finalist presentation/interview.*

Medical Technology Issues

Participants conduct research on a contemporary medical technology issue of their choosing, document their research and solution, and create a display. The entry may include student research or a re-creation or simulation of research performed by the scientific community. If appropriate, a model or prototype depicting an aspect of the issue may be included in the display. Finalists give a presentation.

*Limited at State to: Three (3) teams of two (2) to six (6) individuals per chapter.*

Microcontroller Design *(NEW EVENT!)*

Teams develop a working digital device (product) with real-world applications. Through a multimedia presentation, product demonstration, and documentation, the team demonstrates in detail its knowledge of microcontroller programming, simple circuitry, and product design and marketing. The project should have educational and/or social value and conform to the theme for the year. The theme will be posted on the TSA website *(http://www.tsaweb.org)* under Competitions/Themes and Problems. Teams demonstrate and promote their work in a timed presentation. For 2016, the theme is: Create an educational toy for a preschool-aged child (ages 2-4 years old).

*Limited at State to: One (1) team of three to five (3-5) members per chapter. Up to three (3) team members may participate in the presentation.*

Prepared Speech

Participant delivers a speech that reflects the theme of the current national TSA conference. The theme for 2016 is: Building a Legacy.

*Limited at State to: Three (3) students per chapter.*

Problem Solving

Participants must work effectively as a team to manipulate and process materials using only the tools designated. An objective measurement is used to determine the best solution to the given problem.

*Limited at State to: Two (2) teams of two (2) members per chapter.*
Promotional Marketing (NEW EVENT!)

Participants design a three-part TSA Marketing Toolkit that must include a national conference promotional poster, a state delegation fact sheet, and a chapter t-shirt design; the toolkit must be submitted in digital PDF format. Finalists are asked to work creatively under constraints to design a solution to a problem given on site, using their own computer/laptop work station. **NOTE:** Due to the complexity and the large number of entries in this event as well as the limited duration of the state conference, this event has an early submission deadline! Contestants should submit entry as a single, multi-page PDF file via the COTSA State Conference Early Submission Entry Form located at: [http://goo.gl/r0zz1F](http://goo.gl/r0zz1F) by 11:59 p.m. February 1, 2016. Contestants will need to enter their STATE CONFERENCE ID# when submitting your entry. Entries that are not submitted electronically or are not received by the deadline will NOT be considered for competition.

*Limited at State to: Six (6) students per chapter.*

STEM Animation

Participants use computer graphics tools and design processes (i.e., animation) to communicate, inform, analyze and/or illustrate a topic, idea, subject, or concept that focuses on one (1) or more of the following areas: science, technology, engineering, and/or mathematics; sound may accompany graphic images. **NOTE:** Due to the complexity and the large number of entries in this event as well as the limited duration of the state conference, this event has an early submission deadline! Contestants should upload the entry to YouTube as an UNLISTED video (as an unlisted video, the video will not appear in any of YouTube’s public spaces such as search results, your channel, or the Browse page. Only people with whom you share the link will be able to view it). Once the video is uploaded, go to the COTSA State Conference Early Submission Entry Form located at: [http://goo.gl/r0zz1F](http://goo.gl/r0zz1F) and submit the URL to the video (along with required documentation in PDF format). All entries must be received by 11:59 p.m. February 1, 2016. Contestants will need to enter their STATE CONFERENCE ID# when submitting your entry. Entries that are not submitted electronically or are not received by the deadline will NOT be considered for competition.

*Limited at State to: Six (6) teams of one to six (1-6) students per chapter, one (1) entry per team.*

Structural Engineering

Teams apply the principles of structural design and engineering through basic research, design, construction, and destructive testing to determine the design efficiency of a structure. Details about the structure and information related to it will be posted on the TSA website at [http://www.tsaweb.org](http://www.tsaweb.org), under Competitions/Themes and Problems. The on-site finalist problem will be a variation of the pre-conference problem posted on the TSA website.

*Limited at State to: Two (2) teams of two (2) per chapter.*
**System Control Technology**

Participants use a team approach to develop a computer-controlled model solution to a given problem, typically one based on an industrial setting. Teams analyze the problem, build a computer-controlled mechanical model, program the model, explain the program and mechanical features of the model-solution, and leave instructions for evaluators to operate the device.  
*Limited at State to: One (1) team of three (3) per chapter.*

**Tech Bowl**

A team of three (3) students complete a written test and then compete in a head-to-head competition similar to “Jeopardy” where students “buzz-in” and answer technical questions orally.  
*Limited at State to: One (1) team of three (3) per chapter.*

**Technical Design**

Participants demonstrate their ability to use the technical design process to solve an engineering design problem on site at the conference.  
*Limited at State to: Two (2) teams of two (2) individuals per chapter.*

**Video Game Design**

Participants develop, build, and launch an E-rated, online game that focuses on the subject of their choice. The game should be interesting, exciting, visually appealing, and intellectually challenging. The game and all required documentation must be submitted and will be evaluated online, pre-conference. Finalist teams (list posted at the conference) participate in an on-site interview to demonstrate the knowledge and expertise they gained during the development of the game.  
*NOTE: Due to the complexity and the large number of entries in this event as well as the limited duration of the state conference, this event has an early submission deadline! Contestants should upload the URL of the game via the COTSA State Conference Early Submission Entry Form located at: [http://goo.gl/r0zz1F](http://goo.gl/r0zz1F). Contestants should provide the URL in the space provided and upload the documentation portfolio in a single, multi-page PDF document. All entries must be received by 11:59 p.m. February 1, 2016. Contestants will need to enter their STATE CONFERENCE ID# when submitting your entry. Entries that are not submitted electronically or are not received by the deadline will NOT be considered for competition.*  
*Limited at State to: One (1) team of two (2) to six (6) students per chapter.*
Website Design

Participants are required to 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. The design brief for the website will be posted on the TSA website at http://www.tsaweb.org under Competitions/Themes and Problems. Finalists (posted at the conference) participate in an on-site conference interview to demonstrate the knowledge and expertise gained during the development of the website, with an emphasis on web design as it pertains to their solution. **NOTE: Due to the complexity and the large number of entries in this event as well as the limited duration of the state conference, this event has an early submission deadline! Contestants should submit the URL (which points to the main page of the team’s entry) via the COTSA State Conference Early Submission Entry Form located at: [http://goo.gl/r0zz1F](http://goo.gl/r0zz1F) no later than 11:59 p.m. February 1, 2016. After 11:59 p.m. on February 1 changes should not be made to the website. If the team makes changes or updates to the website after the evaluators begin judging the entry, those changes will not be considered. Contestants will need to enter their STATE CONFERENCE ID# when submitting your entry. Entries that are not submitted electronically or are not received by the deadline will NOT be considered for competition.**

*Limited at State to: One (1) team of three (3) to six (6) members per chapter. One (1) entry per team is permitted. Up to six (6) members of a team participate in the interview.*

**MIDDLE SCHOOL STATE-ONLY EVENTS**

Crash Test

Teams consisting of a middle school student and an elementary student design and build a “crash test” car that will be tested in multiple head-on and rear-end collisions. The theme for 2016 is: Limousine.

