

## 2023 ACSEF Checklist For Items to Create and Display = DELIVERABLES

These items are created following the instructions in the Deliverables Booklet which follows the Checklist & Fair Schedule.

- ☐ Lab notebook - Required HS and MS - [bring to project set up March 24th]
  - ☐ [Follow all Display & Safety \(D&S\) rules and guidelines](#)
  - ☐ will be displayed in person, and to judges
  
- ☐ Research Plan - Required for HS and MS - [uploaded to zairs paperwork in menu bar]
  - ☐ this is the research plan approved by SRC in your application submission
    - Science, Engineering, or Math/Computer Science research plan forms
    - (Diocese students this is your Question/Problem, Materials, and Methods/Engineering Design).
  
- ☐ Virtual Display Board - Required HS
  - ☐ [Follow all D&S rules and guidelines](#)
  - ☐ will be displayed virtually [ uploaded to zairs paperwork in menu bar ].
  - ☐ Judges will pre-view virtually
  
- ☐ Physical Display Board - Required HS & MS [bring to project set up March 24th]
  - ☐ [Follow all D&S rules and guidelines](#)
  - ☐ will be displayed in person [bring to project set up March 24th]
  - ☐ Will be viewed in person by the public & judges
  
- ☐ Quad Chart - Required for HS
  - ☐ [Follow all D&S rules and guidelines](#)
  - ☐ will be displayed virtually [ uploaded to zairs paperwork in menu bar ].
  - ☐ judges will pre-view virtually
  
- ☐ 2-minute video - Required for HS
  - ☐ [Follow all D&S rules and guidelines](#)
  - ☐ will be displayed virtually [url pasted onto your zairs profile page]
  - ☐ judges will view it virtually
  
- ☐ Abstract on official ACSEF Form - Required for HS and MS
  - ☐ [Follow all D&S rules and guidelines](#)
  - ☐ [Official Abstract Form](#) - will be displayed virtually [ uploaded to zairs paperwork in menu bar ].
    - ☐ will be displayed in person [bring 15 printed copies to project set up Friday, March 24 ]

☐ judges will take a copy with them after the interview before entering scores.

☐ Abstract word document version - Required HS and MS

☐ [Follow all D&S rules and guidelines](#)

☐ Copy & paste from your official abstract form.

☐ Paste onto this Google Form [2023 Abstract Google Form](#) no later than March 22, 2023

#### Optional items for HS and MS

☐ [Follow all D&S rules and guidelines](#)

☐ 1-minute demonstration video - [ uploaded to zfacts paperwork in menu bar ]

☐ will be visible virtually to judges during their preview.

☐ can be shown in person to judges if time allows.

☐ Written [Research Paper](#) - can be set up at the display table at the fair (only).

☐ Artifacts - (Items that are allowed or not allowed are on the [D&S Rules & Guidelines](#)) These are items that you feel will enhance understanding of your project. These will be evaluated for safety by the D&S team during project setup on March 24th.

STUDENTS	
Friday March 24, 2023	
3:00 - 8:00 PM *come anytime between 3-8	Project Display Set Up
Location	Ohlone College Newark Center for Health Sciences and Technology
	39399 Cherry St, Newark, CA
Saturday March 25, 2023	
8:30 AM	Participants Arrive Dressed to Impress
<b>9:00 - 11:30 AM</b>	<b>Round 1 Judging</b>
11:30 AM - 1:30 PM	Public Hours
	Students must remain at projects from <b>11:30 - 12:30</b> *snacks provided
12:30 - 1:30 PM	Students Lunch (Bring a Bag Lunch)
	Continue Public Hours - Visit the STEM & Info Booths

1:30 PM	Round 2 Project Promotions Announced <a href="https://acsef.org">https://acsef.org</a>
	Displays Not Promoted to Round 2 Removed
1:45 PM	Round 2 Promoted Students Go to Displays
2:00 PM	<b>Round 2 Judging</b>
3:30 PM	Round 2 Displays Removed and Round 2 Participants are Dismissed
<b>Sunday March 26, 2023</b>	
New Location Dublin	Dublin Unified School District Center for Performing Arts & Education
	8151 Village Pkwy, Dublin, CA
1:00 - 2:30 PM	Middle School Award Ceremony for Round 1 & 2 and special awards
4:00 - 5:30 PM	High School Award Ceremony for Round 1 & 2 and special awards

# 2023 ACSEF Display Item Guidelines (DELIVERABLES)

## What are Deliverables?

- They are various items found in this booklet that you will create and “DELIVER” to one, two, or more places for the purpose of judging and showcasing your project:
- Some are brought to the fair site fair as part of your table display, some are uploaded as PDFs to your registration dashboard, or some may be pasted into a Google form.

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### PAGE 1-2 - Overview of items to create for the fair

- \*ACSEF paperwork & forms - required for Middle & High school
- \*Abstract on Official ACSEF Form - required for Middle & High school
- \*Virtual/Digital Project Presentation - required for High school - Optional for Middle school participants to do if wanting to move on to state or national competition **\*2/28/23 See Addendum**
- \*Quad Chart - required for High school only
- \*2-minute Project Video - required for High school - Optional for Middle school participants to do if wanting to move on to state or national competition
- \*1-minute demonstration video - **OPTIONAL FOR ALL** - (showing some aspect of your project that contains risks for the indoor venue & that cannot otherwise be understood) unless viewed in action).
- \*Lab notebook - required for Middle & High school set up at the in-person fair
- \*In-person Physical Display - required for Middle & High school set-up at the in person fair

**PAGE 2** - DETAILED INSTRUCTIONS FOR PHYSICAL PROJECT DISPLAY BOARD & NOTEBOOK

**PAGE 3** - INSTRUCTIONS FOR VIRTUAL/DIGITAL PROJECT PRESENTATION

**PAGE 4** - SUMMARIZED DISPLAY & SAFETY RULES

\* This is ONLY a summary - go to the full rules in the link provided

**PAGE 5** - INSTRUCTIONS & DESCRIPTIONS OF VIRTUAL PRESENTATION TEMPLATES

**PAGE 6** - VIRTUAL/DIGITAL TEMPLATE FOR SCIENCE PROJECT

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**PAGE 12 - 17** PROJECT ABSTRACT WRITING INSTRUCTIONS, SAMPLES, FORMS, LINKS

**PAGE 18 - 20** HOW TO UPLOAD DELIVERABLES TO ZFAIRS PROJECT DASHBOARD

**PAGE 21** INSTRUCTIONS FOR PROJECT SET UP AT THE FAIR.

**\*\*Pages 22-26 ADDENDUM - California State Science Fair - announced 2/28/23 they will require High School AND Middle School to create the STATE version of the Virtual Display. The state version contains most of the features but with additions This will affect 25 projects selected by the judges to move on to the competition with a very short turn around time to produce the virtual display for submission. ACSEF will assist these selected projects to make the state deadline.**

Questions: Contact Founding Director, President ACSEFA, SRC Chairman - Patti Carothers [directoracsef@gmail.com](mailto:directoracsef@gmail.com) or Phone: 925-353-4414 \*leave a message following the instructions for a callback.

# ACSEF 2023 Display Item Guidelines (Deliverables)

ACSEF 2023 will be an in-person event in which students will compete in-person in Newark, CA at the Ohlone College Newark Center for Health Sciences & Technology from March 24-25, 2023. Students will be making a physical display to set up in the exhibit areas at the college **and** high school students are also required to complete a virtual display to support the judging process and to share their projects with the greater community of ACSEF. All displays, virtual and in-person, will undergo Display & Safety (D&S) inspections. ACSEF Rules and Display and Safety Guidelines determine what is eligible and allowable; all written materials are to be provided in English. Award ceremonies will be held at Dublin HS in Dublin, CA March 26, 2023.

