

Sacramento Regional STEM Fair Policy & Procedures: Judging

INTRODUCTION

The judging goals of the Sacramento Regional STEM Fair are to engage and inspire student participants to pursue STEM degrees and career pathways through recognition and exposure.

1. **Recognition:** To reward student scientific and engineering talent, primarily shown through original thought and skillful project execution
2. **Exposure:** To encourage broad interest and participation in all STEM subjects as applicable to their everyday lives through professional interaction, especially amongst students who may have no other outlet to do so.

To promote these goals, the Sac STEM Fair's policy is to award first through third in the High School division and first through fifth in the Middle School Division. Both Divisions also receive at least one honorable mention ribbon per category. That means that there are 70 possible category awards to be presented to Sac STEM Fair participants.

We also award attendance at the STEM fair by acknowledging not only every project, but every *STUDENT* who participates with a certificate of participation and recognition, as well as an official Fair pin.

GENERAL POLICY & EXPECTATIONS

Conflict of Interest

To avoid conflicts of interest, ACSEF does not allow the following (perhaps otherwise well-qualified) people to serve as judges:

1. 6th-12th grade school teachers or site administrators of schools with participants, staff or board members
2. Parents of or professional mentors of any student participants
3. Anyone else whose relationship with any STEM fair participant could pose a conflict of interest such as: Family, neighbor, or corporate relationships are often too complex for SSRSEF to enumerate all the cases where you as a judge may find yourself scheduled to evaluate a project whose student(s) you know personally or professionally. If you can anticipate such conflicts before the day of the event ("my company donated resources to four chemistry projects," for example), please contact the fair coordinator to transfer duties to a volunteer capacity.

If it is discovered that a volunteer judge is dishonest and violates this policy, they will be asked to turn in their badge and removed from the future judge lists. All of their scores will be removed from the database and reassigned to be rescored.

Nondisclosure of Judging Results

Serving as an SSRSEF judge means that you agree to strictly follow our policy on the confidentiality of judging results:

1. Project scores are ***never*** disclosed to anyone outside of the judges' conference room. Students never see these scores; they only support the project ranking process and are ***never*** made public.
 2. Ranking decisions (preliminary and those adjusted for cross-category consistency) are confidential until publicly announced at the awards ceremony. Do not discuss ranking decisions with anyone outside the judges' conference area (including in restrooms, lobbies, or parking lots).
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PROCESS

When projects are submitted to the Sacramento Regional STEM Fair, they undergo a few levels of review prior to obtaining any sort of award. Below is a simple list of the steps to complete judging for the STEM Fair event.

1. In Office Review

2. Scientific Review Committee (SRC) Review and Approval
3. STEM Professionals Judge Projects using Score Sheets
4. Data Entry into Computer database
5. Scoring Calculations and Deviation Check
6. Consistency Coordination and Follow up

The sections below explain a volunteer judge's role in each of these phases, along with the more specific Sac STEM Fair policies and procedures that apply to each.

STEM PROFESSIONAL SCORES

Scoring Policy

The Sacramento Regional STEM Fair uses a 100-point scale, similar to what has been developed and used by the Intel International Science and Engineering Fair (ISEF).

Science vs. Engineering

The scoring criteria is split into two alternatives for evaluating the project: "scientific thought" or "engineering design." Science projects earn points for features that promote empirical discovery, such as well-defined variables and thoughtful experimental controls. Engineering projects earn points for design-oriented features, such as practical tests, economic feasibility, and promising applications. The category structure of the Fair generally means that science projects compete against other science projects while engineering projects compete against other engineering projects. However, the Fair does have a few categories, such as "Energy and Transportation," where both types of projects could be present. For these categories judges will receive both rubrics upon request.

Individual vs. Team

Students may choose to work on a project alone or on a team with up to two other classmates. Team projects earn points in the same ways as individual projects, except that teams are expected to showcase their joint efforts and understanding during their interview. Student teams are expected to divide the work among their members yet also exhibit shared responsibility for overall success (one strong student should not "carry" the team).

PRACTICAL SCORING ISSUES

Implementation Time

Judges must move thoughtfully but quickly through their examination of each project assigned, due to the multitude of entries. There is seldom time to follow an overt, elaborate, multi-question evaluation process for scoring. We recommend that you familiarize yourself with the criteria for each scored category *before* you go out on the exhibit floor, and then rely on your professional experience and judgment to thoughtfully but quickly assess the quality of each project. We also provide two opportunities for judges to view project boards prior to the event. These viewings assist in mitigating the "wow" factor of some boards as well as allows for familiarization of the project floor. There are many different categories to navigate through and it is always a good idea to obtain some reference. Furthermore, abstracts are posted online at least two weeks prior to the event for viewing alongside the rubrics and criteria.

