COLORADO
Science and Engineering Fair

For Colorado Students in grades 6 to 12
Hosted by the College of Natural Sciences Education & Outreach Center at Colorado State University Fort Collins, Colorado
APRIL 5 - 7, 2018

Artwork by: Angel Castillo, West Grand High School

Copy and distribute freely!
Revised December 2017

Electronic version can be found at:
http://www.csef.colostate.edu/Handbook
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Dear Regional Science & Engineering Fair Winner:

Congratulations!

Your outstanding science fair research project has earned you the right to represent your region and your school at the 63rd Annual Colorado Science and Engineering Fair (CSEF)! This year's science and engineering fair will be held April 5 - 7, 2018 at Colorado State University’s Lory Student Center.

In this packet you will find the necessary information needed to prepare for and participate in the CSEF: instructions for online registration, CSEF and Intel International Science and Engineering Fair (ISEF) form requirements, preliminary CSEF schedule of events, area maps, information on local hotels, and much more.

At the CSEF, you will be one of approximately 400 talented science students from around the state. You are one of Colorado's top young scientists, and we want your state science and engineering fair experience to be the best we can make it. For this reason, we ask that you read all of the information in this packet completely and carefully because it will help make your project set-up and your stay in Fort Collins easier and more enjoyable.

Remember that the Colorado Science & Engineering Fair is a three-day event! You are required to sign the CSEF Finalist Verification Form agreement that states you will be present for Thursday's judging, Friday night's Awards Ceremony, and Saturday morning’s public and media viewing. For those needing to be excused from any portion of this event for religious reasons or another school event, I must receive a written permission (name of finalist, date/time excused, reason for absence, and parent signature) from a parent/guardian prior to March 31, 2018 at the address listed below. If for any reason you decide not to participate in this year's CSEF, please notify your Regional Science Fair Director as soon as possible so an alternate Finalist can participate in the CSEF.

Your entire science and engineering fair experience is not only about hard work, dedication, and competition, but also comraderie, creativity, and education. You will also have the opportunity to meet other students who are pursuing the fields of science and engineering. In addition to meeting your colleagues, you will have the chance to chat with working engineers and scientists from many corporations and organizations in Colorado.

Please remember that we are here for you. If you have any questions, please do not hesitate to contact me. I am looking forward to meeting you in April.

Sincerely,

Courtney Butler
CSEF Director
Colorado State University
Campus Delivery 1802
Fort Collins, CO 80523-1802
Phone: (970) 491-7716
FAX: (970) 491-2005
email: courtney.butler@colostate.edu
CSEF Registration Deadlines

CSEF Finalists should complete their online registration (www.csef.colostate.edu/Students) **immediately** after being chosen by your Regional Science Fair. Failure to register by the deadline listed below for your regional science fair may forfeit your spot in this year’s Colorado Science & Engineering Fair competition. ALL registration forms and ISEF or CSEF Middle School forms MUST be submitted to your Regional Fair Director at this time as well.

ALL CSEF Finalists MUST submit their abstracts online through the same web site by March 9th. Failure to do so will compromise your project’s review by the judging captains.

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<td>Held in La Junta, CO on Feb 20 – 22, 2018</td>
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<td>Dol Nath Khanal &amp; Warren McClure – RSF Co-Directors <a href="mailto:dol.khanal@ojc.edu">dol.khanal@ojc.edu</a> or <a href="mailto:warren.mcclure@ojc.edu">warren.mcclure@ojc.edu</a></td>
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<td>Boulder Valley Regional Science Fair</td>
<td>Held in Boulder, CO on Feb 22 &amp; 24, 2018</td>
<td>March 3, 2018</td>
<td>Marlys Lietz – RSF Director <a href="mailto:marlys.lietz@bvsd.k12.co.us">marlys.lietz@bvsd.k12.co.us</a></td>
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<td>Denver Metro Regional Science Fair</td>
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<td>February 25, 2018</td>
<td>Lin Browning – RSF Director <a href="mailto:linbrowning@centralcoahec.org">linbrowning@centralcoahec.org</a></td>
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<td>East Central Regional Science Fair</td>
<td>Held in Hugo, CO on Feb 28, 2018</td>
<td>March 6, 2018</td>
<td>Will Mallory – RSF Co-Director <a href="mailto:wmallory@genoaahugo.org">wmallory@genoaahugo.org</a></td>
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<td>February 20, 2018</td>
<td>Lori Ball – RSF Director <a href="mailto:lori.ball@unco.edu">lori.ball@unco.edu</a></td>
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<td>Held in Brush, CO on Feb 26 – 27, 2018</td>
<td>March 6, 2018</td>
<td>Darline Miner – RSF Director <a href="mailto:d.miner2@brushschools.org">d.miner2@brushschools.org</a></td>
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<td>Northeast Regional Science Fair</td>
<td>Held in Sterling, CO on Mar 1, 2018</td>
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<td>Sonya Shaw – RSF Director <a href="mailto:shaw1@plainstel.com">shaw1@plainstel.com</a></td>
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<td>Pikes Peak Regional Science Fair</td>
<td>Held in Colorado Springs, CO on Feb 24 &amp; 27, 2018</td>
<td>March 6, 2018</td>
<td>Nancy Hampson – RSF Director <a href="mailto:nehampson@comcast.net">nehampson@comcast.net</a></td>
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<td>March 6, 2018</td>
<td>Sheila Weahkee – RSF Director <a href="mailto:sweahkee@sjboces.org">sweahkee@sjboces.org</a></td>
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<tr>
<td>San Luis Valley Regional Science Fair</td>
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<td>Lucy Adams – RSF Director <a href="mailto:laadams@adams.edu">laadams@adams.edu</a></td>
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<tr>
<td>Southeast Regional Science Fair</td>
<td>Held in Lamar, CO on Feb 14, 2018</td>
<td>February 21, 2018</td>
<td>Valerie Reifschneider – RSF Director <a href="mailto:valerie.reifschneider@lamarcc.edu">valerie.reifschneider@lamarcc.edu</a></td>
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<tr>
<td>Southern Colorado Regional Science Fair</td>
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<td>March 6, 2018</td>
<td>MorganLee Kempf – RSF Director <a href="mailto:sciencefair@pueblocityschools.us">sciencefair@pueblocityschools.us</a></td>
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<tr>
<td>Western Colorado Regional Science Fair</td>
<td>Held in Grand Junction, CO on Mar 26, 2018</td>
<td>March 5, 2016</td>
<td>Kevin Hoskin – RSF Director <a href="mailto:kevin.hoskin@d51schools.org">kevin.hoskin@d51schools.org</a></td>
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Finalist Schedule

8:30 a.m. – 11:30 a.m. SRC Interviews – Interviews must be done BEFORE a project may be set up.
Room 308/310

9:00 a.m. – 11:00 a.m. Junior and Senior Division Finalist Check-In
Grand Ballroom Foyer

Finalists MUST stay with their exhibit until Display & Safety Inspection has been done and an Official Photo has been taken. Finalists must be out of the exhibit areas by 11:30 a.m.

9:00 a.m. – 11:00 a.m. Tour Ticket Pick-Up & Sales
Room 322

1:30 p.m. – 5:00 p.m. Judging – Students must be at their exhibits for interviews.
Grand Ballroom

Adult Schedule

2:00 p.m. – 2:30 p.m. CSEF Scientific Review Committee Debrief & Discussion
Room 312

2:30 p.m. – 4:30 p.m. Professional Development for Teachers – TBD
Room 312

Judging Schedule

9:15 a.m. – 9:45 a.m. Grand Awards Judge Captains’ Briefing
LSC Theater

10:00 a.m. – 11:00 a.m. Grand Awards Judges’ Briefing
LSC Theater

11:15 a.m. – 12:00 noon Grand Awards Judges’ Luncheon
LSC Theater Lobby

12:15 p.m. – 12:30 p.m. Special Awards Judges’ Briefing
North Ballroom

12:00 noon – 5:00 p.m. Judging
Grand Ballroom

11:30 – 12:30 p.m. Grand Award Judges only may enter the exhibit area. Judges only in the exhibit area.