We strongly encourage students to use the same core materials in both virtual and physical displays to avoid duplication of effort and to support the D&S review.

## Deliverables Overview (BRIEF intro. to Items to create for the fair)

**Items marked Optional for Middle School are encouraged for middle school students wanting to move on to next level fairs state or national.**

### ACSEF Paperwork Items Required for Middle and High School

- \***1. Official Abstract on ACSEF Form** (250 words) ( Required from all projects)
- \***2. ACSEF Approved Research Plan** (Required from all projects - this is the one located in your application forms which you submitted to SRC/IRB for approval).
- \***Form 1C** (required only if project was performed at college .professional lab & in your approved application)
- \***Form 2** (required only if src/irb required the form in your approved application)
- \***Form 7** (required only if your project is a continuation and is in your approved application)

### **II. Virtual/Digital Project Presentation Required from High School - *Optional for Middle School***

- a. The project presentation is the primary virtual vehicle to present the content of your project and content will be basically duplicated on the physical poster. The appendix in this document provides complete instructions of the format requirements and recommendations.
- b. There are three suggested project presentation templates based on project type:
  - i. Science Projects,
  - ii. Engineering Projects and
  - iii. Mathematics/Computer Science Projects.

### **III. A Quad Chart Required from High School *only***

- a. The quad chart summarizes the project in a single page for a quick overview by the judges.
- b. This representation of your project is intended to be only a summary and to be visual in nature.
- c. Appendix III provides complete instructions with format requirements and recommendations as well as sample templates.

### **IV. Project Video (2-minute max.) Required from High School - *Optional for Middle School***

- a. This video summarizes the project at a high level and will be used for pre-judging overview & public display of projects and should have the public as the core audience.
- b. While judges will be given access to all materials submitted, it is advised that the video be a supplement to the project presentation slides.
- c. This video must feature the student(s) prominently on screen. This is not a slide presentation.
- c. **OPTIONAL 1-MINUTE VIDEO DEMONSTRATION - Allowed for Middle and High School**
  - a. This is being allowed because potentially hazardous, messy, noisy, etc., demonstrations are NOT allowed at the display tables at our venue - if absolutely necessary for judges to see & understand - you may create this optional video providing if it does not pose any potential risks to self, others or the environment during the making of the video and was previously described as part of your approved research plan.

## Lab Notebook Required for Middle and High School

The lab notebook must be present at your display table. It must have LAB NOTEBOOK written on the front. It must NOT have your name or school on or in it. It must only have your PROJECT ID & TITLE on the cover. If your school or your name appear in it you can use removable tape to cover it temporarily. It does not need to be a notebook - it can be binder paper or printed digital lab notes stapled together or hole punched & put into a folder. If it is digital you need to print it and put into a folder. **\*No active web links allowed.**

### V. In-Person Physical Display Required for Middle and High School

Please review the full text of the [Display & Safety rules](#) in the [International Rules & Guidelines](#) to ensure compliance with the display regulations including:

- Maximum size of the physical Display Board \*refer to the D&S rules link above
- Photograph/Image Display Requirements and \*refer to the D&S rules link above
- Items/materials **not allowed** on display & at your project table \*refer to the D&S rules link above

**Read this - these are the DETAILED GUIDELINES FOR CREATING THE PHYSICAL DISPLAY BOARD**

Follow the instructions in this document, D&S Safety & international Rules and Guidelines so that SRC/IRB does not need to remove any items with rule infractions from your physical display or any uploaded items on your zairs registration dashboard. **ACTIVE WEB LINKS, QR CODES ETC. ARE NOT PERMITTED ANYWHERE! UNLINK ALL ACTIVE LINKS. Remove all logos you did not create. Follow the D&S rules.**

The two formats (physical and virtual display) are different and they do not need to be identical, but where you can use the same elements in both displays, it is encouraged. **The following information are suggested guidelines for your physical display taken from <https://guides.nyu.edu/posters>.**

- **Display type:** Tri Fold board or banner style \*note if using the banner style the stand dimensions are included in the maximum height, depth and width.
- A max allowable height is 108" from the floor. Allowable but not recommended for readability and stability. Width max 48" and Depth max 30"
- When considering height of physical display - it will be on a 36 inch high table. For readability by your judges we suggest it be no taller than 60" from the floor. 60" display height + 36" table height = 96 inches (8') from the floor. Will it be readable near the top? Maybe...but this is not a comfortable height.
- Important information on the display should be readable from about 10 feet away. The suggested smallest font on your physical poster is 18 pt.
- Do not use non-standard fonts or colors to "stand out from the crowd" or to be entertaining. It is recommended that you use a font such as Arial, Calibri, Helvetica or Century Gothic.
- Title is the same as on your APPROVED Research Plan - You may have a sub-title beneath is a smaller font beneath the required title.
- **Abstracts should NOT go onto the display board.**
- Text is clear and to the point. Word count 300-700 words
- Less words, more graphics for example a flow chart for procedure instead of long sections of sentences, let your data tables and graphs tell part of the story
- Correctly title and label all data tables and graphs (descriptive short titles, correct axis labeling)
- Use of bullets, numbering, and headlines make it easy to read.
- Effective use of graphics, color, and fonts. within the guidelines in this booklet.
- All graphics must be correctly labeled with source. Follow guidelines on the D&S rules link above.
- Sections: For the physical display board you may refer to & use the applicable Virtual/digital Project presentation sections for Science, Engineering, or Math/Computer Sci.(see pgs. 6-8)and note the content.

## **Virtual/Digital Project Presentation Instructions - High School** required **see the CSEF instructions on pages 22-26**

You may prepare your Virtual Project Presentation for ACSEF 2023 using any software tools that you desire, but the final document submitted for display viewed by the judges and the public must satisfy the following requirements. The virtual display is essentially a set of up to 12 PowerPoint or Google Slides, converted into an up to 12 page PDF.

### Format Requirements

1. The **Virtual Project Presentation** must be uploaded to your zfairs dashboard as a **pdf**. You are limited to **no more than 12 pages**. *Tip: PowerPoint or Google Slide pages can be easily converted to pdf.*
2. The presentation should be created following the templates provided in this document on pages 6,7,8 that matches your research and selected research plan. The page should be created in **Landscape mode** so that the entire page is visible at the same time when viewed by the judges and public on a screen.
3. Your pages must be **without** animation or active hyperlinks.
4. The page background color must be a light color and should not affect readability. No color gradients.
5. Text color must be predominantly dark to support readability.
6. All text should be easily readable when viewing the entire page at once. The smallest allowable font size of body text is 14 pt. and an 18 pt. font is recommended. *Exception:* You may use a smaller font size, down to 10 pt., for figure captions or photo credits.
7. All Project Presentation elements must conform to all Display & Safety Rules as if placed on a physical poster for display to judges and the public. Passing a Display & Safety inspection will be required to compete.
8. (Please see the highlight of Display & Safety Rules on the next page) Note the highlights are not to be substituted for the entire Display and Safety Rules.
9. ADDITIONAL NOTES: \*Active links are not permitted anywhere on the virtual display, quad chart, research plan (including references section), video or abstract. UNLINK all active links from all Deliverable items.
10. \*Do NOT include your research paper or notebook images as part of your virtual display.

