

# Science and Engineering Fair

February 26 - March 3, 2017  
2707 Transworld Dr., Stockton

[sjcoesciencefair.weebly.com](http://sjcoesciencefair.weebly.com)



## Ethics Statement

Scientific fraud and misconduct are not condoned at any level of research or competition. This includes plagiarism, forgery, use of presentation of other researcher's work as one's own and the fabrication of data. Fraudulent projects will not be tolerated and will be disqualified.

## Eligibility

- Each student may enter only one project that covers research done over a maximum of 12 continuous months between May 2016 and May 2017.
- Projects that are demonstrations, 'library' research or informational projects, 'explanation' models, or kit building are not appropriate.
- Projects that are top winners from their school.

## Who Can Enter

The San Joaquin County Science and Engineering Fair (SJCSEF) is open to K - 12 students who attend school in the San Joaquin County and have a teacher or qualified adult sponsor. The SJCSEF is intended as a secondary fair. Schools in our county should hold independent Science Fairs before submitting projects to SJCSEF. Schools may send projects based on the ADA. **The SJCSEF is a qualifying fair for the California State Science Fair.**

0 – 499 students	20 projects	750-999 students	30 projects
500 – 749 students	25 projects	1,000 or over	35 projects
Home schooled, 5 projects			

## General Requirements

1. Projects must adhere to the Ethics Statement above.
2. Projects must adhere to local, state, country and U.S. Federal laws, regulations and permitting conditions.
3. The use of non-animal research methods and the use of alternatives to animal research are strongly encouraged and must be explored before conducting a vertebrate animal project.
4. Projects must adhere to the display and safety requirements found in this handbook.
5. It is the responsibility of the student and coach to check with the SJCOE Fair Coordinator for any additional restrictions or requirements.
6. Projects should NOT have the student's names, teacher's name or school name on the front of any project.
7. **All restricted projects must have proper documentation before experimentation.** Details listed in section "Restricted Projects".

## Divisions and Teams

- Divisions: K-2, 3-5, 6-8, 9-12
- Teams: Team projects may have a maximum of three members. All team members will need to have their own notebooks, but only one board and abstract are required.
- Whole Class: The K-2 division only is allowed to participate as a whole class. All students will need to have their own notebooks, but only one board is required.

## Project requirements

1. Tri-fold board or Poster: Limited to 121 cm (4 feet) side to side, 92 cm (3 feet) top to bottom, and 93cm (3ft) front to back.
  - a. Posters are also permitted as long as they fit the same dimensions.

- b. Realia or models NOT allowed unless called for an interview.
- c. Pictures on the display that do not model appropriate safety procedures will not be allowed.

## Science Projects



The board is a visual representation of your project. This is a sample of what components should be on your board. However, organize your board to fit the needs of your project.

## Engineering Projects



The board is a visual representation of your project. This is a sample of what components should be on your board. However, organize your board to fit the needs of your project.

2. Abstract: One per project (not required for K-2).
  - The abstract is a summary of the entire project, that includes the following details. (Maximum of 250 words.)
    - **Objective or Goal:**
    - **Materials and Methods:** Summarize the materials and methods
    - **Results:** Summarize the results of your experiment and indicate how they pertain to your objective.
    - **Conclusion/Discussion:** Indicate if your results supported your hypothesis or enabled you to attain your objective. Discuss briefly how information from this project expands our knowledge about the category subject.
  - Put the abstract on the board OR provide a copy.
  - Did you know? People will read your abstract more than any other part of your project.
  - Tip: The abstract should be the last thing you write.
  - Visit the California State Science Fair website for examples.
    - [http://cssf.usc.edu/Info\\_Genl/Writing\\_Abstract.html](http://cssf.usc.edu/Info_Genl/Writing_Abstract.html)
  
3. Handwritten notebook:
  - One **per student** participant (Including K-2).
  - MUST be an ongoing dated log of everything. Should be an authentic representation of entire project.
  - Should show evidence of student thinking, brainstorming ideas, processing and reflection of what occurred. For example:
    - How the student will go through testing or the creation of a procedure. Must be detailed and identify variables and controls as applicable. In the writing be sure to include MULTIPLE TRIALS!
    - A detailed list of ALL materials should also be contained in the journal. It is recommended that in grades 6-12, all measurements should be in metric form.
    - All data collected as applies, engineering design, mathematical computations or coding, technology development.
    - Analysis of data or of procedure. This should be in-depth, not just one or two sentences.