12:30 – 1:30 p.m. Special Award Judges may enter the exhibit area. Judges only in the exhibit area.

1:30 – 5:00 p.m. Students will be at their exhibits for interviews.

5:30 p.m. Exhibit area is locked. Final judging continues.

Only Judging Captains and SRC Members are permitted in the exhibit area at this time.

Friday, April 6, 2018

10:30 a.m. – 5:00 p.m. CSEF Finalist Exhibits Open to the Public and the Media
Grand Ballroom

9:00 a.m. – 10:00 a.m. Guest Speaker – Dr. Janet McAllister, Centers for Disease Control – Fort Collins
LSC Theater

10:30 a.m. – 3:00 p.m. Tours – Registration is required.

2:00 p.m. Finalist Ballots for Student Choice and Poster Contest are due.
Registration Booth

6:00 p.m. CSEF Awards Ceremony
Timberline Church

Saturday, April 7, 2018

9:00 a.m. – 11:00 a.m. CSEF Finalist Exhibits Open to the Public and the Media
Finalists MUST be at their projects for interaction with the public.
Grand Ballroom

9:00 a.m. – 11:00 a.m. Advisory Council & Regional Fair Directors Meeting – open to all
Room 322

11:00 a.m. – 12:00 noon Pizza Party - Finalists, adult sponsors, & family members are invited.
Finalists must be present to win door prizes!
Grand Ballroom

11:00 a.m. – 1:00 p.m. Exhibit Dismantling - Everything must be removed by 1:00 p.m.
Grand Ballroom

12:00 noon – 2:00 p.m. Board of Directors Meeting – open to all
Room 322
Important Finalist Information – PLEASE READ!!

Updates to this information can be found on the CSEF web site: www.csef.colostate.edu/Students and will be posted through Facebook and Twitter.

Thursday, April 5, 2018

On Thursday, April 5, 2018, activities include setting up projects, display & safety inspections, official photos, and judging interviews by Grand Award and Special Award Judges.

1. **Scientific Review Committee Interviews.** Check the lists posted on the bulletin boards outside of the Grand Ballroom in the Lory Student Center (LSC) to determine if you must see the SRC before setting up your project. We hope to let you know prior to arriving if you need to see the SRC, but this is not always possible.

2. **Registration Packets.** Students should report to the designated area outside the Grand Ballroom to pick up their registration packets and CSEF t-shirt. Registration packets will not be given out if the student has an SRC or payment hold. **Registration payments are due to CSEF by April 1st (either via check or school purchase order)!!!**

3. **Pre-ordered Tickets for Friday's Tours and Presentations.** Pre-registration for the tours will begin on March 19th on the CSEF website. A tentative list of tours and presentations can be found on page 18 of this booklet. We strongly encourage all students to pre-register for tours due to a limited number of spots, however there will be options to sign up on the day of the CSEF.

4. **Display Set-up.** Junior and Senior Division Projects will be in the Grand Ballroom on the third floor of the LSC. **All projects must be in place by 11:00 a.m.**

5. **Display & Safety Inspections.** When you have completed your display set-up, report to the Display & Safety station with the blue Setup Approval Form (see Figure 1) for assignment to a Display & Safety Inspector. Finalists must return to their projects and remain there until the Display & Safety Inspector has checked the project for compliance with CSEF Display & Safety Rules (see page 14 for details).

6. **Official Photos.** Once the project has been cleared by a Display & Safety Inspector, they will place a sticker on the hang tag and you will receive a yellow Photo-Ready Card that you will need to take to the Photography Station to be assigned a photographer. Return to your project and wait for an official photographer to take your picture and place another sticker on your hang tag. **Only after both stickers have been placed on your project hang tag are you free to go to lunch.**

7. **Name Tags.** Be sure to wear your name tag at all times during the CSEF, especially during judging, during the Awards Ceremony, while on tours, and during the public viewing on Saturday.

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Figure 1
Important Finalist Information – PLEASE READ!!

Thursday, April 5, 2018 (cont.)

8. **Judging.** You must be at your project from 1:30 p.m. – 5:00 p.m. for judging interviews on Thursday.
   a. **Grand Award Judging.** All finalists should be interviewed by at least three Grand Award Judges (red-ribboned name tags – Figure 2) by 3:30 p.m. During this first round of interviews, judges have been instructed to place stickers on the project hang tag of each student they interview, but they sometimes forget, so you may politely remind them if necessary. If you feel that you have not been judged by the required number of Grand Award Judges by 3:30 p.m., please report this to a CSEF Volunteer stationed at the door to the exhibit hall. **Informing us of a problem on Friday would be too late for us to do anything about it.**

   b. **Special Award Judging.** Various organizations, universities and companies have sent representatives to act as Special Award Judges (yellow-ribboned name tags – Figure 3) and select projects to receive awards based on criteria relevant to that organization. This means that you will more than likely not be interviewed by the same number of Special Award Judges as your neighbor.

c. **Business Cards and Abstracts.** It is not appropriate or allowable for finalists to hand out business cards or abstracts to judges during the judging session. Please note that judges have access to your electronically submitted abstract via the CSEF website.

d. **Student Advocates.** There will be several individuals roaming the exhibit hall checking in with all of the students. They are there to assist you should you need help or are concerned about an interaction with a judge.

9. **Post-Judging.** Students will be released by a CSEF official once we have word from the Grand Awards and the Special Awards Coordinators that the judges are through with interviews.
   a. **Display & Safety Inspections.** The Display & Safety Team will be re-inspecting all projects Thursday evening after judging and may find items that were missed during the initial inspection that should not be present during public viewing times. A note will be left at your project giving you directions on where to pick up any confiscated items.

   b. **Research Notebooks.** DO NOT remove your research notebook from your display for any reason when leaving after judging. The Scientific Review Committee will be conducting final reviews of forms (especially in the Senior Division for those continuing on to the Intel ISEF) and signing the Approval Form 1B.

c. **Equipment.** Any sensitive equipment you may have used during judging should NOT be left at projects on Friday during the public viewing time. You should take this equipment with you when you leave after judging on Thursday. You can bring it back on Saturday if you want to utilize the equipment when you are talking with visitors.
Important Finalist Information – PLEASE READ!!

Friday, April 6, 2018
On Friday, April 6, 2018 activities include a guest keynote speaker, a series of tours and scientific presentations for the finalists, their sponsors, and families, the awards ceremony and public viewing.

1. **Tours.** For those taking tours of various CSU labs or attending presentations by local scientists – tour guides will be available to lead groups from the LSC to the tour location. Tours will leave the LSC at the time indicated on the tour ticket – DON’T BE LATE!!

2. **Guest Speaker.** This year’s Guest Speaker will be Dr. Janet McCallister from the Centers for Disease Control and Prevention – Fort Collins. The presentation will be from 9 a.m. to 10 a.m. in the CSU Theater at the Lory Student Center.

3. **Student Choice and Poster Art Awards.** You are encouraged to vote for your favorite Junior and Senior Division project and favorite poster art submission (located on the tack board in the foyer outside Grand Ballroom) for next year’s publicity. Ballots can be found in your registration packet and are due to the registration booth by 2 p.m. on Friday.

4. **Awards Ceremony.** The Awards Ceremony will be held at the Timberline Church in Fort Collins and will begin promptly at 6:00 p.m. Due to the vast number of awards given out at this year’s CSEF (over 500 individual awards), the ceremony may take up to 2 ½ hours, so please plan accordingly. Official ceremony photos will be taken of the winners, so please dress nicely for this event. If you can’t attend the ceremony, you may pick up your award from the registration booth Saturday morning, otherwise, they will be mailed to you.

Saturday, April 7, 2018
On Saturday, April 7, 2018 activities include public viewing, door prize drawings, lunch, advisory council meeting and board of directors meeting.

1. **Public Viewing.** You must be at your project from 9:00 a.m. to 11:00 a.m. while the CSEF is open to the public and the media.

2. **Pizza Party!** We will serve pizza and beverages at NO CHARGE to Finalists, sponsors, and families while supplies last just outside the Grand Ballroom.

