WS/FCS DISTRICT
SCIENCE FAIR

Information Packet
WS/FCS General Rules 2014-2015 Science Fair

1. Consult International Science and Engineering Fair (ISEF) rules as they will guide district, state, and regional fairs at http://www.societyforscience.org/isef/rulesandguidelines

2. Support for doing a science fair project (includes videos) http://www.ncsciencefair.org/index.php/students-a-parents/doing-a-science-fair-project?limitstart=0

3. Use the Overview of Forms and Date site http://www.societyforscience.org/page.aspx?pid=517

4. Each exhibit must be pre-registered using the official WS/FCS Exhibit Entry Form, Permission for Photo/Name Release form, and include ISEF forms (1, 1A, 1B, Abstract, and Research Plan).

5. Required Forms (double-click to view color forms) Most forms should be filled out and signed BEFORE any research takes place. Only Forms 1C, 7, and the abstract are done AFTER the research. The dates of the signatures reflect when the approval or consent is given.

<table>
<thead>
<tr>
<th>Required Forms</th>
<th>Title</th>
<th>Form #</th>
<th>Who needs to fill this form out?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Checklist for Adult Sponsor</td>
<td>Everyone</td>
<td>1</td>
<td>Everyone</td>
</tr>
<tr>
<td>Student Checklist</td>
<td>Everyone</td>
<td>1A</td>
<td>Everyone</td>
</tr>
<tr>
<td>Approval Form</td>
<td>Everyone</td>
<td>1B</td>
<td>Everyone</td>
</tr>
<tr>
<td>K-2 Abstract</td>
<td>Participants Grades K-2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Official Abstract</td>
<td>Participants Grades 3-12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research Plan</td>
<td>Everyone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regulated Research</td>
<td>Research conducted at a research institution or industrial setting</td>
<td>1C</td>
<td></td>
</tr>
</tbody>
</table>
| Institutional/Industrial Setting                     | Qualitative Scientist                 | 2      | Projects involving:
<p>|                                                      | BSL-2 biological agents              |        |                                                     |
|                                                      | DEA-controlled substances             |        |                                                     |
|                                                      | Human participants (dependent on project) |        |                                                     |
|                                                      | Vertebrate animal studies             |        |                                                     |
| Risk Assessment                                      | Projects using hazardous chemicals, activities or devices | 3      |                                                     |
| Human Participants                                   | Projects involving human participants (i.e. questionnaires, taking measurements, memory tests, etc) | 4      |                                                     |</p>
<table>
<thead>
<tr>
<th>Category</th>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vertebrate Animal</td>
<td>5A</td>
<td>Projects involving vertebrate animals when the experiment is conducted in a Non-Regulated Research Site such as home or school.</td>
</tr>
<tr>
<td>Vertebrate Animal</td>
<td>5B</td>
<td>Projects involving vertebrate animals when the experiment is conducted in a Regulated Research Institution.</td>
</tr>
<tr>
<td>Potentially Hazardous Biological Agents (PHBA) Risk Assessment</td>
<td>6A</td>
<td>Projects involving microorganisms, recombinant DNA, human or animal blood, tissue or body fluids.</td>
</tr>
<tr>
<td>Human and Vertebrate Animal Tissue</td>
<td>6B</td>
<td>Projects using human or vertebrate animal tissue</td>
</tr>
<tr>
<td>Continuation Projects</td>
<td>7</td>
<td>Anyone conducting a continuation project.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>o If the current project is in a similar area of research as any previous project of the student or any team member.</td>
</tr>
</tbody>
</table>

Visit [http://www.ncsciencefair.org/index.php/students-a-parents/forms](http://www.ncsciencefair.org/index.php/students-a-parents/forms) for more information to include detailed directions on filling out forms.

6. **Deadlines and Dates:**
   i. **Friday, December 19, 2014** -- Local WS/FC individual school science fairs completed and winners’ entry form, photo release and required forms sent in to Benika Thompson for registration in the system-wide competition (mail hardcopies w/ required signatures).
   ii. **Thursday, January 15, 2015** -- WS/FCS Elementary System-wide Science Fair at WS/FCS Education Building from 8:45 a.m. - 12:30 p.m.
   iii. **Friday, January 23, 2015** -- WS/FCS Secondary System-wide Science Fair at Wake Forest University Deacon Tower/Bridger Field House from 8:45 a.m. – 12:30 p.m.
   iv. **TBD** -- Region V Science Fair at Forsyth Technical Community College West Campus, Winston-Salem, NC
   v. **TBD** -- North Carolina Science and Engineering Fair at Meredith College in Raleigh, NC.
7. Exhibitors should arrive on the designated date and time early enough to check-in, receive exhibit number/location; and set up their exhibits.