*Limited to: Ten (10) teams of two (2) students per chapter. Each team MUST include one (1) MS and one (1) Elementary student (grades 1-5).*

Giant Jenga Tournament

Teams take turns in this bracketed-tournament competition to build the tallest structure possible without tipping it over.

*Limited at State to: Four (4) teams of two to four (2-4) students per chapter. NOTE: This event does not earn medals or points for a school toward the Chapter of the Year award. Winners of this event are awarded the traveling Giant Jenga Trophy.*

Integrated Autonomous Vehicle

Participants create and operate an integrated autonomous vehicle. The vehicle will operate in a number of courses, but must be able to navigate a course without prior knowledge of distance or direction within a chosen course. Two separate modes of operation will be used: Student-controlled and Autonomous.

*Limited to: Two (2) teams of three (3) members per chapter.*
**Middle School Creativity Challenge**

Design teams, composed of one middle school student and one elementary student, work to solve an on-site problem.

*Limited to: Ten (10) teams of two (2) students per chapter. Each team MUST include one (1) MS and one (1) Elementary student (grades 1-6)* See rules for more information.

**Mousetrap Tractor Pull**

Participants design, build and test a model vehicle powered only by a standard mousetrap. The vehicle is tested by having it pull as much weight as possible over a set distance.

*Limited to: Six (6) students per chapter.*

**Pin Design (NEW NAME!)

Participants design a lapel pin representative of Colorado and Colorado TSA to be used for trading at the National TSA Conference. The winning middle school and winning high school designs will be made into pins for trading. *NOTE: Due to the complexity and the large number of entries in this event as well as the limited duration of the state conference, this event has an early submission deadline!* Contestants should submit entry as a single, multi-page PDF file via the COTSA State Conference Early Submission Entry Form located at: [http://goo.gl/r0zz1F](http://goo.gl/r0zz1F) by 11:59 p.m. February 1, 2016. Contestants will need to enter their STATE CONFERENCE ID# when submitting your entry. Entries that are not submitted electronically or are not received by the deadline will NOT be considered for competition.

*Limited to: One (1) entry per student.*

**Rubber Band Powered Car**

Participants design, build and then race a rubber band-powered propeller car that resembles a commercially produced automobile.

*Limited to: Six (6) students per chapter.*

**T-Shirt Design**

Participants design the Colorado delegation’s national conference T-shirt. The winner between the middle and high school top finishers will become the state delegation T-shirt. *NOTE: Due to the complexity and the large number of entries in this event as well as the limited duration of the state conference, this event has an early submission deadline!* Contestants should submit entry as a single, multi-page PDF file via the COTSA State Conference Early Submission Entry Form located at: [http://goo.gl/r0zz1F](http://goo.gl/r0zz1F) by 11:59 p.m. February 1, 2016. Contestants will need to enter their STATE CONFERENCE ID# when submitting your entry. Entries that are not submitted electronically or are not received by the deadline will NOT be considered for competition.

*Limited to: One (1) entry per student.*
Underwater ROV Challenge

Participants apply and document the engineering design process, mathematical principles and scientific concepts used in the research, design, construction, testing and evaluation of an underwater remote operated vehicle (ROV). The ROV will be expected to perform a range of tasks including: passing through one or more rings, and then backing through the same route; retrieving rings from the bottom of the testing tank/pool; entering and illuminating a cave area; and/or demonstrating full maneuverability in three axes of motion.

Limited to: Two (2) teams of 2 (two) to six (6) students per chapter.
Event Summaries - High School

The following description are only brief summaries about the events available to students. For detailed information about each of the national events, please consult the official High School National TSA Conference Competitive Events Guide. State-only event rules are detailed earlier in this guide. Please be sure to carefully read the event descriptions, regulations and procedures!

**IMPORTANT UPDATE:** Several events have EARLY ELECTRONIC SUBMISSION deadlines. Events which have early submission deadlines are noted in these summaries. For those events, unless otherwise stated, contestants are to submit a single, multi-page PDF document containing all required documentation, related links (to download videos or game files, for example), and contest entries (like Pin and T-Shirt designs) via the COTSA State Conference Early Submission Entry Form located at: [http://goo.gl/r0zz1F](http://goo.gl/r0zz1F) by 11:59 p.m. February 1, 2016. Contestants will need to enter their STATE CONFERENCE ID# when submitting your entry. Entries that are not submitted electronically or are not received by the deadline will NOT be considered for competition.

For multimedia and video early submissions, entries will be required to be uploaded to YouTube on an unlisted channel and the URL (along with required documentation in PDF format) is to be submitted via the COTSA State Conference Early Submission Entry Form located at: [http://goo.gl/r0zz1F](http://goo.gl/r0zz1F) by 11:59 p.m. February 1, 2016. Contestants will need to enter their STATE CONFERENCE ID# when submitting their entries. Entries for events which have early submission deadlines that are not submitted electronically or are not received by the deadline will NOT be considered for competition.

Be aware that contest updates and clarifications may occur throughout the school year and are available at: [http://www.tsaweb.org/Updates-and-Clarification](http://www.tsaweb.org/Updates-and-Clarification). Advisors and students are urged to check this site periodically throughout the year to prevent a disqualification at the state or national conferences! Themes for the various events are available on the National TSA website at [http://www.tsaweb.org/Themes-and-Problems](http://www.tsaweb.org/Themes-and-Problems).

