OSSEF Judging Criteria - 2024

The following criteria are used for judging at the OSSEF and the ISEF. While many of the science and engineering criteria are the same, some are different and reflected in the scoring rubric. Each section of the scoring rubric includes key items to consider for evaluation before, during, and after the interview.

Students are encouraged to design their posters in a clear and informative manner to allow pre-interview evaluation and to enable the interview to become an in-depth discussion. Judges should examine the student notebook and, if present, any special forms such as Form 1C (Regulated Research Institution/Industrial Setting) and Form 7 (Continuation of Projects).

Considerable emphasis is placed on two areas: *Creativity* and *Presentation/Interview*.

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

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

- If 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 (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.
- 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 (Regeneron ISEF Continuation Projects) to clarify what progress was completed this year.
- 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 and an understanding of the project.

OSSEF JUDING CRITERIA FOR SCIENCE AND ENGINEERING PROJECTS

Research Question				
1 ..... **2** ..... **3** ..... **4** **5**				
Science: Does not provide a purpose or provides one that is unclear or disorganized; does not identify a contribution to the field of study; or is not able to be tested using sound scientific methods. **Engineering**: Fails to provide a description of a practical need or problem to be solved, or provides one that is unclear; fails to define criteria for proposed solution or defines incorrectly; lacks explanation of constraints.		**Science**: Provides a vague research question; focused purpose statement; or contribution to the field of study. The scientific method presented in the study is testable using sound methods but could benefit from further efforts. **Engineering**: Provides a vague description of a practical need or problem to be solved; simple and vague definition of criteria for proposed solution; limited explanation of constraints.		**Science**: Provides a clearly articulated research question, focused purpose statement, and contributions to the field of study. The scientific method presented in the study is sound and clearly testable. **Engineering**: Provides a clear description of a practical need or problem to be solved; thoroughly descriptive definition of criteria for proposed solution; detailed explanation of constraints.
				_____ Points X 2 = _____ (10 possible points)

Design and Methodology				
1 ..... **2** ..... **3** ..... **4** **5**				
Science: Does not provide a well-designed plan; data collection methods are poorly designed or absent; variables and controls are poorly defined, inappropriate, or incomplete. **Engineering**: Does not provide or provides notably unclear exploration of alternatives to answer a need or problem; absence of identification of a solution; absence of or poor quality of a prototype/model.		**Science**: Provides a clear plan but lacks clarity in data collection methods; variables and controls are somewhat vague. As described, the replication of the experimental design would need additional information for replication. **Engineering**: Provides some exploration of alternatives to answer a need or problem; moderately unclear or simple identification of a solution; incomplete development but good quality of a prototype/model.		**Science**. Provides a well-designed plan with clear data collection methods; variables and controls are explicitly described, appropriate, and complete. As described, the experimental design would be easily replicated from the information provided. **Engineering**: Provides an extensive exploration of alternatives to answer a need or problem; clear and advanced identification of a solution; skillful development of a high-quality prototype/model.
				_____ Points X 3 = _____ (15 possible points)

Science Projects - Execution: Data Collection, Analysis, Interpretation **Engineering Projects - Execution: Construction, Testing**				
1 ..... **2** ..... **3** ..... **4** **5**				
Science: Does not provide clear systematic data collection and analysis; incorrect application or absence of mathematical or statistical methods; insufficient data collected to support interpretation and conclusions. **Engineering:** Does not provide a prototype that demonstrates qualities of the intended design; prototype has not been tested in conditions/trials; prototype does not demonstrate engineering skills and completeness.		**Science**: Provides organized data collection and analysis; moderate reproducibility of results; application of mathematical and statistical methods is weak; insufficient data collected to support interpretation and conclusions. **Engineering**: Provides a prototype that demonstrates some qualities of the intended design; prototype has been moderately tested in some conditions or trials; prototype demonstrates a few engineering skills and some completeness.		**Science**: Provides clear systematic data collection and analysis; reproducibility of results; appropriate application of mathematical and statistical methods; sufficient data collected to support interpretation and conclusions. **Engineering**: Provides a prototype that specifically demonstrates intended design; prototype has been thoroughly tested in multiple conditions/trials; prototype demonstrates engineering skills and completeness.
				_____ Points X 4 = _____ (20 possible points)

Creativity				
1 ..... **2** ..... **3** ..... **4** **5**				
Science and Engineering: Project fails to demonstrate imagination and/or inventiveness; fails to offer different perspectives that may open up new possibilities or new alternatives.		**Science and Engineering**: Project demonstrates some imagination and/or inventiveness; although weak, offers different perspectives that may open up new possibilities or new alternatives.		**Science and Engineering**: Project clearly demonstrates imagination and inventiveness; offers different perspectives that open up new possibilities or new alternatives.
Comments:				_____ Points X 4 = _____ (20 possible points)

Research Poster/Display
1 ..... **2** ..... **3** ..... **4** **5**

Science and Engineering: Does not provide logical organization of materials; graphics and legends are unclear or absent; or supporting documentation is not displayed.		**Science and Engineering**: Provides somewhat scattered materials that do not appear to have reasoning to their placement; or displays appropriate graphics but legends are weak; could benefit from additional supporting documentation.		**Science and Engineering**: Provides a clearly articulated and logical organization of material and display of supporting documentation. Excellent use of graphics and legends.
				_____ Points X 2 = _____ (10 possible points)

Interview				
1 …… **2** …… **3** …… **4** …… **5**				
Does not provide a clear, concise, thoughtful responses to questions; lacks a basic understanding of the science relevant to the project; lacks a basic understanding of the interpretation and limitation of the results and conclusions; displays a lack of independence in conducting the project; no recognition of potential impact in science, society, and/or economics; or provides a low quality of ideas to further research. **Team projects** – Team members do not contribute equally to the presentation, and one or more lack substantial understanding of the project.		Provides a moderately clear, concise, thoughtful response to questions; has limited understanding of basic science relevant to the project; has limited understanding of the interpretation and limitations of the results and conclusions; indicates moderate independence in conducting the project; some recognition of potential impact in science, society, and/or economics; struggles with providing ideas for further research. **Team projects** – All team members contribute equally to the presentation, but some demonstrate more understanding than others.		Provides a very clear, concise, thoughtful response to questions; understands the basic science relevant to the project; understands the interpretation and limitations of the results and conclusions; demonstrates independence in conducting the project; recognizes the potential impact in science, society and/or economics; provides quality of ideas for further research. **Team projects** – All team members contribute equally, and all demonstrate a thorough understanding of the project.
				_____ Points X 5 = _____ (25 possible points)