

SIM Science & Engineering Fair (SIMSEF)

2019 Handbook (Updated 12-05-18)

KEY DATES

See website - <https://tinyurl.com/SIMSEF19> for times and location details for events.

Sponsored by:



Professional Engineers in California Government
Inland Empire Section

Registration Dates/Deadlines

Online Student Registration:

November 30, 2018 thru February 28, 2019 by 9 a.m.

District Registration Fees Due:

March 8, 2019 (Friday) by 4:00 p.m.

Project Check-in:

April 2, 2019 (Tuesday)

Project Check-in: 7:00 – 8:30 a.m.

Project Judging:

April 2, 2019 (Tuesday)

Project Judging: 9:00 a.m. – 4:00 p.m.

Student Interviews: 9:00 a.m. – 2:00 p.m.

Project Removal:

April 2, 2019 (Tuesday) 4:30 – 6:00 p.m.

April 3, 2019 (Wednesday) 7:00 a.m. – 12:00 p.m.

Awards Ceremony:

April 4, 2019 (Thursday) 5:30 – 8:30 p.m.

TBD

County Affiliates:

Inyo County Superintendent of Schools

Lisa Fontana, Ph.D., County Superintendent of Schools

Mono County Office of Education

Stacey Adler, Ph.D., County Superintendent of Schools

Date:

April 2, 2019 (Tuesday)

Auto Club Speedway

9300 Cherry Avenue

Fontana, CA 92335

Resources

Event Website:

<https://tinyurl.com/SIMSEF19>

Registration Fee:

\$60 per student (not per project)

Due by March 8, 2019 by 4:00 p.m.

This fee must be submitted by the district/affiliate for all registered students, with the **District/Affiliate Registration Submittal Form**, the **District/Affiliate Summary Sheet** and a separate **Signature Card** for each participating student.

WE NEED JUDGES!

Do you know someone with science and engineering background/expertise who would make a great judge? PLEASE invite them to apply to be a volunteer judge!

Here is the online application for judges:

<https://sbcss.k12oms.org/31-157479>

SIM Science & Engineering Fair

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SUGGESTED DISTRICT/AFFILIATE FAIR TIMELINE

September/October	January	February
<ul style="list-style-type: none"> • Schedule date of school science fairs. • Reserve location for school science fairs. • District representatives calendar District Coordinators meeting. <p style="text-align: center; margin: 10px 0;">November</p> <ul style="list-style-type: none"> • District representatives schedule workshops for teachers. • Orient students to the components of developing a science fair project. • Assist students in choosing a suitable topic. <p style="text-align: center; margin: 10px 0;">December</p> <ul style="list-style-type: none"> • Students conduct library research. • Students should write project proposal. 	<ul style="list-style-type: none"> • District representative calendar District Coordinators Meeting. • Assist students with professional contacts for guidance and background for projects. • Student develop list of materials needed for projects. • Discuss the nature of experimentation with students. • Discuss safety, controlled and uncontrolled experiments with students. • Review observing, measuring and data collection. • Provide students with time, space and give guidance for experimentation. • Set up system for regular progress reports from students. • Always ensure safety rules conform to projects and are observed. • Discuss proper animal care. • Review exhibit construction with students. • Discuss qualities of a good exhibit with students - construction, clarity, etc. • Hold a Parent Information Night. • Provide project review and approval to students to avoid disqualifications. 	<ul style="list-style-type: none"> • Students develop conclusions and write research paper. • Review criteria for successful oral presentations. • Practice mock interviews (if applicable) with students. • Arrange a review of students' paper by teaching staff. • Publicize your science fair, contact local news media. • Recruit Science Fair Judges. • Students should develop final research papers. • District Science Fair Day - Good Luck!

SIM Science & Engineering Fair KEY DATES & DEADLINES

November 30, 2018 – February 28, 2019 (by 9:00 a.m.)	Online Student Registration	Get link from District/Affiliate Coordinator.
March 1-6, 2019 (Friday-Wednesday)	Registration Review	
March 6, 2019 (Wednesday)	Abstract Safety Screening	
March 6, 2019 - March 8, 2019 (Wednesday – Friday)	Disqualified Project Notification	Phone calls and emails.
March 8, 2019 (Friday)	District Registration Fees Due	
April 2, 2019 (Tuesday) 7:00 – 8:30 a.m.	Project Check-in	Auto Club Speedway 9300 Cherry Avenue Fontana, CA 92335
April 2, 2019 (Tuesday) 9:00 a.m. – 4:00 p.m.	Project Judging	
April 2, 2019 (Tuesday) 9:00 a.m. – 2:00 p.m.	Student Interviews (Jr/Srs Only)	
April 2, 2019 (Tuesday) 4:30 – 6:00 p.m. April 3, 2019 (Wednesday) 7:00 a.m. – 12:00 p.m.	Project Removal	
April 4, 2019 (Wednesday) 5:30 – 8:30 p.m.	SIMSEF Awards Ceremony	TBD

EVENT SCHEDULE

April 2, 2019 Tuesday	Safety screening of all projects	7:00 – 9:00 a.m.
	Elementary project setup (Grades 4-5)	7:00 – 9:00 a.m.
	Elementary judging (Grades 4-5 do not stay on site, not interviewed)	9:00 a.m. – 4:00 p.m.
	Junior/senior project setup (Grades 6-12)	7:00 – 8:30 a.m.
	Orientation for juniors/seniors	8:30 – 9:00 a.m.
	Junior/senior judging and interviews (Students only)	9:00 – 10:45 a.m.
	Break for students (Location: TBD) – Snack provided for students	10:45 – 10:55 a.m.
	Junior/senior judging and interviews (Students only)	10:55 a.m. – 12:00 p.m.
	Break for students (Location: TBD) – Lunch provided for students	12:00 p.m. – 12:25 p.m.
	Junior/senior judging and interviews (Students only)	12:25 p.m. – 2:00 p.m.
	Juniors/seniors dismissed for the day	2:00 p.m.
	Project removal	4:30 – 6:00 p.m.
April 3, 2019 Wednesday	Project removal	7:00 a.m. – 12:00 p.m.
April 4, 2019 Thursday	SIM Science & Engineering Fair Awards Ceremony	5:30 – 8:00 p.m.
	Meeting for projects advancing to California State Science Fair (6-12 th grade only)	8:00 p.m. (immediately following awards ceremony)

NOTE: Please be advised student lunches are provided, however, **if students have special dietary needs and/or allergies they are welcome to bring a lunch** that meets their dietary needs. A snack will only be provided at the morning break.

PROJECT SET UP AND REMOVAL

Set Up: All projects must be delivered and set up at the indicated group time (listed above). All projects must pass the onsite safety inspection before they can be checked in and set up. Projects may be delivered and set up by a parent, teacher, or other designated person if the participant is unable to do so personally.

Removal: Projects must be removed on either Tuesday, April 2, 2019 from 4:30 – 6:00 p.m. or Wednesday, April 3, 2019 from 7:00 a.m. – 12:00 p.m. No projects may be removed before this time or after this time. **Projects not picked up by 12:30 p.m. on Wednesday, April 3, 2019 will be disposed/discarded of immediately.** All projects removed from the Fair must be signed out by the student or a designee (chosen by student). Designees must have approval from the student (or group) to remove their project. Designees will sign a statement confirming that they are approved to remove the project.

SIM Science & Engineering Fair 2019 Eligibility Rules

1. Affiliated Fair. Participation in the SIM Science & Engineering Fair (SIMSEF) is open to students attending a public school, private school, or charter school located within San Bernardino, Inyo, or Mono Counties. Home-schooled students may participate in SIMSEF through the public school in San Bernardino, Inyo, or Mono Counties that they would attend if they were not home schooled, at the discretion and approval of the public school or school district administration. Students must advance to the SIMSEF by participating in a district or affiliate fair prior to advancing to the county level.

2. Divisions. Each applicant must be a student enrolled in grades 4-12 at the time of qualification. Students in grades 4-5 participate in the Elementary Division; students in grades 6-8 participate in the Junior Division; while students in grades 9-12 participate in the Senior Division. The division for team projects with students in different grades is determined by the highest grade represented.

3. Single Entry. Each student may enter only one project each year. Each project may have one to three authors. Team projects will be placed in competition with individual projects in the same categories, though judging panels will have a higher level of expectation for team projects commensurate with the number of students on the team. All work must be done by the student(s) named as author(s). Projects entered into the Fair under an individual's name but discovered by the judging panel to have been prepared by a team of more than one student will be disqualified.

4. Category Assignment. Students will indicate desired project category during online registration. Desired project categories will be reviewed during registration/abstract review. At such time, some projects may be reassigned to more appropriate categories as determined by the review committee. SIMSEF reserves the right to disqualify any project due to poor quality, incompleteness, or inappropriateness of project content.

5. New Research. Any project reentered from a past Regional Fair must show substantial new research and development to be eligible for an award. Final determination will be made by the category judges.

6. Supervision. Students not accompanied by their own parent(s) must be under authorized supervision by an adult escort, teacher, or administrator. Each student must have appropriate signed permission form(s) as required by his/her own school district. SIMSEF is not responsible for the supervision of any participant.

All Eligible Projects Will Not Necessarily Be Accepted.

Each affiliated fair has been allocated a maximum number of projects which it may qualify to SIMSEF.

SIM Science & Engineering Fair

INSTRUCTIONS FOR APPLICATION

DEADLINE FOR STUDENT REGISTRATION: February 28, 2019 (9:00 a.m.)

DEADLINE FOR DISTRICT/AFFILIATE REGISTRATION: March 8, 2019 (4:00 p.m.)

SIM Science & Engineering Fair offers online student registration. **WE DO NOT OFFER PAPER REGISTRATION.** Online registration is open November 30, 2018 thru February 28, 2019 (closes 9:00 a.m.). Students may obtain the website address from their district coordinator. All information must be completed accurately and all applicable forms and certifications (*See SIMSEF Form Requirements, pp. 23-24*) to your project must be uploaded with your registration and then turned into your District/Affiliate Fair Coordinator. In addition to turning in certifications and related forms to their District/Affiliate Fair Coordinator, students must also **submit their Signature Card by 9:00 a.m. on February 28, 2019 to their District/Affiliate Fair Coordinator.**

Signature Cards are to be signed and given to District/Affiliate Fair Coordinators with all certifications and related forms. *The District/Affiliate Fair Coordinator will then also sign the Signature Card certifying that they have reviewed the student and project registration, are in possession of all necessary documents for that given project to participate in the SIMSEF, and will ensure all appropriate forms are uploaded.*

District/Affiliate Fair Coordinators will submit a separate **Signature Card** for each registered student along with the **District/Affiliate Registration Submittal Form**, the **District/Affiliate Summary Sheet** and the participation fee of \$60 per student (not per project).

