



Dear Parents/Guardians:

The goal of the San Mateo County Science, Technology, Engineering & Math (STEM) Fair is to foster a greater interest and deeper understanding of science through projects developed by students. Below you will find the guidelines for the 2012 San Mateo County Science, Technology, Engineering & Math (STEM) Fair, sponsored by the San Mateo County Office of Education and hosted by the Hiller Aviation Museum.

If your child is a public or private school student, in grades 5 through 12 AND has been selected to participate in this Fair, you will receive an official entry form. Be sure to complete the form and have your son/daughter bring it with his/her project during one of the check-in periods for the Fair (see Calendar of Events below). Students are encouraged (but not required) to set up their own projects at the fair. If the student, because of prior commitments cannot set up the project, a responsible adult (i.e. parent or teacher) may set up the project.

Please be sure your son/daughter registers ONLINE for the Fair. The specific website will be given after the list of students are submitted.

2012 SAN MATEO COUNTY SCIENCE, TECHNOLOGY, ENGINEERING & MATH (STEM)
Fair Calendar of Events

- Jan. 29 & Jan. 30 • Projects set up (Sunday, 12 - 4 pm; Monday, 3:30 – 6 pm)
 - January 31 • Judging, General: 6:30 - 9:30 pm (no students at this time)
 - February 1 • Fair Open House, 6:30 - 7:30 pm. We invite ALL students, their parents/relatives and friends to attend – free of charge! All non-Finalist projects may be removed between 7:30 - 9 pm. All unclaimed projects may be picked up at the San Mateo County Office until Friday, February 10th. After the 10th, unclaimed projects will be discarded.
 - February 2 • Judging, Finalists' Interviews: 6:30 - 9:00 pm
 - February 4 • Science Fair Awards Ceremony, 7 - 9:30 pm
- Note: All Fair events will be held at the Hiller Aviation Museum, San Carlos

Project Categories

- **Behavioral/Health/Social Sciences**
Projects that are related to health and the social sciences. Examples would be perception studies, aptitude and attitude surveys, and various exercise studies.
- **Biological Sciences**
Projects involving living or once-living things. Examples of projects in this category would be studies of plant growth, cell structure, bacteria, molds, preservatives or growth and development.
- **Earth Sciences**
Projects involving the earth and its processes. Examples of project topics would be the weather, astronomy, rocks/minerals, and water.
- **Ecology/Environmental Science**
Projects relating to the environment and the interdependency of living and non-living things on earth. Examples of project topics in this category would be the impact of products or processes on the environment, and solutions to environmental problems.



- **Engineering/Technology**
Projects that incorporate the design, manufacture, and operation of original and creative mechanisms that involve scientific principles. This category will have slightly different judging criteria, emphasizing originality, model or prototype design, testing, and refinements. Inventions are now included in this category.
- **Materials Sciences**
Projects that compare various types of materials as to their durability, effectiveness or other characteristics. Examples include comparisons of various home products, such as insulation, detergents, or teeth whitening products. Also various building materials, energy-conservation materials, etc.
- **Mathematics**
Projects that solve and attempt to solve complex or sophisticated mathematical problems, including those involving computers. Examples would be graphical explanations of the Pythagorean Theorem, the four-color problem or unique math-related computer programs.
- **Physical Sciences**
Projects involving non-living things. Examples of project topics would include aerodynamics (such as flight comparisons of various types of paper airplanes), catalysts, crystal growth, evaporation rates, and electrical circuits.

Note: It is the teachers' responsibility to determine the appropriate category for each of their students' projects. However, the Fair has the discretionary right to re-classify projects if necessary, in order to allow our judges to compare similar types of projects.