**NOTE:** With each event, you will find the number of entries allowed. This number of entries is only applicable to the Colorado TSA State Conference; the number of entries permitted at the National TSA Conference are listed in the National TSA Competitive Events Guide.
HIGH SCHOOL NATIONAL EVENTS

Animatronics

Participants work as a team to demonstrate knowledge of mechanical and control systems by designing, fabricating, and controlling an animatronics device that will communicate, entertain, inform, demonstrate and/or illustrate a topic, idea, subject or concept. Sound, lights and surrounding environment are to accompany the device.

Limited at State to: Two (2) teams of two to six (2-6) individuals per chapter with a limit of three (3) representatives per team for the presentation/interview.

Architectural Renovation

Participants develop a set of architectural plans and related materials for an annual architectural renovation design challenge and construct a physical as well as computer-generated model to accurately depict their design. For 2016, the challenge is the renovation of an early 1900’s kit home.

Limited at State to: Three (3) teams of one to six (1-6) students per chapter.

Biotechnology Design

Participants select a contemporary biotechnology problem that relates to the current year’s published area of focus and demonstrate understanding of it through documented research, the development of a solution, a display, and an effective multimedia presentation. If appropriate, a model or prototype of the solution may be included in the display. Participants may choose to recreate or simulate research that previously has been performed within the scientific community.

For 2016, the theme is: Outer Space and Biotechnology.

Limited at State to: Three (3) teams of two to six (2-6) members per team with a limit of two (2) representatives per team for the finalist presentation.

Career Preparation

During the school year participants research technology-related careers designated by the Bureau of Labor Statistics as falling in the top ten employment growth areas in the near future. Participants research and prepare a resume and cover letter for each of the careers: Manufacturing engineer, Web developer, Data communication analyst. Finalists participate in an on-site job interview related to one of the careers.

NOTE: Due to the complexity and the large number of entries in this event as well as the limited duration of the state conference, this event has an early submission deadline! Contestants should submit resume, letters and related materials as a single multi-page PDF file via the COTSA State Conference Early Submission Entry Form located at: http://goo.gl/r0zz1F by 11:59 p.m. February 1, 2016. Contestants will need to enter their STATE CONFERENCE ID# when submitting your entry. Entries that are not submitted electronically or are not received by the deadline will NOT be considered for competition.

Limited at State to: One (1) entry per student.
Chapter Team

Participants take a written parliamentary procedures test in order to qualify for the semifinals, where they perform an opening ceremony, dispose of items of business, and perform a closing ceremony within a specified time period.

*Limited at State to: One (1) team of six (6) per chapter.*

Children’s Stories

Participants create an illustrated children’s story of high artistic, instructional, and social value. The story may be written in prose or poetry and take the form of a fable, adventure story, or other structure. The narrative, along with the accompanying illustrations, is to result in an experience that delights, enlightens, and helps in the wholesome development of a child. Finalists will

*Limited at State to: Three (3) teams of one to six (1-6) students per chapter. Finalist teams will have two (2) of those team members make the final presentation.*

Computer Aided Design - 2D Architecture

Participants create representations, such as foundation and/or floor plans, and/or details of architectural ornamentation or cabinetry. Participants may compete in CAD 2D, Architecture or CAD 3D, Engineering, but not both. 

*NOTE: Due to the complexity and the large number of entries in this event as well as the limited duration of the state conference, contestants will participate in a preliminary round the opening night of the conference to determine finalists. Finalists will then compete in a 2.5 hour-long on-site challenge. Please plan appropriately when preparing for this event.*

*Limited at State to: Three (3) students per chapter with only one (1) CAD event per student.*

Computer Aided Design - 3D Engineering

Participants create a 3D computer model(s) of an engineering or machine object, such as a machine part, tool, device, or manufactured product. Participants may compete in CAD 2D, Architecture or CAD 3D, Engineering, but not both. 

*NOTE: Due to the complexity and the large number of entries in this event as well as the limited duration of the state conference, contestants will participate in a preliminary round the opening night of the conference to determine finalists. Finalists will then compete in a 2.5 hour-long on-site challenge. Please plan appropriately when preparing for this event.*

*Limited at State to: Three (3) students per chapter with only one (1) CAD event per student.*

Computer Numerical Control Production

Participants design, fabricate, and demonstrate their ability to use a CNC (computer numerical control) machine to produce a device based on an annual problem posted on the TSA website under Competitions/Themes and Problems. Documentation and two (2) machined samples are checked in and evaluated. Teams return for an assembly session of their entry, using the tools in their tool box, and immediately demonstrate their device. For 2016, teams must fabricate a mechanical bank device that self-deposits pennies, nickels, dimes, and quarters; evaluation is based on the number of coins that can be deposited in a two (2)-minute time frame. The theme of the mechanical bank must be inspired by the city and/or state of the national TSA conference site.

*Limited at State to: Three (3) teams of two (2) individuals per chapter*
Debating Technological Issues

Team members 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 the designated topic.  

Limited at State to: One (1) team of two (2) members per chapter.

Desktop Publishing

Participants produce a notebook containing a news release, a three (3)-column newsletter, and a poster to be used to attract students to the TSA organization. At the state conference, all participants work to solve an on-site problem to demonstrate their abilities in using a computer to design and edit materials for publication.  

Note: Due to the complexity and the large number of entries in this event as well as the limited duration of the state conference, this event has an early submission deadline! Contestants should submit entry as a single, multi-page PDF file via the COTSA State Conference Early Submission Entry Form located at: http://goo.gl/rOzz1F by 11:59 p.m. February 1, 2016. Contestants will need to enter their STATE CONFERENCE ID# when submitting your entry. Entries that are not submitted electronically or are not received by the deadline will NOT be considered for competition.  

Limited at State to: Six (6) students per chapter.

Digital Video Production

Participants develop a digital video/film that focuses on the given year’s theme. Sound may accompany the film. For 2016, the theme is: Stopping social media bullying.  

Note: Due to the complexity and the large number of entries in this event as well as the limited duration of the state conference, this event has an early submission deadline! Contestants should upload the entry to YouTube as an UNLISTED video (as an unlisted video, the video will not appear in any of YouTube’s public spaces such as search results, your channel, or the Browse page. Only people with whom you share the link will be able to view it). Once the video is uploaded, go to the COTSA State Conference Early Submission Entry Form located at: http://goo.gl/rOzz1F and submit the entry, providing the URL in the space provided. All entries must be received by 11:59 p.m. February 1, 2016. Contestants will need to enter their STATE CONFERENCE ID# when submitting your entry. Entries that are not submitted electronically or are not received by the deadline will NOT be considered for competition.  