3. **Door Prizes.** You will receive a door prize ticket, placed in the back of your name tag holder. These will be collected on Saturday morning ONLY, so do not lose it! Finalists must be present to win any of the prizes! Door prize announcements will be made in the Grand Ballroom during the party.

4. **Meetings.** There will be an Advisory Council Meeting to discuss how things went during the CSEF starting at 9:00 a.m. in Room 322. A Board of Directors meeting will begin at 12:00 noon, also in Room 322 to discuss board business and to wrap up the CSEF season. Both are open to the public and comments and suggestions are welcome.

5. **CSEF Surveys.** On-line surveys will be available during and after the CSEF to collect constructive comments and feedback from both student Finalists and adults. Use the flier in your registration packet to gain access to the different surveys.
Thank you for considering volunteering for the 63rd Annual Colorado Science and Engineering Fair being held April 5 – 7, 2018 at the Lory Student Center on the campus of Colorado State University. CSEF has many areas where volunteers are needed. We need help with the following jobs:

Complete Mailing Address:

I would like to volunteer with the following job(s):

- Room Set-Up
  - Thursday, 7 a.m. – 9 a.m.

- Parking Attendants (off site)
  - Thursday, 7 a.m. – Noon (2 ½ hour shifts)

- Tour Ticket Sales
  - Thursday, 8:15 a.m. – 11 a.m.

- Project Drop-Off Aide
  - Thursday, 8 a.m. – 11 a.m. (1 ½ hour shifts)

- Official Photography (taking photos of students at projects)
  - Thursday, 8:15 a.m. – 11 a.m. (must have own digital camera)

- Display & Safety Inspections (checks of student projects)
  - Thursday, 8:15 a.m. – 11 a.m.

- Finalist Check-In
  - Thursday, 8:15 a.m. – 11 a.m.

- Monitoring Exhibit Halls (please mark which day(s) you can help)
  - Thursday, 11 a.m. – 5 p.m. (1 ½ hour shifts)
  - Friday, 10:30 a.m. – 5 p.m. (1 ½ hour shifts)
  - Saturday, 9 a.m. – 11 a.m. (2 hour shift)

- Help at the Awards Ceremony
  - Friday, 5 p.m. – 9 p.m.

- Project Teardown & Clean-up
  - Saturday, 12 noon – 2 p.m.

- Pizza Party
  - Saturday, 10:30 a.m. – 12 noon

- Any job I can help with during these times:

T-shirt Size: ____________

This form can be mailed to the address listed below, emailed to csef@colostate.edu or submitted online at http://www.csef.colostate.edu/Volunteers.htm.

CSEF – Volunteers
Colorado State University
Campus Delivery 1802
Fort Collins, CO 80523 - 1802

Volunteer assignments will be mailed out by March 26, 2018. Thank you for your help.
Note: #1 through #5 are forms that are required for all projects:

1. **2018 Finalist Verification Form** (printed from online registration website) contains permissions for participating in the 2018 CSEF. After submitting the registration information online, print the verification form, obtain the appropriate signatures and submit it along with the other required forms to your Regional Fair Director immediately. Your Regional Fair Director must also sign the form and return it to CSEF by his/her individualized deadline. Each member of a team must register and pay separately – even though all team member names appear on the team leader’s registration form. If your school district or some other organization does not pay the $40 entry fee, you must enclose a check with your Finalist Verification Form. **Registration fees are due to CSEF by April 1st!**

Tips for completing 2018 Online Registration Form:

- Use the Registration Worksheet on page 13 to gather the information you will need to complete the online form. Corrections and additions to the Finalist Registration information may be done by emailing the CSEF Director.
- Please include a home mailing address and non-school email address for the Finalist to ease communications.
- You must provide a valid email address where your Adult Sponsor may receive your Scientific Review Committee (SRC) Review information.
- You must read and sign the Finalist Verification Form. If you have any difficulty with these conditions, please contact Courtney Butler, the CSEF Director, at (970) 491-7716 immediately. Finalists who fail to follow the agreement, without contacting the CSEF Director, may fail to qualify for competition.

2. **CSEF Abstract** (printed from the online registration website) is one of the most critical forms used by the CSEF Judges. The **Original** of this signed form should be the 1st page of your Research Notebook. Send a copy to your Regional Fair Director to be submitted to CSEF with your Finalist Verification Form. Teams should prepare one abstract form with the signatures of all team members. The abstract should be no more than 250 words and should include the purpose of the experiment, a summary of the procedures used, data gathered, and conclusions reached. A copy of this abstract may also be on your display board. (See page 16 of this booklet for sample abstracts. The abstract is not a repeat of your research plan!)
Submission of CSEF and Intel ISEF Forms

3. **Checklist for Adult Sponsor (1)** is required for ALL projects and is used by CSEF SRC to determine if your project is eligible for competition. The ORIGINAL of this form should be the next page of your Research Notebook after the CSEF Abstract. **Give a COPY of this form to your Regional Fair Director.**

4. **Student Checklist (1A)** is used by both the CSEF Judges and the CSEF SRC. The SRC will use this form to determine if your project is eligible for competition at the state science fair level. The ORIGINAL of this form should be the next page of your Research Notebook after the Checklist for Adult Sponsor Form (1). **Give a COPY of this form with a COPY of your Research Plan to your Regional Fair Director to be submitted to CSEF.**

   Common troubles with the Student Checklist (1A):
   - The Project Start Date should be the date that LABORATORY EXPERIMENTAL work began, not when library/Internet research began. Also, all projects must have a Project End Date that is prior to CSEF for competition purposes.
   - Include complete names and physical addresses for all work sites. Work done at a residence should be noted as such (i.e.: Jones’ residence). PO Boxes are NOT worksites!
   - Attach a completed and typed Research Plan that includes your works cited. Be sure to include all information about your experimental design that is relevant. This research plan should be the next page(s) of your Research Notebook after your Student Checklist (1A).

5. **Approval Form (1B)** is used by the SRC to determine if your project is eligible for competition at the state science fair level. The ORIGINAL(S) of this form should be the next page(s) after the Research Plan in your Research Notebook. **Give a COPY of this fully signed form to your Regional Fair Director to be submitted to CSEF.** Members of Team Projects should have one Approval Form (1B) per student.

   Common troubles with the Approval Form (1B):
   - The student and parent MUST both approve this project BEFORE experimentation, so signatures must be obtained BEFORE the experiment's starting date.
   - Please note that the CSEF SRC Chairperson will sign the last line of this original form (in your Research Notebook) during CSEF on Thursday evening – **please leave your research notebook open to this page after judging is over.** This ORIGINAL form should never leave your research notebook.

6. **Other Required Forms** (see Checklist for Adult Sponsor (1)) are used by the SRC to determine if your project is eligible for competition at CSEF. The ORIGINALS of these forms should follow the Approval Form (1B) in your Research Notebook. **Give COPIES of these forms to your Regional Fair Director.**

7. **The title page and the rest of your Research Notebook** should follow these forms.