### Format Recommendations:

1. **Do not** use non-standard fonts or colors to “stand out from the crowd” or to be entertaining. It is recommended that you use a font such as Arial, Calibri, Helvetica or Century Gothic.
2. Page titles should all be the same size. That size should be larger than headings within each page. In turn, headings should be larger than body text.
3. Avoid long expository paragraphs. State your points succinctly.
4. Use bullets to set out individual points of interest. Use numbered lists when the ordering of points of interest is important (*e.g.*, instructions to be followed in order, or items needing a reference anchor for citation elsewhere in your Presentation).
5. All body text should adopt a common font style and size. Similarly, all heading text should adopt a common font style and size. There is no recommendation for the relation between body and heading styles.



## Display & Safety Rules Highlights for Presentation Materials

THIS IS A summary below. OPEN THIS LINK FOR FULL DETAILS [Display & Safety Rules Guidelines](#)

### Photograph/Image Display Requirements

- 1) Any photograph/visual image/chart/table/student-created logo and/or graph is allowed if:
  - a) It is not deemed offensive or inappropriate (which includes images/photographs showing invertebrate or vertebrate animals/humans in surgical, necrotizing or dissection situations) by the Scientific Review Committee, or the Display & Safety Committee.
  - b) EACH has a credit line of origin ("Photograph taken by..." or "Image taken from..." or "Graph/Chart/Table taken from..."). **If all images, etc. displayed were created by the student or are from the same source, one credit line prominently and vertically displayed on the backboard/poster or tabletop is sufficient. example:** "All images & graphics created by student researcher or add the source they all came from."
    - **All images MUST BE properly cited.** This includes student-created logos, background graphics, photographs and/or visual depictions of the students or photographs and/or visual depictions of others.
    - **All visual depictions of others people require a signed photo/video release form is in a notebook or logbook at the project table.** These signed release forms must be available upon request during the set-up and inspection process **but may not be displayed.**
  - c) **Sample person release text:** "I consent to the use of visual images (photos, videos, etc.) involving my participation/my child's participation in this research" then signed/dated by the person.
- 2) Students using any presentation or demonstration outside of a display board or must be prepared to show the entire presentation to the Display & Safety Inspectors before the project is approved. All aforementioned rules apply to this presentation and the presentation or prototype may not be altered in any way after the final Display & Safety inspection. Examples of presentations that require approval include, but are not limited to PowerPoint, Prezi, Keynote, software program/simulation and other images and/or graphics displayed on a computer screen or other non-print delivery method.  
**NOT ALLOWED in your Presentation Materials or at the display table. NO ACTIVE WEB LINKS.**
- 1) Any information on the project display or items that are self-promotions or external endorsements are not allowed at the project table.
  - a) The use of commercial logos including known brands, institutional crests or trademarks, flags **unless integral to the project and approved by the SRC via inclusion in the Official Abstract and Certification. If in doubt contact [src.irb.acsef@gmail.com](mailto:src.irb.acsef@gmail.com)**
  - b) Any reference to an institution or mentor that supported the student's research except as provided in an acknowledgment section of the poster and within official ACSEF paperwork, most notably Form 1C or ACSEF Research Plan acknowledgment section.
  - c) Any reference to patent status of the project.
  - d) Any items intended for distribution such as disks, CDs, flash drives, brochures, booklets, endorsements, giveaway items, business cards, printed materials or food items designed to be distributed to judges or the public.
- 2) Any awards or medals, certificates from prior competitions.
- 3) Postal addresses, World Wide Web, email and/or social media addresses, QR codes, telephone and/or fax numbers of a project or student. Note: The only personal information that is permissible to include on the display is the Project ID.
- 4) Active Internet or email links as part of displaying or operating the project at ACSEF.
- 5) Any changes, modifications, or additions to projects including any attempt to uncover, replenish or return removed language or items after the approval by the Display & Safety Committee and the Scientific Review Committee has been received is prohibited. A photo of the set up will be taken by D&S or SRC/IRB teams during display set up.



## Project Virtual/Digital Presentation Templates - **Required for High School** **Optional for Middle School** unless selected for STATE competition. See addendum

The CSEF fair director just announced 2/28/23 - Their version of Virtual Display is required MS & HS.

See the addendum pages 22-26 This will only effect 25 of ACSEF's projects.

Choose one of the following **templates located on the following pages 6,7,8** to create your VIRTUAL presentation. It is recommended by State & ISEF that you **Do not include information not specified in the template.**

\*Create using PowerPoint or Google Slides then convert to PDF. Only pdf format can be uploaded.

\*Active links are not permitted anywhere on the virtual/digital presentation. **UNLINK active links**

If you are submitting a continuation project, include only information related to this year's research unless otherwise directed in the instructions in the template.

You may (SHOULD ) include graphical elements as they would explain or illustrate your work and can be contained within the overall page limits. More graphics - fewer words!

**Each of the required sections in each template must start on its own page and be in the order provided.** Titles per section are provided as recommended titles, but alternate titles may be used.

Each section may extend beyond one page as long as the total does not exceed 12 maximum pages. **Example: you may want more space to show graphs for results, etc..**

Virtual /Digital TEMPLATE I with instructions: for **Science Projects page 6**

Virtual /Digital TEMPLATE II with instructions: for **Engineering Projects page 7**

Virtual/Digital TEMPLATE III with instructions: for **Mathematics/Computer Science Projects page 8**

# Project Presentation Template: Science Project \*12 page max.

## 1. Project ID and Title

- The following should be included:
  - Project ID. This ID will be provided by Zfairs registration site upon completion of the registration process. Look for an email from hello@zfairs.com. It may also go to your spam.
  - Project Title

## 2. INTRODUCTION - What is your research question?

- Explain what is known or has already been done in your research area. Include a brief review of relevant literature. If this is a continuation project, a brief summary of your prior research is appropriate here. Be sure to distinguish your previous work from this year's project.
- What were you trying to find out? Include a description of your purpose, your research question, and/or your hypothesis.

## 3. METHODS - Explain your methodology and procedures for carrying out your project in detail.

- What did you do? What data did you collect and how did you collect that data? Discuss your control group and the variables you tested.
- DO NOT include a list of materials.

## 4. RESULTS - What were the result(s) of your project?

- Include tables and figures which illustrate your data.
- Include relevant statistical analysis of the data.

## 5. DISCUSSION - What is your interpretation of these results?

- What do these results mean? Compare your results with theories, published data, commonly held beliefs, and expected results.
- Discuss possible errors. Did any questions or problems arise that you were not expecting? How did the data vary between repeated observations of similar events? How were results affected by uncontrolled events?

## 6. CONCLUSIONS - What conclusions did you reach?

- What do these results mean in the context of the literature review and other work being done in your research area? How do the results address your research question? Do your results support your hypothesis?
- What application(s) do you see for your work?

## 7. REFERENCES/ACKNOWLEDGEMENTS

- This section should not exceed one page. Limit your list to the most important references.
- List the references/documentation used which were not of your own creation (i.e., books, journal articles).
- It is permissible to include a short statement acknowledging support from supervisors, research groups and others that had a direct role in your project.

# Project Presentation Template: Engineering Project 12 page max.

## 1. Project ID and Title

- The following should be included:
  - Project ID. This ID will be provided by Zfairs registration site upon completion of the registration process. Look for an email from hello@zfairs.com. It may also go to your spam.
  - Project Title

## 2. INTRODUCTION - What is your engineering problem and goal?

- What problem were you trying to solve? Include a description of your engineering goal.
- Explain what is known or has already been done to solve this problem, including work on which you may build. You may include a brief review of relevant literature.
- If this is a continuation project, a brief summary of your prior work is appropriate here. Be sure to distinguish your previous work from this year's project.

## 3. METHODS - Explain your methods and procedures for building your design.

- What did you do? How did you design and produce your prototype? If there is a physical prototype, you may want to include pictures or designs of the prototype.
- If you tested the prototype, what were your testing procedures? What data did you collect and how did you collect that data?
- DO NOT include a separate list of materials.