8. Any exhibitor who does not follow these rules and regulations and those on the Official Exhibit Entry Form will be disqualified and the exhibit will not be judged.

9. Entries (schools are encouraged to implement equitable policies to consider submissions from self-contained students and those in sheltered courses):
   a. Each high school will be allowed three (3) entries. Note that only one entry per category will be accepted from each high school. From one to three students can work on a single project.*
   b. Each middle school will be allowed three (3) entries. Note that one entry per category will be accepted from each middle school. From one to three students can work on a single project.*
   c. Each elementary school will be allowed three (3) entries—ONE from K-2 Grades (individual, small group, or class project). TWO projects from grades 3-5. From one to three students can work on a single project.*
   d. In the event an entry wins for the submitted category, individuals are responsible for negotiating the division of the prize, if applicable. Scholarships are awarded to individuals.

10. Experimental procedures with animals that involve discomfort, pain, death, or diets deficient in essential nutrients WILL BE DISQUALIFIED.

11. NO animals (live or preserved), or Petri dishes, should be brought to the fair. The intent of this rule is to protect students and animals since the welfare of both is of great concern.

12. Due to the risks and safety rules associated with culturing microorganisms, the NCSEF has decided to restrict most microbiology projects to the JUNIOR AND SENIOR LEVELS, with ONLY two exceptions (stated below).

   Elementary projects involving the culturing of microorganisms are NOT ALLOWED, with the exception of the following:

   a. Experiments using Baker's/Brewer's yeast (bread yeast)
   b. Experiments using lactobacillus or probiotic cultures (yogurt, buttermilk, or commercially available probiotic supplements)

   Microorganisms include, but are not limited to: bacteria, fungi (including molds), yeasts, viruses, viroids, prions, rickettsia, and parasites. ALL projects involving microorganisms must follow the ISEF Rules regarding culturing, handling, and disposal. NO STUDENTS AT ANY LEVEL may grow microorganisms at home, except for those specifically stated as exceptions above. These rules do not apply to projects involving composting or decomposition of foods as long as no samples are cultured and as long as all projects in these categories are terminated at the first visible signs of microbial growth.

13. Dangerous items associated with students’ projects are NOT allowed on the exhibit floor. Dangerous items include, but not limited to the following:
• Syringes
• Toxic, caustic, flammable, or explosive chemicals.
• Bacterial cultures or human parasites in Petri dishes.
• Ionizing radiation.
• High voltage/amperage electric equipment or improperly shielded electrical equipment.
• NO Mercury Thermometers.
• NO gas or running water will be available for exhibits.

10. Electricity will be available on a limited basis for the research project or exhibit only if necessary for it to operate. Students should bring short extension cords with adaptor plugs. No electricity will be available for decorative purposes.
11. Computers: Using a computer to assist in conducting the investigation is acceptable; however, computers will NOT be permitted in the displays.
12. Teachers or exhibitors should bring hardware, such as screwdrivers or hammers, needed to set-up projects.
13. Individuals must assume all liability and responsibility for items associated with their exhibit.
14. Only students, science fair officials, and judges will be allowed on the fair floor during judging. Any variation in this rule will result in disqualification.
15. The Science Fair Director may refuse permission for any project to exhibit for reasons of safety, sanitation, or best interest of the fair.

Divisions and Categories
Elementary - Grades K-2
Elementary - Grades 3-5
Secondary - Grades 6-8
Secondary - Grades 9-12

Descriptions
Elementary Categories
Projects are not divided into categories. Elementary projects can have from one to three students per project. Class projects are permitted in K-2 but will not be judged in a separate category from individual or small group projects.

Secondary Categories
Categories are:
• Biological Science A
• Biological Science B
• Chemistry
• Earth/Environmental Science
• Physical Science
• Technology, Engineering

*From one to three students can work on a single project.
Category Descriptions

The following descriptions should be of assistance in making the most appropriate decisions. For detailed descriptions of the categories, visit the ISEF web site at http://www.societyforscience.org/isef/project_categories

**Biological Science A**
- Animal Science
- Medicine and Health Science
- Microbiology

**Biological Science B**
- Behavioural and Social Sciences
- Biochemistry
- Cellular & Molecular Biology
- Plant Sciences

**Chemistry**
The science of the composition, structure, properties, and reactions of matter, especially of atomic and molecular systems

**Earth/Environmental Science**
Geology, mineralogy, physiography, oceanography, meteorology, climatology.
Study of pollution especially related to the environment

**Physical Science**
Physics is the science of matter and energy and of interactions between the two.

**Technology/Engineering**
Technology or Engineering projects that directly apply scientific principles to manufacturing and practical uses

