

Guidelines for the Golden Gate STEM Fair

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Also available separately is the SRC, Scientific Review Committee, Packet with special information for projects involving invertebrate or vertebrate animals, human subjects, recombinant DNA, tissue, pathogenic agents, or controlled substances.

Please read all the guidelines carefully. We suggest that you give one copy of the Crucial Dates and Information papers to each of your prospective science fair participants so that students and their parents have ready access to the most important information regarding participation in the GGSF.

If you have any questions about the Fair, suggestions, or comments on the revisions of the guidelines, you may contact:

Assistant Director, GGSF
email: ggstemfairad AT gmail.com

I. Goals of the Golden Gate STEM Fair.

The Golden Gate STEM Fair is dedicated to encouraging original scientific research on the part of young people from all walks of life and from public, private and parochial schools. We feel that the experience gained by students while doing science projects can be among the most valuable parts of their education. Whether a student pursues a science-related career or not, the observation, analytical, and communication skills required by a science fair project will serve them well for the rest of their lives in our modern technological world. Because of this, we urge teachers to encourage all their students to participate in Science Fair.

II. The Quick and Easy Guide to GGSF

The Golden Gate STEM Fair takes place every year around the middle of March. Students in grades 7 - 12 who have conducted original research under the guidance of a teacher sponsor may participate. Students may compete first at their schools, or at a county or feeder science fair before reaching GGSF. Individual schools receive a quota for the number of allowable entries each year direct from GGSF unless the schools have a county or feeder level fair in which to participate before coming to GGSF. In the latter case, the county or feeder fair receives the quota for the number of entries. The individual schools and feeder fairs review each project for compliance with regulations and determine which projects will fill the GGSF quota.

Students generally start their research early in the school year. Those students doing projects involving research related to invertebrate or vertebrate animals, human subjects, recombinant DNA, tissue, pathogenic agents, or controlled substances have very special requirements that are described in detail later in the guidelines and in the SRC packet.

Students whose projects are accepted into GGSF install their projects on Monday, the week of the fair. Judging takes place on the Wednesday of that week and, for 1st and 2nd place awards, involves a personal interview with a team of scientists. The awards ceremony takes place on Thursday evening.

III. Overview of Golden Gate STEM Fair and General Project Information

The Golden Gate STEM Fair, GGSF, is affiliated with the International Science and Engineering Fair, ISEF, which is administered by Science Service. This means that each year, the two Senior Grand Prize winners of the Golden Gate STEM Fair are sent to the International Science and Engineering Fair. Because of this, all 10 - 12th grade projects submitted to GGSF must conform to ISEF regulations. These regulations include very specific restrictions, protocols, and timetables for projects involving research related to invertebrate or vertebrate animals, human subjects, recombinant DNA, tissue, pathogenic agents, or controlled substances. 7 - 9th grade projects will have somewhat less stringent requirements, but both require the filing of special papers. These papers are available at our website on the Paperwork page. **Students contemplating such research must file the appropriate research plans with the GGSF Scientific Review Committee before any research begins. These regulations apply even in the case where research involves only surveys, questionnaires, or observation! These papers should be filed even though students may not yet know if they are participating in GGSF. The Scientific Review Committee would prefer to screen extra projects instead of disqualifying projects that have not filed papers.**

Any student wishing to enter the fair must have a teacher sponsor their science project. This sponsor need not be the student's current science or mathematics teacher. Student projects are sometimes entered directly in the GGSF, or they may be winners of local county or district science fairs. Sponsoring teachers should know whether or not their students participate in local fairs prior to the GGSF. Those in doubt should speak with their department chairperson or district or county science coordinator.

Students in grade levels 7 - 12 may enter projects in the following categories:

- Behavioral and Social Sciences
- Biological Sciences
- Math and Computer Sciences
- Physical Sciences
- Environmental Sciences
- Engineering and Computer Applications

No group projects will be accepted. For the purposes of award presentation, grades 7, 8, and 9 are considered Junior Division, and grades 10, 11, and 12 are considered Senior Division. Students compete only against other students from the same grade level. Four 1st place awards may be presented in each grade level, one for each category. 2nd, 3rd, and 4th place awards will total approximately 50% of the number of entrants in each category. In addition, special awards are given to projects which meet the particular criteria of the award sponsors.