## 4. RESULTS - What were the result(s) of your project?

- How did your prototype meet your engineering goal?
- If you tested the prototype, provide a summary of testing data tables and figures that illustrate your results.
- Include relevant statistical analysis of the data.

## 5. DISCUSSION - What is your interpretation of these results?

- What do these results mean? You may compare your results with theories, published data, commonly held beliefs, and/or expected results.
- Did any questions or problems arise that you were not expecting? Were these problems caused by uncontrolled events? How did you address these?
- How is your prototype an improvement or advancement over what is currently available?

## 6. CONCLUSIONS - What conclusions did you reach?

- Did your project turn out as you expected?
- What application(s) do you see for your work?

## 7. REFERENCES /ACKNOWLEDGEMENTS

- This section should not exceed one page. Limit your list to the most important references.
- List the references/documentation used which were not of your own creation (i.e., books, journal articles).
- It is permissible to include a short statement acknowledging support from supervisors, research groups and others that had a direct role in your project.

# Project Presentation Template: **Mathematics/Computer Science** - 12 pg. maximum

## **1. Project ID and Title**

- The following should be included:
  - Project ID. This ID will be provided by Zfairs registration site upon completion of the registration process. Look for an email from hello@zfairs.com. It may also go to your spam.
  - Project Title

## **2. INTRODUCTION - What is your research question?**

- Explain what is known or has already been done in your research area. Include a brief review of relevant literature.
- If this is a continuation project, a brief summary of your prior work is appropriate here. Be sure to distinguish your previous work from this year's project.

## **3. FRAMEWORK - Notation and framework.**

- Introduce the concepts and notation needed to specify your research question, methods, and results precisely.
- Define relevant terms and explain prior/background results. (Novel concepts developed as part of your project can be presented here or in Section 4, as appropriate.)

## **4. FINDINGS - Present your findings and supporting arguments.**

- What did you discover and/or prove? Describe your result(s) in detail. If possible, provide both formal and intuitive/verbal explanations of each major finding.
- Describe your methods in general terms. Then:
  - Present rigorous proofs of the theory results – or, if the arguments are long, give sketches of the proofs that explain the main ideas.
  - For numerical/statistical results, include tables and figures that illustrate your data. Include relevant statistical analysis. Were any of your results statistically significant? How do you know this?

## **5. CONCLUSIONS - What is your assessment of your findings?**

- How do the results address your research question? And how have you advanced our understanding relative to what was already known?
- Discuss possible limitations. Did any questions or problems arise that you were not expecting? What challenges do you foresee in extending your results further?
- What application(s), if any, do you see for your work?

## **6. REFERENCES /ACKNOWLEDGEMENTS**

- This section should not exceed one page. Limit your list to the most important references.
- List the references/documentation used which were not of your own creation (i.e., books, journal articles).
- It is permissible to include a short statement acknowledging support from supervisors, research groups and others that had a direct role in your project.

# Quad Chart Required for High School *Optional for Middle School*

A “quadchart” is a single page divided into four quadrants providing a high-level summary of the project. It is intended to be bulleted information that a judge could review at a quick glance and then proceed to the Project presentation for more details. Follow the model below that corresponds to the Project Virtual/Digital Presentation template you selected.

1. The page should be created so that **the entire page is visible at the same time**. The page should be created in **Landscape mode**.
2. The page will have to upload as pdf to your zfairs Registration Dashboard.
3. The page background color should be a light color and text color predominantly dark to support readability.
4. The minimum allowable font size is 14 pt. and larger fonts are encouraged for readability. *Exception:* You may use a smaller font size, down to 10 pt., for figure captions or photo credits.
5. Text should be in list or bulleted form and as brief as possible. This chart is intended as a high-level summary that can be read at-a-glance.
6. All four quadrants of your Quad Chart should each be the same size with a single border line delimiting each, as in the examples below.
7. The Title section should be only tall enough to include the required elements which are the same as the abstract header. The project title should be at the largest header size of the document for easy identification of the project. (See section on Quad Chart Title).
8. The Quad Chart should include all appropriate photo credits, should not include a bibliography, references, or acknowledgments and must adhere to all Display & Safety rules.
9. ADDITIONAL NOTES: \*Active links, QR codes etc., are not permitted anywhere on the quad chart, UNLINK all active links from all Deliverable items.

10. Approximate examples of the format of a Quad Chart are listed below.

<b>Title goes in this space - Science Project Quad Chart *all words</b> <span style="float: right;"><b>Project ID</b></span> <b>currently here should be removed to type your title here.</b>	
<b>Q1: Scientific Question</b>  <ul style="list-style-type: none"> <li>• Bullet 1</li> <li>• Bullet 2</li> <li>• Bullet 3</li> </ul> <div style="border: 1px solid black; width: 100px; height: 50px; margin: 10px auto; text-align: center;">Image</div> <div style="text-align: right; font-size: small;">credit</div>	<b>Q3: Data Analysis &amp; Results</b>  <ul style="list-style-type: none"> <li>• Bullet 1</li> <li>• Bullet 2</li> </ul> <div style="border: 1px solid black; width: 150px; height: 50px; margin: 10px auto; text-align: center;">Data Chart</div> <div style="text-align: right; font-size: small;">credit</div>
<b>Q2: Methodology</b>  <div style="border: 1px solid black; width: 100px; height: 50px; margin: 10px auto; text-align: center;">Image</div> <ul style="list-style-type: none"> <li>• Bullet 1</li> <li>• Bullet 2</li> <li>• Bullet 3</li> <li>• Bullet 4</li> </ul> <div style="text-align: right; font-size: small;">credit</div>	<b>Q4: Interpretation &amp; Conclusions</b>  <ul style="list-style-type: none"> <li>• Bullet 1</li> <li>• Bullet 2</li> <li>• Bullet 3</li> </ul>

Engineering Project Quad Chart - Title goes in this space - *all words currently here should be removed to type your title here.		Project ID
Q1: Engineering Problem & Objectives	Q3: Data Analysis & Results	
Q2: Project Design	Q4: Interpretation & Conclusions	
Math/Computer Science Project Quad Chart -Title goes in this space - *all words currently here should be removed to type your title here.		Project ID
Q1: Problem or Question	Q3: Findings	
Q2: Framework	Q4: Interpretation & Conclusions	

### Quad Chart Title:

- In the upper right-hand corner, list the Project ID.
- All of line one is the title of your project.

### Quadrant 1: Research Question/Engineering Objectives

- This should reflect material in #2 of the Project Presentation Template.
- Please state the research question or engineering problem being addressed.
- A leading core graphic or visual is encouraged, but not required.

### Quadrant 2: Methodology/Project Design

- This should reflect material in #3 of the Project Presentation Template.
- Please provide a succinct, **bulleted** summary of the methodology/project design.

### Quadrant 3: Data Analysis & Results

- This should reflect material in #4 and #5 of the Project Presentation Template.
- It is advised that this quadrant should primarily be a graphic representation of relevant data and results.
- Sentences/words should be kept to a minimum.

### Quadrant 4: Interpretation & Conclusions

- This should reflect material in #5 and # 6 of the Project Presentation Template.
- An additional graphic can be added but not stand alone.

# Project Video Instructions - Required for High School - *Optional for Middle school*

Record a video (maximum duration 2 minutes) explaining the 3 main points of your project. The target audience for this video is members of the general public who will view the projects virtually during ACSEF and in the months following. While judges will have access to this video, it will not be the focus of their project review. This video must comply with all [Display & Safety Rules](#) particularly those involving logos, acknowledgements and properly crediting images/graphs/photos.