- Not only should the conclusion include whether the hypothesis was proven, or if the engineering was feasible, or if the programming or mathematical evaluation worked, but also why and what are your "next steps" or further questions.
- Notebooks should include **annotated research information** NOT just a bibliography. (Excluding K-2)
- Acknowledgements: Note credit given to parents, teachers and other sources.
- *Don't leave anything out!*

## How to Enter

Students will need to be registered through a school in the San Joaquin County. Schools will designate a Science Coordinator/Point of Contact. This coordinator will register the school and then the students.

Steps to Register: (Find specific dates at <http://sjcoesciencefair.weebly.com/>)

- 1) Review all rules and determine if you need pre-approval before beginning your project.
- 2) Science Coordinator/Point of Contact registers school (Fall/early Winter).
- 3) The SJCSEF will send Science Coordinator/Point links for student registration (Winter).
- 4) Delivery of projects and all applicable paperwork (February).

## **Restricted Projects**

A restricted project requires approval from a Science Review Committee (SRC) or Institutional Review Board (IRB) before experimentation can begin. A restricted project needs to be approved to make sure no harm will be done to humans or animals.

- The SJCEFS SRC is responsible for approval of any student project involving tissue/cell lines, human subjects, vertebrate animals and/or potential hazardous and dangerous materials or equipment.
- The SJCEFS IRB is responsible for approval of student projects involving potential physical and/or psychological risk involving humans. The IRB is responsible for assessing and documenting the level of risk.

- **Pre-Approval and Documentation**

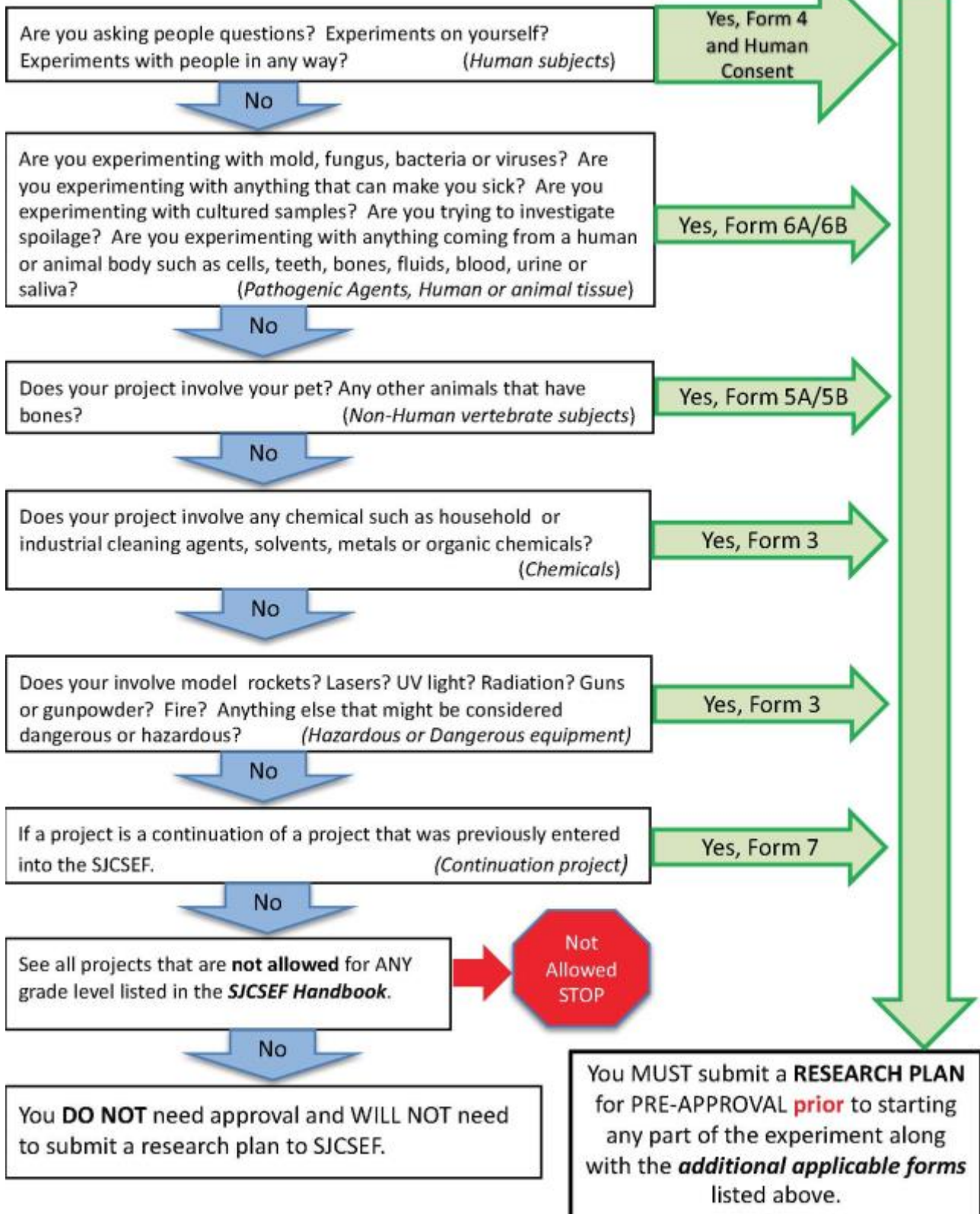
All students/teachers need to review the requirements for projects that require a research plan approved by the SJCEFS Scientific Review Committee (SRC) and Institutional Review Board (IRB). If your project needs pre-approval the following information applies.

