<table>
<thead>
<tr>
<th>SIM Science &amp; Engineering Fair 2017 Handbook</th>
<th>KEY DATES</th>
</tr>
</thead>
<tbody>
<tr>
<td>See website - <a href="http://tinyurl.com/SIMWebpage">http://tinyurl.com/SIMWebpage</a> for times and location details for events</td>
<td></td>
</tr>
</tbody>
</table>

**Sponsored by:**

![San Bernardino County Superintendent of Schools](image1.png)

![Professional Engineers in California Government Inland Empire Section](image2.png)

![Auto Club Speedway](image3.png)

**Registration Dates/Deadlines**

**Online Student Registration:**
December 1, 2016 thru March 2, 2017

**District Registration Fees Due:**
March 10, 2017 (Friday) by 4:00 p.m.

**Project Check-in:**
April 4, 2017 (Tuesday)
Project Check-in: 7:00 – 9:00 a.m.

**Project Judging:**
April 4, 2017 (Tuesday)
Project Judging: 9:00 a.m. – 1:30 p.m.

**Project Removal:**
April 4, 2017 (Tuesday) 4:30 – 6:00 p.m.
April 5, 2017 (Wednesday) 7:00 a.m. – 12:00 p.m.

**Awards Ceremony:**
April 5, 2017 (Wednesday) 5:30 – 8:30 p.m.
*National Orange Show – Valencia Room*

**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 4, 2017 (Tuesday)
*Auto Club Speedway*
9300 Cherry Avenue
Fontana, CA 92335

**Registration Fee:**
$40 per student (not per project)
Due by March 10, 2017 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.

**Resources**

*Event Website:*
[http://tinyurl.com/SIMWebpage](http://tinyurl.com/SIMWebpage)

*Facebook:*
[http://tinyurl.com/SIMFacebook](http://tinyurl.com/SIMFacebook)

**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:
[http://tinyurl.com/SIMJudges](http://tinyurl.com/SIMJudges)
SIM Science & Engineering Fair

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SUGGESTED DISTRICT/AFFILIATE FAIR TIMELINE

**September/October**
- Schedule date of school science fairs.
- Reserve location for school science fairs.
- District representatives calendar District Coordinators meeting.

**November**
- District representatives schedule workshops for teachers.
- Orient students to the components of developing a science fair project.
- Assist students in choosing a suitable topic.

**December**
- Students conduct library research.
- Students should write project proposal.

**January**
- 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.

**February**
- 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**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>December 1, 2016 - March 2, 2017 (by 9:00 a.m.)</td>
<td>Online Student Registration</td>
<td>Get link from District/Affiliate Coordinator.</td>
</tr>
<tr>
<td>March 3-7, 2017 (Friday)</td>
<td>Registration Review</td>
<td></td>
</tr>
<tr>
<td>March 7, 2017 (Tuesday)</td>
<td>Safety Screening</td>
<td></td>
</tr>
<tr>
<td>March 7, 2017 - March 10, 2017</td>
<td>Disqualified Project Notification</td>
<td></td>
</tr>
<tr>
<td>March 10, 2017 (Friday)</td>
<td>District Registration Fees Due</td>
<td></td>
</tr>
<tr>
<td>April 4, 2017 (Tuesday) 7:00 – 9:00 a.m.</td>
<td>Project Check-in</td>
<td>Auto Club Speedway 9300 Cherry Avenue Fontana, CA 92335</td>
</tr>
<tr>
<td>April 4, 2017 (Tuesday) 9:00 a.m. – 1:30 p.m.</td>
<td>Project Judging</td>
<td></td>
</tr>
<tr>
<td>April 4, 2017 (Tuesday) 4:30 – 6:00 p.m.</td>
<td>Project Removal</td>
<td></td>
</tr>
<tr>
<td>April 5, 2017 (Wednesday) 7:00 a.m. – 12:00 p.m.</td>
<td>SIM Awards Ceremony</td>
<td>National Orange Show Valencia Room 689 South E Street San Bernardino, CA 92408</td>
</tr>
</tbody>
</table>