Limited at State to: Three (3) teams of two (2) to six (6) students per chapter.

Dragster Design

Participants design, produce working drawings for, and build a CO2- powered dragster.  

Limited at State to: Three (3) students per chapter.
**Engineering Design**

Participants work as part of a team to design and fabricate a device that will meet the specific needs of a person with a disability. Through use of a model/prototype, display, and notebook, participants document and justify their approach and reasoning in identifying a problem and their solution’s direct impact on a member of their community and on society. Finalists justify and demonstrate their solution to their identified problem in a timed presentation.

*Limited at State to: Three (3) teams of three to five (3-5) people per chapter.*

**Essays on Technology**

Participants conduct research in a published technological area and, using the knowledge and personal insights gained from this research, write an essay on one (1) subtopic selected from two (2) or three (3) related subtopics designated on site. Consider your audience to be the readers of the local daily newspaper.

*Limited at State to: Three (3) students per chapter.*

**Extemporaneous Presentation**

Participants give a three to five (3-5) minute speech fifteen (15) minutes after having drawn a card on which a technology or TSA topic for their speech is written.

*Limited at State to: Three (3) students per chapter.*

**Fashion Design**

Students have the opportunity to research, develop, and create garment designs, garment mock-ups, and portfolios that reflect the current year’s published theme. At the state competition, teams participate in an on-site event in which they present their potential garment designs to the judges on a TSA runway. For 2016, participants are to design and create a total of three (3) garments for two (2) outfits total for the opening ceremonies of the 2016 (summer) Olympic Games for a country of their choice.

*Limited at State to: Two (2) teams of two to four (2-4) students per chapter.*

**Flight Endurance**

Participants have the opportunity to build, fly, and adjust (trim) a model to make long endurance flights inside a contained airspace. Any model design is acceptable if the model complies with the event specifications. All models are to be built and test flown before the event date.

*Limited at State to: Three (3) students per chapter.*
Future Technology Teacher

Participants research and select three (3) accredited colleges or universities that offer technology education/engineering technology teacher preparation as a major. Each participant will write no more than one (1) page (simulated college essay) explaining why s/he would like to become a technology education/engineering technology teacher and what would constitute success in the field. In addition, each participant will develop and present a one (1)-class period activity, with a lesson plan, using the ITEEA standards for technological literacy. **Note:** Due to the complexity and the large number of entries in this event as well as the limited duration of the state conference, this event has an early submission deadline! Contestants should submit entry as a single, multi-page PDF file via the COTSA State Conference Early Submission Entry Form located at: [http://goo.gl/r0zz1F](http://goo.gl/r0zz1F) by 11:59 p.m. February 1, 2016. Contestants will need to enter their STATE CONFERENCE ID# when submitting your entry. Entries that are not submitted electronically or are not received by the deadline will NOT be considered for competition.

**Limited at State to: Three (3) students per chapter.**

Manufacturing Prototype

Participants design and manufacture a prototype of a product and provide a description of how the product could be manufactured in a state-of-the-art American manufacturing facility. For 2016, participants are to design and construct a device to hold supplies for a person who uses a wheelchair.

**Limited at State to: One (1) team of two to six (2-6) students per chapter.**

Music Production

Participants produce an original musical piece that is designed to be played during the national TSA conference opening or closing general sessions. The musical piece should be energizing, interesting and of a spirit consistent with the Technology Student Association.

**Note:** Due to the complexity and the large number of entries in this event as well as the limited duration of the state conference, this event has an early submission deadline! Contestants should upload the entry as an .mp3 or .wav file via the COTSA State Conference Early Submission Entry Form located at: [http://goo.gl/r0zz1F](http://goo.gl/r0zz1F) by 11:59 p.m. February 1, 2016. Any accompanying documentation should also be uploaded as a single, multi-page PDF file at that time. Contestants will need to enter their STATE CONFERENCE ID# when submitting your entry. Entries that are not submitted electronically or are not received by the deadline will NOT be considered for competition.

**Limited at State to: Six (6) teams of one to six (1-6) students per chapter.**
On Demand Video

Participants write, shoot, and edit a short video during the conference in this on-site event. Required criteria, such as props and a line of dialogue, make the competition more challenging and will be revealed at the event orientation meeting. NOTE: Due to the length of the state conference, this event will be shortened at state to fit within the allotted time.

Limited at State to: One (1) team of two to six (2-6) students per chapter.

Photographic Technology

Students capture images and process photographic and digital prints that depict the current year’s published theme. For 2016, the theme is: Macro Photography. Qualifying finalists participate in an on-site event in which they capture digital images and utilize multimedia software to prepare and develop a media presentation during the annual conference. NOTE: Due to the complexity and the large number of entries in this event as well as the limited duration of the state conference, this event has an early submission deadline! Contestants should upload the entry as a single, multi-page PDF document via the COTSA State Conference Early Submission Entry Form located at: http://goo.gl/r0zz1F. All entries must be received by 11:59 p.m. February 1, 2016. Contestants will need to enter their STATE CONFERENCE ID# when submitting your entry. Entries that are not submitted electronically or are not received by the deadline will NOT be considered for competition.

Limited at State to: Two (2) students per chapter.

Prepared Presentation

Participants deliver an oral presentation that includes audio and/or visual enhancement based on the theme for the current year’s conference.

Limited at State to: Three (3) students per chapter.

Promotional Graphics

Participants will act as freelance designers to develop and present a graphic design that can be used to promote participation in TSA-related interests. For 2016, Create a design that promotes teaching technology and engineering as a career, recruiting high school students or undeclared college students. NOTE: Due to the complexity and the large number of entries in this event as well as the limited duration of the state conference, this event has an early submission deadline! Contestants should upload the entry as PDF document via the COTSA State Conference Early Submission Entry Form located at: http://goo.gl/r0zz1F. All entries must be received by 11:59 p.m. February 1, 2016. Contestants will need to enter their STATE CONFERENCE ID# when submitting your entry. Entries that are not submitted electronically or are not received by the deadline will NOT be considered for competition.

