



University of South Carolina Upstate

PIEDMONT REGION III SCIENCE FAIR

800 University Way
Spartanburg, SC 29303

September 2015

Dear Science Fair Coordinator:

Greetings! Enclosed you will find information you need for the regional fair competition.

A new website (<https://sites.google.com/site/piedmontregionsciencefair/home>) and Facebook page (<https://www.facebook.com/piedmontsciencefair>) have been created for this year's competition. The new website contains many different forms of information (general information, calendar of events, forms, recent winners, and frequently asked questions). The Facebook page is intended to communicate information to both school coordinators and parents quickly, accurately, and efficiently. Please share these resources with the parents of students competing in the Regional Science Fair.

Work has begun on including tutorial videos about creating a competitive Science Fair project. The goal is to have those tutorials posted before the beginning of the 2016 – 2017 school year.

If you have questions or would like to have someone discuss the Regional Science Fair with your teachers, Dr. Gary Bradley and Dr. Stephen Bismarck are available to meet with you at your school to discuss the Science Fair. They will be available between October 1st and December 11th. They can be contacted at gbradley@uscupstate.edu and sbismarck@uscupstate.edu

Timeline:

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|---|--|
| Now through January 8th | School Science Fair Coordinators reply with number of anticipated projects. |
| February 1st – 19th | School Science Fair Coordinators register their student winners. |
| Wednesday, February 24th | 1:00pm to 5:00pm -- Set up projects in the Readiness Center at USC Upstate
6:00pm to 10:00pm -- Judging takes place. High School students should stand by their projects until the judging interview is complete. |
| Thursday, February 25th | 9:30am to 7:00pm -- Science Fair is open to the public. Parents and Schools can begin picking up projects Thursday, preferably after 1pm but before 7pm. |
| Friday, February 26th | 9:30am to 3:00pm – Science Fair is open to the public. Parents and Schools continue to pick up projects. |
| PLEASE NOTE: ALL PROJECTS MUST BE PICKED UP BY 5PM ON FRIDAY, FEBRUARY 26, 2015. UNCOLLECTED PROJECTS WILL BE DISCARDED AT THIS TIME, AS THERE IS NOT SPACE AVAILABLE AT USC UPSTATE TO HOLD YOUR PROJECT. | |
| Saturday, March 5th | 10:00am -- Awards Ceremony in the Campus Life Center ballroom (3 rd floor) |

General Information for Schools:

All Schools:

Each school may submit **up to, but no more than 22 projects.**

ALL PROJECTS, 1st through 12th grades, MUST CONFORM TO ISEF (INTERNATIONAL SCIENCE AND ENGINEERING FAIR) GUIDELINES. See section below on Rules, Regulations and Guidelines.

The Judge's Score Card (at the end of this document) is a good blueprint for crafting a competitive Science Fair project. Read it carefully and feel free to share it with all your teachers.

As a general rule, permission is required for **all students** who work with:

1. Human Subjects: complete IRB forms and Inform Consent form
2. Animal Subject (only vertebrate): complete Animal Care Committee permission
3. Controlled or Hazardous Materials: complete Hazardous Chemicals, Activities or Devices rules

*Information and links to forms for projects that involve any of the three above categories can be found in the Projects that involve Human subjects, Animal Subjects, or Potentially Hazardous Materials section on Page 4

Elementary Schools Grades (1-4):

Elementary Schools are expected to host a local Science Fair to gain winners to compete in the Regional Science Fair at USC Upstate. Only individual projects can be submitted to the regional fair at the elementary school. No team projects please. Students are eligible for this Regional Fair if they are winners at their local fair.

Middle and Secondary Schools:

Middle and Secondary Level students (grades 5-12) may submit team projects (completed by two or three students—no whole class projects). Team projects will be judged with individual projects, not as a separate category. Names of all members of a team, with a team leader listed, should be identified when registering.

Middle Schools are expected to host a local Science Fair to gain winners to compete in the Regional Science Fair here at USC Upstate. Students are eligible for this Regional Fair if they are winners at their local fair.

For Secondary Level students in grades 9-12, a school fair is not required. If you have a promising young scientist or mathematician who will work with a mentor teacher and prepare a project, we welcome them to the Regional Fair.

All Middle and Secondary Level projects selected to compete in the Regional Science Fair must fill out ISEF Checklist Forms and turn them in during project registration.

- 1. All students must fill out the 1A. Student Checklist Form.**
- 2. All teachers must fill out the Form 1: Checklist for Adult Sponsor Form.**

These forms can be found on the Piedmont Region III Science Fair website (<https://sites.google.com/site/piedmontregionsciencefair/school-information>) or on the ISEF website (<https://student.societyforscience.org/forms>).

All 9th through 12th grade students should plan to accompany their projects Wednesday evening from approximately 6:30pm to 8pm in order to explain their work to the judges. Prior to their interview, students should be in the Readiness Center Lobby rather than roaming the Great Room area. Students are expected to be able to explain their project. Project notebooks should have student's name clearly marked on the front. In cases in which a student has been part of a larger research project, such as some of the Governor's School efforts, the student should be able to explain clearly the larger project, their particular contribution, and how that contribution was important to the larger project. Students and parents are asked to leave once the student has been interviewed and explained their project.

Competition Divisions:

Competition in the Piedmont Region III Science Fair is open to public, private and home school students in the following South Carolina counties: Cherokee, Chester, Lancaster, Spartanburg, Union and York.

Divisions are: Elementary (grades 1-4), Middle Level (grades 5-8), and Secondary Level (grades 9-12).

These divisions place us in conformity with the next levels of competition. There continues to be some confusion when dealing with students in grades 5-8. These students are in the "Middle School" category for competition purposes, even if your school is officially an "Elementary" or "Junior High" School.