The judges will also select two students from the Senior Division and two students from the Junior Division with the best projects, one representing the Biological Sciences and Behavioral Sciences categories, and one representing the Physical Sciences and Math and Computer Sciences categories. The two grand prize winners in the Senior Division will be sent, all expenses paid, to the International Science and Engineering Fair, subject to meeting the ISEF regulations.

Because of limited exhibition space, each school and local fair will have a quota which limits the number of entrants. This quota is based on several factors: The number of schools entering the fair, the size of the science enrollment in each school, and the participation of the school or local fair in previous years.

Each school site should have a GGSF School Coordinator. All communication with GGSF should go through that individual. For schools which participate in local fairs, the head of the local fair will perform most of the functions of the school coordinator, such as receiving fair quotas, distributing registration materials, etc.

IV. General Timetable for the Golden Gate STEM Fair

September-December

Students begin their research early in the school year. Students doing projects involving invertebrate or vertebrate animals, human subjects, recombinant DNA, tissue, pathogenic agents, or controlled substances, need to file Scientific Review Committee Proposal Papers with the GGSF before they begin their research. These papers are available from the GGSF website. These papers must be filed before February 1st. Students who are hoping to participate in GGSF should file papers even though they do not know whether they will be eligible for the Fair this year.

December-January

Teachers whose students do not go through a feeder fair should download the Project Request Form and email to GGSF AT gmail.com. no later than January 7.

January

Based on project requests received, quotas for feeder fairs and schools are established. Registration information is sent via email to feeder fair coordinators and teachers. All registration is done online. Qualified students will receive registration directly from their teachers.

February

February 1 is the deadline for receipt of Proposal Forms by the Scientific Review Committee for Projects involving invertebrate or vertebrate animals, human subjects, recombinant DNA, tissue, pathogenic agents, or controlled substances. Please help us by following these procedures carefully. These forms should be filed even though students may not yet know if they are participating in GGSF. The Scientific Review Committee would prefer to screen extra projects instead of disqualifying projects that have not filed papers.

By early February, School Coordinators and Local Science Fair Coordinators will be notified of their quotas. Registration information is sent via email to feeder fair coordinators and teachers. All registration is done online. Qualified students will receive registration information directly from their teachers.

Early March--Deadline for online registration from all students who are participating in the fair.

The Week of the Science Fair (Usually Mid-March)

Monday

All projects must be installed according to the published schedule.

Tuesday

Projects may be viewed by the public.

Wednesday: Project judging takes place in the morning. All exhibitors must be present at the Science Fair from 1:00 pm until approximately 4:30 pm. During this time, students who are being considered for a 1st or 2nd place will receive interviews. Other students will remain in the project exhibition area until they are informed that all judging is completed in their category and grade level. During the afternoon all award winners will be notified. Those receiving 1st or 2nd place awards will have been interviewed. Those students receiving 3rd place or special awards will be posted at the registration desk. They should plan to attend the award ceremony on Thursday evening. 4th place ribbons will have been placed on the appropriate projects by this time. If students leave before they are instructed to, they may be receiving an award on Thursday and not know it. Exhibitors should take home log books and all loose and/or valuable equipment or materials before they leave at the end of the day. Ribbons should be left in place until the project is removed on Thursday.

Thursday: The Awards Ceremony is held on Thursday evening. After the Awards Ceremony, projects may be removed. All projects must be removed on this day—any unclaimed projects may be destroyed due to a lack of storage space.

V. Project Design and Judging Criteria

A science fair project is really just a formal, public presentation of a piece of scientific research conducted by a student. As such, it should conform to the standards of research of the scientific community to the greatest degree possible. The judges will be applying a wide range of criteria, including the following:

1. Is the scientific problem or hypothesis clearly defined and stated?
2. Has the data been gathered in a reliable and careful fashion? Have the variables been carefully controlled?
3. Is the analysis of the data scientifically and mathematically correct?
4. Have the relationships between the variables been correctly established?
5. Are the conclusions that the student has drawn supported by the body of evidence?
6. Has the student taken into account the effects of experimental error on the conclusions, and have those errors been analyzed?
7. Has the student shown originality of thought in the formulation and design of the experiment? Science Fair judges have requested more information on displays about how students arrive at their project ideas. Judges are interested in originality of thought in the experimental design. They would like very specific information stating where the idea came from, who contributed to the idea, who influenced their choice, etc. This information will be used by the judges and will be particularly important for those students who do their project under the supervision of professionals or academics in a laboratory. This information should be contained in the statement of the problem in a separate acknowledgment section on the display.
8. Has the student demonstrated thoroughness in the development of his or her ideas?
9. Is the workmanship in the project of a high quality? Has the student demonstrated mastery of the skills relevant to the project?
10. How well does the student communicate through the project? Will the average person understand what is being displayed? Is the exhibit constructed such that the reader's eye is drawn through the project in a sensible manner? Does the display make the judges' job easy or hard? Have outside resources been thoroughly documented?