**EVENT SCHEDULE**

<table>
<thead>
<tr>
<th>April 4, 2017 Tuesday</th>
<th>Event</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety screening of all projects</td>
<td>7:00 – 9:00 a.m.</td>
<td>April 4, 2017 Tuesday</td>
</tr>
<tr>
<td>Elementary project setup (Grades 4-5)</td>
<td>7:00 – 9:00 a.m.</td>
<td>April 4, 2017 Tuesday</td>
</tr>
<tr>
<td>Elementary judging (Grades 4-5 do not stay on site, not interviewed)</td>
<td>9:00 a.m. – 1:30 p.m.</td>
<td>April 4, 2017 Tuesday</td>
</tr>
<tr>
<td>Junior/senior project setup (Grades 6-12)</td>
<td>7:00 – 8:30 a.m.</td>
<td>April 4, 2017 Tuesday</td>
</tr>
<tr>
<td>Orientation for juniors/seniors</td>
<td>8:30 – 9:00 a.m.</td>
<td>April 4, 2017 Tuesday</td>
</tr>
<tr>
<td>Junior/senior judging and interviews (Students only)</td>
<td>9:00 – 10:45 a.m.</td>
<td>April 4, 2017 Tuesday</td>
</tr>
<tr>
<td>Break for students (Location: TBD) – Snack provided</td>
<td>10:45 – 11:00 a.m.</td>
<td>April 4, 2017 Tuesday</td>
</tr>
<tr>
<td>Junior/senior judging and interviews (Students only)</td>
<td>11:00 a.m. – 12:00 p.m.</td>
<td>April 4, 2017 Tuesday</td>
</tr>
<tr>
<td>Break for students (Location: TBD) – NO SNACK PROVIDED</td>
<td>12:00 p.m. – 12:15 p.m.</td>
<td>April 4, 2017 Tuesday</td>
</tr>
<tr>
<td>Juniors/seniors dismissed for the day</td>
<td>1:30 p.m.</td>
<td>April 4, 2017 Tuesday</td>
</tr>
<tr>
<td>Project removal</td>
<td>4:30 – 6:00 p.m.</td>
<td>April 4, 2017 Tuesday</td>
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<table>
<thead>
<tr>
<th>April 5, 2017 Wednesday</th>
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<tr>
<td>Project removal</td>
<td>7:00 a.m. – 12:00 p.m.</td>
<td>April 5, 2017 Wednesday</td>
</tr>
<tr>
<td>SIM Science &amp; Engineering Fair Awards Ceremony</td>
<td>5:30 – 8:00 p.m.</td>
<td>April 5, 2017 Wednesday</td>
</tr>
<tr>
<td>Meeting for projects advancing to California State Science Fair (6-12th grade only)</td>
<td>8:00 p.m. (immediately following awards ceremony)</td>
<td>April 5, 2017 Wednesday</td>
</tr>
</tbody>
</table>

**NOTE:** Please be advised that lunches are not provided. Students may want to bring lunch or additional food items. 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 entrant is unable to do so personally.

**Removal:** Projects must be removed on either Tuesday, April 4, 2017 from 4:30 – 6:00 p.m. or Wednesday, April 5, 2017 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 5, 2017 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
DISPLAY AND SAFETY REGULATIONS

The SIM Science & Engineering Fair 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 SIM Science & Engineering Fair. The SIM Science & Engineering Fair Display and Safety Committee may require students to make revisions to conform to display and safety regulations.

All displays will be inspected for compliance: projects not meeting compliance with SIM Science & Engineering Fair Safety Rules will be disqualified and not displayed.

Loss or Damage - Valuable equipment such as technology may only be part of the display if the student accepts full responsibility. These should only be used during actual judging periods. SIM Science & Engineering Fair assumes no responsibility for loss or damage to any project or part.