- a. The research plan is a succinct detailing of the rationale, research question(s), methodology, and risk assessment of your research project and should be completed **before** the start of your experimentation. Templates are available on-line
  - b. Research plans are due to our office **no later** than **January 13, 2017**. Plans can be submitted starting in September 2016. Remember, students requiring approval of the SJCEFS SRC/IRB cannot proceed with their investigation until they have received approval.
  - c. Links to the necessary forms and templates needed for pre-approval can be found at [sjcoesciencefair.weebly.com/resources.html](http://sjcoesciencefair.weebly.com/resources.html)
- **Projects that are not allowed for ANY grade level**
    - **NO** blood products, human fresh tissue, and bodily fluids. **The student researcher may not handle blood of another person or vertebrate animal. Student researchers may handle their own blood, tissue or other bodily fluids but not of any others.** EXCEPTION: Student researchers may ask a medical professional to do the taking of the blood or bodily fluids of other individuals or vertebrate animals and do the analysis to GIVE the data to the student researcher (with pre-approval from the SJCEFS SRC/IRB)
    - **NO** Vertebrate animal parts. (Exception is Zebra fish eggs up to the 7th day (168 hours) after fertilization. After this time Zebra fish eggs are considered to be vertebrate animals too.)
    - **NO** Pathogenic agents (Biological Safety Level {BSL} 2+).
    - **NO** Recombinant DNA (rDNA).
    - **NO** Ingestion (tasting, eating, inhalation or drinking) of any substance by **human** or **vertebrate** animal subjects.
    - **NO** Carcinogenic, mutagenic and potentially toxic chemicals/fumes.
    - **NO** Explosive or flammable chemicals/gases,
    - **NO** Radioactive materials.
    - **NO** Compressed gas (including, but not limited to CO<sub>2</sub>)
    - **NO** guns, potato cannons, paint ball guns, bows/arrows – or other dangerous projectiles.

- **NO** High voltage equipment.
- **NO** Lasers (except class I with eye/skin protection) or use of ionizing radiation X-rays or nuclear energy.
- **NO** introduction of non-native and/or invasive species, pathogens, toxic chemicals or foreign substances into the environment.
- **NO** prescription drugs, alcohol or controlled substances.
- **NO** dry ice or liquid nitrogen or other dangerous liquid gases.