Judging and Awards

1. Judging begins at 9:30 a.m. Students are encouraged to be present at their projects from 9:30 a.m. until judging is completed.
2. The decisions of judges are final.
3. The Awards Program will take place at 11:30 a.m. We will announce Region V Participants during this time.
4. Region V Participants will meet briefly at the end of the Awards Program.
Display Regulations

1. Students should arrive at the designated venue for registration and set-up from 8:45-9:30 a.m.
2. Neither student names nor identifying information are permitted on the display. Student should attempt to reduce individual identifying factors unless necessary for the nature of the project. All photos related to the project should only display the variables explored during research.
3. **Maximum Size of Project**
   - **Depth** (front to back): 30 inches or 76 centimeters
   - **Width** (from tabletop): 48 inches or 122 centimeters
   - **Height** (floor to top): 108 inches or 274 centimeters
   *Note: At the NCSEF, fair-provided tables will not exceed a height of 36 inches (91 centimeters).*
4. *Official Abstract* or *K-2 Abstract* should be visible at display.
5. Students should take down projects immediately after the awards presentation.
Most Common Reasons for Projects to Fail to Qualify at Intel ISEF

1. Human, vertebrate animal, or PHBA studies that did not have preapproval
   - Need IRB preapproval for human subjects studies
   - Need SRC or IACUC preapproval for vertebrate animal studies
   - Need SRC or IBC preapproval for PHBA studies

2. Prohibited Vertebrate Animal Studies
   - Studies done at home/school/field that should have been done at a regulated research institution
   - Studies that caused more than momentary pain or suffering or that were designed to kill
   - Induced toxicity studies
   - Predator/vertebrate prey experiments
   - Studies where student performed euthanasia on a vertebrate animal
   - Studies with an animal death in any group or subgroup due to the experimental procedures
   - Studies where animals have a weight loss greater than or equal to 15%
   - Studies where there was an inappropriate restriction of water or food
   - Studies treated as embryonic studies that were actually vertebrate studies

3. Prohibited Studies using Potentially Hazardous Biological Agents (PHBA’s)
   - Microorganisms were cultured at home
   - BSL-2 studies (including opening plates or containers of unknown microorganisms) done in a BSL-1 lab
   - Studies using human and other primate established cell lines without SRC pre-review and approval

4. Prohibited Human Subjects Studies
   - Studies where the IRB required written documentation of consents which were not obtained
   - Studies where the student used surveys/questionnaires without IRB pre-review and approval

5. Eligibility Problems
   - Student worked with a partner or team but competed as an individual, or vice versa
   - Project was more than 1 year in length or was too old
   - More than three students on a team

6. Scientific Misconduct
   - Plagiarism
   - Student presented mentor’s research as his/her own
   - Falsification of data

7. Other problems that may result in an FTQ
   - Continuation study which was merely a repeat of a previous project conducted by the student
   - Student removed or added items to the project display which he/she had been previously told to change
JUDGING CRITERIA

Students will need to be present during the judging to answer questions
(If at all possible)

The basis for judging the projects will be:

Creative Ability
- The questions asked are student-initiated and original (0 – 6)
- The approach to solving the problem is creative (0 – 6)
- Equipment is creatively used or had to be made/modified (0 – 6)
- Interpretation of the data shows creative and original thinking by student (0 – 6)
- Student has understanding of project implications beyond their research (0 – 6)

Total possible points 30

Scientific Thought
- Clear and unambiguous statement of problem (0 – 5)
- Clearly defined procedural plan for obtaining a solution (0 – 5)
- Variables clearly recognized and defined; proper controls used correctly (0 – 5)
- Data adequately supports student’s conclusions; limitations recognized (0 – 5)
- Student understands project’s ties to other research (0 – 5)
- Scientific literature cited, not just popular literature (i.e. newspapers, web) (0 – 5)

Total possible points 30

Thoroughness
- Original question was completely addressed (0 – 3)
- Conclusions are based on repeated observations (not single experiments) (0 – 3)
- Project notes/lab notebook are complete (0 – 3)
- Student is aware of alternate approaches or theories (0 – 3)
- Student spent an appropriate amount of time on the project (0 – 3)

Total possible points 15

Skill
- Data was obtained and analyzed appropriately by student (0 – 5)
- Student worked largely independently (0 – 5)
- Student has required skills and understanding to continue research on own (0 – 5)

Total possible points 15

Clarity
- Clear discussion of project (not a memorized speech) (0-2)
- Written material/poster reflects understanding of research project (0-2)
- Data and results are presented clearly (0-2)
- Presentation is forthright (0-2)
- Student designed and created poster largely independently (0-2)

Total possible points 10

Maximum Total 100