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
   - 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/photos 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.
2. It has a credit line of origin (“Photograph taken by...” or “Image 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 and vertically displayed is sufficient.
4. It is a photograph or visual depiction of the student.
5. It is a photograph or visual depiction for which a signed consent form is at the project or in the booth.
## 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.
3. 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).
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.).
### 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.

### 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

1. 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, slingshots, 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).
2. 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.
3. Rocket-propelled projectile or similar device with an engine greater than 0.60 inch in diameter.

### Tobacco, Alcohol and Controlled Substances

#### GROUNDS FOR IMMEDIATE DISQUALIFICATION

1. 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).
2. 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

1. Projects that use a chemical with a hazard rating of five or with asterisks are not permitted.
## HUMAN SUBJECTS AND LIVE VERTEBRATE ANIMALS

1. If applicable:
   - Certificate of Humane Treatment to Live Vertebrate Animals.
   - Certificate of Tissue Samples must be submitted with your application to your district coordinator. Personal and school identification, including photograph, must be concealed.

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.

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 participant’s face to protect identity.

4. Live vertebrate animals may not be displayed during the fair.

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:
   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.

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 practices of animal husbandry.

## PROJECTS THAT REQUIRE CERTIFICATION OF A BIOMEDICAL SCIENTIST

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.
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.

### Name of Student(s):

<table>
<thead>
<tr>
<th>Project Title:</th>
</tr>
</thead>
</table>

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?

Signature: ___________________________ Date: ___________________________

Name: (type or print): ___________________________ Title: ___________________________

Institution: ___________________________ Email: ___________________________

Institution Address: ___________________________ Phone: ___________________________
## 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.

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
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<tbody>
<tr>
<td>Behavior Science-(E01)</td>
<td>Studies of behavior, conditioned responses, learning, psychiatry, or psychology in human and other animals.</td>
</tr>
<tr>
<td>Biology Animals–(E02)</td>
<td>Studies of vertebrate or invertebrate zoology.</td>
</tr>
<tr>
<td>Biology/Other Kingdoms-(E03)</td>
<td>Studies of plants, fungi, protists and bacteria.</td>
</tr>
<tr>
<td>Chemistry-(E04)</td>
<td>Studies of chemical and physical properties of organic and inorganic materials.</td>
</tr>
<tr>
<td>Consumer Science-(EOS)</td>
<td>Examination, comparison, analysis, testing of manufactured devices or trade name chemicals, materials, etc. Product quality, safety and consumer satisfaction.</td>
</tr>
<tr>
<td>Earth Science–(E06)</td>
<td>Studies of geology, meteorology, oceanography, astronomy and space science.</td>
</tr>
<tr>
<td>Environmental Education–(E07)</td>
<td>Projects using biological systems/organisms to study the impact of natural and man-made changes on our environment.</td>
</tr>
<tr>
<td>Engineering–(EO8)</td>
<td>Projects that follow the Engineering Design Process to develop solutions by building and testing prototypes of new or improved devices.</td>
</tr>
<tr>
<td>Math–(EO9)</td>
<td>Studies in geometry, topology, number theory, statistics, computer graphics, artificial intelligence and modeling or stimulations.</td>
</tr>
<tr>
<td>Physics-(E10)</td>
<td>Studies of electricity, magnetism, aerodynamics, energy, physical properties of matter and applied mechanics.</td>
</tr>
</tbody>
</table>

## Junior Division Categories (grades 6 – 8)

1. Aerodynamics/ Hydrodynamics (Junior Division only)
2. Alternative Energy (Junior Division only)
3. Applied Mechanics & Structures
4. Behavioral & Social Sciences
5. Biochemistry/ Molecular Biology
6. Chemistry
7. Cognitive Science (Junior Division only)
8. Earth & Atmospheric Sciences (Junior Division only)
9. Electronics & Electromagnetics
10. Environmental Engineering
11. Environmental Science
12. Mammalian Biology
13. Materials Science (Junior Division only)
14. Mathematics & Computer Science
15. Microbiology - General
16. Microbiology – Medical (Junior Division only)
17. Physics & Astronomy
18. Plant Biology
19. Product Science - Biological (Junior Division only)
20. Product Science - Physical (Junior Division only)
21. Toxicology
22. Zoology