\*Active links are not permitted anywhere on the video, UNLINK active links

What to include in your video: [samples at this link](#)

**1. Introduce Yourself:** State your First name only. DON'T recite your project title. Instead, consider explaining your project in a single sentence. The video should feature you presenting your project orally as if in front of a judge or a member of the public. Your whole body does NOT need to be seen - upper body only is best. You can have your display as a backdrop only. DO NOT turn and point or refer to it.

**2. Explain Your Project:** Summarize your research into 3 main points:

- a. What did you do?
- b. What did you find?
- c. What conclusions did you make?

**To note:**

- Videos can be taken with many devices but MUST be uploaded to YouTube (no other format or it won't display properly on the zfairs dashboard system)
- If you have a Gmail account you have a free YouTube account.
- The YouTube link will need to be **public and unlisted**. DO NOT SET AS PRIVATE
- The video MUST be named with your TITLE (if long shorten it) + **Project ID. (NO NAMES!)**
- NO NAMES, DON'T WEAR SCHOOL LOGO'S
- We encourage you to be prominently displayed in the video (as opposed to having the video be prominently your slides).
- You can use any props or visuals you may have that are within the [Display & Safety guidelines](#).
  - *Tip: This video is a summary statement about your project and the scientific or engineering design process you followed; it is not intended as an advertisement or sales pitch.*
- Do not include anyone in your video other than the student researchers of the project.

**Best Practices for Filming:**

**A cell phone is a fine tool to use when taking a video.**

**Remove all noise and distractions.**

**Film in a well-lit (make sure no shadows fall on your face - natural light from a window behind the camera and falling onto your face is best) and non-distracting environment in the background.**

**It is best to be close to the camera instead of across the room. You DO NOT need to be by your display board. You need to be heard and seen.**

**For best results, film your video horizontally (landscape).**

**Keep the camera still and in place during filming. Using a small tripod is recommended. Speak clearly and loudly Do not rush! Do not read from a script shown on a computer screen. Use reminder bullet points instead.**

**Maintain eye contact with the camera. Avoid long pauses.**

**Listen to your video after recording to ensure your voice is clear and audible, without background noise. Retake and retake again if you aren't happy with the results before uploading**



## **2023 Instructions for Writing the Abstract - Required for Middle & High School Projects**

**\*High School students - Consider using the summary created by your Quad chart to inform this narrative.**

**The abstract summarizes the project in ONE 250-word maximum paragraph.**

Do not indent.

Single spaced.

Use 11 pt. font size.

Use Arial, Calibri, Helvetica, or Century Gothic font.

No hard returns (after a period don't double space).

Does not have any sections or headings - **it is 1 paragraph.**

**The contents of your abstract paragraph include SHORT sentences covering the following (a-e).**

It should be **limited to these essential elements** a-e described below

- ❖ **(a) The research question or engineering, mathematical, or computer science problem,**
- ❖ **(b) A briefly summarized procedures or engineering design (do not use numbered steps - Use SHORT sentences only)**
- ❖ **(c) Summarized/analyzed data only**
- ❖ **(d) Explained results**
- ❖ **(e) Conclusions**
- ❖ **You also may briefly include any possible research applications.**

\*The abstract is one of the MOST important items. Often, people, judges included, will not have time to review everything in your display, log book, 2-minute video, research plan, etc. But along with your Quad Chart and the Abstract, they can get a very good idea of what your research is all about.

**\*After writing your abstract -**

**Ask someone who is not familiar with your research to read the abstract and ask them to simply tell you what you did and what you learned.**

**After your abstract is completed. You are required to answer the Check Boxes with Certification Questions at the end.**

You will write 1 abstract - and copy/paste **it into \*3 places:**

1. Write the abstract in a word document. Teams collaborate but only the team captain will do steps 2-9
2. Open the [2023 ACSEF Official Abstract Form](#) (\*place 1)
3. In the upper left corner of the Official ACSEF Abstract Form:  
Type your zfairs registration **Project ID**  
**Directly below the Project ID type your Title.**

4. Copy and paste your word doc abstract into the ACSEF Official Abstract Form
5. Name the file being saved by your project ID and Title (Do NOT include your name, or school name)
6. Save as a pdf.
7. Print 15 copies to bring to project set up on Friday, March 24th at Ohlone College - Newark. If you are on a team only the team captain will do this.
8. You will also upload a pdf copy to your registration dashboard. See pg.
9. For the second place we want the abstract: Copy and paste the word document into the [2023 ACSEF Abstract Google Form](#) (\*place 2)
10. The Google Form contents will be used by our publicity, social media, and ACSEF staff when writing press releases, etc. **Do this only one time.** If you are on a team - only the team captain will submit to the Google Form.
11. Upload the Official Abstract Form pdf copy to your registration dashboard at <https://acsef.zfairs.com> \*you will need to log in with your username and password to upload. (\*place 3)

**Sample abstracts: Sample abstracts: Sample abstracts: Sample abstracts:**

#### **4 Sample Abstracts**

The first 3 samples have been **COLOR CODED for TEACHING PURPOSES ONLY** to indicate the key sections, and how they can fit into a single 250-word maximum paragraph.

The 4th abstract has not been color coded - **Your abstract will NOT be color-coded, nor will it use a font larger than 12 as we've done here for purposes of easy viewing.**

**Your abstract will NOT use colors!!! The colors are merely for teaching purposes.**

#### **Sample #This abstract is a Middle School Sample**

**1 = Research Question or Problem 2 = Procedures/ engineering Design 3 = Summarized data/analyzed data 5 = Explained Results 6 = Conclusions**

#### **MS-AHBS-222**

#### **Electromagnetic Radiation Effects on Silkworm Cocoon Spinning Time**

**On a daily basis, every living plant, or animal on earth is exposed to low-level electromagnetic radiation (EMF) the effects of which can be studied by studying the amount of time it takes silkworms to spin a cocoon. Silkworms ordered from a supply company were raised to a**

spinning state in a non-EMF exposed container. When each silkworm started to spin a cocoon, it was separated into individual cups exposed to EMF. The start time and date were recorded. The silkworms were observed daily. When the cocoon was opaque, the stop time and date were recorded. The silkworms that were exposed to low-level electromagnetic radiation took longer than the control group to spin a cocoon. The average elapsed spinning time of the control group was 64 hours 52 minutes with the average time for the electromagnetic radiation group 81 hours 10 minutes, totaling a 16-hour 18-minute difference. When initially relocated to the source of electromagnetic radiation, the silkworms either stopped spinning or spun all over the container, as opposed to the normal figure 8 pattern. The times recorded reflected the hypothesis. The control group silkworms spin cocoons faster than the EMF group. Though the results showed that the EMF group took longer than the control group to spin, the difference from the control group was only 25%. Overall, the EMF group took longer, but the electromagnetic radiation had only a minimal effect on the silkworms. Further research may include increasing the level of electromagnetic radiation to that of sunlight. The results of this project may benefit third-world production of silk.

---

Certification Questions: Answer each either YES or NO with an X in the box

1. As a part of this research project, the student directly handled, manipulated, or interacted with human participants, vertebrate animals, potentially hazardous biological agents:(include which of these PHBA's were involved: microorganisms, rDNA, tissues). Y ☐ N ☐
  2. I/we worked or used equipment in a regulated research institution (college or professional lab) or industrial setting. Y ☐ N ☐
  3. This project is a continuation of previous research. Y ☐ N ☐
  4. My/our display board includes non-published photographs/visual depictions of humans (other than myself). Y ☐ N ☐
  5. This abstract describes only procedures performed by me/us, reflects my/our own independent research, and represents one year's work only. Y ☐ N ☐
  6. I/we hereby certify that the abstract and responses to the above statements are correct and properly reflect my/our own work. Y ☐ N ☐
- 

Your abstract will NOT use colors!!! The colors are merely for teaching purposes.