District/Affiliate Fair Coordinators must submit all this documentation and payment to SBCSS Student Events by Friday, March 8, 2019 at 4:00 p.m. District/Affiliate Fair Coordinators should keep a copy of everything submitted for their records. Coordinators: faxed applications are **not** acceptable. District/Affiliate Fair Coordinator submissions may be sent by messenger or overnight mail, provided they are received by the District/Affiliate registration deadline.

Key Points

Team Projects

Each member of the team must complete and upload a separate Student Signature Card. Team projects may have up to 3 team members.

Project Title

Do not abbreviate unless necessary, but please avoid extremely long titles. Your title need not be the same as it was in your qualifying fair, but must be the same as it will appear on your display at the SIM Science & Engineering Fair.

Requirements

Indicate whether if you display requires more height than the standard. If you do not indicate a choice, you will be assigned a table top space. Also, indicate if you need an electrical outlet. If you need an outlet you must bring your own extension cord (100-foot cord is recommended – no extension cords will be provided at the Fair) and you must bring duct tape to safely secure the extension cord.

Certifications/Forms

If your project involves the use of human or animal tissue(s) (including blood), live vertebrate animals, or human subjects, complete the appropriate Certification Form, upload with online registration and submit to your district coordinators.

Signatures

Both student and a parent or guardian must sign and date the Signature Card form where indicated by the deadline. District/Affiliate Fair Coordinator must sign and date the form, *certifying that they have reviewed the student and project registration, are in possession of all necessary documents for that given project to participate in the SIMSEF, and will ensure all appropriate forms are uploaded.* Their signature will also certify that each student project complies with SIM Science & Engineering Fair rules and regulations. The district coordinator must certify that you are eligible to enter the Science & Engineering Fair.

SIM Science & Engineering Fair

APPLICATION ACCEPTANCE CRITERIA

Submission of the Online Application to the SIM Science & Engineering Fair (SIMSEF) does not guarantee acceptance to the fair. The Fair has always rejected applications on the basis of inappropriate content and for violations of Fair regulations. Projects that are substandard (poor quality) or incomplete will also be rejected. The basis for this judgment of quality is exclusively the information collected on Online Application Form which includes the Project Summary and additional project information including the Project Abstract. The SIMSEF does not consider other submitted materials or awards won at affiliated fairs.

<ol style="list-style-type: none">1. Acceptance to present a project at the SIMSEF requires the approval of an application submitted for each student(s) from an affiliated fair. The fair is open to students in grades 4-12.2. Each student on a team project must complete his/her own personal application and Project Abstract. All abstracts for team members should be the same. Additional forms may be required (see Appendix).3. Abstracts must demonstrate a level of knowledge and investigation that is appropriate for the grade of the student and discipline and which is beyond what is considered common knowledge. The investigations must demonstrate knowledge that is not found in middle or high school textbooks. Abstracts must communicate ideas effectively.4. The methodology and experimental design should be appropriate for the discipline, and should include the following where appropriate:<ul style="list-style-type: none">• experiments are appropriate to achieve the stated objective;• sample size and/or number of trials is sufficient for projects where replication is necessary to establish validity;• statistical analysis is appropriate for the discipline; the conclusion is relevant to the stated hypothesis.5. Experimental projects which are merely demonstrations, display collections and literature searches are generally not acceptable. In order to be acceptable, the student must use the demonstrations, collection, or search results, to extract new information not previously known to the student.6. Applications may be rejected for failing to follow the rules described in this handbook and safety guideline as identified in the California Science Safety handbook. satisfy the rules of the Fair.7. Application fees are not refundable. Exceptions are made for multiple payments for the same application.8. All rejected applications reviewed by SIMSEF officials will be granted an appeal process (with the exception of those applications which do not contain an Abstract).	<ol style="list-style-type: none">9. All projects submitted must reflect work completed during the current academic school year. If work from a previous year is used within the current project, the student must submit the Continuation of Research Form (see Appendix).10. Group projects may have up to 3 team members.11. Submitting an application to SIMSEF assumes the student in grades 6-12 will be present for oral interviews on April 2, 2019 (grades 4 and 5 are not interviewed). <p>Student, parents and advisors should be aware that these acceptance criteria are not intended to limit the number of participants but rather by requiring higher standards for project abstracts, the criteria is intended to improve the quality of the Fair and to ensure that all participants are able to effectively communicate their project to the judges. Any student whose application is not accepted will be contacted through the affiliate coordinator and/or parent in a timely manner. The student/parent will have an opportunity to participate in the appeals process.</p> <p>The purpose of the rules is to:</p> <ol style="list-style-type: none">1. Protect the rights and welfare of the student researcher.2. Protect the rights and welfare of the human participant.3. Ensure adherence to state regulations.4. Ensure the use of safe laboratory practices.5. Protect the environment.6. Determine eligibility in the competition for the SIMSEF. <p>Submission of an application to the SIMSEF does not guarantee acceptance to the Fair. Fair officials reserve the right to reject applications on the basis of inappropriate content and for violations of Fair regulations. The basis for this judgement of quality is exclusively from the information provided within the student application. The SIMSEF does not consider other submitted materials or awards won at school or district fairs.</p>
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SIM Science & Engineering Fair

DISPLAY AND SAFETY REGULATIONS

The SIM Science & Engineering Fair (SIMSEF) Display and Safety Committee is the final authority on display and safety issues for projects approved by the Scientific Review Committee (SRC) to compete in the SIMSEF. The SIMSEF Display and Safety Committee may require students to make revisions to conform to display and safety regulations.

Students must take full responsibility for the safety of all parts of their exhibits. Please review all display and safety regulations in the following pages. Please note that:

- The purpose of the display is to communicate the experimentation done, but not necessarily to provide a live demonstration of the experimentation. Consider use of video, photographs, and drawings.
- **SIMSEF assumes no responsibility for loss or damage to any project or part.**
- Valuable material and equipment should be simulated or pictured. Items may be brought for demonstration during judging and then removed. No gas or water outlets are provided.
- No plants, food, chemicals, liquids (including water), hazardous materials or equipment, or unattached items may be on display.
- Containers for high pressure gases must be empty. No open flames are allowed.
- Toxic, hazardous, combustible, or cryogenic materials are prohibited.
- All parts of the exhibit should be securely attached to the display board.
- All displays will be inspected for compliance: projects not meeting compliance with SIMSEF Safety Rules will be disqualified and not displayed.

The regulations that follow have been divided into two main categories to separate those that deal specifically with display regulations and those that pertain to safety regulations.

I. Display Regulations

The following regulations must be adhered to at SIM Science & Engineering Fair:

Maximum Size of Project:

- Depth (front to back): 2.5 feet or 76 centimeters
- Width (side to side): 4 feet or 122 centimeters
- Height (table): 6.5 feet or 198 centimeters
- Height (floor): 9 feet or 274 centimeters

Please be aware when ordering posters that the mechanism that supports the poster should conform to the maximum size limitations stated above.

1. All project materials and support mechanisms must fit within the project dimensions.
2. Projects displayed on tables are the preferred standard. Projects which require floor access may utilize a table for a portion of their display, but the entire display must still fit within the width and depth limitations specified above. Projects with floor displays may be placed out of numerical sequence and possibly away from other projects in the same subject category.
3. All projects must fit within these prescribed space limitations. This includes elements of the project that may extend or protrude. Displays which are admitted, but are later augmented to exceed the space limitations will be disqualified until brought into conformance. Using the aisle between projects as additional display space, even temporarily during interviews, is cause for disqualification.

Display Content for Regulated Research Institution and/or Continuation Projects

1. **Regulated Research Institution Projects**
The display must reflect on the work conducted by the student.
 - Minimal reference to mentor's or other researcher's work must only reflect background information or be used to clarify differences between student's and others' work.
2. **Continuation Projects (See SIMSEF Form 2, p. 27)**
The display board should summarize **ONLY** the **CURRENT** year's work.
 - The Title may include the duration of the project (for example, "Year Two of an Ongoing Study").
 - Minimum reference to conclusions of previous years' work may be shown without any specific data being displayed.

Audio Visual Presentations

Students using audio-visual or multi-media presentations (for example 35mm slides, videotapes, images, graphics, animations, etc., displayed on computer monitors; or other non-print presentation methods) must be prepared to show the entire presentation to the Display and Safety Inspectors before the project is approved.

Any photograph/visual image/chart/table and/or graph is allowed if:

1. It is not deemed offensive or inappropriate (which includes images/photographs showing invertebrate or vertebrate animals/humans in surgical, necrotizing or dissection situations) by the Review Committee, the Display and Safety Committee, or San Bernardino County Superintendent of Schools Office. The decision made by any one of the groups mentioned above is final.

SIM Science & Engineering Fair

DISPLAY AND SAFETY REGULATIONS (continued)

2. It has a credit line of origin ("Photograph taken by..." or "Image take from..." or "Graph/Chart/Table taken from..."). If all images, etc. being displayed were taken or created by the student or are from the same source, one credit line prominently and vertically displayed on the backboard/poster or tabletop is sufficient.
3. It is from the Internet, magazine, newspaper, journal, etc., and a credit line is attached. If all photographs, etc. are from the same source, one credit prominently displayed is sufficient.
4. It is a photograph or visual depiction that does not provide any public disclosure or identifying information of human subjects, regardless of the method or modality of that public disclosure (i.e., pictures, videos, etc.). Human participants and the project researcher must have their faces covered.

Prohibited Items/materials (not allowed at project)

The following items cannot be displayed/included at the project:

1. Any items that are acknowledgements, self-promotions or external endorsements (such as naming the research institution, mentor or patent pending statements) and/or are intended for distribution including:
 - a. Any disks, CDs, business cards, printed materials, etc., (including unofficial abstracts) designed to be distributed to judges or the public.
 - b. Flash drives, brochures, booklets, endorsements and additional give-away items including, but not limited to, pins, key chains, food, etc.
2. Postal addresses, World Wide Web, email and/or social media addresses, QR codes, telephone and/or fax numbers of a project or student.
3. Awards won in previous competitions.
4. Active internet or email connections as part of displaying or operating the project at the SIM Science & Engineering Fair.
5. Prior year's written material or visual depictions on the vertical display board *(Exception: The project title displayed in the student's booth may mention duration of the project. For example, year two on an ongoing study).