## Senior Division Categories (grades 9 – 12)

1. Applied Mechanics & Structures
2. Behavioral & Social Sciences
3. Biochemistry/ Molecular Biology
4. Chemistry
5. Electronics & Electromagnetics
6. Environmental Engineering
7. Environmental Science
8. Mammalian Biology
9. Mathematics & Computer Science
10. Microbiology (General)
11. Physics & Astronomy
12. Plant Biology
13. Toxicology
14. Zoology
<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Aerodynamics/ Hydrodynamics (Junior Division only)</td>
<td>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.</td>
</tr>
<tr>
<td>2. Alternative Energy (Junior Division only)</td>
<td>Studies of power generation using alternative energy technologies such as solar cells.</td>
</tr>
<tr>
<td>3. Applied Mechanics &amp; Structures</td>
<td>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. Senior Division only: includes aerodynamics, hydrodynamics and fluids projects.</td>
</tr>
<tr>
<td>4. Behavioral &amp; Social Sciences</td>
<td>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. Senior Division only: includes studies of cognition.</td>
</tr>
<tr>
<td>5. Biochemistry/ Molecular Biology</td>
<td>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.</td>
</tr>
<tr>
<td>6. Chemistry</td>
<td>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.</td>
</tr>
<tr>
<td>7. Cognitive Science (Junior Division only)</td>
<td>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.</td>
</tr>
<tr>
<td>8. Earth &amp; Atmospheric Sciences (Junior Division only)</td>
<td>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.</td>
</tr>
<tr>
<td>9. Electronics &amp; Electromagnetics</td>
<td>Experimental or theoretical studies with electrical circuits, computer design, electro-optics, electromagnetic applications and antennas.</td>
</tr>
<tr>
<td>10. Environmental Engineering</td>
<td>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.</td>
</tr>
<tr>
<td>11. Environmental Science</td>
<td>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.</td>
</tr>
<tr>
<td>12. Mammalian Biology</td>
<td>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).</td>
</tr>
<tr>
<td><strong>13. Materials Science (Junior Division only)</strong></td>
<td>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.).</td>
</tr>
<tr>
<td><strong>14. Mathematics &amp; Computer Science</strong></td>
<td>Studies in mathematics, mathematical modeling, numerical methods, artificial intelligence and the design, improvement, or optimization of algorithms, computer languages, operating systems, or software architecture.</td>
</tr>
<tr>
<td><strong>15. Microbiology (General)</strong></td>
<td>Studies of genetics, growth and physiology of bacteria, fungi, protists, algae, or viruses. Includes surveys of bacterial contamination. <em>Senior Division Only:</em> includes projects described within the category Microbiology (Medical).</td>
</tr>
<tr>
<td><strong>16. Microbiology - Medical (Junior Division only)</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>17. Physics &amp; Astronomy</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>18. Plant Biology</strong></td>
<td>Studies of the genetics, growth, morphology, or physiology of plants. Studies of the effects of fertilizers on plants.</td>
</tr>
<tr>
<td><strong>19. Product Science - Biological (Junior Division only)</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>20. Product Science - Physical (Junior Division only)</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>21. Toxicology</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>22. Zoology</strong></td>
<td>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).</td>
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**SIM Science & Engineering Fair**

**APPLICATION ACCEPTANCE CRITERIA**

Submission of the Online Application to the SIM Science & Engineering Fair 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 SIM Science & Engineering Fair does not consider other submitted materials or awards won at affiliated fairs.