**Sample #2 This abstract is a High School Sample**

**1 = Research Question or Problem   2 = Procedures/ engineering Design   3 = Summarized data/analyzed data   5 = Explained Results   6 = Conclusions**

**HS-BS-101 (project ID)**

## Effects of Marine Engine Exhaust Water on Algae (Title)

This research explored the effects of two-cycle marine engine exhaust water on two species of green algae. Toxicity was determined by means of the standard bottle or “batch” bioassay technique. A crop of each alga including Scenedesmus quadricauda and Ankistrodesmus sp. was grown in water with marine engine exhaust and a control group without any added engine exhaust. Toxicity was measured in terms of a decrease in the maximum number of standing algae crops during 50 trials. The effective concentration -50% (EC 50) for Scenedesmus quadricauda versus the control had a 3.75% reduction in standing crop population in exhaust water; for Ankistrodesmus sp. it was 3.1% population in exhaust water using the standard batch bottle technique. Anomalies in growth curves raised the suspicion that evaporation was affecting the results; therefore, a flow-through system was improvised utilizing the characteristics of a device called a Biomonitor. The use of the Biomonitor lessened the influence of evaporation, and the EC 50 was found to be 4.2% reduction of population in exhaust water using Ankistrodesmus sp. as the test organism. Mixed populations of various algae gave an EC 50 of 3.9% population reduction in exhaust water. The contributions of this project are twofold. First, the toxicity of two-cycle marine engine exhaust was found to be considerably greater than reported in the literature (1.4% vs. 4.2%). Secondly, the benefits of a flow-through Bioassay technique utilizing the Biomonitor were demonstrated as a beneficial methodology for future use.

---

Certification Questions: Answer each either YES or NO with an X in the box

1. As a part of this research project, the student directly handled, manipulated, or interacted with human participants, vertebrate animals, potentially hazardous biological agents:(include which of these PHBA's were involved: microorganisms, rDNA, tissues). Y ☐ N ☐
  2. I/we worked or used equipment in a regulated research institution (college or professional lab) or industrial setting. Y ☐ N ☐
  3. This project is a continuation of previous research. Y ☐ N ☐
  4. My/our display board includes non-published photographs/visual depictions of humans (other than myself). Y ☐ N ☐
  5. This abstract describes only procedures performed by me/us, reflects my/our own independent research, and represents one year's work only. Y ☐ N ☐
  6. I/we hereby certify that the abstract and responses to the above statements are correct and properly reflect my/our own work. Y ☐ N ☐
-

### Sample #3 This abstract is a High School Sample

1 = Research Question or Engineering Problem 2 = Procedures/ engineering Design 3 = Summarized data/analyzed data 5 = Explained Results 6 = Conclusions

HS- HBC-199

#### A Study of Exercise Stress Duration on Muscle Mass Development

The objective of this research is to study the correlation between the amount of exercise stress duration on muscles and the amount of muscle development relative to a 4-second strain duration and optimal gain in muscle mass. Fifty high school male seniors of the same age, same height, and within 5 pounds of the same weight were selected and divided randomly into two test groups and then asked to perform a workout routine with different stress duration for one month. The body muscle-to-fat ratios were measured both before starting the workout routine and at the end of the one-month time period. During the research, the daily workout time, diet plan, and calorie intake were kept the same for each of the subjects. 100% of the volunteers completed the trials. 87.9% of subjects who exposed their muscles to a 4-second strain period showed an average gain of 8.2% in muscle mass, 8% showed no change, and 4.3% showed a loss in muscle mass averaging 1%. The data shows that overall a 4-second strain period can provide a potential 7.2% muscle mass gain even after subtracting no change and muscle loss from those with a gain. The study enables and equips aspiring high school athletes to rectify & modify their current workout practices to get the most out of their exercise routine & efforts to build muscle mass.

---

Certification Questions: Answer each either YES or NO with an X in the box

1. As a part of this research project, the student directly handled, manipulated, or interacted with human participants, vertebrate animals, potentially hazardous biological agents:(include which of these PHBA's were involved: microorganisms, rDNA, tissues.  
Y ☐ N ☐
  2. I/we worked or used equipment in a regulated research institution (college or professional lab) or industrial setting. Y ☐ N ☐
  3. This project is a continuation of previous research. Y ☐ N ☐
  4. My/our display board includes non-published photographs/visual depictions of humans (other than myself). Y ☐ N ☐
  5. This abstract describes only procedures performed by me/us, reflects my/our own independent research, and represents one year's work only. Y ☐ N ☐
  6. I/we hereby certify that the abstract and responses to the above statements are correct and properly reflect my/our own work.  
Y ☐ N ☐
-

#### Sample #4 \*adapted from “Snot Science

”<https://www.snexplores.org/blog/eureka-lab/snot-science-sneeze-mucus>

This sample is purposely not color-coded. **Can you identify the required sections?**

HS-PHAS-134

**Snot Science: How far does a sneeze travel?**

Viruses, such as those that cause colds and influenza, spread via droplets of mucus that are produced when an infected person sneezes or coughs. For perspective a sneeze pressure level of about 1 psi. compared to exhaling at about 0.03 psi. Using thick and thin mucus and a model sneeze, we tested the hypothesis that thin mucus will travel farther than thick mucus. Thin and thick mucus were represented by 1-milliliter volumes of colored water or a mixture of corn syrup and gelatin, respectively. Fluid was squirted from a plastic dropper by dropping a one-pound lead weight with enough force to model a sneeze (1 psi). Each sample was analyzed for maximum distance traveled and distribution of droplets. Data was analyzed using a two-tailed t test. Compared to thick mucus (mean distance of 110.8 cm, SD 103.7 cm, n=26/group), thin mucus squirted a greater mean distance (302.4 cm, SD 45.06 cm, n=26/group,  $p < 0.0001$ , Cohen's d 2.395). Thick mucus traveled a maximum of 310 cm. Thin mucus traveled a maximum of 400 cm. Thick mucus also formed fewer visible droplets, and droplets concentrated closer to the origin of the “sneeze.” This study showed that thin mucus travels farther than thick mucus in the plastic dropper sneeze model. Thin mucus traveled a maximum of 400 cm, suggesting a potential spread of virus-containing particles of up to 4 meters in our tests. Further experiments will clarify differences in viscosity between thick and thin mucus and potential differences in droplet size.

---

Certification Questions: Answer each either YES or NO with an X in the box

1. As a part of this research project, the student directly handled, manipulated, or interacted with human participants, vertebrate animals, potentially hazardous biological agents:(include which of these PHBA's were involved: microorganisms, rDNA, tissues).  
Y ☐ N ☐
  2. I/we worked or used equipment in a regulated research institution (college or professional lab) or industrial setting. Y ☐ N ☐
  3. This project is a continuation of previous research. Y ☐ N ☐
  4. My/our display board includes non-published photographs/visual depictions of humans (other than myself). Y ☐ N ☐
  5. This abstract describes only procedures performed by me/us, reflects my/our own independent research, and represents one year's work only. Y ☐ N ☐
  6. I/we hereby certify that the abstract and responses to the above statements are correct and properly reflect my/our own work.  
Y ☐ N ☐
-



## INSTRUCTIONS FOR GETTING THE DELIVERABLES TO THE CORRECT LOCATION

### I. Placing your YouTube 2-Minute Video onto your Zfairs registration dashboard

1. Log into <https://acsef.zfairs.com>
2. Input your Username and password.
3. In the upper right corner use your mouse to click the down arrow.
4. A drop-down menu will appear.
5. Select MY PROFILE
6. On your profile page, there are 2 VIDEO spaces
7. Use the first space for your 2-minute video.
8. Copy and paste the YouTube 2-minute URL into the space.
9. Scroll to the bottom of the screen and click SAVE
10. In the upper right corner, you will see a green bar and the word save.  
When the green bar disappears....it is SAVED.  
You can now log out or go to step 11.
11. If you created a 1-minute demonstration video (optional - not required)
12. Copy the 1-minute video URL from YouTube
13. Select the second video link space.
14. Paste the URL into this second space
15. Scroll to the bottom, Click SAVE - wait for the green bar to disappear
16. Log out

### II. Uploading Paperwork to your Zfairs Dashboard

- ❖ **The deadline to upload is March 20, before 4:00 AM**
- ❖ **This is the time when judges take over the zfairs site to view your uploaded items.**
- ❖ **Student participants will be locked out until after the fair.**

Screenshot of the list of items that can be uploaded to Zfairs. Note it is not meant to be legible...it is meant to show what you will be looking for.