Over the years, our judges have expressed themselves concerning what they feel constitutes a quality science project. Judges look for good research, not just an impressive looking project. They are, at times, critical of projects that seem to require an excessive expenditure of money. They would much rather see a clever, straightforward solution to a well defined problem, or a skillful test of a clearly stated hypothesis. They expect a student to do original work, not just a repeat of the standard projects seen at every science fair.

Clear communication, including proper spelling, etc. is essential. Projects should be neat, straightforward, and arranged so that the essential information can easily be found. Poor communication and organization can only adversely affect the judging of a project.

A project should not be simply the successful construction of an apparatus or model, unless the apparatus or model is original and was conceived and developed to solve a scientific problem or to demonstrate the scientific principles which affect a new design. In any case, the apparatus should be used to make observations or measurements from which new knowledge can be drawn. Judges look most favorably upon equipment that the student has built, which demonstrates ingenuity, simplicity, and economy of design.

A collection should not be entered as a project unless it is used as evidence in actual research, and **the collection itself cannot be displayed**. Only photographs may be presented. For example, a collection of minerals might be cited as evidence for geochemical processes thought to be responsible for rock or mineral formation. Photographs of an insect collection might be used as evidence of ecological relationships between species in some environment.

If the cost of a project seems excessively high, indicating purchase of expensive materials not normally available to a high school student, judges will be inclined to discount the project. In general, modest equipment, ingeniously used is far more impressive.

VI. Project Construction and Safety Considerations

All work on the projects must be done by exhibitors. Students may secure advice on the project from any available source; however, the design and implementation of both the experimental work and the display must be done solely by the exhibitor.

Tables will be provided for displaying projects. A table space of 122 cm (front) by 76 cm (side) is allotted to each entry. Height is limited to 274 cm or less. This size must not be exceeded.

Oversized projects will be disqualified.

Strong backing and sides are recommended. The project must stand by itself and cannot be fastened to the table or walls in any fashion.

The following items should not be included in exhibits:

Liquids--No liquids of any kind should be in project displays. If water is part of the experiment, then the apparatus must be displayed without water. If there are bottles of sample liquids in the display, they must be empty.

Food--Food samples may not be included in the display. Perhaps drawings, plastic food or photos could be used. This includes bottles of catsup and so on.

Bacteria--No Petri dishes or test tubes with gel and bacterial colonies may be displayed. Photos or drawings should be used here too.

Gravel, sand and dirt--If these are in the display, they must be tightly enclosed and sealed securely.

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 scattered.

Mounted birds, mammals, or any stuffed specimens will not be allowed in Science Fair displays because of the risk of insect infestation.

Live animals--Live animals are not permitted in project displays.

Remember, hundreds of people will be enjoying your project. Please think carefully about what you want on display since everything will be handled. **Please supply only photographs to support project research. Projects which include any of the above items will be disqualified. If you are in doubt about a material, leave it out, or contact us**

Since this exhibit will be open to the public, it is important that no valuable or hazardous items be left with the project after the judging day. Any items remaining should be firmly attached to the project so they can not be removed by visitors. If a log book is part of the project, either remove it before the fair opens to the public, or leave a duplicate copy firmly attached to the project.

The Golden Gate STEM Fair will not be responsible for loss or damage to projects. The exhibitor assumes all responsibility for project loss or damage.

Safety Regulations

1. Construction must be durable, with moving parts firmly attached to the project. No sharp objects or large rapidly moving parts which might pose a safety risk will be allowed.
2. Any working electrical apparatus can be powered only by batteries.
3. Dangerous chemicals, explosives, drugs, hypodermic syringes or needles, or open flames may not be included in any exhibit.

Exhibit Labeling

1. Projects must have the same title that was used when the entry form was submitted.
2. **Neither the student's name or the name of the student's school should appear anywhere on the project.**