---

**REMEMBER!**
CSEF will keep all the copies of your forms that you submit to your Regional Fair Director.
Keep ORIGINALS in your Research Notebook at all times.
NEVER send original forms, send only COPIES!
2018 CSEF Online Registration Instructions

All CSEF Finalists are required to register online at www.csef.colostate.edu/Students.html. CSEF Finalists should complete their online registration immediately after being chosen by their Regional Science Fair. Failure to register by the regional science fair registration deadline listed on page 4 will forfeit your spot in the CSEF. The following are the steps to follow IN ORDER for a successful registration process:

1. Use the Online Registration Worksheet on page 13 to gather the information you will need to complete the online form.
2. Enter all information completely on the above website, and pay close attention to required fields as the form will not submit if these are not entered properly.
3. Once you have completed the Registration Form, click the submit button at the end of the form. This will take you to the Finalist Registration Review page. Check over the information you have submitted. Corrections must be emailed to the CSEF Director - DO NOT resubmit a new form!! If you experience technical difficulties with the registration process, contact the CSEF Director at courtney.butler@colostate.edu or 970-491-7716 immediately.
4. At the bottom of the review page, you will see a link to the Finalist Verification Form – YOU MUST PRINT THIS FORM!!!
5. Sign the Finalist Verification Form and have your Adult Sponsor and Parent/Guardian read and sign it as well.
6. Enter your abstract online through the links from the Finalist Information page of the website at [http://www.csef.colostate.edu/Students.html](http://www.csef.colostate.edu/Students.html). Abstracts must be submitted by March 9th in order for them to be reviewed by the judging captains.
7. Submit the abstract.
8. Print a copy of your abstract and sign it.
9. Turn in COPIES of the following forms to your Regional Fair Director along with the $40/STUDENT registration fee:
   - 2018 Finalist Verification Form
   - 2018 CSEF Abstract Form (either Individual or Team)
   - Checklist for Adult Sponsor Form 1
   - Student Checklist Form 1A
   - Research Plan
   - Approval Form 1B
   - All other ISEF forms required for your type of project

Tips for completing the online registration form:

- Use the TAB key to move between fields. DO NOT USE THE ENTER key as this will submit the form prematurely.
- Answer all questions completely.
- DO NOT use all capitals.
- Each Regional Science Fair is linked to a number given in parenthesis next to the name. This number is what is entered into the database and what you will see on the Registration Verification Form.
- The Adult Sponsor entered MUST be the person who signed the Checklist for Adult Sponsor Form 1. If the Adult Sponsor is someone different from your science teacher, and you would like your science teacher notified of your SRC Determination, please give us the name of your science teacher and his/her email address as well.
- Project Titles are limited to 90 CHARACTERS ONLY! The database will not accept anything past the 90 character limit.
- The portion in red under Project Information (Section #3) is for Team Leaders ONLY!!! Finalists with individual projects or non-team leaders DO NOT need to fill in this information.
- The question regarding ethnicity is COMPLETELY OPTIONAL. This information is for some of our Special Awards Judges to use in identifying Finalists who might be eligible for their award.
CSEF Online Registration Worksheet

This worksheet is provided to Finalists to aid in gathering the information you will need to complete the online registration form. The items that are starred (*) are required and the system will not let you submit the registration form until they are answered. This is only a WORKSHEET and NOT the Finalist Verification Form required for registration.

*Name of Regional Science Fair:__________________________________________________________

1. FINALIST INFORMATION:
   a. *Name:_________________________________________ Pronunciation:_____________________
   b. *Gender: Male/Female *Grade Level:____________________
   c. Ethnicity:________________________________ (OPTIONAL)
   d. *Mailing Address:___________________________________ *City:________ *Zip Code:____
   e. Home Phone:_________________________ *Student’s email:_____________________
   f. *School Name & City:
   g. *T-shirt Size(adult sizes): ☐ Small ☐ Medium ☐ Large ☐ Extra Large
   h. List the colleges to which you have applied or plan to apply (for High School Juniors & Seniors only):

2. PROJECT ADULT SPONSOR INFORMATION:
   a. *Adult Sponsor’s First & Last Name: Mr./Mrs./Ms./Dr._________________________________
      ☐ Finalist’s parent/guardian ☐ Finalist’s teacher ☐ Mentor ☐ Other:________________________
   b. School/Institution Name:____________________________________________________________
   c. Mailing Address:________________________ City:________ Zip Code:________
   d. Phone:_____________ FAX:_____________ *email:________________________
   e. Science Teacher:______________________ Teacher’s email:__________________________
   f. *Parent’s Name:________________________ *Parent’s email:________________________

3. PROJECT INFORMATION:
   a. *Title of Project (DO NOT use all capital letters; 90 character limit):
   b. *Individual/Team: ☐ Individual Project ☐ Team Project Leader ☐ Team Project Member
      Team Leaders will need to have the following information for each of their team members:

      | Team Member 1 | Team Member 2 |
      |----------------|--------------|
      | Name | Name |
      | Grade Level | Grade Level |
      | T-shirt Size (S, M, L, XL) | T-shirt Size (S, M, L, XL) |
   c. *Category:______________________________________________________________
   d. Exhibit Specifications (check all that apply):
      ☐ Exhibit sets on a table (provided by CSEF) ☐ Exhibit is set on the floor
      ☐ Electricity is needed
   e. Is this a continuation from a previous year? ☐ Yes ☐ No
   f. Project Type (check ALL items that apply to your research):
      ☐ Human Subjects used. ☐ Potentially Hazardous Biological Agents used.
      ☐ Microorganisms ☐ rDNA ☐ Tissues
      ☐ Vertebrate Animals used. Number of animals:___________ Number of deaths:___________
      ☐ Hazardous Chemicals, Activities or Devices used.
      ☐ None of these apply.
CSEF Display & Safety Guidelines

The Display & Safety Committee will be reviewing ALL projects after they have been set up on Thursday. No changes can be made to the display once the official inspection is completed. Please review this list of restrictions, and plan your exhibit accordingly. This is required by CSEF for the safety of other students and the public.

Display Guidelines

Physical Exhibit:
The dimensions of ALL project materials may not exceed 108” high, 48” wide and 30” deep and nothing can be set in front of the table.

Research Notebook:
These forms MUST be present in the notebook. It’s highly recommended that they be ordered as follows:
1. Signed CSEF Abstract form
2. Signed Checklist for Adult Sponsor Form 1
3. Student Checklist Form 1A
4. Research Plan
5. Signed Approval Form 1B
6. All other pertinent forms

Photography/Images:
Display of photographs other than that of the finalist(s) MUST have a photo release signed by the subject, and if under 18, also by the guardian of the subject.

ALL photos, visual images, charts, tables and graphs MUST be credited as to who took or created them. Also, photographs, images, charts, tables and/or graphs are allowed IF:
1. It is not deemed offensive or inappropriate (which include images/photos showing vertebrate animals/humans in surgical, necrotizing or dissection situations) by the SRC, Display & Safety Committee or CSEF.
2. It is from the Internet, magazine, newspaper, journal, etc. and a credit line is attached. NOTE: images used as backgrounds must also be credited.
3. It is a photograph or visual depiction of the finalist.
4. It is a photograph or visual depiction for which a signed consent form is at the project.

Items NOT Allowed to be Displayed at the Project:
1. Any items (CDs, business cards, printed material, patent pending statements, flash drives, brochures, booklets, or any other giveaway material) that are acknowledgements, self-promotions or external endorsements.
2. Postal addresses, Internet, email and/or social media addresses, QR codes, telephone and/or fax numbers of a finalist.
3. Active internet or email connections as part of the display or operating the project.
4. Prior year’s written material or visual depictions on the vertical display board (exception: the project title may mention which year the project is in)

Safety Guidelines

Items NOT Allowed at the Project Display:
1. Living organisms, including plants
2. Soil, sand, rock, and/or waste samples
3. Taxidermy specimens or parts
4. Preserved vertebrate or invertebrate animals
5. Human or animal food
6. Human or animal parts or body fluids
7. Plant materials (living, dead or preserved) that are in their raw, unprocessed or non-manufactured state (Exception: manufactured construction materials used in building the project or display)
8. All chemicals including water (projects may NOT use water in any form in a demonstration)
9. All hazardous substances or devices (i.e.: poisons, drugs, firearms, weapons, ammunition, reloading devices, lasers, etc.)
10. Items that may have contained or been in contact with hazardous chemicals
11. 3-D printers
12. Dry ice or other sublimating solids
13. Sharp items (i.e.: syringes, needles, pipettes, knives, etc.)
14. Flames or highly flammable materials
15. Batteries with open-top or wet cells
16. Glass or glass objects unless deemed by the Display & Safety Committee to be an integral and necessary part of the project
17. Lasers or laser pointers
18. Any apparatus deemed unsafe by the Scientific Review Committee, the Display & Safety Committee or CSEF

Other Safety Restrictions:
1. Any inadequately insulated apparatus producing extreme temperatures that may cause physical burns is not allowed.
2. Any apparatus with unshielded belts, pulleys, chains, or moving parts with tension or pinch points must be for display only.
3. Project sounds, lights, odors or any other display items must not be distracting.
4. CSEF, the Display & Safety Committee, and/or the Scientific Review Committee reserve the right to remove any project for safety reasons or to protect the integrity of the CSEF and its rules and regulations.
CSEF Category Descriptions

**Animal Sciences:** ● Studies related to all aspects of non-human animals (including insects), animals life, animal life-cycles, animal health and medicine, animal behavior, and animal interactions with one another or their environment.