Feedback to Students

Judges should remember that the only audience for their project score sheets is *themselves*. The students whose projects you evaluate **never** see your score sheets or your clarifying comments for yourself. Hence, we urge a two-fold approach:

1. Use your *scores* to assess project features and record your evaluations
 2. Use your *verbal comments* when you interview students to provide encouragement, technical suggestions, or **gentle** advice to improve future work (or future presentations of this work elsewhere). See also the "Interviews" section below.
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SCORING MECHANICS

Some scoring mechanics unavoidably depend on details about projects submitted, availability of judges, and venue arrangements that will only settle close to the day of the STEM fair. This section summarizes the basic scoring-mechanics framework.

Judging Schedule

On Fair day, judges should arrive at their designated conference area no later than 8AM to allow time for:

1. A very brief welcome (with food), rule reminders, meeting other judges within your assigned category, and assignment of projects
2. An opportunity to preview and compare your assigned projects *without* students present

Our goal is to complete the judging process no later than 1:30PM, a goal that obviously depends in part on the number of projects submitted and the number of judges available on Fair day. We provide lunch and snacks on the day of judging.

What to Check during Preview Periods (when students are NOT present)

1. Abstracts.
The relation between abstract quality and project quality (highly correlated in real-life science) tends to vary greatly by grade level. Middle-school abstracts are often not very revealing; high-school abstracts can be quite professional. All abstracts will be posted online in the student data base. The Competing and Showcase Divisions will have separate databases. The middle school and high school projects will also be separated in the Competing Division. If your category judging assignment has been received from the judging lead, please read the abstracts before arriving to judge projects.
2. Scientific Journals or Data books.
Again, these are often pro forma for younger students but should be thorough and reveal the personal sophistication of older students. While checking journals for IRB/SRC (safety, risk, and human-subject) compliance is *not* your primary role as a judge, finding obvious flaws (altered data, excessive death rates, undated pages) should be noted.
3. Display Boards.
Science fairs are not beauty pageants and should not be judged by display alone. Nevertheless, a project display should effectively use available space and explanatory graphics to clearly reveal the problems addressed, methods used, and results achieved. Good displays help their students talk cogently during a judge interview as well as deliver organized project details when students are not present.

Score Sheets

All score sheets and cards are treated as "personally identifying information," which judges should turn in to staff and which should **not** be shared or discussed outside of the judges' conference room. **Please do not remain in the exhibit hall or the hallway to the conference area to deliberate.** We cannot risk students or parents overhearing commentary in regards to scores or any overly negative criticism. This is a day to *encourage* and *inspire*.

Interviews

For most students, judge interviews about their work are the most intellectually (and often, emotionally) challenging part of STEM Fair day, please be aware of it! Students are instructed to prepare a 2 minute presentation to summarize the main points of their project prior to judge's questions. Please allow them to speak for 2 minutes before beginning your questions. (Remember: please keep track of the amount of time at each project, we want all students to have the same opportunities – do not stay past your allotted time per project!)

1. Authority.
To most students, judges represent professional authority. Use your influence wisely by asking questions or offering constructive criticism from an encouraging stance. Although interviews are, of necessity, short, they should always have a positive tone.
2. Encouragement.

Never belittle projects nor display boredom with simple techniques. Projects often vary greatly in level of sophistication, but students with few facilities or little background should feel that while you recognize the basic character of their work, you value their effort, curiosity, and participation. A low score should *not* mean a negative interview experience.

3. Glibness.

Some students talk easily about their work, while others are nervous or scared. Good judges patiently distinguish between the knowledgeable but halting speaker and the student who really does not understand their own project.

4. Privacy.

Although a crowded exhibit floor makes complete privacy impossible, judges should try to avoid interfering with other, near-by interviews and should complete each project's score sheet in a way not visible to those being scored. Scores are *not* public information. Since their significance depends partly on other judges and other projects, sharing your scores with students is never appropriate.

CONSISTENCY COORDINATION

Fairness Issues

Real and perceived fairness--in picking award winners and in distributing awards among project categories--both encourage participation and promote respect for judges' decisions. Fairness also prevents students from manipulating the judging process to inappropriately gain awards.

Students largely self-select the category in which their project competes. Since categories are broad and nonexclusive, a project might easily qualify for several different categories. For example, work on the environmental impact of a microscopic animal might fit into Biological Sciences (BIO) or Energy & Transportation (EAT) at the student's discretion. Empirical analysis of past regional-fair award distribution by category unfortunately shows that such content-overlapping categories have had very divergent rates of numbered awards. Students and teachers who became aware of these between-category differences were understandably concerned. Hence, we use consistency compliance to help judges avoid such real or perceived unfairness.