A. VIRTUAL PROJECT PRESENTATION PDF. REQUIRED maximum of 12 pages following the Deliverables Virtual Project Presentation Template*
B. ABSTRACT official ACSEF form only PDF . REQUIRED*
C. ACSEF Research Plan PDF. REQUIRED*
D. ACSEF Research Plan Part 2 *If file size is greater than 20MB split into two pdf documents. & upload both.
F. Form 1C - REQUIRED IF RESEARCH WAS PERFORMED AT A COLLEGE, PROFESSIONAL LAB, OR ONLINE MENTORED THROUGH A UNIVERSITY OR PROFESSIONAL LAB
G. Form 1C supporting documents if provided by the College or Professional Lab PDF
H. Form 2 This is required ONLY for those projects that have a Mentor or SRC/IRB determined the project required a Qualified Scientist (QS) to oversee the project for safety purposes
I. Form 2 part 2 (Include only if any additional documents were provided by the QS or Mentor)
J. Form 7 + Previous Years Abstract & Research Plan PDF
K. Form 7 part 2 If the PDF is greater than 20 MB

Two items are marked as required with a **red bar**: for MS & HS. One additional item is marked required for HS upload.

- **Abstract on Official ACSEF Form PDF** required for **all** projects.
- **Approved ACSEF Research Plan PDF** required for **all** projects
- Virtual Project Presentation PDF required for High school projects/optional for Middle school

All other items are not required UNLESS they were included in your **Early Application**. None of the additional FORMS are required by anyone doing the General Application.

\*If any of these items are greater than 20MB then divide them into two pdf and upload them as part 2.

None of these additional items are applicable to the General Application with the exception of part 2 of the General Application research plan. RP could be long enough to be greater than 20MB.

### **Instructions for uploading each of these Paperwork items on the list.**

1. Log into <https://acsef.zfairs.com>
2. Input your Username and password.
3. Select **PAPERWORK** from the upper menu bar when in your Profile
4. The List of Paperwork items will appear (*like in the screenshot*)
5. Click on the item on the screen that you are ready to upload
6. The screen will show Browse your files
7. Select the item from your computer
8. The word UPLOAD will appear
9. Click upload
10. There will be a popup in the upper right corner of your screen with a green bar and the word SAVE.
11. WAIT until you see the green bar disappear - It is SAVED
12. Upload complete.
13. Repeat for each Required Item + any others applicable to your project.
14. Log out when you are finished. You can return and upload any remaining items.
15. If you want to re-upload you can repeat the process and the new one will overwrite the previous one.
16. Log out.

### **III. Placing your word doc version Abstract onto 2023 ACSEF Abstract Google Form The deadline to place your word version of the abstract is March 19th before 6:00 am**

1. You will need to know your Zfairs registration Project ID and exact title as shown on your application.  
\*log into your zfairs dashboard.  
Look in the upper section of your dashboard. It will start with either MS- or HS- followed by letters and numbers.
2. Copy the word document of your abstract
3. Go to the [2023 Abstract Google Form](#)
4. Follow each prompt
5. DONE!

#### IV. Project Set up

**Where:** Ohlone College Newark Center for Health Sciences and Technology  
39399 Cherry St, Newark, CA

**When:** Friday, March 24, 2023 anytime between 3 and 8 pm

**Who:** Student participants & parents.

NOTE parents may set up for their student - but it is not advisable because the student will not know the location of their project on Saturday before the judging begins nor will they be able to answer any questions the display & safety/compliance team may ask.

If you are on a team it is advisable all of you are there to set up.

**What:** Required items to bring

1. **Physical Display Board** which stringently follows the [full Display & Safety Guidelines](#)
2. **15 copies** of your [Official ACSEF Abstract on the official Form](#)
3. **Logbook** (Title and Project ID only) - no names of self, school, or teacher.
4. **Forms 1C, 2, 7 ONLY if these are part of your ACSEF Application.**
5. **Folder of Human Informed Consent** - *ONLY if you used human volunteers*
6. **Engineering projects** - *bring your prototype. Be sure it adheres to the [Allowed/Not Allowed](#)*
7. **Computer Science Projects** - bring a sample of your program to show if applicable on a working device such as a laptop, cell phone, or tablet and a charged battery. \*Note this could be your optional 1-minute video.
8. **Optional items to bring:**
  - a. Items that enhance your display - CONSULT this list before bringing your items [Allowed/Not Allowed](#)
  - b. A 1- minute video rendering of a demonstration of your project if materials/items include anything not allowed at the physical display. You must supply the device (phone, tablet, computer) with a battery backup to show the Display & Safety or SRC for approval.
  - c. A stand-alone photo frame for a copy of your Official ACSEF Abstract Form
  - d. Research Paper (Title and Project ID only) - no names of self, school, or teacher.

Questions reach out to Founding Director, ACSEFA President, SRC Chairman Patti Carothers at [directoracsef@gmail.com](mailto:directoracsef@gmail.com) or by phone at 925-353-4414. Leave a message for a callback.

## Addendum page 22

# California Science and Engineering Fair 2022-2023 Project Presentation Rules

You may prepare your Project Presentation for Virtual CSEF 2022 using any software tools that you desire, but the final document submitted for display to the judges and the public must satisfy the following requirements. These requirements ensure that all text of your Project Presentation is readable by your judges when a single page fills their screen. You are preparing your presentation for your judges to read, not you. Your judges will not “blow up” portions of your page if they cannot read your text because it is too small.

### Format Requirements

1. The Project Presentation must be a single PDF document limited to **no more than 12 pages**.
2. You must use a page size no larger than standard 8½”x11”.
3. The PDF document must open with default magnification “Fit Page” so that **the entire page is visible at the same time**. Create each page in landscape mode (*i.e.*, it is wider than it is tall).
4. Your PDF document must not contain animations. Similarly, active hyperlinks are prohibited except on the final page (References/ Supplemental Information). The document must not have instructions to open in “full screen mode.” Do not include any page transitions, embedded videos, or animations in your Presentation. These are all disabled when full screen mode is disabled.
5. The page background color must be light (not necessarily white) to enhance readability.
6. Text color must be predominantly dark (not necessarily black) to enhance readability.
7. All text must be easily readable when viewing the entire page at once. The smallest allowable font size for body text is 14 point, with 18 point recommended. *Exception:* You may use a smaller font size, down to 10 point, for figure captions or photo credits.
8. All Project Presentation elements must conform to [the fair’s standard Display Regulations](#), and the International science fair Display and Safety Rules as they would have to conform if placed on a physical poster for display to judges and the public.