**Behavioral & Social Sciences:** ● Studies related to the thought processes and behavior of humans and their interactions with the environment as studied through observational and experimental methods.

**Biochemistry & Chemistry:** ● Studies related to the chemical basis of processes occurring in living organisms, including the processes by which these substances enter into, or are formed in the organisms and react with each other and the environment. ● Studies related to the composition, structure, properties, and reactions of matter

**Earth & Space Sciences:** ● Studies related to Earth systems and their evolution. ● Studies related to anything in the universe beyond Earth.

**Energy & Transportation:** ● Studies related to biological and chemical processes of renewable energy sources, clean transport, and alternative fuels. ● Studies related to renewable energy structures and processes including energy production and efficiency.

**Engineering:** ● Studies related to electrical systems in which information is conveyed via signals and wave forms for the purpose of enhancing communications, control, and/or sensing. ● Studies related to science and engineering that involves movement or structure. The movement can be by the apparatus or the movement can affect the apparatus. ● Studies related to the characteristics and uses of various materials with improvements to their design which may add to their advanced engineering performance. ● Studies related to the use of machine intelligence to reduce the reliance on human intervention. ● Studies related to the application of engineering principles and design concepts to medicine and biology for healthcare purposes including diagnosis, monitoring, and therapy.

**Environmental Sciences:** ● Studies related to the environment and its effect on organisms/systems, including investigations of biological processes such as growth and life span. ● Studies related to the engineering or development of processes and infrastructure to solve environmental problems in the supply of water, the disposal of waste, or the control of pollution.

**Mathematics & Computer Sciences:** ● Studies related to the measurement, properties, and relationships of quantities and sets, using numbers and symbols. ● Studies related to the discipline and techniques of computer science and mathematics as they relate to biological systems. ● Studies related to the development of software, information processes, or methodologies to demonstrate, analyze, or control a process/solution.

**Medicine & Health:** ● Studies related to the issues of human health and disease. ● Studies related to the improvement of human health and longevity by translating novel discoveries in the biomedical sciences into effective activities and tools for clinical and public health use.

**Microbiology & Molecular Biology:** ● Studies related to micro-organisms. ● Studies related to the structure, function, intracellular pathways, and formation of cells. ● Studies involve understanding life and cellular processes at the molecular level.

**Physics:** ● Studies related to the science of matter and energy and of the interactions between the two.

**Plant Sciences:** ● Studies related to plants and how they live, including structure, physiology, development, and classification.
Sample Abstracts

The abstract is one of the most important pieces to your project. This is what the Grand Award Judging Captains use to determine whether you are in the right category before you even arrive at the science fair. The Special Awards Judges use the abstracts as a way to filter out the Finalists they want to interview, based on the criteria of the awards they have to present. The following are two excellent examples of abstracts written by your peers with the parts identified.

**Gone with the Wind:**

*The Horseshoe Vortex Behind Tree Islands on Pikes Peak and Its Impact on Tree Growth*

Kathryn Kummel, Grade 8 © 2017

Organisms living in extremely harsh conditions, such as trees at treeline, help each other by changing the habitat to their benefit. At treeline this facilitation can distribute trees into “islands” which change the airflow and create favorable microclimates. Fluid moving around an object creates a vortex on the downstream side. This vortex should lead to slow wind speeds, higher air residence time, and warmer microclimate. My study examined the airflow around a tree island model, tree islands at treeline, the resulting microclimates, and their impact on tree growth.

Using a drag tank and a tree island model, a fast stream of air (v/v_ambient=207.6%) was found over the trees and eddy. The layer right below the fast stream was slower (v/v_ambient=57.6%). Immediately behind the tree island, this difference in velocity created an updraft (v/v_ambient=66.4%) by the Bernoulli principle. This created a backflow (v/v_ambient=83.1%). In the field, air speeds decrease slightly as the air moves towards the island, behind the island is a sheltered zone where wind speeds don’t exceed 5% of the ambient value. The wind speed returned to normal 20m behind the island. Air temperature in the sheltered area was 1.7 times that of ambient air. These findings were replicated at five tree islands and likely are general characteristics of tree islands.

The warmer and calmer conditions at the leeward sides of the tree islands create better tree growth, as predicted by the theory of facilitation. Applications of these findings are in agriculture, where ameliorating climate may increase yield.

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**Worse Outcomes in Turner Syndrome Women Compared to Women Without Turner Syndrome**

Isani Singh, Grade 11 © 2017

The goal of this study was to compare hospitalization outcomes in women with Turner Syndrome (TS), the condition of missing the second X chromosome, and non-TS women. It was hypothesized that TS patients would have higher mortality and length of stay while having a lower likelihood of being discharged to home, independent of the reason they were hospitalized.

TS cases and comparable controls were acquired from a database of hospitalizations. TS women were matched 1:4 to controls based on primary diagnosis code, which is used to indicate why a patient was hospitalized. The study population included 14,890 women (2978 TS), making it one of the largest studies ever done on TS. Adjusted multivariate conditional logistic regression models were used for analysis.

TS patients were 44% more likely to die compared to matched controls (Odds Ratio (OR):1.44, 95% Confidence Interval (CI):1.02-2.02, p=0.04). TS patients were also more likely to have a longer than average length of stay (OR=1.42, 95% CI:1.03-1.95, p=0.03). TS patients were 32% less likely to be discharged to home (OR=0.68, 95% CI:0.60-0.78, p=0.0001). Outcomes were worse for TS patients when solely analyzing patients admitted for a cardiac indication. Cardiac TS patients were 210% more likely to die compared to matched controls (OR=3.10, 95% CI:1.27-7.57, p=0.01).

This study will enable clinicians to be aware that hospitalized patients with TS carry a higher risk of adverse outcomes even when presenting with the same diagnosis as non-TS patients (adjusting for age, race, and other factors), particularly when hospitalized for cardiovascular diseases.
Sample Works Cited

The following are acceptable formats for different types of references that might be used in researching a science fair project topic.

Books:

**Format:**
Author’s Last Name, First Initial.  (Year Published).  *Book Title*.  City of Publication:  Publishing Company.

**Examples:**

Article in an Edited Book:

**Format:**
Author’s Last Name, First Initial.  (Year Published).  Article Title.  In Editor’s Name (Ed.), *Book Title* (Page Number(s)).  City of Publication:  Publishing Company.

**Example:**

Journal Articles:

**Format:**
Author’s Last Name, First Initial.  (Year Published)  Article Title.  *Journal Name*, Volume Number, Page Number(s).

**Examples:**

Articles in a Magazine or Newspaper:

**Format:**
Author’s Last Name, First Initial.  (Date Published).  Article Title.  *Publication Name*, Volume Number, Page Number(s).

**Examples:**

Electronic Sources:

**Format:**
For Internet articles that are based on a print source, use the appropriate style above and add Retrieved Date, from Web site to the end of the citation.  For Internet only sources, use the following:

Web Site Author.  *Web Site Title*.  (Date Published).  Retrieved Date Retrieved, from Web site URL.

**Examples:**

Personal Communications:

**Format:**
Interviewee Name.  Interviewee Area of Expertise or Affiliation.  Place of Interview:  Date(s) of Interview.

**Examples:**
Swart, Randy.  Director, Bicycle Helmet Safety Institute.  Via telephone:  2/21/05.
CSEF Tour/Presentation Information

Tour Registration
The tour registration form can be found only online at http://www.csef.colostate.edu/Tours.htm. All tours will be filled on a first-come, first-served basis. Pre-ordering will begin on March 19th and continue until April 1st.

Pick-up and Payment
Tickets can be picked up in Room 322 of the Lory Student Center. Pre-registered tickets may NOT be exchanged and payment is due at the time of pick-up. Cost for all tours/presentations is $1/ticket – exact change is preferred.