**Any attempt to replenish or return removed items from the above list is a violation and will result in items being confiscated by the Display and Safety Committee and may result in the project failing to qualify for competition.*

Other Display Regulations

1. No changes, modifications, or additions to projects may be made after approval by the Display and Safety Committee and the Review Committee. Participants who do not adhere to this regulation will fail to qualify for competition.
2. If a project fails to qualify and is not removed by the student, fair officials will remove the project in the safest manner possible and is not responsible for damage to the

project.

2. It is highly recommended that your name, school, grade and district be placed on all notebooks or materials that are left with your project. A project data book and research paper are not required but are highly recommended.

II. Safety Regulations

The following regulations must be adhered to when a student exhibits a project at the SIM Science & Engineering Fair:

Not Allowed on Judging Floor

1. Any living organism inclusive of all animals, plants and studied collections of microscopic life forms such as bacteria, fungi and molds. Displays of preserved animals are not permitted. Projects may not display photographs of procedures detrimental to the health and well-being of vertebrate animals.
2. Soil, sand, rock, cement and/or waste samples, even if permanently encased in a slab of acrylic.
3. Taxidermy specimens or parts.
4. Preserved vertebrate or invertebrate animals.
5. Human or animal food as part of the exhibitor demonstration of the project.
6. Human/animal parts or body fluids (Example: blood, urine).
7. Plant materials (living, dead, or preserved) that are in their raw, unprocessed, or non-manufactured state (Exception: manufactured construction materials used in building the project or display).
8. All chemicals including water or other liquids (projects may not use water in any form in a demonstration.)
9. All hazardous substances or devices (Example: poisons, drugs, firearms, weapons, ammunition, reloading devices and lasers).
10. Items that may have contained or been in contact with hazardous chemicals (Exception: item may be permitted if professionally cleaned and documented for such cleaning is available).
11. 3-D printers.
12. Dry ice or other sublimating solids.
13. Sharp items (Example: syringes, needles, pipettes, knives).
14. Weapons or weapon paraphernalia of any kind.
15. Flames or highly flammable materials (including magnified light sources):
 - a. A Fresnel Lens cannot be used in conjunction with a light source – it becomes an open flame.
16. Batteries with open-top cells or wet cells.
17. Glass or glass objects unless deemed by the Display and Safety Committee to be an integral and necessary part of the project (Example: glass that is an integral part of a commercial product such as a computer screen).

SIM Science & Engineering Fair

DISPLAY AND SAFETY REGULATIONS (continued)

18. Any apparatus deemed unsafe by the Scientific Review Committee, the Display and Safety Committee, or San Bernardino County Superintendent of Schools' officials (Example: large vacuum tubes or dangerous ray-generating devices, empty tanks that previously contained combustible liquids or gases, pressurized tanks, 3D prints, etc.).

Electrical regulations at the SIM Science & Engineering Fair

1. Electrical power supplied to the project is 120 volt. Surge protectors are permitted, but not provided.
2. Electrical devices must be protectively enclosed. Any enclosure must be non-combustible. All external non-current carrying metal parts must be grounded.
3. Energized wiring, switches and metal parts must have adequate insulation and over-current safety devices (such as fuses) and must be inaccessible to anyone other than the student. Exposed electrical equipment or metal that possibly may be energized must be shielded with a non-conducting material or with a grounded metal box to prevent accidental contact.
4. Decorative lighting or illumination is discouraged. If used, lighting must be as low a voltage as possible and must be LED lighting that does not generate heat. Light bulbs are prohibited. When student is not at the exhibit, all electrical power must be disconnected, or power bars must be switched off (Exception: during pre-judging audio visual displays may be available).
5. No exposed live circuits over 36 volts are allowed.
6. There must be an accessible, clearly visible on/off switch or other means of quickly disconnecting from the 120-volt power source.

Laser Requirements: Any Class 1 or Class 2 lasers, along with only Class 3A or 3R lasers, are allowed to be used provided a student avoids indiscriminate exposure to other students, judges, or visitors (except if passed through magnifying optics such as microscopes and telephones, in which case they may not be used). No other lasers may be used or displayed.

1. Displays with lasers should have a warning sign: "LASER RADIATION-DO NOT STARE INTO BEAM."
2. Any laser must be labeled by the manufacturer so that power output can be inspected. Lasers without labels will NOT be "cleared."
3. LED's that consume over 1 watt, unless they are in a commercial light bulk/fixture or otherwise shielded, will not be allowed.
4. Lasers will be confiscated with no warning if not used in a safe manner. Serious offenses may result in failure to qualify.

Biofuels

1. Research regarding biofuel/alcohol production must conform to the U.S. Dept. of Treasury, Alcohol and Tobacco Trade Bureau regulations.

2. Permits must be obtained prior to the production of any alcohol fuel. Application and Regulation information for permits visit: www.ttb.gov/forms/f511074.pdf

Other Safety Regulations

1. Any inadequately insulated apparatus producing extreme temperatures that may cause physical burns is not allowed.
2. Any apparatus with unshielded belts, pulleys, chains, or moving parts with tension or pinch points must be for display only.
3. San Bernardino County Superintendent of Schools' officials, the Review Committee, and/or the Display and Safety Committee reserve the right to remove any project for safety reasons or to protect the integrity of the SIM Science & Engineering Fair and its rules and regulations.
4. Project sounds, lights, odors, or any other display items must not be distracting. Exceptions to this rule may be permitted for judging demonstrations. Approval must be given prior to judging.
5. Projects can be continued under the table, but it is not to be used for storage.

Firearms, Explosives and Projectiles

6. Fire regulations prohibit the use of highly flammable or combustible materials in project displays. Education Code, Section 48915. "Firearm" means any device designed to be used as a weapon from which a projectile is expelled through a barrel by the force of any explosion or other form of combustion. Examples of dangerous objects include but are not limited to: air soft guns, paint ball guns, BB guns, pellet guns, air rifles, brass knuckles, fist packs, nunchaku, slings shots, throwing stars, darts and any object likely to cause injury to person or property that has no reasonable use at school. Education Code 48900(b).
7. Projects involving the discharge of a single or multiple projectiles by mechanical, chemical or electromagnetic means are not permitted. Examples: Archery, tackle, air guns, firearms of any type, etc.

SIM Science & Engineering Fair
DISPLAY AND SAFETY REGULATIONS (continued)

Rocket-propelled projectile or similar device:

8. Only commercially produced class A or smaller engines are permitted.
9. The length of the rocket must not measure less than 10 inches (25 cm) or more than 15 inches (38 cm).
10. The minimum size of the launch site for class A or smaller engines should extend to a radius of 100 feet (30 m) from the firing position.
11. Application for a special launch permit may be required by local fire protection agencies.
12. Designated Supervisors and/or teachers should caution their students about the dangers of experimenting with rockets and missiles, especially the dangers in the preparation and use of noncommercial rockets and propellants. Teachers must refrain from the following practices:
 - a. Providing chemicals for rockets or missiles or helping students to obtain them
 - b. Using, or permitting to be used, liquid or solid fuels in the classroom (such use essentially constitutes a controlled explosion)
 - c. Permitting the construction of rockets, missiles, or component parts in the classroom or shop
 - d. Allowing students proximity to the firing area
 - e. Launching anything other than commercially produced rocket engines of known size and predictable range
13. Further Rocket Safety Precautions can be found within the [CA Science Safety Handbook](#) 2014 on pages 169-170, 282-286

Tobacco, Alcohol and Controlled Substances

GROUND'S FOR IMMEDIATE DISQUALIFICATION

14. No project may use consumable tobacco, alcohol or illegally obtained narcotics and/or controlled substances. This includes surveys that compare use of the above substances; (e.g. smokers vs. non-smokers).
15. Controlled substances (drugs, chemicals, anesthetics, etc., the use of which is regulated by the Comprehensive Drug Abuse Prevention and Control Act of 1970) must conform to existing local, state and federal laws. Such substances may not be exhibited at the Fair.

Chemicals

16. Projects that use a chemical with a hazard rating of five or with asterisks are not permitted.

For help on chemical use, use The Science Safety Handbook for California Public Schools' (2014 edition) downloadable at: www.cde.ca.gov/pd/ca/sc/documents/scisafebook2014.pdf.

SIM Science & Engineering Fair

INFORMATION ON ADDITIONAL REQUIREMENTS

HUMAN SUBJECTS AND LIVE VERTEBRATE ANIMALS	PROJECTS THAT REQUIRE CERTIFICATION OF A BIOMEDICAL SCIENTIST
<p>1. If applicable:</p> <ul style="list-style-type: none"> • Certificate of Humane Treatment to Live Vertebrate Animals. • Certificate of Compliance of Research Involving Human Subjects. • Certificate of Tissue Samples must be submitted with your application to your district coordinator. Personal and school identification, including photograph, must be concealed. <p>2. The display of bacterial cultures and live or dead vertebrates, invertebrates, plants or microorganisms or their parts, is not permitted (e.g. teeth, hair, fur, feathers). Only illustrations or photographs of microorganisms and animals are permitted.</p> <p>3. Photographs or other visual presentations of surgical techniques, dissections, autopsies and/or laboratory techniques depicting vertebrate animals in other than normal conditions may not be displayed. Hide a participants face to protect identity.</p> <p>4. Live vertebrate animals may not be displayed during the fair.</p> <p>5. State of California Education Code 51540: In the public elementary and high schools or in public elementary and high school sponsored activities and classes held elsewhere than on school premises, live vertebrate animals shall not, as part of a scientific experiment or any purpose whatever:</p> <ol style="list-style-type: none"> a) Be experimentally medicated or drugged in a manner to cause painful reactions or induce painful or lethal pathological conditions. b) Be injured through any other treatments, including, but not limited to, anesthetization or electric shock. <p>Live animals on the premises of a public elementary or high school shall be housed and cared for in a humane and safe manner.</p> <p>The provisions of this section are not intended to prohibit or constrain vocational instruction in the normal practices of animal husbandry.</p>	<ol style="list-style-type: none"> 1. All recombinant DNA research must be carried out in accordance with current NIH Guidelines for Research Involving Recombinant DNA Molecules. Only research normally conducted without containment in microbiological laboratories and performed under the supervision of an appropriately qualified scientist will be permitted. The facilities to be used must be described in the research plan. Research requiring containment is prohibited. 2. It is permissible for the student and designated adult supervisor to consult with a biomedical scientist to obtain detailed instructions and guidance in techniques to be used by the student under the direct continuous supervision of a designated adult supervisor (for research not conducted in the biomedical scientist laboratory). In this instance the designated adult supervisor will be required to certify in writing jointly with the biomedical scientist. 3. Either the biomedical scientist or adult supervisor must provide continuing supervision to assure compliance with the protocol. 4. Major deviations from the approved protocol may be implemented only with the written approval of the biomedical scientist, but may never violate California Education Code. 5. The biomedical scientist or adult supervisor must be in the same locality as the student for the duration of the experimental work except for short trips. This means that a project started in one city may not be continued in another unless an alternate designated adult supervisor, approved by the biomedical scientist prior to the continuation of the experimental work agrees to supervise the project.