<table>
<thead>
<tr>
<th>1. Acceptance to present a project at the SIM Science &amp; Engineering Fair requires the approval of an application submitted by the student(s).</th>
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</thead>
<tbody>
<tr>
<td>2. Applications without a Project Abstract will be rejected without recourse to appeal. Each student on a team project must complete his/her own personal application, but the Project Abstract need only be supplied by one member of the team. As long as the abstract is provided by at least one member, other members of the team may choose to provide or omit the abstract without penalty.</td>
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<tr>
<td>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. In other words, the investigations must demonstrate knowledge that is not found in middle or high school textbooks.</td>
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<tr>
<td>4. Abstracts must communicate ideas effectively, use Standard English and be legible.</td>
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</table>
| 5. The methodology and experimental design should be appropriate for the student’s grade and discipline and should include the following where appropriate:  
  - Experiments are appropriate to achieve the stated objective.  
  - The sample size and/or number of trials is sufficient for projects where replication is necessary to establish validity.  
  - The statistical analysis is appropriate for the student’s grade and discipline; the conclusion is relevant to the stated hypothesis. |
| 6. 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. |
| 7. Applications may be rejected for failing to satisfy the rules of the Fair. |
| 8. The application fees are not refundable if the application is rejected. |
| 9. All rejected applications will be reviewed by the Directors of Judging and are subject to appeal (with the exception of those applications which do not contain an Abstract). |

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, to improve the quality of the Fair and to ensure that all participants are able to effectively communicate their projects to the judges. Only a small percentage of applications have ever been identified as likely to be rejected. Every disqualified application will be contacted in a timely manner.
SIM Science & Engineering Fair
INSTRUCTIONS FOR APPLICATION

DEADLINE FOR STUDENT REGISTRATION: March 2, 2017 (9:00 a.m.)
DEADLINE FOR DISTRICT/AFFILIATE REGISTRATION: March 10, 2017 (4:00 p.m.)

SIM Science & Engineering Fair offers online student registration. **WE DO NOT OFFER PAPER REGISTRATION.** Online registration is open December 1, 2016 thru March 2, 2017 (closes 9:00 a.m.). Students may obtain the website address from their district coordinator or go to [http://tinyurl.com/SIMWebpage](http://tinyurl.com/SIMWebpage). All information must be completed accurately and all applicable forms and certifications to your project must be turned into your District/Affiliate Fair Coordinator. In addition to turning in certifications and related forms to your District/Affiliate Fair Coordinator you must also submit your Signature Card by 9:00 a.m. on March 2, 2017.

**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 possession of all necessary documents for that given project to participate in the SIM Science & Engineering Fair.

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 $40 per student (not per project).

**Key Points**

**Group Projects**
Each member of the team must complete a separate online application, taking care to list the same project title and check the “Group Project” box in addition to the category box on the Project Summary as well as list the other members of their team on the front side of the application.

**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 you have a floor display or a table top project. If you do not indicate a choice, you will be assigned a table top space. If you need an extension cord you must bring your own (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**
If your project involves the use of human or animal tissue(s), live vertebrate animals, or human subjects, complete the Certification Form 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 received required certifications and related forms and 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

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 December 1, 2016 thru March 2, 2017 (closes 9:00 a.m.).

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

**Student Information**
- Have you previously entered the California State Science Fair? Yes/No
- Name (first, middle initial, last)
- Student phonetic spelling
- Gender: male/female
- Parent name (first, last)
- Parent’s day phone (in case of emergency)
- Email address (parent or student)
- Student phone number (parent or student)
- Student address, city, state, zip
- Grade (list student grade 4-12)