Cancellation and Refunds
No refunds will be made for tour tickets unless a tour is cancelled. If you have purchased a ticket and cannot go on that tour, you may sell the ticket to another individual.

Tour Departures
All tours and presentations will take place on the CSU campus. Tour groups will leave the Lory Student Center at the time designated on the tour ticket. It is suggested that you arrive at the departure room at least 10 minutes early. Volunteers will be on hand to lead the group to the tour destination. If the tour guide is not there at least 5 minutes before the designated leave time, please let someone know at the registration both outside of the Main Ballroom ASAP! Presentations being held in the Lory Student Center will begin at the time designated on the tour ticket – you should arrive at least 10 minutes early for these as well.

Tentative List of Tours
The following is a PROPOSED list of tours/presentations being offered at the 2018 CSEF. For an updated list and full descriptions, please visit the Tour web site at http://www.csef.colostate.edu/Tours.htm after March 1st.

- Anatomy/Physiology Lab
- Central Instrument Facility & Electron Microscopy Demo
- CSU Campus Tours
  - EcoCar3
  - Get Critical!
  - Guppy Lab
- Journey Through Space & Time in 3D
- Medical Mysteries
- Muscles Alive!
- Museum of Arthropod Biodiversity
- National Center for Genetic Resources Preservation
- Patents – How do they work and do I need one?
- Serious Fun with Mathematics
- Star Lab
- Sustainable Campus Tour
- The Last Flight of 746 (Forensic Sciences)
- Veterinary Medicine
- What is “Machine Learning” and will it lead to real intelligence?
## Things to do in Fort Collins

### Museums:
- **Fort Collins Museum of Art**
  - 201 South College Avenue
  - (970) 382–2787
  - ftcmoa.org
- **Museum of Discovery**
  - 408 Mason Court
  - (970) 221-6738
  - fcmod.org
- **Global Village Museum**
  - 200 West Mountain Avenue
  - (970) 221-4600
  - globalvillagemuseum.org
- **Swetsville Zoo**
  - 4801 East Harmony Road
  - (970) 484-9509
- **The Farm at Lee Martinez Park**
  - 800 North Sherwood Street
  - (970) 221-6665
  - fcgov.com/recreation/thefarm.php
- **Downtown Artery**
  - 252 Linden Street
  - (970) 682-2668
  - downtownartery.com
- **The Lincoln Center**
  - 417 West Magnolia Street
  - (970) 221-6730
  - lctix.com/exhibitions
- **University Art Museum**
  - 1400 Remington Street
  - (970) 295-6700
  - artmuseum.colostate.edu

### Fun and Games:
- **Fort Collins Escape Room**
  - 4025 South Mason Street
  - (970) 530-3000
  - fortcollinescaperoom.com
- **Fort Fun**
  - 1513 East Mulberry Street
  - (970) 472-8000
  - fortfun.biz
- **Fly High Trampoline Park**
  - 218 Smokey Street
  - (970) 305-5300
  - flyhightrampolinepark.com
- **Chipper’s Lanes**
  - 217 West Horsetooth Road
  - (970) 226-6327
  - chipperslanes.com
- **Rollerland Skate Center**
  - 324 South Link Lane
  - (970) 482-0497
  - rollerlandskeatecenter.com
- **Somewhere Secret**
  - 222 Walnut Street
  - (970) 235-1199
  - somewheresecret.com

### Tours:
- **Fort Collins Tours**
  - 19 Old Town Square
  - (970) 372-1445
- **Magic Bus Tours**
  - 2425 Farghee Court
  - (970) 420-0662
  - themagicbustours.com

### Historic Old Town:
- **Nature’s Own**
  - 201 Linden Street
  - (970) 484-9701
  - naturesown.com
- **Rocket Fizz**
  - 123 North College Avenue #180
  - (970) 493-9464
  - rocketfizz.com
- **Halley’s Comics**
  - 322 Walnut Street
  - (970) 221-2878
- **Curiosities**
  - 242 Walnut Street
  - (970) 495-0684
  - curiosities.biz

### Outside Activities:
- **Parks**
  - fcgov.com/parks/map/
- **Hiking**
  - www.co.larimer.co.us/naturalresources/parkareas.htm
- **Environmental Learning Center**
  - 2400 South County Road 9
  - (970) 491-1661
  - csuelc.org

### Theatre:
- **The Lincoln Center**
  - 417 West Magnolia Street
  - (970) 221-6730
  - lctix.com/shows
- **Bas Bleu Theatre Company**
  - 401 Pine Street
  - (970) 498-8949
  - basblue.org
- **Candlelight Dinner Playhouse**
  - 4747 Marketplace Drive, Johnstown, CO
  - (970) 744-3747
  - coloradocandlelight.com

[Visit Fort Collins](www.visitftcollins.com)
Judging at the Colorado Science & Engineering Fair

Over 200 professional scientists and engineers volunteer to interview the Finalists for the CSEF Grand Awards. They form 24 Grand Award Judging Teams that interview Finalists in each of the categories in both the Junior and Senior divisions. The captains of each judging team form the Best of CSEF Project Judging Team that determines the top five Senior Division and top three Junior Division project winners.

Over 175 professionals volunteer to interview the Finalists for Special Awards presented by the company or professional organization they represent. Each Special Award Organization has its own criteria for presenting awards and will not necessarily visit every project within a given category. To see what Special Awards Judges are looking for in projects, please visit the CSEF website at http://www.csef.colostate.edu/Special_Awards_Category.htm.

What are the judges looking for?
Judges will examine your project very carefully to confirm the correctness of all research. This is an educational experience for BOTH the Finalist and the interviewer. It is their job to find out how much YOU know about your project. They do this by asking you questions to learn more about your work. You will be evaluated on how well you ACTUALLY DID your project compared to how well you COULD have done it.

Projects are judged on the following:
- The quality of the work done; how well do you understand the project and subject area?
- How the project involves laboratory, field or theoretical work – not just library research or gadgeteering.
- How the project compares with other projects in the same category and division at the state level.

In particular, judges evaluate:
- how well a student followed the scientific method or reached the engineering, mathematics or computer science goals;
- the detail and accuracy of the research data book; and
- whether the experimental procedures were used in the best possible way.

Judges look for well thought-out research. They look for how significant your project is in its field, as well as how thorough you were. Did you leave something out? Did you start with four experiments and finish only three?

The judges applaud those students who can speak freely and confidently about their work. They are not interested in memorized speeches; they simply want to TALK with you about your research to determine if you have a good grasp of your project, such as “What didn’t you do?” or “What would be your next step?”

Grand Award Judging Criteria – The decision of the judges is final.
Evaluation of projects is done on work performed by exhibitors, not on the value of accessory equipment either borrowed or purchased.

Creative Ability: Creative research should support an investigation and help answer a question in an original way.

Scientific Thought/Engineering, Mathematics or Computer Science Goals: Is the problem/objective stated clearly and unambiguously? Was the problem sufficiently limited to allow a plausible approach? Was there a procedural plan for obtaining a solution? Are the variables clearly recognized and defined? Is there adequate data to support the conclusions? Is the solution a significant improvement over previous alternatives?

Thoroughness: Was the purpose carried out to completion within the scope of the original intent? Are the conclusions based on a single experiment or replication? How complete are the project notes?

Skill: Does the student have the required laboratory, computation, observational, and design skills to obtain supporting data? Where was the project performed? Was the project completed under adult supervision, or did the student work largely alone?

Clarity: How clearly does the student discuss the project and explain the purpose, procedure, and conclusions? How well does the project display explain the project? Are important phases of the project presented in an orderly manner?

Teamwork: Are the tasks and contributions of each team member clearly outlined? Was each team member fully involved with the project, and is each member familiar with all aspects? Does the final work reflect the coordinated efforts of all team members?
CSEF Special Awards

Technical Writing Awards

The CSEF has two technical writing awards, one for a senior division participant and one for a junior division participant. The Senior Division award is named in memory of Ralph Desch, a former board member, one of the driving forces in the Colorado Science and Engineering Fair, a technical writer, and an employee of the National Bureau of Standards. The Junior Division award is named after Elemer Bernath, one of the founders of the Colorado Science and Engineering Fair and current CSEF Historian.