Limited at State to: One (1) entry per student.
SciVis

SciVis refers to Scientific and Technical Visualization, the graphical representation of complex scientific concepts. Participants develop a visualization focusing on a subject or topic from one (1) or more of the following areas: science, technology, engineering or mathematics. **NOTE: Due to the complexity and the large number of entries in this event as well as the limited duration of the state conference, this event has an early submission deadline!** Contestants should upload the entry to YouTube as an UNLISTED video (as an unlisted video, the video will not appear in any of YouTube’s public spaces such as search results, your channel, or the Browse page. Only people with whom you share the link will be able to view it). Once the video is uploaded, go to the COTSA State Conference Early Submission Entry Form located at: [http://goo.gl/r0zz1F](http://goo.gl/r0zz1F) and submit the entry, providing the link to the visualization in the space provided. All entries must be received by 11:59 p.m. February 1, 2016. Contestants will need to enter their STATE CONFERENCE ID# when submitting their entry. Entries that are not submitted electronically or are not received by the deadline will NOT be considered for competition.

**Limited at State to: Three (3) teams of one to six (1-6) students per chapter.**

Software Development

Participants work as part of a team to participate in the development, debugging, and documentation of a software design project using freely available software development toolkits. Through a multimedia presentation and entrant documentation, the team demonstrates its knowledge of the software development process. The project should have educational or social value. **NOTE: Due to the complexity and the large number of entries in this event as well as the limited duration of the state conference, this event has an early submission deadline!** Contestants should upload the multimedia portion of their entry in video format to YouTube as an UNLISTED video (as an unlisted video, the video will not appear in any of YouTube’s public spaces such as search results, your channel, or the Browse page. Only people with whom you share the link will be able to view it). Once the video is uploaded, go to the COTSA State Conference Early Submission Entry Form located at: [http://goo.gl/r0zz1F](http://goo.gl/r0zz1F) and submit the entry, providing the URL to the video in the space provided. Contestants should upload the documentation portfolio as a single, multi-page PDF document on the same form. All entries must be received by 11:59 p.m. February 1, 2016. Contestants will need to enter their STATE CONFERENCE ID# when submitting your entry. Entries that are not submitted electronically or are not received by the deadline will NOT be considered for competition.

**Limited at State to: One (1) team of two to six (2-6) students per chapter.**

Structural Engineering

Participants work as a team to build a designated structure prior to the conference. The team applies the principles of structural design and engineering through research, design, construction, destructive testing, and assessment, to determine the design efficiency of the structure. Finalist teams compete in an on-site challenge.

**Limited at State to: Two (2) teams of two (2) students per chapter.**
System Control Technology

Participants work as part of a team on-site to develop a computer-controlled model-solution to a problem. Teams analyze the problem, build and program a model, explain the program and mechanical features, and provide instructions to operate the device.  

*Limited at State to: One (1) team of three (3) students per chapter.*

Technical Sketching and Application

Participants complete a written test in order to qualify as semifinalists. Semifinalists then demonstrate their ability to solve on-site engineering graphics problems using standard drafting techniques.  

*Limited at State to: Six (6) students per chapter.*

Technology Bowl

A written test followed by a knowledge bowl format like “Jeopardy” where students “buzz-in” and answer technical questions orally.  

*Limited at State to: One (1) team of three (3) students per chapter.*

Technology Problem Solving

Participants work together to develop and create a solution to a problem using the limited materials provided and the tools allowed. Completed solutions will be objectively measured and judged to determine the best and most effective solution for the stated problem. Participants won’t know what this one is until they show up!  

*Limited at State to: Two (2) teams of two (2) students per chapter.*

Transportation Modeling

Participants use engineering skills to design and fabricate a CO2-powered scale model of a vehicle that meets the current year’s stated design theme. For 2016, the theme is: Riding Lawnmowers.  

*Limited at State to: Three (3) students per chapter.*
Video Game Design

Participants develop an E-rated 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. **NOTE: Due to the complexity and the large number of entries in this event as well as the limited duration of the state conference, this event has an early submission deadline!** Contestants should upload the documentation portfolio for their entry via the COTSA State Conference Early Submission Entry Form located at: [http://goo.gl/r0zz1F](http://goo.gl/r0zz1F) as a single, multi-page PDF document. Contestants SHOULD NOT UPLOAD the game program executable file via the upload button on this page; instead, contestants should provide a link where the file may be downloaded from (for example, Dropbox, High Tail or Sendspace). All entries must be received by 11:59 p.m. February 1, 2016. Contestants will need to enter their STATE CONFERENCE ID# when submitting their entry. Entries that are not submitted electronically or are not received by the deadline will NOT be considered for competition.

**Limited at State to: One (1) team of two to six (2-6) students per chapter.**

Webmaster

Participants are required to design, build and launch a World Wide Web site that features the school's career and technology education program, the TSA chapter, and the chapter's ability to research topics pertaining to technology. Conference finalists participate in an on-site interview to demonstrate the knowledge and expertise gained during the development of the website with an emphasis on Internet and web history, web design (school, chapter and design brief pages), and research about cutting edge advances in technology. **NOTE: Due to the complexity and the large number of entries in this event as well as the limited duration of the state conference, this event has an early submission deadline!** Contestants should upload the URL (which points to the main page of the team's entry) via the COTSA State Conference Early Submission Entry Form located at: [http://goo.gl/r0zz1F](http://goo.gl/r0zz1F) no later than 11:59 p.m. February 1, 2016. After 11:59 p.m. on February 1 changes should not be made to the website. If the team makes changes or updates to the website after the evaluators begin judging the entry, those changes will not be considered. Contestants will need to enter their STATE CONFERENCE ID# when submitting their entry. Entries that are not submitted electronically or are not received by the deadline will NOT be considered for competition.

**Limited at State to: One (1) team of three to five (3-5) students per chapter.**
HIGH SCHOOL STATE-ONLY EVENTS

Catapult Design *(NEW EVENT!)*

Participants design and produce a working catapult, within specified guidelines, that is adjustable and propels hollow plastic practice golf balls (weighing about 14.5 grams each) at a scoring target between 15’ and 25’ away.

*Limited to: Three (3) teams of two to four (2-4) students per chapter.*

Fore!

Teams, composed of one high school student and one elementary student, design and develop one hole for a proposed miniature golf course.