**School Information**
- School name
- School phone
- School mailing address/city/state/zip
- Teacher
- 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 an application)
- Indicate which division the project will enter (check one)
  - Elementary (Grades 4-5)
  - Junior Division (Grades 6-8)
  - Senior Division (Grades 9-12)
- Project advisor name (first, last)
- Project advisor email
- Project advisor organization
- 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 Certifications**
- Does your project involve live vertebrate animals? Yes/No (If yes, complete certification of Human Treatment of vertebrate animals)
  - If yes, required forms/procedures completed?
- Does project involve human subject? Yes/No
  - If yes, complete certification of compliance of research involving human subjects
  - If yes, required forms/procedures completed?
Project Summary

- Type of entry: Individual/Group
- Your name (if group project list your name, then list remaining student names)
- Project Title (limit 120 characters)
- Preferred category
- Abstract
  - Objectives/Goals
  - Methods/Materials
  - Results
  - Conclusions/Discussion
- Summary Statement (in one sentence, state what your project is about.)
- Describe assistance received (e.g. Used lab equipment at university under the supervision of Dr. Y; participant in NSF Young Scholars Program)

Statement of Understanding

- Authorizations
  - Photo/Media Release
  - Acknowledgement – Rules and Removal of Projects
- Disclaimer/Liability waiver
This Student Signature Card must be received by March 2, 2017 (9:00 a.m.)

Mail this Signature Card, complete with both signatures to:

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

**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, 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 SIM Science & Engineering Fair and we agree to indemnify and hold them harmless against all such liability.

By the undersigned applicant's participation in the SIM Science & Engineering Fair, 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 name and project description in connection with the *SIM Science & Engineering Fair* 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 that SBCSS may identify applicant's grade level and school. We have read and understood the regulations governing the SIM Science & Engineering Fair and agree to abide by them.

We understand projects not picked up by 12:00 p.m. on Wednesday, April 5, 2017 will be disposed/discarded of immediately.

**SIGNATURE OF STUDENT**

**DATE SIGNED**

**SIGNATURE OF PARENT(S)/GUARDIANS**

**DATE SIGNED**

**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 to me and I have in my possession, all the necessary certifications and related forms for the above named project. 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**
SIM Science & Engineering Fair
WRITING YOUR ABSTRACT

Your abstract is important. Your judges will 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.
Your abstract is important. The judges will receive your abstract before they come to interview you so they can preview your work. 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 grass, 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 85-4 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.
**JUDGING CRITERIA**

<table>
<thead>
<tr>
<th>Science Project Judging Criteria</th>
<th>Engineering Project Judging Criteria</th>
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</thead>
<tbody>
<tr>
<td>Research Question (10 pts.)</td>
<td>Research Question (10 pts.)</td>
</tr>
<tr>
<td>a. Clear and focused purpose</td>
<td>a. Description of a practical need or problem to be solved</td>
</tr>
<tr>
<td>b. Identifies contribution to field of study</td>
<td>b. Definition of criteria for proposed solution</td>
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<tr>
<td>c. Testable using scientific methods</td>
<td>c. Explanation of constraints</td>
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<tr>
<td>Design and Methodology (25 pts.)</td>
<td>Design and Methodology (25 pts.)</td>
</tr>
<tr>
<td>a. Well-designed plan and data collection methods</td>
<td>a. Exploration of alternatives to answer need or problem</td>
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<tr>
<td>b. Variables and controls defined, appropriate and complete</td>
<td>b. Identification of a solution</td>
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<tr>
<td>c. Degree of independence in conducting project</td>
<td>c. Development of a prototype/model</td>
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<tr>
<td>d. Recognition of potential impact in science, society and/or economics</td>
<td>d. Degree of independence in conducting project</td>
</tr>
<tr>
<td>e. Quality of ideas for further research</td>
<td>e. Recognition of potential impact in science, society and/or economics</td>
</tr>
<tr>
<td>f. Quality of ideas for further research</td>
<td>f. Quality of ideas for further research</td>
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<tr>
<td>Execution: Data Collection, Analysis and Interpretation (30 pts.)</td>
<td>Execution: Construction and Testing (30 pts.)</td>
</tr>
<tr>
<td>a. Systematic data collection and analysis</td>
<td>a. Prototype demonstrates intended design</td>
</tr>
<tr>
<td>b. Reproducibility of results</td>
<td>b. Prototype has been tested in multiple conditions/trials</td>
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<tr>
<td>c. Appropriate application of mathematical and statistical methods</td>
<td>c. Prototype demonstrates engineering skill and completeness</td>
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<tr>
<td>d. Sufficient data collected to support interpretation and conclusions</td>
<td>d. Understanding of basic science relevant to project</td>
</tr>
<tr>
<td>e. Understanding of basic science relevant to project</td>
<td>e. Understanding interpretation and limitations of results and conclusions</td>
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<tr>
<td>f. Understanding interpretation and limitations of results and conclusions</td>
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<tr>
<td>Creativity (20 pts.)</td>
<td>Creativity (20 pts.)</td>
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<tr>
<td>a. Project demonstrates significant creativity in one or more of the above criteria</td>
<td>a. Project demonstrates significant creativity in one or more of the above criteria</td>
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<tr>
<td>Presentation Display (15 pts.)</td>
<td>Presentation Display (15 pts.)</td>
</tr>
<tr>
<td>a. Logical organization of material</td>
<td>a. Logical organization of material</td>
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<tr>
<td>b. Clarity of graphics and legends</td>
<td>b. Clarity of graphics and legends</td>
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<tr>
<td>c. Supporting documentation displayed</td>
<td>c. Supporting documentation displayed</td>
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**SIM Science & Engineering Fair**  
**DISTRICT/AFFILIATE SUMMARY SHEET 2017**