### Is My Project Restricted?

Some projects may be covered by the rules for more than one category.



## Category Descriptions

**Animal Sciences:** Study of animals – genetics, ornithology, ichthyology, herpetology, entomology, animal ecology, paleontology, cellular physiology, circadian rhythms, and animal husbandry, cytology, histology, animal physiology.

**Behavioral and Social Sciences:** Human and animal behavior, social and community relationships – psychology, sociology, anthropology, archaeology, ethnology, linguistics, learning, perception, urban problems, reading problems, public opinion surveys, educational testing.

**Biochemistry:** Chemistry of life processes – molecular biology, molecular biology, molecular genetics, enzymes, photosynthesis, blood chemistry, protein chemistry, food chemistry, hormones, etc.

**Chemistry:** Study of nature and composition of matter and laws governing it – physical chemistry, organic chemistry (other than biochemistry), inorganic chemistry, materials, plastics, fuels, pesticides, metallurgy, soil chemistry, etc.

**Computer Science/Mathematics:** Study and development of computer hardware, software engineering, Internet networking and communications, graphics (including human interface), simulations/virtual reality or computational science (including data structures, encryption, coding and information theory.) Development of formal logical systems or various numerical and algebraic computations, and the application of these principles – calculus, geometry, abstract algebra, number theory, statistics, complex analysis, probability.

**Earth and Space Sciences:** Geology, mineralogy, physiography, oceanography, meteorology, climatology, astronomy, speleology, seismology, geography, etc.

**Engineering:** Judging for engineering projects is slightly different from other categories. These projects directly apply scientific principles to manufacturing and practical uses – civil mechanical, aeronautical, chemical, electrical, photographic, sound, automotive, marine, heating/refrigeration, transportation, environmental, etc.

**Environmental Science:** Study of pollution (air, water, and land) sources and their control; ecology.

**Medicine and Health:** Study of diseases and health of humans and animals – dentistry, pharmacology, pathology, ophthalmology, nutrition, sanitation, pediatrics, dermatology, allergies, speech and hearing, etc.

**Microbiology:** Biology of microorganisms – bacteriology, virology, protozoology, fungi, bacterial genetics, yeast, etc.

**Physics:** Theories, principles, and laws governing energy and the effect of energy on matter – solid state, optics, acoustics, particle, nuclear, atomic, plasma, superconductivity, fluid/gas dynamics, thermodynamics, semiconductors, magnetism, quantum mechanics, biophysics, etc.

**Plant Sciences:** Study of plant life – agriculture, agronomy, horticulture, forestry, plant taxonomy, plant physiology, plant pathology, plant genetics, hydroponics, algae, etc.



## **Awards**

### **Will Students be notified if they have won?**

Students will not be notified if they have won. **ALL** students are invited to attend the Family Science Event and Awards Ceremony.

### **Interviews**

Students who have been called for an interview (3-12) are the only ones who will be eligible for top awards. Students will interview with a minimum of two judges. The interviews last 10-20 minutes, depending on the grade level. Interviews are conducted the evening before the Awards ceremony. K-2 students are not required to interview. Students are allowed to bring realia to interviews.

### **Participation Awards**

All participants in the fair receive a participation certificate and ribbon to acknowledge the hard work and effort. Projects may earn certificates, ribbons, medals, and a portion of monetary prize money as well as additional Special Awards. Awards are determined based upon the judges' evaluations of the project (all grade levels) and interviews (3-12). Team members will share the monetary award, but each will receive his or her own ribbon, medal and/or special certificate.

### **Category Place Awards**

Finalist, first, second, third and fourth place will be awarded in each grade band, K-2, 3-5, 6-8 and 9-12. In addition, there is a Whole Class Award for K-2. There will be multiple place awards dependent upon the outcome of the judging points within each grade band. Finalist projects will be called back for interviews in grades 3-12 for TOP placement. The winners of the top place awards will be announced at the awards ceremony for grades K-12.