SIM Science & Engineering Fair

CATEGORIES

Elementary Division Categories (grades 4 - 5)

Separate awards are given for each grade level, except for team projects, which are judged at the highest grade level represented in the project.

Team projects, which are produced collaboratively with two or three students in any eight areas of science listed below, are judged along with individual projects in the same category.

Behavior Science- (E01)	Studies of behavior, conditioned responses, learning, psychiatry, or psychology in human and other animals.
Biology Animals- (E02)	Studies of vertebrate or invertebrate zoology.
Biology/Other Kingdoms-(E03)	Studies of plants, fungi, protists and bacteria.
Chemistry-(E04)	Studies of chemical and physical properties of organic and inorganic materials.
Consumer Science-(E05)	Examination, comparison, analysis, testing of manufactured devices or trade name chemicals, materials, etc. Product quality, safety and consumer satisfaction.
Earth Science- (E06)	Studies of geology, meteorology, oceanography, astronomy and space science.
Engineering- (E07)	Projects that follow the Engineering Design Process to develop solutions by building and testing prototypes of new or improved devices.
Environmental Education - (E08)	Projects using biological systems/organisms to study the impact of natural and man-made changes on our environment.
Math- (E09)	Studies in geometry, topology, number theory, statistics, computer graphics, artificial intelligence and modeling or stimulations.
Physics-(E10)	Studies of electricity, magnetism, aerodynamics, energy, physical properties of matter and applied mechanics.

Junior Division Categories (grades 6 – 8)

J1 - Aerodynamics/ Hydrodynamics J2 - Alternative Energy J3 - Applied Mechanics & Structures J4 - Behavioral & Social Sciences J5 - Biochemistry/ Molecular Biology J6 - Chemistry J7 - Cognitive Science J8 - Computational Systems & Analysis J9 - Earth & Atmospheric Sciences J10 - Electronics & Electromagnetics J11 - Environmental Engineering J12 - Environmental Science	J13 - Mammalian Biology J14 - Materials Science J15 - Mathematical Sciences J16 - Microbiology - General J17 - Microbiology – Medical J18 - Physics & Astronomy J19 - Plant Biology J20 - Product Science - Biological J21 - Product Science - Physical J22 - Toxicology J23 - Zoology
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Senior Division Categories (grades 9 – 12)

S3 - Applied Mechanics & Structures S4 - Behavioral & Social Sciences S5 - Biochemistry/ Molecular Biology S6 - Chemistry S8 - Computational Systems & Analysis S10 - Electronics & Electromagnetics S11 - Environmental Engineering S12 - Environmental Science	S13 - Mammalian Biology S15 - Mathematical Sciences S16 - Microbiology (General) S18 - Physics & Astronomy S19 - Plant Biology S22 - Toxicology S23 - Zoology
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SIM Science & Engineering Fair

JUNIOR/SENIOR DIVISION CATEGORY DESCRIPTIONS

Category	What Belongs	What Doesn't Belong
<p>J1) Aerodynamics/ Hydrodynamics (Junior Division only): Studies of aerodynamics and propulsion of air, land, water and space vehicles; aero/ hydrodynamics of structures and natural objects. Studies of the basic physics of fluid flow.</p>	<p><i>Effect of Dimples on Golf Ball Flight; Airfoil Stall Characteristics; Effect of Fins on Water Rocket Stability; Low Drag Launch Lug for Model Rockets.</i></p>	<p>Ballistics studies comparing other than different shapes or surface textures belong in Materials Science or Applied Mechanics. Senior Division projects otherwise appropriate for this category belong in Applied Mechanics.</p>
<p>J2) Alternative Energy (Junior Division only): Studies of power generation using alternative energy technologies such as solar cells.</p>	<p><i>Analysis of Nanocrystal Dye-sensitized Solar Cells; Maximizing the Power Output of a Crystalline Silicon Photovoltaic Module through the Use of Solar Concentrators.</i></p>	<p>Aerodynamic studies on turbines belong in Aerodynamics/ Hydrodynamics. Hydroelectric projects generally belong in Electricity & Electronics. Senior Division projects otherwise appropriate for this category belong in the relevant basic science (e.g., Physics & Astronomy, Electronics & Electromagnetics, Chemistry).</p>
<p>J3/S3) Applied Mechanics & Structures: Studies concerning the design, manufacture and operation of mechanisms, including characteristics of materials, dynamic response and active/ passive control. Testing for strength and stiffness of materials used to provide structural capability; studies and testing of structural configurations designed to provide improved weight and force loading or stiffness capabilities. <i>Senior Division only:</i> includes aerodynamics, hydrodynamics and fluids projects.</p>	<p><i>An Underwater Glider for Marine Exploration; Measurement of CD Variations; Tensile Strength of Composite Materials; Bridge Design; Can Foam Make Steel Stronger?; How Does Arch Curvature Affect Strength? How Do Different Foundations Stand Up to Earthquakes? Sr. Div: "Arrow" Dynamics; Measuring the Effect of Aerodynamic Design on Vehicular Drag.</i></p>	<p>Junior Division aerodynamics/ hydrodynamics projects belong in Aerodynamics/Hydrodynamics. Engineering studies of soil stability during earthquakes belong in Earth & Atmospheric Sciences.</p>
<p>J4/S4) Behavioral & Social Sciences: Studies of human psychology, behavior, development, linguistics and the effects of chemical or physical stress on these processes. Experimental or observational studies of attitudes, behaviors, or values of a society or groups within a society and of the influences of society on group behavior. Includes gender and diversity studies, anthropology, archaeology and sociology. Studies may focus on either normal or abnormal behavior. <i>Senior Division only:</i> includes studies of cognition.</p>	<p><i>A Study of the Senses in Stress Management; Racial Awareness in Infants; AIDS Awareness in Teens; The Effect of Authority Figures on Group Decision Making.</i></p>	<p>Animal behavior projects belong in Zoology or Mammalian Biology. Junior Division projects studying memory, learning, and sensory perception belong in Cognitive Science.</p>

SIM Science & Engineering Fair

JUNIOR/SENIOR DIVISION CATEGORY DESCRIPTIONS (Continued)

<p>J5) Biochemistry/ Molecular Biology (Junior Division only): Studies at the molecular, biochemical, or enzymatic levels in animals (including humans), plants and microorganisms, including yeast. Studies of biological molecules, e.g., DNA, RNA, proteins, fats, vitamins, nutrients.</p>	<p><i>Lipoxygenase Influence on Lipofuscin Granule Formation in Bananas; Effects of P1 Precursors on Virus Growth; Isolation of Pre-mRNA Mutants in Saccharomyces cerevisiae; Determination of Ascorbic Acid Concentration in Orange Juice Using a Redox Reaction; Effects of Food Preparation on Vitamins.</i></p>	<p>Studies of the physical properties of biochemicals such as oxidation reduction reactions belong in Chemistry. Functions of major organ systems belong in Mammalian Biology or Zoology.</p>
<p>J6/S6) Chemistry: Studies in which chemical properties of nonbiological organic and inorganic materials (excluding biochemistry) are observed. Some studies involving physical properties are appropriate, including phase changes, crystal structures and formation, intermolecular and intramolecular forces.</p>	<p><i>Isolation, Purification, and Specific Rotation Determination of Ricinoleic Acid; Conductivity of Electrolytes; Does Water Purity Affect Surface Tension?</i></p>	<p>Chemical studies of metabolic processes (e.g. fermentation and/or yeast), processes mediated by biochemical intermediates (e.g. enzymes), or biological organic molecules belong in Biochemistry. In the Junior Division, projects that deal with the characterization of chemical products in everyday life belong in Materials Science or Product Science (Physical).</p>
<p>J7) Cognitive Science (Junior Division only): Studies of learning, memory and cognition in humans, using human or animal models for human processes. Studies of the effects of chemical or physical stress on cognition. Includes projects on subliminal perception, optical illusions, recall and observations (e.g. reliability of eyewitnesses), and the interaction of different senses.</p>	<p><i>Does Age Affect Implicit Learning?; The Effectiveness of Flash Cards vs. Computer Scripts; Optical Illusions; Subliminal Persuasion by Television; Eyewitness Identifications; Effect of Curcumin on Memory.</i></p>	<p>Studies examining basic human senses and physiological, rather than psychological, reactions belong in Mammalian Biology. Senior Division projects otherwise appropriate for this category belong in Behavioral and Social Sciences.</p>
<p>J8/S8) Computational Systems & Analysis: Studies that focus primarily on the development or use of computational systems for applications in the biological, physical, or engineering sciences, such as analyzing big data, modeling and simulations, autonomous navigation, and bioinformatics.</p>	<p><i>Neural Network Model to Predict Future Body Mass Index; Safecopter: Developing a Collision Avoidance System Based on an Array of Time-of-Flight 3D Cameras; Using Artificial Intelligence Systems for Autonomous Visual Comprehension and Handwriting Generation; Value of Splines in Modeling the Extragalactic Background Light; Assessing the Practicality of Asteroid Deflection Strategies Using Simulation; Mathematical Models of Cancer Development in the Human Digestive System.</i></p>	<p>Projects using computers or mathematics as a tool (without developing a program or a model) or that include actual experimentation to study a different subject belong in that category. For example, a computer-based analysis to identify obesity driver genes would belong here, but if the project also experimented with those genes it would then belong in Biochemistry/ Molecular Biology. Computer hardware projects belong in Electronics & Electromagnetics.</p>

