California Science and Engineering Fair
Project Presentation Requirements, 2024

You may prepare your *Project Presentation* for Virtual CSEF 2024 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.

Requirements are of two types. This page gives formatting requirements, while the remaining pages specify the content requirements of your *Project Presentation*. The *Project Presentation Approval Committee* will check that your final document satisfies both types of requirements and, if necessary, will require you to revise your submission before you can be scheduled for interviews.

Format 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.

1. The *Project Presentation* must be a single PDF document limited to **no more than 13 pages**.
2. Each page must be wider than it is tall (*i.e.*, it must be produced in landscape mode), and all pages must be the same size, no wider than 11", and no taller than 8½".
3. The PDF document must open with default magnification "Fit Page" so that **the entire page is visible at the same time**.
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, 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 the ordering is important, *e.g.*, instructions to follow in order, or items needing a reference anchor for citation elsewhere in your Presentation.

Content Requirements

Please read all of these requirements. Omitting a required element may be cause for your *Project Presentation* to be rejected.

Your *Project Presentation* must have the following four elements, each starting on its own page, in this order:
1. A title page,
2. The body of your *Project Presentation*, based on one of the three templates on the following pages,
3. The *Scope of Work* section, and
4. A single page list of references and/or supplemental information.

Title Page
- This section cannot exceed one page.
- This page must include:
  - Project Title
  - Student Name(s)
  - A Project Summary limited to no more than 150 words.
- Do not include a Project Number because it may change after you submit your *Project Presentation*.
- This page should not have its own title in addition to the Project Title.
- You may include photographs and drawings relevant to your project on this page, but no detailed or explanatory text belonging on subsequent pages.

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 of the entire document does not exceed the maximum allowed (see page 1).
- 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 your sections.

Scope of Work
This section is where you must (1) clarify your personal contributions and (2) distinguish your work from that of others that may have contributed to **any phase of your project: its conception, execution, or presentation**. This section may use more than one page as long as the total page count of the entire document does not exceed the maximum allowed (see page 1). This section must contain the following two subsections, with titles to distinguish them:

- **New Work by Author(s)**, listing the most significant steps you personally performed in the design and execution of your project. *This is not a summary of the entire project*. You should limit yourself to the most important things you did yourself while working on your project.

- **Professional, Institutional, and Academic Resources and Support**, listing any resources you used which are not generally available to the general public at no cost. This includes opportunities to work in professional research laboratories (whether as a guest, an intern, a paid assistant, or for which you paid for the opportunity), laboratory resources at your school beyond what is generally available to students at any other school in the State of California, access to specialized equipment for measurements regardless of how you came to have that access, and even assistance in producing a professional-quality *Project Presentation*. In this listing, *be specific*. For example, "I attended a summer research program at North Dakota State University under the direction of Dr. John Smith. A post-doc in the research group taught me how to use the electron microscope, but I did all of the measurements myself."

  If you did all of the work without any help from any other person, you can simply state this fact. Be aware that even after your *Project Presentation* is approved by the Fair, if judges determine through your interviews that there has been a lack of candor revealing assistance and support in this section, then they may use that determination in evaluating your project in any way they deem appropriate.

  Judges are interested in what you yourself contributed to the project, which may be intellectual or it may be the physical work and experimentation that you performed. No professional researcher works entirely without assistance from others. What distinguishes ethical from unethical researchers is their honesty in portraying their own contributions and that of others to the end product of their research.

References/ Supplemental Information

This section cannot exceed one page. This page is the only one in the entire *Project Presentation* which is allowed to contain live hyperlinks. This page may contain either or both of the following subsections:
- **References**: List published references/ documentation that you used (*e.g.*, books, journal articles). List only the most important references. You cannot include everything you ever saw because the minimum font size (see page 1) sets an upper limit on how much text will fit within the single-page of this section.
- **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 that you want your judges to see in supplemental material.

Science Project Template

1. **Introduction**

   In addition to providing any background or history that you find useful, this section must include the following four titled subsections in any order you choose:

   - **Research Question.** What was your research question? What were you trying to find out? Include a description of your purpose and/or your hypothesis.
   - **Project Origin.** 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?

     Specify if you found or adapted the idea for your project from any book, website, or online reference, or whether it was in any way assigned to you as part of a class, laboratory, university, or research institution. Such sources do not diminish or invalidate your project, but your judges are empowered to lower your project's evaluation for withholding or concealing its origin.
   - **Previous Work.** 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. If not a continuation project, you can simply say, "None."
   - **Work by Others.** 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?

Engineering Project Template

1. **Introduction**
   In addition to providing any background or history that you find useful, this section must include the following four titled subsections in any order you choose:
   - **Engineering Goal.** What engineering problem were you trying to solve? Include a description of your engineering goal.
   - **Project Origin.** 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?
     Specify if you found or adapted the idea for your project from any book, website, or online reference, or whether it was in any way assigned to you as part of a class, laboratory, university, or research institution. Such sources do not diminish or invalidate your project, but your judges are empowered to lower your project's evaluation for withholding or concealing its origin.
   - **Previous Work.** 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. If not a continuation project, you can simply say, "None."
   - **Work by Others.** 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?

Mathematics / Computer Science Template

1. **Introduction**

   In addition to providing any background or history that you find useful, this section must include the following four titled subsections in any order you choose:

   - **Research Question.** What is your research question?
   - **Project Origin.** 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? Specify if you found or adapted the idea for your project from any book, website, or online reference, or whether it was in any way assigned to you as part of a class, laboratory, university, or research institution. Such sources do not diminish or invalidate your project, but your judges are empowered to lower your project's evaluation for withholding or concealing its origin.
   - **Previous Work.** 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. If not a continuation project, you can simply say, "None."
   - **Work by Others.** 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?