<table>
<thead>
<tr>
<th>District/Affiliate Name:</th>
<th>Coordinator's Name:</th>
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<tbody>
<tr>
<td>Phone #:</td>
<td>Email:</td>
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<table>
<thead>
<tr>
<th>Student Name</th>
<th>Grade</th>
<th>G or I (Group or Individual)</th>
<th>School Site</th>
<th>Project Title</th>
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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 10/12/16). Deadline: *March 10, 2017 (4:00 p.m.)*
SIM Science & Engineering Fair
CERTIFICATION OF HUMANE TREATMENT OF LIVE VERTEBRATE ANIMALS

<table>
<thead>
<tr>
<th>Name of Student:</th>
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<tbody>
<tr>
<td>Project Title:</td>
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</tbody>
</table>

Any student research involving animals MUST COMPLY with the requirements of the California Education Code stated below and Regulation #8, page 7 of the Safety Rules of the Science & Engineering Fair.

HUMANE TREATMENT OF ANIMALS, State of California Education Code Title 2, Division 2, Part 28, Chapter 4, Article S (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:

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. 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 the Science & Engineering Fair 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 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.

RESEARCH PLAN FOR HUMAN TREATMENT OF LIVE VERTEBRATE ANIMALS

Purpose of Project: ____________________________________________

Starting Date: ________________________________________________

Site at which investigation will take place: ________________________

Name: ________________________________________________________

Address: _____________________________________________________
RESEARCH PLAN FOR HUMAN TREATMENT OF LIVE VERTEBRATE ANIMALS (CONTINUED)

Live vertebrate animals to be used:

a) Genus, species and common name: 

b) Number of animals: 

c) Animal(s) obtained from: 

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 is 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).

Describe proposed methods of animal care:

<table>
<thead>
<tr>
<th>Cage size:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of animals per cage:</td>
</tr>
<tr>
<td>Temperature range (maximum and minimum) degree Celsius of room where animals are to be kept:</td>
</tr>
<tr>
<td>Frequency of feeding and watering:</td>
</tr>
<tr>
<td>Frequency of cleaning cage:</td>
</tr>
<tr>
<td>Type of bedding to be used:</td>
</tr>
<tr>
<td>Where will animal(s) be housed:</td>
</tr>
<tr>
<td>Where will animal(s) be returned when research is complete:</td>
</tr>
</tbody>
</table>

Name of animal care supervisor: ____________________________

Name of biomedical scientist: ____________________________

Name of designated adult supervisor: _______________________

Signature of student: ____________________________________
CERTIFICATIONS

CERTIFICATIONS 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.