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JUNIOR/SENIOR DIVISION CATEGORY DESCRIPTIONS (Continued)

<p>J9) Earth & Atmospheric Sciences (Junior Division only): Studies in geology, seismology, physical oceanography, marine geology, coastal processes, atmospheric physics and chemistry, meteorology and climatology including measurements, models and the effects of climate change.</p>	<p><i>Gravity Current Velocities; Beach Sand Fluctuations and Cliff Erosion; Dependence of Liquefaction upon Soil Composition; Influence of Site Effects on Peak Ground Acceleration in the Northridge and Whittier Narrows Earthquakes; Solar Activity and Refraction Properties of the Ionosphere. The Effect of CO(2)-Induced Carbonic Acid on Calcium Carbonate in Sea Water</i></p>	<p>Studies concerning human-caused pollution and its effects on the environment, other than climate, belong in Environmental Science. Studies of methods to mitigate pollution's effects on the environment, including climate, belong in Environmental Engineering. Earthquake engineering projects (other than soil stability) belong in Applied Mechanics & Structures. Senior Division projects otherwise appropriate for this category belong in Environmental Science (climate) or the relevant basic science (e.g., Physics & Astronomy, Chemistry, etc.).</p>
<p>J10/S10) Electronics & Electromagnetics: Experimental or theoretical studies with electrical circuits, computer design, electro-optics, electromagnetic applications and antennas.</p>	<p><i>Satellite Reception Without a Dish; The Gauss Rifle; Transmission of Information by Laser; Are Maglev Trains Practical?</i></p>	<p>Projects that merely use electronics to study something else (e.g., hearing in birds) belong in another category (Zoology in this example).</p>
<p>J11/S11) Environmental Engineering: Projects which apply technologies such as recycling, reclamation, restoration, composting and bioremediation which could benefit the environment and/or the effects of pollution on the environment.</p>	<p><i>Newspapers as Mulch; Oil Control; Water Hyacinth: Primary Water Treatment?; What Soil Conditions Best Control Soil Erosion While Assisting Growth?; Designing a New Home Sewer System.</i></p>	<p>Projects that measure or survey environmental impacts without any mitigation of those impacts belong in Environmental Science or Earth & Atmospheric Sciences. Projects that study the mitigation of climate change through alternative energy production belong in Alternative Energy.</p>
<p>J12/S12) Environmental Science: Projects surveying, measuring, or studying the impact of natural and man-made changes on the environment. Examples include: floods, fires, biohazardous spills, acid rain, earthquakes, air pollution and water pollution.</p>	<p><i>The Effects of Fires on Flora and Fauna; How Does Water Quality Affect the Abundance and Diversity of Micro-invertebrates; Bacteria Pollution in Our Beaches; An Analysis of Dissolved Oxygen and Density in Ballona Creek.</i></p>	<p>Junior Division studies that measure or model climate change and its effects belong in Earth & Atmospheric Sciences. Studies of methods to mitigate pollution's effects on the environment, including climate, belong in Environmental Engineering. Studies performed under unrealistic or simulated conditions to examine the negative effects of substances or conditions on living things belong in Toxicology.</p>
<p>J13/S13) Mammalian Biology: Studies of growth and developmental biology, anatomy and physiology in all mammals, including humans. Studies of the behavior of all mammals in their natural habitats (or reproductions of them).</p>	<p><i>Effect of Age on Aerobic Abilities; Peripheral Vision; Correlation of Strength with Gender; Effect of Vaccination on Antibody Development in Neonatal Bovines. Lung Capacity, Age, and Exercise; Crossed Hand-Eye Dominance</i></p>	<p>Projects studying physiology of birds, insects, etc. belong in Zoology. Studies of the effect of chemicals on a physiological function may belong in Toxicology. Studies in which animals serve as a model for human learning or behavior belong in Cognitive Science (Jr) or Behavioral & Social Sciences (Sr).</p>

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JUNIOR/SENIOR DIVISION CATEGORY DESCRIPTIONS (Continued)

<p>J14) Materials Science (Junior Division only): Studies of materials characteristics and their static (not in motion) physical properties. Includes measurements and comparisons of materials durability, flammability and insulation properties (thermal, electrical, acoustic, optical, electromagnetic, etc.).</p>	<p><i>Which Metal Conducts the Most Heat? What Is the Effect of Duct Tape as an Insulation Material? Sun Protection on the Courts: A Test of Colors and Materials in Tennis Clothing; Which Building Material Disrupts a Wireless Connection the Least?</i></p>	<p>Studies of fundamental properties of matter (e.g., specific heat) belong in Physics and Astronomy. Studies comparing and testing natural and manmade products for effectiveness in intended use in real-world, consumer-oriented applications belong in Product Science (Physical).</p>
<p>J15/S15) Mathematical Sciences: Studies of mathematics (e.g., algebra, geometry, logic), and computer science (e.g., artificial intelligence, and the design, improvement, or optimization of algorithms, computer languages, operating systems, or software architecture.)</p>	<p><i>Maximally Dispersed Points on a Sphere; Knot Mathematics; Mathematical Optimization of Multiple Precision Multiplication; Computerized Deductive Reasoning Using Bipartite Rules; Using Global Optimization to Separate Mixed Signals in a Noisy Environment; The Algebra and Geometry of Quasicategories; A Combinatorial Proof for the Geometric Series, Binomial Theorem, and the Square of a Polynomial with Tiling</i></p>	<p>Computer programming projects belong in Computational Systems & Analysis. Projects using mathematics or computers as a tool to study a different subject, that develop an engineering solution, or that lead to a specific experiment, belong in that category.</p>
<p>J16/S16) Microbiology (General): Studies of genetics, growth and physiology of bacteria, fungi, protists, algae, or viruses. Includes surveys of bacterial contamination. <i>Senior Division Only:</i> includes projects described within the category Microbiology (Medical).</p>	<p>Studies of Light Producing Bacteria; Enhancement of Algae Lipid Composition through the Manipulation of Temperature, Light, and Nutrient Levels; The Utilization of a Photobioreactor to Optimize the Growth Rate of Lipids in Microalga.</p>	<p>Projects studying photosynthesis or fermentation belong in Biochemistry. Projects using bacteria as a tool to study another subject belong in that subject.</p>
<p>J17) Microbiology - Medical (Junior Division only): Studies of prevention, diagnosis and treatment of infectious diseases caused by pathogenic bacteria, fungi, or viruses. Includes all antimicrobial studies except testing of commercial antimicrobials.</p>	<p><i>Effects of Spices on Escherichia coli growth on food; Antibiotic Resistance in Bacteria; Effects of Hand Washing on Absenteeism in Schools</i></p>	<p>Projects using bacteria as a tool to study another subject belong in that subject. Testing of commercial antimicrobial products belongs in Product Science (Biological). Senior Division projects otherwise appropriate for this category belong in Microbiology (General).</p>
<p>J18/S18) Physics & Astronomy: Studies of the physical properties of matter, light, acoustics, thermal properties, solar physics, astrophysics, orbital mechanics, observational astronomy, planetary science and astronomical surveys. Computer simulations of physical systems are appropriate in this category.</p>	<p><i>Emissivity as a Function of Geometry; Do High Temperature Superconductors have a First Order Phase Transition?; Chaotic Pendulum; Photometric Detection of an Extrasolar Planetary Transit; Jupiter's Decametric Emission; Solar Activity and Geosynchronous Satellites.</i></p>	<p>Electromagnetic propagation studies (e.g., antennas) belong in Electronics & Electromagnetics. Junior Division projects studying the characteristics of materials such as insulation properties belong in Materials Science.</p>

SIM Science & Engineering Fair

JUNIOR/SENIOR DIVISION CATEGORY DESCRIPTIONS (Continued)

<p>J19/S19) Plant Biology: Studies of the genetics, growth, morphology, or physiology of plants. Studies of the effects of fertilizers on plants.</p>	<p><i>The Effects of Organic and Inorganic Fertilizers on Plant Growth; Effect of Rhizobium on Legume Plants (Pisum); Transpiration of Plants Under Different Light Sources.</i></p>	<p>Studies using plants for indication or remediation of environmental pollution belong in the appropriate environmental category. Studies of the negative effects of chemicals on plants belong in Toxicology.</p>
<p>J20) Product Science - Biological (Junior Division only): Comparison and testing of commercial off-the-shelf products for quality and/or effectiveness for intended use in real-world consumer-oriented applications. This category is reserved for experimental methods involving biological sciences and processes.</p>	<p><i>Preventing Pumpkin Decomposition; Antibacterial Soap vs. Antibacterial Gel: Cause for Concern? Tylenol Brand vs. Store Brand Acetaminophen; Does Orange Oil Really Work?</i></p>	<p>Biological studies that do not include a commercial off-the-shelf product but are only testing potentially new consumer applications belong in their respective Life Science Category. Senior Division projects otherwise appropriate for this category belong in the relevant basic science.</p>
<p>J21) Product Science - Physical (Junior Division only): Comparison and testing of commercial off-the-shelf products for quality and/or effectiveness for intended use in real-world consumer-oriented applications. This category is reserved for experimental methods involving non-biological, physical sciences and processes.</p>	<p><i>Water Absorption in Eight Selected Hardwoods With and Without Sealants; Best Plywood for Homemade Skateboards; Cotton, Linen, Wool: Which One Lasts Longer?; Fire Resistance of Roofing Materials; Which Laundry Detergent Works the Best? Shock Attenuation in Baseball Helmets.</i></p>	<p>Non-biological studies that do not include a commercial off-the-shelf product but are only testing potentially new consumer applications belong in their respective Physical Science category. Senior Division projects otherwise appropriate for this category belong in the relevant basic science.</p>
<p>J22/S22) Toxicology: Studies of the effects of the negative effects of chemicals, toxins, medicinal and nutritional factors, prescription drugs, natural remedies, food components (caffeine) and other potentially harmful factors (such as temperature, carbon dioxide, radiation) at the cellular or higher levels on plants and animals.</p>	<p><i>Effect of Caffeine on Daphnia; Copper Toxicity of Marine Embryos; The Effects of Intermittent and Constant EMFs on Drosophila; The Effects of Petroleum Contaminated Water on Aquatic Plants.</i></p>	<p>Studies of the positive or beneficial effects of external factors such as nutritional components, medicines, vitamins, natural remedies, and fertilizers, belong in the relevant basic life science (e.g., Mammalian Biology, Zoology, Plant Biology, etc.) Studies of changes in actual ecosystems due to pollution belong in Environmental Science.</p>
<p>J23/S23) Zoology: Studies of growth and developmental biology, anatomy and physiology in animals other than mammals. Studies of the behavior of all animals (excluding mammals) in their natural habitats (or reproductions of them).</p>	<p><i>Hot Fish, Cold Fish: Respiration in Goldfish; Hearing and the Dominance Hierarchy of Crickets; Effect of Gravity on Living Organisms; Invertebrates in Kelp Holdfasts; Auditory Stimuli in Interganglial Neurons of Acheta domesticus; Bird Responses to Boar Rootings.</i></p>	<p>Studies of mammals belong in Mammalian Biology. Studies in which animals serve as a model for human behavior belong in Behavioral & Social Sciences.</p>

SIM Science & Engineering Fair

ONLINE STUDENT PARTICIPATION AND PROJECT REGISTRATION INFORMATION

SIM Science & Engineering Fair offers online student registration only. **WE DO NOT OFFER PAPER REGISTRATION.** All participating students must be registered online to participate. Online registration is open November 30, 2018 thru February 28, 2019 (closes 9:00 a.m.).