*Limited to: Ten (10) teams of two (2) students per chapter. Each team MUST include one (1) HS and one (1) elementary student (grades 1-5).*

Giant Jenga Tournament

Teams take turns in this bracketed-tournament competition to build the tallest structure possible without tipping it over.

*Limited to: Four (4) teams of two to four (2-4) students per chapter. NOTE: This event does not earn medals or points for a school toward the Chapter of the Year award. Winners of this event are awarded the traveling Giant Jenga Trophy.*

High School Creativity Challenge

Design teams, composed of one high school student and one elementary student, work to solve an on-site problem.

*Limited to: Ten (10) teams of two (2) students per chapter. Each team MUST include one (1) HS and one (1) elementary student (grades 1-6* See rules for more information). NOTE: This is a non-competitive event and does not earn medals or points for a school toward the Chapter of the Year award.*

Integrated Autonomous Vehicle

Participants create and operate an integrated autonomous vehicle. The vehicle will operate in a number of courses, but must be able to navigate a course without prior knowledge of distance or direction within a chosen course. Two separate modes of operation will be used: Student-controlled and Autonomous.

*Limited to: Two (2) teams of three (3) members per chapter.*
**Pin Design (NEW NAME!)**

Participants design a lapel pin representative of Colorado and Colorado TSA to be used for trading at the National TSA Conference. The winning middle school and winning high school designs will be made into pins for trading. **NOTE: Due to the complexity and the large number of entries in this event as well as the limited duration of the state conference, this event has an early submission deadline!** Contestants should submit entry as a single, multi-page PDF file via the COTSA State Conference Early Submission Entry Form located at: [http://goo.gl/r0zz1F](http://goo.gl/r0zz1F) by 11:59 p.m. February 1, 2016. Contestants will need to enter their STATE CONFERENCE ID# when submitting your entry. Entries that are not submitted electronically or are not received by the deadline will NOT be considered for competition. **Limited to: One (1) entry per student.**

**Rat Trap Drag Race**

Participants design and build a vehicle powered solely by a standard rat trap. **Limited to: Six (6) students per chapter.**

**Rubber Band Powered Car**

Participants design, build and then race a rubber band-powered propeller car that resembles a commercially produced automobile. **Limited to: Six (6) students per chapter.**

**T-Shirt Design**

Participants design the Colorado delegation’s national conference T-shirt. The winner between the middle and high school top finishers will become the state delegation T-shirt. **NOTE: Due to the complexity and the large number of entries in this event as well as the limited duration of the state conference, this event has an early submission deadline!** Contestants should submit entry as a single, multi-page PDF file via the COTSA State Conference Early Submission Entry Form located at: [http://goo.gl/r0zz1F](http://goo.gl/r0zz1F) by 11:59 p.m. February 1, 2016. Contestants will need to enter their STATE CONFERENCE ID# when submitting their entry. Entries that are not submitted electronically or are not received by the deadline will NOT be considered for competition. **Limited to: One (1) entry per student.**

**Underwater ROV Challenge**

Participants apply and document the engineering design process, mathematical principles and scientific concepts used in the research, design, construction, testing and evaluation of an underwater remote operated vehicle (ROV). The ROV will be expected to perform a range of tasks including: passing through one or more rings, and then backing through the same route; retrieving rings from the bottom of the testing tank/pool; entering and illuminating a cave area; and/or demonstrating full maneuverability in three axes of motion. **Limited to: Two (2) teams of two to six (2-6) students per chapter.**
**Early Deadline Events - Middle School**

The events listed below have an early submission deadline of February 1, 2016. Along with each event listed is a brief summary of what is to be submitted and in what format. Unless otherwise stated, all documents/portfolios (in PDF format) and URLs are to be uploaded via the COTSA State Conference Early Submission Entry Form located at: [http://goo.gl/r0zz1F](http://goo.gl/r0zz1F) by 11:59 p.m. February 1, 2016. Contestants will need to enter their STATE CONFERENCE ID# when submitting their entries.

<table>
<thead>
<tr>
<th>Event</th>
<th>What to Submit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children’s Stories</td>
<td>Story and illustrations, along with required research documentation should be submitted as a single, multi-page PDF document.</td>
</tr>
</tbody>
</table>
| Community Service Video       | **VIDEO:** Video is required to uploaded to YouTube as an unlisted video. URL to video is to be submitted online via the COTSA Early Submission Entry Form.  
**DOCUMENTATION:** The required documentation portfolio as described in the rules (including consent/photo release forms) is to be submitted as a single, multi-page PDF document. |
| Digital Photography           | Photo album as described in the rules (including consent/photo release forms) is to be submitted as a single, multi-page PDF document. |
| Environmental Engineering     | **MULTIMEDIA PRESENTATION:** Presentation is required to uploaded to YouTube as a video as an unlisted video. URL to presentation is to be submitted online via the COTSA Early Submission Entry Form. 
**DOCUMENTATION:** The required documentation portfolio as described in the rules is to be submitted as a single, multi-page PDF document. |
| Integrated Autonomous Vehicle | DOCUMENTATION: The design process should be made available electronically through a website or blog (e.g., Instructables, Google Sites, wix.com, Blogger, Wordpress, etc.). The URL to the website or blog is to be submitted online via the COTSA Early Submission Entry Form. |
| Pin Design                    | Portfolio as described in the rules is to be submitted as a single, multi-page PDF document. |
| Promotional Marketing         | Portfolio as described in the rules is to be submitted as a single, multi-page PDF document. |

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# Early Deadline Events - Middle School

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<table>
<thead>
<tr>
<th>EVENT</th>
<th>WHAT TO SUBMIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEM Animation</td>
<td><strong>ANIMATION:</strong> The animation is required to be uploaded to YouTube as an unlisted video. The URL is to be submitted online via the COTSA Early Submission Entry Form. <strong>DOCUMENTATION:</strong> The required documentation as described in the rules is to be submitted as a single, multi-page PDF document.</td>
</tr>
<tr>
<td>T-Shirt Design</td>
<td>Design and required documentation as described in the rules is to be uploaded to the online Early Submission Entry Form as a single, multi-page PDF document.</td>
</tr>
<tr>
<td>Underwater ROV</td>
<td>Documentation portfolio as described in the rules is to be submitted as a single, multi-page PDF document via the Early Submission Entry Form.</td>
</tr>
<tr>
<td>Video Game Design</td>
<td><strong>VIDEO GAME:</strong> The URL of the video game is to be submitted online via the COTSA Early Submission Entry form. <strong>DOCUMENTATION:</strong> The required documentation portfolio as described in the rules is to be submitted as a single, multi-page PDF document.</td>
</tr>
<tr>
<td>Website Design</td>
<td>The URL of the website is to be submitted online via the COTSA Early Submission Entry Form.</td>
</tr>
</tbody>
</table>
Early Deadline Events - High School

The events listed below have an early submission deadline of February 1, 2016. Along with each event listed is a brief summary of what is to be submitted and in what format. All early submissions (both PDFs and URLs) are to be uploaded via the COTSA State Conference Early Submission Entry Form located at: http://goo.gl/r0zz1F by 11:59 p.m. February 1, 2016. Contestants will need to enter their STATE CONFERENCE ID# when submitting their entries.