Consistency-Promoting Techniques

To promote award consistency across categories, SSRSEF requires its judges to use:

1. Consistency compliance.

Achieving category consistency is the responsibility of *every* judge. No final decisions for numbered awards are recognized until all judges examine and resolve scoring discrepancies among categories by using some of these techniques:

- Chosen judges will be assigned Tie Breaker scoring sessions to **reassess tied scores or scores that do not fall within the normal standard deviation.**
 - Projects judged with widely divergent scores will be re-assessed to ensure that all scores are consistent and the project was neither favored nor un-favored for any particular reason.
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SELECTING ISEF/CSSF CANDIDATES

The Goals

The Sacramento Regional STEM Fair is affiliated with Intel's International Science and Engineering Fair (ISEF), which entitles it to send three high-school projects to ISEF each year to compete for a second round of awards and recognition at the international level. If funds are available, SSRSEF pays full or partial travel expenses for those selected students to attend ISEF. SSRSEF is also affiliated with the California State Science Fair (CSSF), which entitles it to send 14 mixed high school and middle school projects to CSSF to compete for statewide awards. All middle school projects awarded a first place are eligible to apply to the Broadcom Masters, sponsored by Society for Science and the Public (SSP). Participating in these second-level fairs is considered an honor because of the requirement to place in a previous competition.

Sending projects likely to win again at ISEF or CSSF benefits the prestige of ACSEF, but "likely to win again" is often not the same as being the most original or best executed science or engineering project. Along with intellectual content, factors that affect second-level success include:

- Topic (is it related to medicine or health which has been a very successful category at ISEF?),
- Presentation style (is it professional?)
- Student social maturity (do they interview smoothly?)
- Effect on globe (what global problem does it solve?)

The Process

To promote fairness among possible candidates for ISEF or CSSF SSRSEF's policy for this selection is as follows:

1. All projects awarded first place in their category, and only those, are considered when selecting each year's ISEF and CSSF candidates. All judges should keep this in mind when picking their first-prize award winners.
2. A Grand Prize judging team will work as a small committee to review (finalized, not preliminary) first-place award winners and from them select those that will represent SSRSEF at ISEF (high-school projects only).
3. This process may involve reexamining the technical strengths and weaknesses of the projects earning first-place awards and Category awards. It will also involve weighing the non-content competitiveness factors mentioned above. For this reason, it is SSRSEF policy to characterize the selected candidate projects as "most competitive" & superior in scientific or engineering quality as they go forward, when comparing first-place award winners.
4. The Grand Prize Team will choose candidate projects by consensus if possible, or by open majority vote (such as a show of hands) if necessary.
 - To help prepare the Team for their extra duties in selecting the ISEF and CSSF candidates, they will receive additional support material including: (1) more details on the non-content competitiveness factors mentioned above, and (2) annotated examples (summaries) of some previously successful ISEF projects.

SPECIAL AWARDS

In addition to providing over 70 possible category awards to participating students, our sponsors provide additional Special Awards. These Special Awards are provided to projects based upon distinct criteria that typically represents the area of STEM the sponsor does.

Category and Special Award judging happen at the same time, but they are completely independent of each other. Special Award rankings have no impact on Category placement decisions. As a volunteer judge, you may be assigned to judge a Special Award as opposed to Category awards if you do not indicate a preference on your judge application.

SRSEFF expects that all volunteer judges, regardless if they are Category, Special or Grand Prize, abide by all policies and procedures set forth in this manual.

HARRASMENT POLICY

Adults are expected to ensure a safe and educational venue for students by notifying staff of any concerns throughout the event.

SSRSEF prohibits harassment of any kind against any student, volunteer, or employee by an Adult, another student, volunteer, SSRSEF employee or third party for any reason including, but not limited to: age, national origin, race, color, religion, gender, sexual orientation, marital status, disability, ancestry and/or veteran status. Harassment includes but is not limited to slurs, epithets, threats, derogatory comments, unwelcome jokes, and teasing.

Any student or other person who feels that he or she is a victim of such harassment at the event should promptly report the matter to an SSRSEF employee or other Adult authority who must immediately present it to the proper SSRSEF authority. If an SSRSEF employee or Adult volunteer become aware of such a situation, he or she is under the responsibility to report to the proper SSRSEF authority. Upon receipt of an allegation(s), an investigation will be initiated. All such reports will be handled as confidentially as possible. SSRSEF may take appropriate disciplinary action against any person found to have violated the harassment policy.

No adverse action or retaliation will be allowed to be taken against a person who reports a violation or who participates in an investigation of this policy in good faith. Knowingly false accusations are prohibited and will be treated by disciplinary action comparable to that which would be applied to actual misconduct.