Signature: _________________________________ Date: __________________
Name (type or print): ________________________________
Institution: ________________________________ Title: _______________________
Institution Address: ________________________________ Phone: __________________
Home Address: ________________________________ Home Phone: __________________

CERTIFICATION BY ANIMAL CARE SUPERVISOR of compliance with California Education Code (must be completed prior to receipt of animal(s) 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 animal(s) 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.

Signature: _________________________________ Date: __________________
Name (type or print): ________________________________
Institution: ________________________________ Title: _______________________
Institution Address: ________________________________ Phone: __________________
Home Address: ________________________________ Home Phone: __________________

Source of Authority/Expertise: ________________________________

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 SIM Science & Engineering Fair (must be completed prior to the start of the project).

I certify that I have read the DISPLAY AND SAFETY REGULATIONS for the SIM Science & Engineering Fair, that 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.

Signature: ____________________________________________
Name (type or print): ____________________________ Date: ________________
Institution: ________________________________________ Title: ______________________
Institution Address: ________________________________ Phone: ____________________
Home Address: ________________________________ Home Phone: ____________________
Source of Authority/Expertise: ________________________________

CERTIFICATION BY DESIGNATED ADULT SUPERVISOR (if required).

I certify that I have been trained in the techniques to be used by this student; that I have read the General Regulations for the SIM Science & Engineering Fair; and that I will provide direct supervision for the research.

Signature: ____________________________________________
Name (type or print): ____________________________ Date: ________________
Institution: ________________________________________ Title: ______________________
Institution Address: ________________________________ Phone: ____________________
Home Address: ________________________________ Home Phone: ____________________
Source of Authority/Expertise: ________________________________
Because federal regulations have become increasingly 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 (CONTINUED)

RESEARCH PLAN

Describe the proposed experimental procedures: __________________________________________
________________________________________________________________________________

Explain why human subjects are proposed for this experimentation: __________________________
________________________________________________________________________________

Describe and assess any potential risk (physical, psychological, social, legal, or other): __________
________________________________________________________________________________

Describe the potential benefits to the individual or society: _________________________________
________________________________________________________________________________

Signature of Student: __________________________ Date: __________________________

CERTIFICATION

CERTIFICATION BY TEACHER/ADVISOR of compliance with federal regulations 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.

Signature: __________________________________________________________________________

Name (type or print): __________________________ Date: __________________________

Institution: __________________________ Title: __________________________

Institution Address: __________________________ Phone: __________________________

Home Address: __________________________ Home Phone: __________________________

Source of Authority/Expertise: _________________________________________________________

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 & Engineering Fair.
SIM Science & Engineering Fair  
CERTIFICATION OF TISSUE SAMPLE SOURCE

This form must be completed for all projects using tissue(s), organ(s), human part(s), or animal part(s), including blood.

<table>
<thead>
<tr>
<th>Name of Student</th>
<th>Project Title</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

1) Tissue(s), organ(s), or part(s) used: ____________________________________________________________

   Tissue sample is from:
   Human source: __________________________  Vertebrate animal source: __________________________

2) Genus, species and common name: __________________________________________________________

3) Starting Date: __________

4) Purpose of Project: __________________________________________________________

5) List objectives of the experiment and describe fully the methods and techniques involved: _________________

   ______________________________________________________________________________________

Signature of Student: __________________________ Date: __________

CERTIFICATION

Institution or company that is the source of tissue sample:

Name: ______________________________________________________________________________________

Address: ____________________________________________________________________________________

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

Signature: __________________________ Title: __________________________

Date: __________________________ Phone Number: __________________________