To be considered for either award, you must prepare a technical report as if you were planning to be published in a scientific or technical journal. This is separate from your project write-up. The winners receive a $100 cash award.

Technical reports may differ in their organization, but the following format is typical:

I. Introduction – includes a literature review (with appropriate citations) and the research questions/objectives/hypotheses

II. Method – explains how the data were collected, analyzed, and interpreted

III. Results – presents data, usually in tables and/or figures, including a brief narrative reviewing the key findings

IV. Discussion – explain key findings, and interpret data and graphs; other literature relevant to the results, and acknowledgements of limitations of the study are also included here

V. Conclusions

VI. References – includes literature cited in the paper, not the works cited in the project on the topic

VII. Appendix

Judges for this award assess the technical quality of the report-- the organization and quality, including correct grammar, spelling, mechanics, format, layout, etc. If you have a sample article from the scientific or technical journal in which you aspire to be published, it is helpful to include that as well.

Students wishing to be considered for this award must indicate this on their registration form and submit an electronic copy of the report via email to the CSEF Director at courtney.butler@colostate.edu by April 1st.

Student Choice Awards

The Colorado Science and Engineering Fair provides awards for Finalists to choose your favorite Junior Division project and Senior Division project. Ballots are provided in your Registration Packet when you check-in on Thursday. Each winner will receive $100 and a trophy. Be sure to vote!

Pioneers of Science Awards

The Board of Directors of the Colorado Science and Engineering Fair understands the hard work and dedication that goes into completing a research project of the caliber it takes to become a CSEF Finalist and congratulates all of you. Each year, board members meet certain students who are impressive in regards to their enthusiasm and hard work as they take their initial steps into the world of scientific research. These students have demonstrated sufficient promise in their research that the members of the Board of Directors have chosen to recognize them for following in the footsteps of the great pioneers of science, mathematics, and engineering.
Other Special Awards

The David Young Award for the Best Use of Statistics

This is a statistical award named in the memory of David Young from the University of Colorado at Denver, Department of Medicine and Biometrics and presented by the Colorado/Wyoming Chapter of the American Statistical Association. David’s skills in both science and statistics allowed him to collaborate with medical investigators at the University of Colorado and help communicate results. In this spirit, this award is presented for the best use of statistics in a science project.

To be considered for this award, you must submit a copy of a single graph or table from your project along with a paragraph describing its significance. Judges will be looking at this document along with viewing the project, so background information is not critical. Winners from each division will be awarded $150, a student membership in the American Statistical Association, and acknowledgement in AMSAT News. The winners will also be given the opportunity to give a brief presentation of their results at the ASA chapter’s Spring Meeting at the National Center for Atmospheric Research in Boulder.

Each project will be selected based on the following:

- Were statistical issues considered in the design of the experiment? Examples of such issues include: estimating sample sizes, controlling for possible confounding variables or calculating confidence intervals.
- Were appropriate graphics used to present and interpret the results?
- Was a statistical test used to draw conclusions about the data collected during the experiment? Examples of statistical test are the t-test and analysis of variance.
- Can the student explain the results within a statistical context? How likely are the results a matter of chance?

Broadcom MASTERS

The Broadcom MASTERS (Math, Applied Science, Technology and Engineering for Rising Stars) is a competition for 6th, 7th and 8th grade students who complete a science, engineering or math project, enter it into competition at an SSP-affiliated fair and are nominated to compete in the national competition.

Nominees will enter the competition by completing an online application where they will be asked to explain their science project and to evaluate their use of STEM principles – science, technology, engineering and math – in the development and presentation of their project.

From the national entrants, 300 Semifinalists will be selected along with 30 Finalists who win an all-expense paid trip to Washington, DC, where they will compete for awards and prizes, including the top education award of $25,000 presented by the Samueli Foundation, a gift of Susan and Henry Samueli, a founder of Broadcom Corporation.
24th Annual Poster Art Contest
Invitation to Enter

This contest is not a requirement, but if you wish to enter artwork in the poster contest, please follow these guidelines:

- Poster designs must represent some aspect of science, engineering, and/or mathematics.
- Black and white illustrations only (ink is preferred); no color entries.
- Design area is limited to 8” wide by 10.5” tall.
- Student collaborations (up to two students) on poster designs is permitted.
- Print your name and school name on the back of your entry in pencil.
- Entries must include the following information about the fair prominently displayed somewhere in the design (preferably in an area where we can digitally enhance this information):

  **Colorado Science and Engineering Fair**
  For Colorado Students in Grades 6 to 12
  Hosted by the College of Natural Sciences Education Outreach Center
  At Colorado State University
  Fort Collins, Colorado
  April 11 – 13, 2019

- Submit your entries at the CSEF registration booth on Thursday, April 5, 2018.
- The Poster Art Contest is open to any Colorado student in grades 6 to 12.

All entries that meet these guidelines will be considered. The winner will receive a $100 cash award, and the design will be used on the 2019 Colorado Science and Engineering Fair posters.

The winner will be announced at the 2018 Awards Ceremony on Friday, April 6, 2018.
The following is a list of hotels in Fort Collins and their contact information. This list does not constitute an endorsement of any of the hotels/motels listed, it is simply done to aid those who need to stay in Fort Collins overnight. More information about the city can be found at http://www.ftcollins.com/.

<table>
<thead>
<tr>
<th>Hotel Name</th>
<th>Address</th>
<th>Phone</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td>Americas Best Value Inn</td>
<td>1809 North College Avenue</td>
<td>970-484-2764</td>
<td><a href="http://www.americasbestvalueinn.com">www.americasbestvalueinn.com</a></td>
</tr>
<tr>
<td>Best Western Kiva Inn</td>
<td>1638 East Mulberry Street</td>
<td>970-484-2444</td>
<td><a href="http://www.bestwestern.com/kivainn">www.bestwestern.com/kivainn</a></td>
</tr>
<tr>
<td>Best Western University Inn</td>
<td>914 South College Avenue</td>
<td>970-484-2984</td>
<td><a href="http://www.bwui.com">www.bwui.com</a></td>
</tr>
<tr>
<td>Budget Host Inn</td>
<td>1513 North College Avenue</td>
<td>970-484-0870</td>
<td><a href="http://www.budgethost.com">www.budgethost.com</a></td>
</tr>
<tr>
<td>Cambria Suites</td>
<td>2921 East Harmony Road</td>
<td>970-267-9000</td>
<td><a href="http://www.cambriasuites.com">www.cambriasuites.com</a></td>
</tr>
<tr>
<td>Clarion Inn</td>
<td>3636 East Mulberry Street</td>
<td>970-484-4660</td>
<td><a href="http://www.choicehotels.com/clarion">www.choicehotels.com/clarion</a></td>
</tr>
<tr>
<td>Comfort Inn</td>
<td>601 SW Frontage Road</td>
<td>970-407-0100</td>
<td><a href="http://www.comfortinn.com">www.comfortinn.com</a></td>
</tr>
<tr>
<td>Comfort Suites</td>
<td>1415 Oakridge Drive</td>
<td>970-237-5106</td>
<td><a href="http://www.comfortsuites.com">www.comfortsuites.com</a></td>
</tr>
<tr>
<td>Courtyard Fort Collins</td>
<td>1200 Oakridge Drive</td>
<td>970-282-1700</td>
<td><a href="http://www.marriott.com">www.marriott.com</a></td>
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<tr>
<td>Days Inn</td>
<td>3625 East Mulberry</td>
<td>970-237-5277</td>
<td><a href="http://www.daysinn.com">www.daysinn.com</a></td>
</tr>
<tr>
<td>Fort Collins Marriott</td>
<td>350 East Horsetooth Road</td>
<td>970-226-5200</td>
<td><a href="http://www.marriott.com">www.marriott.com</a></td>
</tr>
<tr>
<td>Hampton Inn</td>
<td>1620 Oakridge Drive</td>
<td>970-229-5927</td>
<td>hamptoninn.hilton.com</td>
</tr>
<tr>
<td>Hilton Fort Collins</td>
<td>425 West Prospect Road</td>
<td>970-482-2626</td>
<td>www3.hilton.com</td>
</tr>
<tr>
<td>Hilton Garden Inn</td>
<td>2821 East Harmony Road</td>
<td>970-225-2900</td>
<td><a href="http://www.hiltongardeninn3.hilton.com">www.hiltongardeninn3.hilton.com</a></td>
</tr>
<tr>
<td>Holiday Inn Express</td>
<td>1426 Oakridge Drive</td>
<td>970-225-2200</td>
<td><a href="http://www.hiexpress.com">www.hiexpress.com</a></td>
</tr>
<tr>
<td>Homewood Suites</td>
<td>1501 Oakridge Drive</td>
<td>970-225-2400</td>
<td>homewoodsuites3.hilton.com</td>
</tr>
<tr>
<td>La Quinta Inn</td>
<td>3709 East Mulberry Street</td>
<td>970-493-7800</td>
<td><a href="http://www.lq.com">www.lq.com</a></td>
</tr>
<tr>
<td>Motel 6</td>
<td>3900 East Mulberry Street</td>
<td>970-482-6466</td>
<td><a href="http://www.motel6.com">www.motel6.com</a></td>
</tr>
<tr>
<td>American Best Value Inn &amp; Suites</td>
<td>4333 East Mulberry Street</td>
<td>970-493-9000</td>
<td><a href="http://www.redlion.com/fort-collins-east">www.redlion.com/fort-collins-east</a></td>
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<tr>
<td>Quality Inn &amp; Suites I-25 North</td>
<td>3636 East Mulberry Street</td>
<td>970-221-5704</td>
<td><a href="http://www.qualityinn.com">www.qualityinn.com</a></td>
</tr>
<tr>
<td>Quality Inn &amp; Suites University</td>
<td>4001 South Mason Street</td>
<td>970-282-9047</td>
<td><a href="http://www.qualityinn.com">www.qualityinn.com</a></td>
</tr>
<tr>
<td>Residence Inn Fort Collins</td>
<td>1127 Oakridge Drive</td>
<td>970-223-5700</td>
<td><a href="http://www.marriott.com">www.marriott.com</a></td>
</tr>
<tr>
<td>Super 8 Motel</td>
<td>409 Centro Way</td>
<td>970-493-7701</td>
<td><a href="http://www.super8.com">www.super8.com</a></td>
</tr>
</tbody>
</table>
CSEF Parking Instructions