Please review the following information and have it ready when registering online:

Student Information

- Name (first and last)
- Email address
- Phone
- Student address, city, state, zip
- Student phonetic spelling
- Student Grade Level (list student grade 4-12)
- Parent name (first and last)

Student Demographics

- Gender
- Student Ethnicity/Race
- What languages are spoken in your home?

School Information

- County
- School district
- School name
- School phone
- School mailing address/city/state/zip
- Teacher name
- Teacher email address
- Name of district/affiliate fair coordinator

Project Information

- Type of entry: Individual/group
 - If group, list all the members and ALL members must file a separate application
- Does your display require electricity? Yes/No (if yes, bring your own 25 Ft extension cords)
- Does your display require more height than the standard? Yes/No (if yes, a suitable floor area will be provided but out of numeric sequence)

Project Summary

- ELEMENTARY DIVISION (grades 4-5): If participating in Elementary Division, please indicate desired Project Category (check one):
- JUNIOR DIVISION (grades 6-8): If participating in Junior Division, please indicate desired Project Category (check one):
- SENIOR DIVISION (grades 9-12): If participating in Senior Division, please indicate desired Project Category (check one):
- Project Title (limit 120 Characters)
- Summary Statement (in one sentence, state what your project is about. Limit 150 characters).
- Abstract Part I: State the OBJECTIVE, GOAL or HYPOTHESIS and METHODS/MATERIALS, upon which the project is based (limit 500 characters).
- Abstract Part II: State the RESULTS and CONCLUSION/DISCUSSIONS, upon which the project is based (limit 500 characters).
- Project Certification: Projects involving animal or human subjects require additional certifications. If your project involves either animal or human subjects, have appropriate forms been completed from pp. 28-35 of the SIMSEF Handbook?
- Describe assistance received (e.g. Used lab equipment at university under the supervision of Dr. Y; participant in NSF Young Scholars Program) (limit 500 characters)
- PLEASE CONFIRM THE FOLLOWING: 1) I acknowledge that I also need to submit the Student Signature Card to my district coordinator. 2) I understand that I may be photographed. 3) I understand that if my project is not picked up during the appropriate times, it will be disposed/discarded.

SIM Science & Engineering Fair

WRITING YOUR ABSTRACT

Your abstract is important. Your judges may receive this abstract in advance of the Fair so that they can preview your work. Your judges will be able to better understand your work and prepare for your interview if you follow these samples or use similar formats.

While most abstracts should include all of the elements listed here, all elements may not be appropriate for all categories.

Project Title:

Indicate the title of your project.

Objective or Goal:

State the objective, goal, or hypothesis upon which the project is based. Example: My objective was to learn if the feeding habits of hummingbirds are affected by color.

Materials and Methods:

Indicate the materials, methods and experimental design used in your project. Briefly describe your experiment or engineering 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.

SIM Science & Engineering Fair

PROJECT ABSTRACT EXAMPLES

Below are some examples of project abstracts. It will help your judges to better understand your work and prepare for your interview if you follow these samples or use similar formats.

Example #1:

What Makes Good Electrical Conductors?

Grades 4-5

Objectives/Goals: The objective of my project is to determine which materials make the best electrical conductors.

Methods and Materials: I used wood, plastic, copper, steel, tin and brass, as my materials to be tested. I also used a volt/ohms meter and the test probes to make my measurements.

Results: The meter I used showed the metals to all be excellent conductors and that the plastic and wood did not conduct an electrical current.

Conclusions: My conclusion is that the metals I tested are excellent conductors of electrical current and that neither wood nor plastic conducts electricity.

Example #2:

The Effect of Surface Finish on Rocket Drag

Grades 6-12

Objectives/Goals: My project was to determine if surface finish has an effect on the drag of a model rocket. I believe that a model with a smooth surface will have lower drag and will reach higher altitudes.

Methods and Materials: Five model rockets with identical size and shape, but different surface preparations, were conducted. One rocket was left with an unfinished surface, three had surfaces finished to various degrees of smoothness and the fifth rocket had its surface sealed, primed, sanded to 600 grit, painted and covered with clear gloss. The rockets were ballasted to weigh the same and flown 10 times each with B5-4 motors.

Results: The rocket with the clear gloss finish consistently reached the highest altitudes of all 5 rockets, while the unfinished rocket consistently reached the lowest altitude.

Conclusions: My conclusion is that surface finish has an important role in model rocket drag.

SIM Science & Engineering Fair

WHAT TO EXPECT DURING THE JUDGING

Students in grades 4 and 5 will set up their projects but will not participate in an interview with judges. Students in the Junior Division (grades 6-8) and Senior Division (grades 9-12) will meet with the judges and should expect the following:

1. You should prepare an oral summary of the important points of your project that you can present in 60 seconds or less.
2. Following your summary, you may find it useful to prepare several short capsule descriptions of important aspects of your project. You know your project better than anyone, so you should have the best ideas of what is important, but you could prepare answers for such questions as "Where did you get the idea for this project?" "What is special or distinctive about your project?" "What is the next thing you would do with your results?" "What questions has your project now generated?" You might also explicitly prepare for the question you hope the judges will ask.
3. If yours is a team project, one person should act as the team spokesperson at the beginning and present the introductory oral summary. This summary should include the rationale for the project being a group, rather than an individual enterprise, and how each member contributed. Each member of the group should be fully knowledgeable about the project and be prepared to then discuss his/her part.
4. Be sure to have each judge initial the form provided during the Fair. This is your record of your project's judges. Special Award judges may also judge your project, however they will not need to initial the form. Special Award judges are identified by a special name badge.

What Should You Expect The Judges To Do?

1. You should be interviewed by two to five different judges for your category who will spend about eight minutes discussing your project with you. It is difficult to space these interviews equally, so do not get discouraged if there is a long wait between judges. Do not worry about comparing the number of your judges with your neighbors. You, or they, may be getting Special/Recognition Awards interviews.
2. Many judges prefer to learn about your project by asking questions. Be prepared for them to interrupt your presentation.

SIM Science & Engineering Fair

SIMSEF JUDGING CRITERIA

Science Project Judging Criteria	Engineering Project Judging Criteria
Research Question (10 pts.) a) Clear and focused purpose b) Identifies contribution to field of study c) Testable using scientific methods	Research Problem (10 pts.) a) Description of a practical need or problem to be solved b) Definition of criteria for proposed solution c) Explanation of constraints
Design and Methodology (15 pts.) a) Well-designed plan and data collection methods b) Variables and controls defined, appropriate and complete	Design and Methodology (15 pts.) a) Exploration of alternatives to answer need or problem b) Identification of a solution c) Development of a prototype/model
Execution: Data Collection, Analysis and Interpretation (20 pts.) a) Systematic data collection and analysis b) Reproducibility of results c) Appropriate application of mathematical and statistical methods d) Sufficient data collected to support interpretation and conclusions/claim	Execution: Construction and Testing (20 pts.) a) Prototype demonstrates intended design b) Prototype has been tested in multiple conditions/trials c) Prototype demonstrates engineering skill and completeness
Creativity (20 pts.) a) Project demonstrates significant creativity in one or more of the above criteria	Creativity (20 pts.) a) Project demonstrates significant creativity in one or more of the above criteria
Presentation (35 pts.) Poster - 10 pts a) Logical organization of material b) Clarity of graphics and legends c) Supporting documentation displayed (e.g. notebook/journal) Interview – 25 pts a) Clear, concise, thoughtful response to questions b) Understanding of basic science relevant to project c) Understanding interpretation and limitations of results and conclusions d) Degree of independence in conducting project e) Recognition of potential impact in science, society and/or economics f) Quality of ideas for further research g) For team projects, contributions to and understanding of project by all members	Presentation (35 pts.) Poster – 10 pts. a) Logical organization of material b) Clarity of graphics and legends c) Supporting documentation displayed (e.g. notebook/journal) Interview – 25 pts. a) Clear, concise, thoughtful response to questions b) Understanding of basic science relevant to project c) Understanding interpretation and limitations of results and conclusions d) Degree of independence in conducting project e) Recognition of potential impact in science, society and/or economics f) Quality of ideas for further research g) For team projects, contributions to and understanding of project by all members

SIMSEF Form Requirements

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The following form(s) must be completed as required and approved by your teacher/advisor prior to the start of your research. Approval is subject to confirmation by the SIMSEF Scientific Review Committee (SRC). All required approval forms must be submitted to District/Affiliate Fair Coordinator with Student Signature Card as part of the SIMSEF application process by 9 a.m. Thursday, February 28, 2019. These may include:

Student Signature Card (*SIMSEF Form 1*)

- This form must be completed by all students entering the SIM Science & Engineering Fair.
- This form should be signed upon completion of online registration.
- This form must be submitted to District/Affiliate Fair Coordinator with Student Signature Card as part of the SIMSEF application process by 9 a.m. Thursday, February 28, 2019.

Continuation of Research Form (*SIMSEF Form 2*)

- Required for projects that are a continuation/progression in the same field of study as a previous project.
- The completed form must be submitted with the Student Signature Card.

