

# Virtual NCSEF 2021 Project Material Guidelines

The 2021 NCSEF Planning Committee is adapting a revised version of the Regeneron ISEF project materials that will be used during judging at the Virtual 2021 Regeneron International Science and Engineering Fair (ISEF). These guidelines have been established to address a judging process that will occur remotely and through a digital medium. The International Rules & Guidelines remain as the guide of what is eligible and allowable.

## REQUIRED Items:

### I. [Regeneron ISEF Forms as required in the Rules and Regulations](#)

- a. This process remains the same as prior years and will be reviewed by the Scientific Review Committee (SRC) to confirm eligibility for competition. Required forms will vary by project but **all projects must complete ISEF Forms 1, 1A, 1B, Abstract, and a Research Plan at a minimum.**
- b. **On display for the judges will be:**
  - i. **Official NCSEF Abstract** (250 words)
  - ii. **Regulated Research Institutional Setting Form 1C** (if applicable)
  - iii. **Continuation Form 7** (if applicable)

### II. [Project Presentation](#)

- a. The project presentation replaces the project poster used during in-person fairs. Appendix II provides complete instructions of the format requirements and recommendations. (sheets 8.5 x 11, maximum 12 pages)
- b. There are two suggested templates based on project type:
  - i. Science Projects,
  - ii. Engineering Projects
  - iii. Mathematics/Computer Science Projects.
- c. Project presentations will be required to be submitted by a set deadline and will then be locked for Display & Safety inspection prior to competition.

### III. [A Quad Chart](#)

- a. The quad chart summarizes the project in a single page for a quick overview by the judges.
- b. Sheets are 8.5 by 14 with only 1 page.
- c. Appendix III provides complete instructions with format requirements and recommendations as well as sample templates.

### IV. **[ONLY PROJECTS SELECTED TO PRESENT AT ISEF WILL DO A PROJECT VIDEO \(2-minute maximum\) These Senior projects will be notified at the NCSEF awards if they will need to do this!](#)**

- a. This video summarizes the project for the public.
- b. While judges will review items I, II, and III above, they are not required to review this video, so do not include any key information here not already provided above.

## Additional OPTIONAL materials:

All judges will have access to these optional materials, just as they would at a finalists' booth, but there is no guarantee that the judges will review them.

1. [Video Demonstration/Simulation/Animation](#) (1 minute maximum)

If a project is best explained by showing a demonstration, simulation or animation, you may include a short video. Usually this would only be for an engineering or technology demonstration.

2. [Research Paper](#)

**NCSEF does not require any project to include a research paper.** However, many students have completed such a paper through the research process and would include it at their booth during an in-person fair. If you have prepared such a paper, you may upload it to share with judges, though judges are not required to review it.

3. [Lab Notebook Image/Excerpt](#)

**NCSEF does not require any project to submit a laboratory notebook.** However, many students have this record of their research timeline and process and typically have it available at their booth. A student may upload a PDF of up to 4 pages of a lab notebook to provide evidence of its use, but it is strongly advised NOT to share the notebook in totality to protect your intellectual property.

# Appendix I. Submission and Review Process

## ISEF Paperwork

All students must register and compete at a NC Regional Fair and upload all of the ISEF paperwork required for their project. At a minimum, all projects must upload [Checklist Forms 1](#), [Student Checklist Form 1A](#), Project Research Plan/Summary and during registration. The forms that are to be uploaded during registration for the judges to review are 1) the [Official Abstract](#) and if applicable, the [Regulated Research Setting Form 1C](#) and/or the [Continuation Form 7](#).

- **NCSEF 2021 Abstract Fillable form** - approved by SRC (250-word maximum format)  
*The abstract summarizes the information contained in the rest of this document. An abstract includes: (a) the research question or engineering problem, (b) procedures used, (c) data, (d) interpretation and (d) conclusions. It also may include any possible research applications. It should be limited to these essential elements.*
- **Regulated Research Institutional Setting Form 1C (if applicable)**  
*In 2020-2021, when many Regulated Research Institution laboratories and facilities are closed to student researchers, the ISEF SRC has suggested that a Form 1C be used when support from mentors and those in a laboratory setting has been provided, even when the student received this support remotely. This can also include situations in which a high school teacher is supporting laboratory activities on behalf of a remote student to help clarify the student's involvement in each step of the project.*
- **Continuation Form 7 (if applicable)**  
*Any project that is a continuation of a previous year's work must document that additional research is new and different on Continuation Form 7. Note that projects that were conducted between January 2020 and March 2020 that competed at an ISEF-affiliate fair, may not be presented in 2021 without meeting the continuation criteria.*

## Display & Safety

Display & Safety inspections will include a review of all submitted materials and enforcement of the display guidelines as published in the [International Display and Safety Rules and Guidelines](#). This includes providing appropriate credits for photographs, graphs and other visuals and in having any permissions of individuals depicted in any project materials (on the board, slides or in the video) available.

# Appendix II. Project Presentation Instructions

You may prepare your Project Presentation for Virtual NCSEF 2021 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. Templates are available at NCSEF.org .