Each of the seven subject categories will have grade level divisions: 5th, 6th, 7th, 8th, and high school. **However, the Bay Area Fair accepts only projects from 7th through 12th grade; the CA State Fair, from grades 6 through 12.** Pair projects will be accepted at the San Mateo County Science Fair at ALL grade levels, and will be judged with the individual projects in the same category unless there are a significant number of group projects in a category. **Only individual projects are accepted at Bay Area Science Fair.**

Fair Guidelines

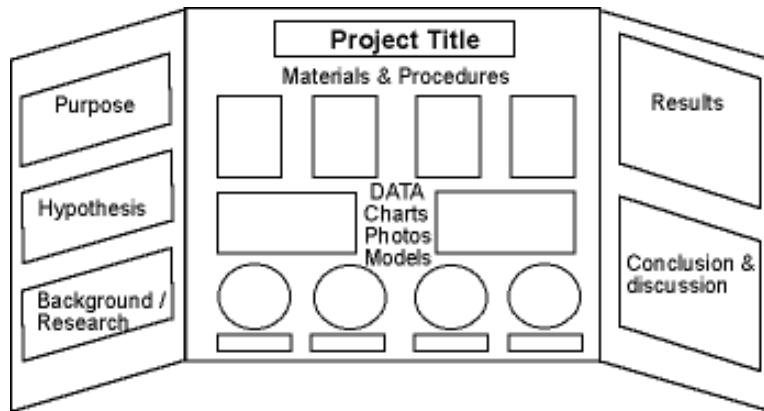
Note: The following Fair Guidelines have been developed so that an award-winning entry in the County Fair will also be eligible for the Bay Area Science Fair and/or the California State Science Fair without any significant modifications to the project or display.

1. **All work should be done by the student and must be an experiment using the scientific method unless entered in the Engineering or Mathematics category.** Appropriate assistance may be provided by teachers, parents, or others.
2. **The TWO entry forms for each project submitted must be completed; both should be either typed or printed.** During the project check-in, one form will be collected and one firmly attached to the project on the upper right corner with the information facing inward.
3. **All entrants are responsible for the installation, maintenance and removal of their projects. Students are encouraged (but not required) to set up their own projects at the fair.** If the student, because of prior commitments cannot set up the project, a responsible adult (i.e. parent or



teacher) may set up the project. (See Fair Calendar for set up dates/times.) No taping, securing or gluing display or items to the tables, as projects need to remain moveable in case they are reclassified or simply moved to another table.

- The project display should be within the following dimensions: 122 centimeters (48 inches) wide, 76 centimeters (30 inches) deep and 274 centimeters (108 inches) high.** Project display should be self-supporting during the public display period, and may be labeled according to the example below (please see example below; not to scale):



- An abstract is required with each project submitted by 6th – 12th grade students.** Abstracts are optional for 5th graders. An abstract helps facilitate the work of the judges. An abstract is a brief summary (200 words or less) of the purpose of the project, the method of solution, and significant conclusions. (See Abstract form.) Note: A research notebook is optional but recommended for the County Science Fair. If one is displayed, a backup copy should be kept at home since there is the possibility of loss or damage during public display.
- No names or photos of participants or their schools should be visible on the project display, in the notebook, in any report, or on the DVD (if provided).** Please remove any awards or ribbons that were received from previous school or district science fairs.
- Projects requiring electricity may be displayed, but not plugged in.** Hiller Aviation Museum does not allow the project to be turned on during the display hours; judges may ask for a demonstration during the interviews. All electrical apparatus must be built according to standard electrical safety laws. Projects that use 110 volts or more may not use push-button switch (doorbell type) or open-knife switches. All projects using 110 volts or more must have a main disconnect switch of a type approved by the National Board of Underwriters. All wires must be of the size and insulation appropriate for the current and voltage used. Store bought batteries may be used, but cannot exceed the 9 volt size. No car sized batteries or batteries put together to increase voltage beyond 9 volts are allowed.
- No liquids of any kind should be in project displays.** Please substitute photographs or drawings instead. If there are sample liquid containers in the display, they must be empty.
- Controlled substances, hazardous materials or sources of open flames cannot be used or exhibited in any project;** e.g., marijuana; firearms of any kind, bullets, any project dealing with high powered projectiles, fireworks, carbon dioxide bombs; candles. Any project that deals with illegal substances or can cause severe physical injury or death is not allowed.