### Format Recommendations:

1. Do not use unusual fonts or colors to “stand out from the crowd” or to be entertaining. We recommend that you use a standard font such as Arial, Calibri, Helvetica or Century Gothic.
2. Adopt a common style and size for all section titles. Similarly, adopt a common style and size for all headings within sections, and for all body text. Make the font size of section titles greater than that of headings, which in turn should be greater than that of body text. Use your own judgement for the relation between styles of title, heading, and body text.
3. Avoid long expository paragraphs. State your points succinctly.
4. Use bulleted lists to set out individual points of interest. Use numbered lists when that numbering is important, *e.g.*, instructions to follow in order, or items needing a reference anchor for citation elsewhere in your Presentation.

## Addendum page 23

### Structure of Project Presentations

Your Project Presentation must have the following elements:

- A title page which must be the first page,
- The body of your Project Presentation based on one of the three templates on the following pages, and
- A list of references and/or supplemental information which must be the last page.

#### Project Title/ Summary

- This section cannot exceed one page.
- This page does not require its own title.
- This page must include:
  - Project Title
  - Student Name(s)
  - A Project Summary limited to no more than 150 words.
- You may include photographs and drawings relevant to your project on this page, but no detailed or explanatory text that belongs on subsequent pages.
- In the lower right hand corner, indicate which of the three templates you selected ("Science," "Engineering," or "Mathematics/Computer Science").

#### Body of Project Presentation

Your Project Presentation's body must be based on one of the three templates on the following pages. Do not include additional information not specified in the template.

- Within each template, each section is required, each must be in the order provided, and each must start on its own page.
- Any section in each template may use more than one page as long as the total page count, including the Title and References sections, does not exceed the maximum page count of 12.
- Only data collected during this year's research may be presented, unless otherwise directed in the templates.
- You may include visual elements (graphs, drawings, and photographs) where they explain or illustrate your work and can be contained within the overall page limit.
- The templates provide recommended section titles, but alternate titles are acceptable.
- Section numbers in the templates are for reference only. You do not need to number yours.

#### References/ Supplemental Information

- This section cannot exceed one page.
- **References:** List published references/ documentation you used (*e.g.*, books, journal articles).
- **Supplemental Information:** To provide more complete information about what you did (*e.g.*, your laboratory notebook with raw data, schematics, code and/or public git repositories) you may include a set of URLs. Because judges are not required to review such supplemental material, do not bury anything in such places that you want your judges to see.



# Addendum page 24

## Science Project Template

### 1. Introduction

- What is your research question? What were you trying to find out? Include a description of your purpose and/or your hypothesis.
- Explain the origin of your project idea. What motivated you to address this issue? If you were led to your idea by someone else's work or suggestion, you must identify it.
  - Where did the specific implementation come from?
  - When did you first start working on this project idea?
- Is this a continuation of your science fair project from a previous year or is it related to work you did in a previous science fair project? If you answered yes to either question, a brief summary of your prior research must be included here. Be sure to distinguish your previous work from this year's project.
- Summarize work by others as it is relevant to, and impacts, your project. Even if you developed your project idea entirely on your own, other people have done related work which you should have discovered while researching your project. Scientific integrity requires you to identify the most relevant people, publications (journals, books, web sites), and/or other science fair projects.

### 2. Methods

- Explain your methodology and procedures for carrying out your project in detail.
- Describe your process. What type of data did you collect and how did you collect that data?
- DO NOT include a list of materials.

### 3. Results

- What were the results of your project?
- Include a brief description in your own words of each experiment, as well as every table and figure that illustrates your data.
- Include relevant statistical analysis of the data.

### 4. Discussion

- What is your interpretation of these results?
- What do these results mean? Compare your results with theories, published data, commonly held beliefs, and expected results.
- Discuss possible errors. Did any questions or problems arise that you were not expecting? How did the data vary between repeated observations of similar events? Did uncontrolled events affect your results? If so, what was their effect and what did you do in response to them?

### 5. Conclusions

- What conclusions did you reach?
- What do these results mean in the context of the literature review and other work being done in your research area? How do the results address your research question? Do your results support your hypothesis?
- What application(s), if any, do you see for your work? Next steps? Further research?

# Addendum page 25

## Engineering Project Template

### 1. Introduction

- What engineering problem were you trying to solve? Include a description of your engineering goal.
- Explain the origin of your project idea. What motivated you to address this issue? If you were led to your idea by someone else's work or suggestion, you must identify it.
  - Where did the specific implementation come from?
  - When did you first start working on this project idea?
- Is this a continuation of your science fair project from a previous year or is it related to work you did in a previous science fair project? If you answered yes to either question, a brief summary of your prior research must be included here. Be sure to distinguish your previous work from this year's project.
- Summarize work by others as it is relevant to, and impacts, your project. Even if you developed your project idea entirely on your own, other people have done related work which you should have discovered while researching your project. Scientific integrity requires you to identify the most relevant people, publications (journals, books, web sites), and/or other science fair projects.

### 2. Methods

- Explain your methods and procedures for building your design.
- What did you do? How did you design and produce your prototype? If there is a physical prototype, you may want to include pictures or designs of the prototype.
- If you tested the prototype, what were your testing procedures? What data did you collect and how did you collect that data?
- DO NOT include a list of materials.

### 3. Results

- What were the results of your project?
- How did your prototype meet your engineering goal?
- If you tested the prototype, provide a summary of testing data tables and figures that illustrate your results.
- Include relevant statistical analysis of the data.

### 4. Discussion

- What is your interpretation of these results?
- What do these results mean? You may compare your results with theories, published data, commonly held beliefs, and/or expected results.
- Did any questions or problems arise that you were not expecting? Did uncontrolled events cause these problems? How did you address your unexpected issues?
- How is your prototype an improvement or advancement over what is currently available?

### 5. Conclusions

- What conclusions did you reach?
- Did your project turn out as you expected?
- What application(s), if any, do you see for your work? Next steps? Further research?



# Addendum page 26

## Mathematics / Computer Science Template

### 1. Introduction

- What is your research question?
- Explain the origin of your project idea. What motivated you to address this issue? If you were led to your idea by someone else's work or suggestion, you must identify it. When did you first start working on this project idea?
- Is this a continuation of your science fair project from a previous year or is it related to work you did in a previous science fair project? If you answered yes to either question, a brief summary of your prior research must be included here. Be sure to distinguish your previous work from this year's project.
- Summarize work by others as it is relevant to, and impacts, your project. Even if you developed your project idea entirely on your own, other people have done related work which you should have discovered while researching your project. Scientific integrity requires you to identify the most relevant people, publications (journals, books, web sites), and/or other science fair projects.

### 2. Framework

- Introduce the concepts and notation needed to specify your research question, methods, and results precisely.
- Define relevant terms, and explain prior/background results. (You can present novel concepts developed as part of your project either here or in Section 4, as appropriate.)

### 3. Findings

- Present your findings and supporting arguments.
- What did you discover and/or prove? Describe your result(s) in detail. If possible, provide both formal and intuitive/verbal explanations of each major finding.
- Describe your methods in general terms. Then:
  - Present rigorous proofs of the theory results – or, if the arguments are long, give sketches of the proofs that explain the main ideas.
  - For numerical/statistical results, include tables and figures that illustrate your data. Include relevant statistical analysis. Were any of your results statistically significant? How do you know this?

### 4. Conclusions

- What is your assessment of your findings?
- How do the results address your research question? How has your work advanced our understanding relative to what was already known?
- Discuss possible limitations. Did any questions or problems arise that you were not expecting? What challenges do you foresee in extending your results further?
- What application(s), if any, do you see for your work? Next steps? Further research?