Colorado Science & Engineering Fair (CSEF)
Judging Guidelines/Criteria

The following evaluation criteria will be used for Grand Award Judging at the 2020 CSEF. These guidelines and criteria align with the Intel International Science & Engineering Fair (ISEF). One of the most significant pieces is the use of different criteria for science projects versus engineering, mathematics and computer science projects. As shown below, both criteria have five sections as well as scoring for each section. Each section includes key items to consider for evaluation both before and after the interview. Students are encouraged to design their posters in a clear and informative manner to allow pre-interview evaluation and enable the interview to become an in-depth discussion. Judges should examine the student notebook and, if present, any special forms such as the Regulated Research Institution/Industrial Setting (Form 1C) or Continuation/Research Progression Projects (Form 7). ***Considerable emphasis is placed on two areas: Creativity and Presentation, especially within the interview section, and are discussed below:***

Creativity: A creative project demonstrates imagination and inventiveness. Such projects often offer a different perspective that opens up new possibilities or new alternatives. Judges should place emphasis on research outcomes in evaluating creativity.

Presentation and Interview: The interview provides the opportunity to interact with the finalist and evaluate their understanding of the project's basic science, interpretation, and limitations of the results and conclusions.

- It the project was done at a research or industrial facility, the judge should determine the degree of independence of the finalist in conducting the project (this is documented on Form 1C).

- If the project was completed at home or in a school laboratory, the judge should determine if the finalist received any mentoring or professional guidance (this is documented on Form 2 and/or Form 3).

- If the project is a multi-year effort, the interview should focus ONLY on the current year's work. Judges should review the project's abstract and Form 7 to clarify what progress was completed for this year's science fair.

- Please note that both team and individual projects are judged together, and projects should be judged only on the basis of their quality. However, all team members should demonstrate significant contributions to the project and an understanding of the project.

Judging Criteria for Science Projects:

1. **Research Questions (10 points):** clear and focused purpose, identifies contribution to the field of study, and is testable using scientific methods.
2. **Design and Methodology (15 points):** well-designed plan and data collection methods, and variables and controls are defined, appropriate and complete.
3. **Execution – Data Collection, Analysis and Interpretation (20 points):** systematic data collection and analysis, reproducibility of the results, appropriate application of mathematical and statistical methods, and sufficient data is collected to support interpretation and conclusions.
4. **Creativity (20 points):** project demonstrates significant creativity in one or more of the above criteria.
5. Presentation (35 total points):
   a. **Poster (10 points):** logical organization of material, clarity of graphs and legends, and supporting documentation displayed; and
   b. **Interview (25 points):** clear, concise, thoughtful responses to questions, understanding of basic science relevant to the project, understanding of interpretation and limitations of the results and conclusions, degree of independence in conducting the project, recognition of potential impacts in science, society and/or economics, quality of ideas for further research, and for team projects, contributions to the project and understanding of the project by all members.

Judging Criteria for Engineering, Mathematics & Computer Science Projects:

1. **Research Problem (10 points):** description of practical need or problem to be solved, definition of criteria for proposed solution, and explanation of constraints.
2. **Design and Methodology (15 points):** exploration of alternatives to answer the need or problem, identification of a solution, and development of a prototype/model.
3. **Execution – Construction and Testing (20 points):** prototype demonstrates intended design, prototype has been tested in multiple conditions/trials, and prototype demonstrates skill and completeness.
4. **Creativity (20 points):** project demonstrates significant creativity in one or more of the above criteria.
5. Presentation (35 total points):
   a. **Poster (10 points):** logical organization of material, clarity of graphs and legends, and supporting documentation displayed; and
   b. **Interview (25 points):** clear, concise, thoughtful responses to questions, understanding of basic science relevant to the project, understanding of interpretation and limitations of the results and conclusions, degree of independence in conducting the project, recognition of potential impacts in science, society and/or economics, quality of ideas for further research, and for team projects, contributions to the project and understanding of the project by all members.

The above-mentioned criteria highlighted in blue shows the differences between the judging criteria for science projects and the engineering, mathematics and computer science projects.