10. **Valuable items**, such as special equipment, cameras, recorders, microscopes, etc. **will NOT be allowed to be displayed**; please use photographs or drawings to illustrate their use.
11. **No hypodermic needles or syringes can be displayed with projects.**
12. **Food samples may not be included in the display.** Drawings, plastic food or photos should be used instead.
13. **Live animals, mounted birds, mammals, or any stuffed specimens will not be allowed in the displays.** Projects that use animals should substitute pictures or drawings for the display. Bones are acceptable if they are clean and free of decaying matter. (Note: Bones ARE NOT accepted for display at the Bay Area Science Fair.)
14. **If plants are in the display, they should be completely covered and sealed (either the entire plant or the pot and soil).** This includes vermiculite and any product that could be easily spilled or scattered.
15. **Protists (bacteria, fungi, molds, etc.) may not be exhibited.** Photos or drawings may be used instead of Petri dishes or culture.
16. **Gravel, sand, dirt must be tightly enclosed and sealed securely if they are on display.**
17. **Projects that include the use of animals or humans (including surveys) must follow the Science Fair Guidelines established by the State Humane Association of California.** (See enclosed guidelines). For grades 7-12, Bay Area Science Fair Special Project Proposal Forms must be filled out prior to experimentation for possible project entry into the Bay Area Science Fair. Special Project Proposal Forms can be obtained by downloading them from the Bay Area Science Fair website: (<http://www.sfbasf.org/paperwork.html>).
18. **DVDs will be allowed to accompany a project display.** (See DVD guidelines)
19. **All projects must clearly distinguish between the work of the student participant and the work of others.** Students participating in a research opportunity in industry, a university, hospital, or institution other than their school, must display only their research. Students must clearly specify the assistance received and the role and contributions of others in the project. **It is required that such projects be accompanied by a letter from the principal research director indicating the level of his/her involvement in the student project.** This letter should be included in the project notebook.
20. **Parents and advisors are not permitted in the display areas during judging.** Violations may result in disqualification of student participants.

Awards:

- All students will receive a participant ribbon for their project.
- Each of the seven subject categories will have first, second, third place and honorable mention awards for the 6th, 7th, 8th and high school divisions. (No place or special awards but a summary evaluation for each 5th grade project.) However, the judges reserve the right to award multiple winners; e.g., two seconds, or not to award all places; e.g., no third.
- Special awards by various organizations, such as NASA will be given for unique projects in certain categories.
- Outstanding high school projects will be awarded cash scholarships.



- **Fair participants and their parents/guardians are required to sign a copy of the following, which will be a printed on the back of the official entry form that must be submitted with the project when it is brought to Hiller Aviation Museum for submission to the Fair.**

Judging/Judges

Our judging process is a two-evening process:

- A. The first night of judging is done by teams of judges carefully reviewing each project within their category and grade level (e.g., 7th grade physical sciences). Each project is evaluated, using a standard set of judging criteria. Each judging team reaches consensus on their finalist (1st or 2nd place) projects and also identifies projects for 3rd place and honorable mention.
- B. The second night are the interviews of the finalists. Each finalist is interviewed for approximately 10 minutes by a pair of judges who have reviewed each project in their judging group and have a list of general and specific questions.

Open House

It is important that ALL students attend the Open House to find out if they are finalists - who will be identified by an invitation and a request to check at the registration area for their interview time. All non- finalists are expected to pick up and take their projects home at the end of the Open House. We encourage the display of all projects during the Open House so that all may observe the wonderful work that was done.

San Francisco Bay Area (SFBASF) & CA State (CSSF) Science Fairs

Our Fair serves as the qualifying event for the top science projects from San Mateo County public/private schools, and the only conduit to the SF Bay Area and CA State science fairs. For more information about these 2 fairs, visit their websites: SFBASF - <http://www.sfbasf.org/index.html>; CSSF - <http://www.usc.edu/CSSF/>

Questions? Please contact Janet Shi, (650) 802-5355, jshi@smcoe.k12.ca.us.

Remember that hundreds of people will be enjoying your project. Please think carefully about what you want on display since everything will be handled. Projects that include any of the items indicated in the Guidelines as not permitted will be disqualified. If you are in doubt about a specific item, leave it out or call us.

Hiller Aviation Museum, the San Mateo County Office of Education and its affiliates shall not be responsible for the damage, loss, or theft of any articles left in the Museum's possession.