Thursday

Due to the limited amount of parking on the Colorado State University campus, we have arranged for off-campus parking and will shuttle people to the LSC on **Thursday only**. Parking will be guaranteed at the Equine Center on Overland Trail, whereas, there is no guarantee of finding a spot on or near campus. CSU shuttle buses will run between the Equine Center and the LSC Transit Center between 7 a.m. to 6:30 p.m. roughly every half hour. (please note: only ONE bus will run between 11 a.m. and 5 p.m.) and will drop you off in front of the Administration Building on the Oval (just East of the LSC).

To reach the Equine Center from I-25, take Exit 268 (Prospect Road), West to Overland Trail and turn North (right) onto Overland Trail to Elizabeth Street. The Equine Center will be to the West (left). Please use the North entrance gate between 7 a.m. and 12 noon and park in the north side of the parking lot so as not to interfere with rodeo traffic that is also arriving on Thursday. When using Mapquest to get specific directions from your home or school, use 735 South Overland Trail; Fort Collins, CO 80521 as the address for the Equine Center. A satellite view of the parking lot can be found on the CSEF web site under the Contacts link.

Friday

For those visiting the CSU campus on Friday to take part in the tours of campus labs, the guest speaker and viewing the projects, you will be on your own for parking. Information on visitor parking at CSU can be found on the web site - http://pts.colostate.edu/visitors/parking/. It is suggested you check this site for the latest on construction and open parking lots. The keys to visitor parking at CSU are:

- There is a high amount of construction currently being done at CSU, making parking very difficult – please plan ahead. CSEF may have a few daily permits available to purchase ($12) on Thursday of the CSEF from 1:30 – 3:30 p.m. at the information booth. Or you can stop by the Lake Street Garage and buy a daily permit ($12) as well.
- Around the Horn is a free on-campus shuttle that connects to most visitor parking lots with a bus that loops campus every 10 minutes form 7 a.m. to 6:40 pm. Monday through Friday. (www.ridetransfort.com/img/site_specific/uploads/HORN.pdf).
- Most lots have hourly metered parking spots during permit hours (most lots are enforced 7:30 a.m. to 4 p.m. daily). Check the signs posted in each lot for enforcement times; some lots have extended enforcement hours. The lots where you can pay for up to 8 ½ hours include #195 (Moby), #310, #425, #570 (Lake Street Garage), #577 (South College Garage), #725 (Veterinary Teaching Hospital), & #740 (Tennis Pavilion).
- The 2017/2018 academic year rate for hourly parking on campus is $1.75 per hour. When you arrive in a lot with visitor parking, have your license plate number ready to enter into CSU’s hourly permit vending machine. You can pay by credit card or coin (no bills) for the amount of time you wish to park. Your license plate number will serve as your permit.
- The parking lots that are closest to the Lory Student Center (but they fill up fast!) are: Lot #310 (Engineering) and Lot #425 (Morgan Library).
- The parking lots that have visitor parking available and are connected to Around the Horn are: Lot #195 (Moby); Lot #577 (South College Garage); Lot #440 (University Station); Lot #570 (Lake Street Garage); Lot #725 (Veterinary Teaching Hospital); Lot #740 (Tennis Pavilion).
- ***NEW*** ALL vehicles (including school buses) are required to have a CSU parking permit displayed while on campus Monday – Friday. However, buses of any size must park on the west side of the Moby arena lot (#195) off of Shields and NOT in Lot #310 (Engineering).
- Parking for people with a valid handicapped permit may park in any of the marked handicapped stalls but must have a CSU parking permit or pay the meters if applicable.
- CAR POOL!!! If you are staying in Fort Collins overnight, make plans with others staying in town for transportation to and from campus. Or check with your hotel; they may have free shuttle service to campus. If you are driving to Fort Collins each day, try to carpool with others from your area.
- Try to stay at a hotel that is close to campus and walk over. There are several hotels that border CSU, see page 24 of this handbook for details.

Saturday

Permits are not required on weekends, so on Saturday you can park in the engineering or library lots to make it easy for loading projects.

**CSEF is not responsible for parking citations issued by CSU to CSEF Finalists, their families, teachers, or any of the judges and volunteers.**
Directions to Colorado State University &
Dropping-Off Projects at Lory Student Center

For Finalists with large and bulky project items, we have arranged for students and projects to be dropped off in the passenger drop-off zone in the Library parking lot before proceeding to the Equine Center for parking. It is recommended that you park out there and use the shuttle to reach the student center if you have an easy to transport display. (See page 25 for details.)

To reach the Library parking lot from North or South I-25, take Exit 268 (Prospect Road) West past College Avenue to Whitcomb Street. Turn North (right) onto Whitcomb. Take Whitcomb (which becomes Meridian Avenue by the stadium) to Pitkin Street (dead end). Turn West (left) onto Pitkin then take the second right (North) back onto Meridian Avenue. Take Meridian to Hughes Way (1st four-way stop). Turn East (right) onto Hughes Way to the Library parking lot. The passenger drop-off zone will be in the far northeast corner of the parking lot.

To reach the Equine Center from the Library parking lot, take Hughes Way out to Shields Street and turn North (right). Get into the far left lane immediately in order to turn West (left) onto Elizabeth Street. Take Elizabeth Street to Overland Trail and turn North (right). The Equine Center will be to the West (left) immediately after the turn.

There will be volunteers at the library available to help you unload your projects and get them into the LSC. They will also have directions on how to get to the Equine Center from the library. Please only use this option if you have large, bulky items that would be difficult to transfer to the shuttle bus and into the student center from the drop-off point – this is a heavily used area by students!!

Do not leave your car unattended!!!