Certification of Professional Research Support Form (*SIMSEF Form 3*)

- Students who perform an experiment as part of an industry, university, hospital or institution other than their school must submit a Certification of Professional Research Support form. The form must be filled out and signed by the adult supervisor or principal investigator at that institution after the student has completed the experimentation.
- The completed form must be submitted with the Student Signature Card.

Certification of Humane Treatment of Live Vertebrate Animals Form (*SIMSEF Form 4*)

- Required for projects involving live vertebrate animals (dogs, cats, fish, rats, hamsters, horses, and birds are a few common examples of vertebrate animals).
- All projects involving nonhuman vertebrate animals must conform to the regulations listed in these guidelines and on the Certification of Humane Treatment of Live Vertebrate Animals form.
- The Certification of Human Treatment of Live Vertebrate Animals must be signed by the appropriate individuals before the project is started.
- The project must conform to California State Education Code Section 514540 and the International Science and Engineering Fair Regulations for Experiments with Animals.
- If any animal injury, stress, or death occurs, the project must be terminated.
- The completed form must be submitted with the Student Signature Card.
- Vertebrate animal studies without this certification will not be allowed in the Fair for exhibition or judging.

SIM Science & Engineering Fair
SIMSEF Form Requirements
Page 2 of 2

Certification of Compliance of Research Involving Human Subjects Form (SIMSEF Form 5)

- Required for projects involving human subjects and/or interviewees. All projects involving human subjects must conform to the regulations listed in these guidelines and on the Certification of Compliance of Research Involving Human Subjects Form.
- The Certification of Compliance of Research Involving Human Subjects Form must be completed and signed by the sponsoring teacher/advisors before the project is begun.
- The completed form must be submitted with the Student Signature Card.
- Human studies without this certification form will not be allowed in the Fair for exhibition or judging.

Participant Informed Consent Form (SIMSEF Form 6)

- Required for projects involving human subjects and/or interviewees.
- The Participant Informed Consent Form is used to gain permission of study participants involved in the project.
- The completed form must be submitted with the Student Signature Card.

Human and Vertebrate Animal Tissue Form (SIMSEF Form 7)

- Required for projects involving human or other vertebrate animal tissue (including teeth and hair roots), blood, blood products and body fluids.
- All projects that involve the use of tissues from humans or vertebrates must conform to the regulations listed in these guidelines and on the Human and Vertebrate Animal Tissue Form.
- Students may not be involved in the direct acquisition of recombinant DNA, tissue, organs, or other body parts (including blood and meat) from human or vertebrate animals; they must be acquired by adults or from a commercial or medical source.
- Human and Vertebrate Animal Tissue Form must be completed and signed by the company, agency or person providing or buying the samples. The form must be approved and signed by the sponsor/advisor before the project is begun.
- The completed form must be submitted with the Student Signature Card.
- Projects involving tissue studies without this certification will not be allowed in the fair for exhibition or judging.

Appendix

SIM Science & Engineering Fair
STUDENT SIGNATURE CARD (SIMSEF Form 1)

SIMSEF Event Dates: April 2-4, 2019

This Student Signature Card must be received by District/Affiliate SIMSEF Coordinator by February 28, 2019 (9:00 a.m.)

Name of Student:	
Project Title:	

Statement of Understanding

In consideration of your permitting the undersigned student to take part in the SIM Science & Engineering Fair (SIMSEF) competition (on Tuesday, April 2, 2019 through Wednesday, April 4, 2019), and as stated in California Education Code Section 35330, we waive all claims against San Bernardino County Superintendent of Schools (SBCSS) and all sponsors for injury to or death of persons or loss or damage of property in any way occurring in connection with SIMSEF competition, and we agree to indemnify and hold them harmless against all such liability.

By the undersigned applicant's participation in the SIMSEF competition, we agree that the applicant and applicant's project may be photographed, filmed, or taped and that SBCSS may use such photographs, film, or tape and applicant's information/data and project description, in connection with the SIMSEF competition (i.e. scholarships, awards, etc...), related awards and the promotion of SBCSS and that we will not make any claim for invasion of privacy or any other legal right in connection with such uses by SBCSS.

We acknowledge and agree to the rules of the SIMSEF. We have read and understand the regulations governing the SIMSEF competition and will accept as final the interpretations and decisions made by the San Bernardino County SIMSEF Competition Coordinator and Judges.

We understand projects not picked up by 12:00 p.m. on Wednesday, April 3, 2019 will be disposed/discarded of immediately.

SIGNATURE OF STUDENT	DATE SIGNED
SIGNATURE OF PARENT(S)/GUARDIANS	DATE SIGNED

Disclaimer

The San Bernardino County Superintendent of Schools bears no responsibility and relinquishes any direct financial responsibility to students or teams that advance to the California State Science Fair competition.

DISTRICT/AFFILIATE COORDINATOR STUDENT FORM CERTIFICATION

I am the district/affiliate fair coordinator and I hereby certify that the above-named student has turned in all the necessary certifications and related forms for the above-named project, and I have these documents in my possession. I have also reviewed the student and project online registration, and will ensure all appropriate forms are uploaded, including this form. I further certify that, to the best of my knowledge, this project complies with all the rules and regulations set forth in the SIM Science & Engineering Fair Handbook and this project is eligible to enter the Science & Engineering Fair.

SIGNATURE OF DISTRICT/AFFILIATE FAIR COORDINATOR	DATE SIGNED
NAME OF DISTRICT/AFFILIATE FAIR COORDINATOR	PHONE
DISTRICT/AFFILIATE AND SCHOOL	DISTRICT/AFFILIATE FAIR COORDINATOR EMAIL

Once the District/Affiliate SIMSEF Coordinator signs this document and it has been uploaded to the student online registration, they must make a copy for their records and send this original Signature Card with the district registration document, by March 8, 2019, to:

*San Bernardino County Superintendent of Schools
 Attention: Student Events; SIM Science & Engineering Fair
 601 North E Street, San Bernardino, CA 92415*

SIM Science & Engineering Fair

SIMSEF Continuation/Research Progression Projects Form (SIMSEF Form 2)

Required for projects that are a continuation/progression in the same field of study as a previous project.

Name of Student: _____

Project Title: _____

Components	Current Research Project	Previous Research Project Year(s)
Title		
Change in goal/purpose/objective		
Changes in methodology		
Variable studied		
Additional changes		

I hereby certify that the above information is correct and the current year Abstract and Certification and project display board properly reflect work done only in the current year.

Student Signature	Date Signed
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SIM Science & Engineering Fair
SIMSEF Professional Research Support Form
(SIMSEF Form 3)

(Acceptable substitute forms: ISEF Form 1C)

This form is required of all projects completed partially or entirely within the facilities of a professional research organization, whether academic, industrial, or government. Include this form and any attachments with your application. Complete the top two lines before delivering the form to your research advisor.

Student Name(s)
Project Title

For Institutional Representative: Note any additional responses on separate attached pages.

1. What led the student(s) to your organization?
 - Announced institutional program (e.g., NSF or NASA REU, Summer Interns)
 - Student(s) independently sought us out for unspecified research experience
 - Student(s) independently sought us out for this specific project
 - Student(s) only needed specialized measurement tools in our lab
 - Other: _____

2. What was the origin of this specific project?
 - Intended path of our regular research program [?]
 - Tangentially related to our research and suggested to the student as a project
 - Student(s) independently proposed this project to us [?]
 - Other: _____

3. What special training or instruction was required of the student(s) prior to starting in the lab? Include legally required training as well as training in the use of specific equipment/procedures.

4. What specific procedures or special equipment did the student(s) personally use for the project? Please list and describe. (Do not list procedures student only observed.)

5. What did the facility or members of the research group do to aid the student(s) in completing this project?

Institutional Professional Researcher Name _____

Institution Name _____

Telephone Number _____ E-mail Address _____

Signature of Professional Researcher _____

Relationship to Student _____

SIM Science & Engineering Fair

SIMSEF Certification of Humane Treatment of Live Vertebrate Animals

Page 1 of 3 (SIMSEF Form 4)

(Acceptable substitute forms: ISEF Form 5A, 5B)

Any student research involving animals **MUST COMPLY** with the requirements of the California Education Code stated below and in the Safety Rules of the SIM Science & Engineering Fair.

HUMANE TREATMENT OF ANIMALS, State of California Education Code Title 2, Division 2, Part 28, Chapter 4, Article 5 (51540). In the public elementary and high schools or in public elementary and high school sponsored activities and classes held elsewhere than on school premises, live vertebrate animals shall not, as part of a scientific experiment or any purpose whatsoever:

- Be experimentally medicated or drugged in a manner to cause painful reactions or induce painful or lethal pathological conditions.
- Be injured through any other treatments, including but not limited to, anesthetization or electric shock. Live animals on the premises of a public elementary or high school shall be housed and cared for in a humane and safe manner. The provisions of this section are not intended to prohibit or constrain vocational instruction in the normal practice of animal husbandry.

Experiments involving any procedures which are not in violation of the “painful reaction” or “injured” restrictions of the California Education Code and are not in violation of SIMSEF rules are permitted if certified by a qualified biomedical scientist prior to the beginning of the investigation. It is permissible for the student and designated adult supervisor to consult with a biomedical scientist to obtain detailed instructions and guidance in the techniques to be used by the student under the direct, continuous supervision of the designated adult supervisor (for research not conducted in the biomedical scientist’s lab). In this instance the designated adult supervisor will be required to certify in writing jointly with the biomedical scientist. Either the biomedical scientist or designated adult supervisor must provide continuing supervision to assure compliance with the protocol. Major deviations from the approved protocol may be implemented only with the written approval of the biomedical scientist. The biomedical scientist or designated adult supervisor must be in the same locality as the student for the duration of the experimental work except for short trips. This means that a project started in one city may not be continued in another unless an alternate designated adult supervisor, approved by the biomedical scientist prior to the continuation of the experimental work agrees to supervise the project. A biomedical scientist is defined as one who possesses an earned doctoral degree in science or medicine and who has current working knowledge of the techniques to be used in the research under consideration. A designated adult supervisor is defined as an individual who has been properly trained in the techniques and procedures to be used in the investigation. The biomedical scientist must certify that the designated adult supervisor has been so trained.

Complete the following pages (2 and 3) and submit with your Student Application Form.

