

## **Expectations for Intel ISEF Candidates – CUSEF and SLVSEF 2011**

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Intel ISEF finalists are the *crème de la crème*: the best projects in the fair. Choosing the top projects is always a challenging task. Judges use the following criteria to select the projects that represent CUSEF and SLVSEF at the Intel ISEF.

Projects that win at ISEF often have three characteristics: (1) they follow sound methodologies; (2) they have useful applications and meaningful implications; and (3) they contribute something new to science. Since we want CUSEF's and SLVSEF's students to do well at ISEF, we consider these three factors when we judge projects.

Ideally, the students selected to represent CUSEF and SLVSEF at the Intel ISEF should:

- Ask a question and design an experiment that makes an original and meaningful contribution to science. Or, if an engineering project, identify a need and follow the engineering design process to produce a useful and innovative product. If appropriate, the student should follow the mathematical proof/reasoning process.
- Consult and reference suitable sources of information, including articles from peer-reviewed journals, scientific monographs, and similar sources of information.
- State a logical, informed hypothesis that includes not only a “what”, but a “why” (i.e., what are the theoretical/conceptual underpinnings of the hypothesis?). A statistical hypothesis should also be stated.
- Use methods that are similar to those published in peer-reviewed journals. Methods should follow “best practices” for research in a specific field. Both control and randomization should be integrated into the experimental design.
- Collect a sufficient amount of data (e.g. 20-30 replicates) to justify statistical analysis.
- Use statistics to analyze data, including both exploratory data analysis and inference.
- State a conclusion supported by the data and data analysis. The conclusion should address the hypothesis and question asked by the student. The “why” should also be discussed in the conclusion or discussion section of the project. Why did the project turn out the way that it did? If an engineering project, the student should present the final version of his or her product with evidence supporting the final design choices.
- Discuss and explain the implications of his or her conclusions/final product.
- Maintain a detailed and complete project notebook.
- Communicate effectively, explain his or her project clearly, and demonstrate understanding of the project’s relevant background information.
- Present a professional appearance in dress and conduct during judging.
- Prepare and display a high quality, easy-to-follow, and detailed display board free from grammatical errors and spelling mistakes. (Remember, however, that the interview greatly exceeds the importance of the display board.)
- Write a clear, concise, and cogent abstract.