<table>
<thead>
<tr>
<th>Event</th>
<th>What to Submit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Career Prep</td>
<td>Resume &amp; cover letter as a single, multi-page PDF document.</td>
</tr>
<tr>
<td>Children's Stories</td>
<td>Story and illustrations, along with required research documentation should be submitted as a single, multi-page PDF document.</td>
</tr>
<tr>
<td>Desktop Publishing</td>
<td>Portfolio containing a news release, a 3-column newsletter, and a poster as a single, multi-page PDF document.</td>
</tr>
<tr>
<td>Digital Video Production</td>
<td>VIDEO: Video is required to be uploaded to YouTube as an unlisted video. The URL to video is to be submitted online via the COTSA Early Submission Entry Form.</td>
</tr>
<tr>
<td></td>
<td>DOCUMENTATION: The required documentation portfolio as described in the rules (including consent/photo release forms) is to be submitted as a single, multi-page PDF document via the Early Submission Entry Form.</td>
</tr>
<tr>
<td>Future Technology Teacher</td>
<td>Portfolio containing three (3) college research summaries, a college essay, a lesson plan with technology standards correlation, relevant handouts, and materials and resources as a single- multi-page PDF document.</td>
</tr>
<tr>
<td>Integrated Autonomous Vehicle</td>
<td>DOCUMENTATION: The design process should be made available electronically through a website or blog (e.g., Instructables, Google Sites, wix.com, Blogger, Wordpress, etc.). The URL to the website or blog is to be submitted online via the COTSA Early Submission Entry Form.</td>
</tr>
<tr>
<td>Music Production</td>
<td>MUSIC: Music is to be uploaded as an MP3 or WAV file via the online Early Submission Entry Form.</td>
</tr>
<tr>
<td></td>
<td>DOCUMENTATION: The required documentation portfolio as described in the rules (including consent/release forms) is to be submitted as a single, multi-page PDF document via the Early Submission Entry Form.</td>
</tr>
<tr>
<td>Photographic Technology</td>
<td>Photo album as described in the rules as a single multi-page PDF document via the Early Submission Entry Form.</td>
</tr>
<tr>
<td>Pin Design</td>
<td>Design and related documentation as a single, multi-page PDF document via the Early Submission Entry Form.</td>
</tr>
</tbody>
</table>

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# Early Deadline Events - High School

*Continued from previous page*

<table>
<thead>
<tr>
<th>HIGH SCHOOL</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Promotional Graphics</td>
<td>Design and documentation portfolio as described in the rules as a single, multi-page PDF document online via the COTSA Early Submission Entry Form.</td>
</tr>
<tr>
<td>SCIVIS</td>
<td>VISUALIZATION: The visualization is required to be uploaded to YouTube as an unlisted video. The URL is to be submitted via the online Early Submission Entry Form. DOCUMENTATION: The required documentation as described in the rules is to be submitted as a single, multi-page PDF document.</td>
</tr>
<tr>
<td>Software Development</td>
<td>MULTIMEDIA PRESENTATION: Presentation is required to uploaded to YouTube as a video as an unlisted video. URL to presentation is to be submitted via the online Early Submission Entry Form. COMPiled Program: URL to runnable, compiled program to be uploaded via the Early Submission Entry Form. DOCUMENTATION: The required documentation portfolio (including source code) as described in the rules is to be submitted as a single, multi-page PDF document via the Early Submission Entry Form.</td>
</tr>
<tr>
<td>T-Shirt Design</td>
<td>Design and required documentation as described in the rules is to uploaded to the online Early Submission Entry Form as a single, multi-page PDF document.</td>
</tr>
<tr>
<td>Underwater ROV</td>
<td>Documentation portfolio as described in the rules is to be submitted as a single, multi-page PDF document online via the COTSA Early Submission Entry Form.</td>
</tr>
<tr>
<td>Video Game Design</td>
<td>VIDEO GAME: The URL link to where the video game executable may be downloaded. DOCUMENTATION: The required documentation portfolio as described in the rules is to be submitted as a single, multi-page PDF document.</td>
</tr>
<tr>
<td>Webmaster</td>
<td>URL of website.</td>
</tr>
</tbody>
</table>
## Middle School Event Eligibility

Below, please find the number of entries that may be submitted for events at both the STATE and National Conferences.

<table>
<thead>
<tr>
<th>EVENT</th>
<th>AT STATE</th>
<th>AT NATIONALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biotechnology</td>
<td>3 teams of 2-6 students per chapter</td>
<td>3 teams of 2-6 per STATE</td>
</tr>
<tr>
<td>CAD Foundations</td>
<td>2 students per chapter</td>
<td>2 students per STATE</td>
</tr>
<tr>
<td>Career Prep</td>
<td>1 entry per student</td>
<td>1 student per chapter</td>
</tr>
<tr>
<td>Catapult Design</td>
<td>3 teams of 2-4 students per chapter</td>
<td>3 teams of 2-4 students per STATE</td>
</tr>
<tr>
<td>Challenging Tech Issues</td>
<td>3 teams of 2 students per chapter</td>
<td>3 teams of 2 students per STATE</td>
</tr>
<tr>
<td>Chapter Team</td>
<td>1 team of 6 students per chapter</td>
<td>1 team of 6 students per chapter</td>
</tr>
<tr>
<td>Children’s Stories</td>
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<td>Dragster</td>
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<td>Electrical Applications</td>
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<tr>
<td>Flight</td>
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<tr>
<td>Forensic Technology</td>
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<td>Geospatial Technology</td>
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<td>Inventions &amp; Innovations</td>
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### NATIVE EVENTS