## 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 either American standard 8½”X11” or European standard A4.
3. The PDF document must open with default magnification “Fit Page” so that the entire page is visible at the same time. Recognizing that almost all judges will view your Project Presentation on screens that are wider than they are tall, you should create all pages in Landscape mode.
4. Your PDF document must not have instructions to open in “full screen mode.” Eliminating this mode automatically precludes page transitions and embedded videos or animations, so do not attempt to include these in your Presentation. (There is provision elsewhere in your submission for an optional video if you need something to move in order to illustrate your project.)
5. The page background color must be white.
6. Text color must be predominantly black, but limited color for emphasis is acceptable.
7. All text should be readable easily when viewing the entire page at once. The smallest allowable font size of body text is 14 pt. Exception: You may use a smaller font size, down to 10 pt., for figure captions or photo credits.
8. All Project Presentation elements must conform to D&S 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.

## 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. For readability, we recommend body text be no smaller than 18 pt.
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 style and size relation between body and heading text.

## Project Presentation Templates

Choose one of the following templates to create your presentation. Do not include information not specified in this template. If you are submitting a continuation project, include only information related to this year’s research unless otherwise directed in the instructions below. You may include graphical elements as they would explain or illustrate your work and can be contained within the overall page limits.

Each of the seven (7) required sections in each template must start on its own page. Each section may use as many pages as you want, as long as all formatting instructions above (such as page count) are satisfied.

TEMPLATE I: Science Projects

TEMPLATE II: Engineering Projects

TEMPLATE III: Mathematics/Computer Science Projects)

# Project Presentation Template: Science Project

## 1. Project ID and Title

- The following should be included:
  - Project ID. This ID will be provided by either the NC Regional or State Fair.
  - Project Title
  - Finalist Name (s)
  - School(s)
  - City, State, Province, Country

## 2. 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. 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. What were the result(s) of your project?

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

## 5. 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. 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

- 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).

# Project Presentation Template: Engineering Project

## 1. Project ID and Title

- The following should be included:
  - Project ID. This ID will be provided by either the NC Regional or State Fair.
  - Project Title
  - Finalist Name (s)
  - School(s)
  - City, State, Province, Country

## 2. 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. 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. 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. 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. What conclusions did you reach?

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

## 7. References

- 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).

# Project Presentation Template: **Mathematics/Computer Science**

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

- The following should be included:
  - Project ID. This ID will be provided by Society for Science & the Public upon submission of ISEF paperwork.
  - Project Title
  - Finalist Name (s)
  - School(s)
  - City, State, Province, Country

## 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.
- 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?

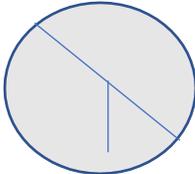
## 6. **REFERENCES**

- 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).

## Appendix III. Quad Chart Instructions

A “quad chart” is a single page divided into four quadrants providing a high-level summary of the project. It is intended to be more visual than detailed in order to quickly introduce your judges to what is important about your project. Follow the model below that corresponds to the Project Presentation template you selected.

1. You must use a page size no larger than either American standard 8½”X11” or European standard A4.
2. The page background color must be white.
3. Text color must be predominantly black, but limited color for emphasis is acceptable.
4. The minimum allowable font size is 14 pt. *Exception:* You may use a smaller font size, down to 10pt., for figure captions or photo credits.
5. 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. The Title section should be only as tall as necessary to include your project title and other identifying information (see section on Quad Chart Title).
6. The Quad Chart should not include a bibliography, references, or acknowledgments.

<b>Science Project Quad Chart</b>	
<p style="text-align: center;">Q1: Research Question</p> <ul style="list-style-type: none"> <li>•</li> <li>•</li> <li>•</li> <li>•</li> </ul> <div style="border: 1px solid black; width: 100px; height: 40px; margin-left: auto; margin-right: auto;"></div>	<p style="text-align: center;">Q3: Data Analysis &amp; Results</p> <div style="display: flex; justify-content: space-around; align-items: center;">   </div>
<p style="text-align: center;">Q2: Methodology</p> <ul style="list-style-type: none"> <li>•</li> <li>•</li> <li>•</li> <li>•</li> <li>•</li> <li>•</li> </ul>	<p style="text-align: center;">Q4: Interpretation &amp; Conclusions</p> <ul style="list-style-type: none"> <li>•</li> <li>•</li> <li>•</li> </ul> <div style="border: 1px solid black; width: 100%; height: 60px; margin-top: 10px;"> <div style="border-bottom: 1px solid black; height: 50px;"></div> </div>

<b>Engineering Project Quad Chart</b>	
Q1: Engineering Problem & Project Objectives	Q3: Data Analysis & Results
Q2: Project Design	Q4: Interpretation & Conclusions

<b>Math/Computer Science Project Quad Chart</b>	
Q1: Problem or Question	Q3: Findings
Q2: Framework	Q4: Interpretation & Conclusions

### Quad Chart Title:

- In the upper right-hand corner, list the Project ID that will be provided by either the NC Regional or State Fair.
- Line one is the title of your project
- Line two is your name, school, city, state, country

### Quadrant 1: Research Question/Engineering Goal

- 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.
- Text should be kept to a minimum.

### Quadrant 4: Interpretation & Conclusions

- This should reflect material in #5 and #6 of the Project Presentation Template