SIMSEF Certification of Humane Treatment of Live Vertebrate Animals
Page 2 of 3 (SIMSEF Form 4)

Name of Student(s): _____

Project Title: _____

Research Plan

Project Purpose		Starting Date
Location of Investigation (include name of facility and address)		
Live vertebrate animals to be used:		
Genus, species, and common name:	Number of animals:	Animals obtained from:
Describe proposed animal care methods (cage size, number of animals per age, temperature of where animals are housed, frequency of feeding and watering, frequency of cage cleaning, type of bedding, where will animals be returned when research is completed):		
List objectives of the experiment and describe fully the methods and techniques involved. (When the use of electrical current, laser beams, sound stimuli or other artificial stimuli are an integral part of the Research Plan, they must not exceed the normal tissue tolerances for the species concerned as indicated in the Biology Data Handbook, 2nd Edition; editors, P.O. Altman and S.S. Dittmer; publisher Federation of American Societies for Experimental Biology).		

(use additional sheet if necessary)

SIM Science & Engineering Fair
SIMSEF Certification of Humane Treatment of Live Vertebrate Animals
Page 3 of 3 (SIMSEF Form 4)

I certify that this plan will adhere to the State of California Education Code Title 2, Division 2, Part 28, Charter 4, Article 5, Humane Treatment of Animals, and the ISEF Regulations for Experimentation with Animals. I understand this form must be approved and signed by all parties before the project can begin.

Student Name (Print)	Student Signature
----------------------	-------------------

CERTIFICATION BY TEACHER/ADVISOR. I agree to sponsor the student named above and assume responsibility for compliance with the existing rules and regulations pertaining to experiments with animals.

Teacher/Advisor Name (Print)	Signature of Teacher/Advisor
School Name	Date Signed

CERTIFICATION BY ANIMAL CARE SUPERVISOR/DESIGNATED ADULT SUPERVISOR (may be Teacher or Parent) of compliance with California Education Code (must be completed prior to receipt of animals by the student).

I certify that I have reviewed and approved the Research Plan and will supervise and accept primary responsibility for the quality of care and handling of the live vertebrate animals used by the designated student. I further certify that I am knowledgeable in the proper care and handling of experimental animals and meet prevailing animal supervisory requirements.

Animal Care / Designated Adult Supervisor (Print)	Signature of Animal Care / Designated Adult Supervisor	
Institution Name	Position	Date Signed
Institution Address (leave blank if home address)		
Institution Phone (leave blank if home phone)		

NOTE: Complete this page if your project involves experimentation with live vertebrate animals or animal parts in a research or clinical facility where the use of anesthetics, drugs or euthanasia becomes necessary.

CERTIFICATION BY BIOMEDICAL SCIENTIST (if required) of compliance with California Education Code and the Regulations for the SIM Science & Engineering Fair.

I have reviewed and approved the Research Plan; that if the student or designated adult supervisor is not trained in the necessary procedures, I will ensure his/her training; that I will assure that the requirements of the California Education Code are fully met; that I will provide advice and supervision personally or through a designated adult supervisor throughout the project; and that I am a qualified scientist with an earned doctoral degree (Ph.D., M.D., D.V.M.) and a working knowledge of the techniques to be used by the students in this research.

Biomedical Scientist (Print)	Signature of Biomedical Scientist	
Institution Name	Position	Date Signed
Institution Address (leave blank if home address)		
Institution Phone (leave blank if home phone)		

SIM Science & Engineering Fair
SIMSEF Certification of Compliance of Research Involving Human
Subjects Page 1 of 2 (SIMSEF Form 5)
(Acceptable substitute forms: ISEF Form 4)

Note: If research involved a survey, a copy of survey must be attached to this form.

Projects involving human subjects may have additional requirements that are being considered by the state.

Name of Student: _____

Project Title: _____

Because federal regulations have become increasingly more rigid, students must plan carefully before undertaking research which involves the use of human subjects in either behavioral or biomedical studies. This will protect subjects from unnecessary exposure to physical or psychological risks and experimenters and schools from legal complications.

A human subject is legally defined as a person about whom an investigator (professional or student) conducting scientific research obtains (1.) data through intervention or interaction with the person or (2) identifiable private information.

A subject at risk is legally defined as: Any individual who may be exposed to the possibility of injury, including physical, psychological or social injury, as a consequence of participation as a subject in any research.

Students using human subjects must comply with all regulations that reflect the will of society and plan proper methodology for the protection of those subjects. It is essential that they be alert to humane concerns at all times.

The following steps must be taken before any student begins research involving subjects:

1. The student completes the "Research Plan" section of this form and submits it to the sponsoring teacher.
2. The sponsoring teacher reviews the "Research Plan" and determines if ANY POTENTIAL physical, psychological, or social risk is involved (as defined in subject at risk above).
 - a. If none is apparent, the teacher signs the certification (no additional certification is necessary).
 - b. If any question exists, the student must redesign the experimental study or plan a different study.

NOTE: Any project involving human subjects that is developed with the advice and assistance of personnel at a medical/scientific organization must comply with any regulations of that organization requiring approval of its Institutional Review Board and Informed Consent Certification

SIM Science & Engineering Fair
Certification of Compliance of Research Involving Human Subjects
Page 2 of 2 (SIMSEF Form 5)

RESEARCH PLAN

Project Purpose	Starting Date
Describe proposed experimental procedures (explain why human subjects are proposed for the experimentation):	
Describe and assess any potential risk (physical, psychological, social, legal, or other):	
Describe potential benefits to the individual or society:	

(use additional sheet if necessary)

Signature of Student: _____

Date: _____

CERTIFICATION BY TEACHER/ADVISOR: I certify compliance with Code of Federal Regulations 45 CFR section 46 for the protection of human subjects in behavioral and biomedical research. (Must be completed before the start of experimentation). I certify that upon reviewing this research plan, I found that the experimental procedures constitute no physical, social, or psychological risk to either experimenter or subjects. I agree to supervise this experimentation and will ensure that it is conducted in a humane, risk-free manner.

Teacher/Advisor Name (Print)	Signature of Teacher/Advisor
School Name	Date Signed

NOTE: This form, properly completed, must be part of the carefully planned procedures of any experiment involving human subjects. It must accompany any such project exhibited at, or presented for, any public display with the SIM Science and Engineering Fair.

SIM Science & Engineering Fair
SIMSEF Participant Informed Consent Form
(SIMSEF Form 6)

Instructions to the Student Researcher(s): An informed consent/assent/permission form should be completed with consultation of an Adult Sponsor, Designated Supervisor, or Qualified Scientist. This form is used to provide information to the research participant (or parent/guardian) and to document written informed consent, minor assent, and/or parental permission.

- When written documentation is required, the researcher keeps the original, signed form.
- Students may use this sample or may copy all elements of it into a new document.

If the form is serving to document parental permission, a copy of any survey or questionnaire must be attached.

Student Researcher(s)	Title of Project
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I am asking for your voluntary participation in my science and engineering fair project. Please read the following information about the project. If you would like to participate, please sign the appropriate area below.

Purpose of project	Time required for participation
If you participate, you will be asked to	
Potential Risks of Study	Benefits of Study
How confidentiality will be maintained	

If you have questions about this study, feel free to contact:

Adult Sponsor/Designated Supervisor/Qualified Scientist	Phone / E-mail
---------------------------------------------------------	----------------

Voluntary Participation. Participation in this study is completely voluntary. If you decide not to participate, there will be no negative consequences. If you decide to participate, you may stop participating at any time and you may decide not to answer any specific question(s).

By signing this form, I am attesting that I have read and understand the information above and I freely give my consent/assent to participate or permission for my child to participate.

Name of Participant	Signature	Date Signed
Name of Parent/Guardian	Signature	Date Signed

SIM Science & Engineering Fair
SIMSEF Human and Vertebrate Animal Tissue Form
(SIMSEF Form 7)

Required for research involving fresh/frozen tissue (including primary cell lines, human and other primate established cell lines and tissue cultures), blood, blood products, and body fluids. If the research involves living organisms, please be sure that the proper human or animal forms are completed.

Name of Student: _____

Project Title: _____

When live or preserved tissue samples or parts of human or vertebrate animals are obtained by the student from an institution or biomedical scientist, a statement signed by the adult providing the tissue is required. Students may NOT be involved in the direct acquisition of these samples from living human or other vertebrate animals.

Live tissue samples must be:

- a. From a continuously maintained tissue culture line already available to institutional researchers, OR;
- b. From animals already being used in an on-going institutional research project.

Research Plan

What vertebrate animal tissue will be used in this study? (check all that apply) <ul style="list-style-type: none"> <input type="checkbox"/> Fresh or frozen tissue sample <input type="checkbox"/> Fresh organ or other body part <input type="checkbox"/> Blood <input type="checkbox"/> Body fluids <input type="checkbox"/> Primary cell/tissue cultures <input type="checkbox"/> Human or other primate established cell lines <input type="checkbox"/> Hair <input type="checkbox"/> Teeth <input type="checkbox"/> Other _____
Where will the above tissue(s) be obtained?
How will the tissue(s) be used in the project?

Student Signature	Date Signed
-------------------	-------------

CERTIFICATION

I certify that the above listed materials were provided by me or institution and that the student list was NOT involved in the direct acquisition of the samples provided or purchased.

Qualified Scientist / Designated Supervisor (Print)	Signature of Qualified Scientist / Designated Supervisor
Institution Name	Date Signed

SIM Science & Engineering Fair

SIMSEF Project Display Information

Please be sure to include the following information on the back of your project display board. Students may use this template by printing, cutting, and pasting the template on to the back of the project board. Project display labels will also be available the day of the fair for students to complete and adhere to their projects.

Student Name: (If group, include all student names)	
Project Title:	
School:	
District:	
Division:	<input type="checkbox"/> Elementary (Gr. 4-5) <input type="checkbox"/> Junior Division (Gr. 6-8) <input type="checkbox"/> Senior Division (Gr. 9-12)

SIMSEF DISTRICT/AFFILIATE SUMMARY SHEET 2019

District/Affiliate Name:	Coordinator's Name:
Phone #:	Email:

	Student Name	Grade	G or I (Group or Individual)	School Site	Project Title
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					

This form may be duplicated, retyped giving the same information. Submit with the ***District/Affiliate Registration Submittal Form*** (received at SIM District/Affiliate Coordinator Meeting on 9/11/18). Deadline: ***March 8, 2019 (4:00 p.m.)***