<table>
<thead>
<tr>
<th>EVENT</th>
<th>AT STATE</th>
<th>AT NATIONALS</th>
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<tbody>
<tr>
<td>Medical Technology Issues</td>
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<tr>
<td>Microcontroller Design</td>
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<td>Prepared Speech</td>
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<td>1 student per chapter</td>
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<tr>
<td>Problem Solving</td>
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<td>Promotional Marketing</td>
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<td>STEM Animation</td>
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<td>Structural Engineering</td>
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<td>1 team of 2 students per chapter</td>
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<tr>
<td>System Control Technology</td>
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<td>1 team of 3 students per state</td>
</tr>
<tr>
<td>Tech Bowl</td>
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<td>Technical Design</td>
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<td>1 team of 2 students per chapter</td>
</tr>
<tr>
<td>Video Game Design</td>
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</tr>
<tr>
<td>Website Design</td>
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### STATE ONLY EVENTS

<table>
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<tbody>
<tr>
<td>Crash Test</td>
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</tr>
<tr>
<td>Giant Jenga Tournament</td>
<td>4 teams of 2-4 students per chapter</td>
</tr>
<tr>
<td>Integrated Autonomous Vehicle</td>
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</tr>
<tr>
<td>Middle School Creativity Challenge</td>
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<tr>
<td>Mousetrap Tractor Pull</td>
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</tr>
<tr>
<td>Pin Design</td>
<td>1 entry per student</td>
</tr>
<tr>
<td>Rubber Band Powered Cars</td>
<td>6 students per chapter</td>
</tr>
<tr>
<td>T-Shirt Design</td>
<td>1 entry per student</td>
</tr>
<tr>
<td>Underwater ROV</td>
<td>2 teams of 2-6 students per chapter</td>
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# High School Event Eligibility

Below, please find the number of entries that may be submitted for events at both the STATE and National Conferences.

## NATIONAL EVENTS

<table>
<thead>
<tr>
<th>EVENT</th>
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<tr>
<td>Animatronics</td>
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<td>Architectural Renovation</td>
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<td>Biotechnology Design</td>
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<td>Children’s Stories</td>
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<tr>
<td>Computer Aided Design - 3D</td>
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<td>Debating Technological Issues</td>
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<td>Desktop Publishing</td>
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</tr>
<tr>
<td>Digital Video Production</td>
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<td>Essays on Technology</td>
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<td>Extemporaneous Presentation</td>
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<td>Fashion Design</td>
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<td>Flight Endurance</td>
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<td>Future Technology Teacher</td>
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<tr>
<td>Manufacturing Prototype</td>
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<td>1 team of 2-6 students per chapter</td>
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<tr>
<td>Music Production</td>
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<td>3 teams of 1-6 per STATE</td>
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### NATIONAL EVENTS

<table>
<thead>
<tr>
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<td>Prepared Presentation</td>
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<td>Promotional Graphics</td>
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<tr>
<td>SciVis</td>
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<td>3 teams of 1-6 per STATE</td>
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<td>1 team of 2-6 students per chapter</td>
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<td>Structural Engineering</td>
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<tr>
<td>System Control Technology</td>
<td>1 team of 3 students per chapter</td>
<td>1 team of 3 students per STATE</td>
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<tr>
<td>Technical Sketching &amp; Application</td>
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</tr>
<tr>
<td>Technology Bowl</td>
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<tr>
<td>Technology Problem Solving</td>
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<td>1 team of 2 students per chapter</td>
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<tr>
<td>Transportation Modeling</td>
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<tr>
<td>Video Game Design</td>
<td>1 team of 2-6 students per chapter</td>
<td>3 teams of 2-6 students per STATE</td>
</tr>
<tr>
<td>Webmaster</td>
<td>1 team of 3-5 students per chapter</td>
<td>1 team of 3-5 students per chapter</td>
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### STATE ONLY EVENTS

<table>
<thead>
<tr>
<th>EVENT</th>
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<tbody>
<tr>
<td>Catapult Design</td>
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<tr>
<td>Fore!</td>
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<tr>
<td>Giant Jenga Tournament</td>
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<tr>
<td>High School Creativity Challenge</td>
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<tr>
<td>Integrated Autonomous Vehicle</td>
<td>2 teams of 3 students per chapter</td>
</tr>
<tr>
<td>Pin Design</td>
<td>1 entry per student</td>
</tr>
<tr>
<td>Rat Trap Drag Races</td>
<td>6 students per chapter</td>
</tr>
<tr>
<td>Rubber Band Powered Cars</td>
<td>6 students per chapter</td>
</tr>
<tr>
<td>T-Shirt Design</td>
<td>1 entry per student</td>
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<tr>
<td>Underwater ROV</td>
<td>2 teams of 2-6 students per chapter</td>
</tr>
</tbody>
</table>
Special Interest Session Proposal Form

At the 2016 Colorado TSA State Conference there will be several special interest sessions offered for both students and advisors. Use this form if you would like to be a presenter at one of these sessions.

Each special interest sessions will last 50 minutes and should offer an opportunity for advisors and/or students to explore various topics in TSA, including competitive events, chapter management, and/or leadership development.

The deadline for submission of a special interest session proposal is February 1, 2016. You will be notified if your proposal has been selected to present at the 2016 COTSA State Conference.

You can complete the form below and mail/fax/email it to the COTSA State Advisor, or you can complete and submit it online at: www.ctsoadvisor.com/cotsa/special_interest_session_proposal.html.

<table>
<thead>
<tr>
<th>Name of Presenter(s):</th>
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</thead>
<tbody>
<tr>
<td>Contact Information:</td>
</tr>
<tr>
<td>School/Company:</td>
</tr>
<tr>
<td>Address:</td>
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<tr>
<td>City:</td>
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<tr>
<td>Phone Number:</td>
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<tr>
<td>Email:</td>
</tr>
<tr>
<td>Title of Special Interest Session:</td>
</tr>
<tr>
<td>Brief Outline of the Session (up to 200 words):</td>
</tr>
</tbody>
</table>

Thank you! Submit your proposal to:
Tony Raymond, COTSA State Advisor,
9101 E. Lowry Blvd., Denver, CO 80230, or tony.raymond@cccs.edu.