### **CSSF-QUALIFIER (California State Science Fair)**

The projects chosen after finalist interviews that are awarded top placement in their grade bands will be designated as CSSF QUALIFIERS based upon the judges evaluation. These projects will be invited to compete at the California State Science Fair. This applies only to projects in 6-12.

### **Environmental Awards**

A number of individuals, companies, and organizations provide awards for projects that meet environmental science criteria as determined by the judges. These awards may be monetary, certificates, and/or other materials and goods.

*The San Joaquin County Office of Education reserves the right to remove any project that it determines, presents offensive language or pictures as part of its display, journal or abstract. The SJCOE maintains reasonable security but is not responsible for lost or damaged displays. Displays that represent a danger to viewers will be removed. All research, experiments models, displays and surveys presented at the SJCSEF must comply with the California Dept. of Education Student Safety Manual ([www.cde.ca.gov](http://www.cde.ca.gov)). This includes storage of chemicals, safety gear to be worn by students, and compliance with the Ca. Ed.Code. The San Joaquin County Office of Education reserves the right to disqualify any projects that exhibit unsafe practices or behaviors or do not use proper personal protective equipment.*

## Deadlines and Fair Week Events

<b>September 1, 2016 January 13, 2017</b>	<b>Research Plans</b> for restricted projects that require approval from the SRC or IRB
<b>October 27, 2016 January 29, 2017</b>	On-line school registration open. On-line school registration due.
<b>January 17, 2017 February 19, 2017</b>	On-line student registration open. (A link will be sent to teachers upon school registration.) On-line student registration due.
<b>February 24, 2017</b>	Check in projects at the Wentworth Education Center, 2707 Transworld Dr., Stockton. Between 1:00pm-7:00pm. <b>Remember to bring:</b> <ul style="list-style-type: none"> <li>• Tri-fold Board or Poster</li> <li>• Abstract (3rd - 12th grade only)</li> <li>• Handwritten notebooks for every student.</li> <li>• Hold Harmless Agreement</li> </ul> These can be brought in individually or a representative from the school can bring in all the projects.
<b>Feb 25 and Feb 27, 2017</b>	Judging of projects. Students are not present for this stage.
<b>March 1, 2017</b>	<b>Student Interviews</b> are between 4:00pm and 7:15 pm. We will have student interviews <b><i>ONLY for students who have been notified by our office.</i></b> Interviews are on a first come, first served basis therefore we recommend that your students bring a snack, some homework or a book to read in case of a long wait. Students may bring objects/realia at this time and we recommend that students dress professionally if possible. Special Note: Parents/guardians must sign a <b>photo release</b> .  <i>School Tours can be scheduled for Wednesday, March 1st.</i> We encourage you to bring your classes to see the fair before the general public has a chance. Contact Lissa Gilmore at 209-468-9170 or lgilmore@sjcoe.net to reserve your time.
<b>March 2, 2017</b>	<b>Community Science Night / Award Ceremony!</b> 5:30pm - 7:30pm Wentworth Education Center, 2707 Transworld Dr., Stockton  Beginning at 5:30pm, projects will be available for viewing by the parents and the public. Students and teachers may pick up projects <b>AFTER</b> the awards ceremony. <b>PLEASE PASS THIS INFORMATION ON TO YOUR PARENTS.</b> Teachers in attendance this evening will have an opportunity to win one of ten, \$100 NASCO gift cards.
<b>March 3, 2017</b>	All projects that have not previously been picked up may be picked up between 8:30am and 2:00pm in the STEM Office in the Wentworth Education Center.

Revision History 2016:

- Updated all dates
- Add information: Abstracts
- Add information: "How to Enter"
- Add information: Every page of the notebook should be dated.
- Added and clarified information: "Projects not allowed" and "Restricted Projects – Pathogenic agents" (please read entire section).
- Clarified information: *The San Joaquin County Office of Education reserves the right to disqualify any projects that exhibit unsafe practices or behaviors or do not use proper personal protective equipment.*
- Add information: "Fair Week Events"