If you are a traditional Elementary School, please enter your 1st through 4th graders as "Elementary", and your 5th graders as "Middle Level". If you are a traditional Junior High School, please enter your 7th and 8th graders as "Middle Level", your 9th graders as "Secondary Level." Typically, an elementary school would submit their 1st and 2nd place winners from the school fair in each of the six categories, for grades 1-4. **Due to space, the total number of projects that you may send forward to the Regional Fair should not exceed 22.**

Scientific Categories: Complete category and subcategory descriptions can be found here:
http://www.societyforscience.org/isef/project_categories

Behavioral and Social Sciences

Biology, including

- Environmental Sciences
- Medicine and Health Sciences
- Plant Sciences
- Microbiology
- Animal Sciences
- Cellular and Molecular Biology

Chemistry, including

- Biochemistry

Computer Science, including

- Math

General Science, including

- Earth and Planetary Science
- Engineering: Electrical and Mechanical
- Engineering: Materials and Bioengineering
- Environmental Management
- Energy and Transportation

Physics, including

Rules, Regulations and Guidelines for All Projects:

ALL PROJECTS, 1st through 12th grades, MUST CONFORM TO ISEF (INTERNATIONAL SCIENCE AND ENGINEERING FAIR) GUIDELINES.

[The Society for Science & the Public](#) oversees the [Intel International Science and Engineering Fair](#), with whom we are affiliated.

All rules, regulations, and guidelines can be found on the SS&P-ISEF website:
<http://www.societyforscience.org/isef/rulesandguidelines>.

Remember, projects at any grade level involving animals or humans must have adult oversight, and if subjects are human minors under 18 years of age, permission of parents must also be obtained. Live animal projects, including behavior-of-pets projects must have adult oversight and must be carried out in a humane fashion. Proper treatment of animals should be documented.

The necessity of adult oversight (teacher, parent, practicing scientist or engineer) brings up the old problem of separating projects done by adults vs. those done by the student. An adult should review and approve the idea of the project, and serve in a support role keeping an eye on things. If the project is to build a home weather station, then the student needs to build the station by himself. If the project is recording and predicting weather, using the weather station, then parents or others can help in the building, from which the student then takes responsibility for the use of the station. The student could then record weather data, make predictions, and compare their home forecasts with those of the newspaper or TV. Parental help is okay with credit given, and the notebook should have a page plainly stating the role of the associated adults.

Notebooks should be secured-at the Secondary Level as they are essential to further competition.

Put your title on the front and name on the back of your notebook. We have had important notebooks disappear during the fair. Either remove your notebooks after judging, or arrange for some means of attaching them to your display board, such as with a length of string. Always keep a backup copy.

Notebooks are not required at the Elementary or Middle Level, but are encouraged.

Projects that involve Human subjects, Animal Subjects, or Potentially Hazardous Materials

ANY project that involves human subjects, animal subjects and potentially hazardous material must be approved by the Scientific Review Board (SRB) before the student starts the experiments. The deadline for submitting a project for review is **December 4th**. The SRC will relay its decision to the participants within 1 week of proposal submission.

Elementary Projects:

To make this process easier for Elementary Level students and teachers, we have developed a short questionnaire. Either the student or their teacher must fill out this questionnaire before collecting data:
<https://www.surveymonkey.com/s/8YMQ3P>

Middle and High School Projects:

Applicants should include the following in their application package **to be submitted by email to Dr. Bradley, Chair of the SRC:**

Experiments Using Human Subjects:

1. Form 1A: Student Checklist/Research Plan
2. Form 3: Risk assessment Form
3. Form 4: Human Participants and Informed Consent Form
4. Form 6B: Human and Vertebrate Animal Tissue Form (if applicable)

Experiments Using Vertebrate Animals:

1. Form 1A: Student Checklist/Research Plan
2. Form 5 (A&B): Vertebrate Animal Form
3. Form 6B: Human and Vertebrate Animal Tissue Form (if applicable)

Experiments Using Potentially Hazardous Biological Agents:

1. Form 1A: Student Checklist/Research Plan
2. Form 6A: Potentially Hazardous Agents Form

*Prior approval for projects using hazardous chemicals, activities and devices is not required.

All forms can be found at: <http://student.societyforscience.org/forms>

2016 Scientific Review Committee:

Chair: Dr. Gary Bradley
Assistant Professor, USC Upstate, School of Education
gbradley@uscupstate.edu

Member: Mr. Jason Lonon
Science Teacher, Spartanburg Day School
Jason.Lonon@sdsgriffin.org

Member: Dr. Bradley Baumgarner
Assistant Professor, USC Upstate, Division of Natural Sciences & Engineering
bbaumgarner@uscupstate.edu

Project Display:

NO PROJECT DISPLAY MAY CONTAIN ANY OF THE FOLLOWING:

(The Region III Scientific Review Committee is required by ISEF regulations to remove and discard all banned materials. Projects brought to the Regional Fair are screened at the door, and more vigorously screened during the judging.)

1. **NO** live plants, live microbes, or live animals, vertebrate or invertebrate. (Note: the ban applies to DISPLAY of living material. Projects may study any and all of the above, but USE DRAWINGS, MODELS, or PHOTOS to illustrate your project.) For example, one student effectively used paint on Petri dishes to illustrate the microbe abundances he found in his study.
2. **NO** human or animal fluids or body parts, vertebrate or invertebrate, or dried plant material. NO taxidermy mounts. (Exceptions include a well-presented insect, shell, or fossil collection. A dental exhibit or tooth paste project may include sterilized teeth.)
3. **NO FOOD**, human or animal food, open or in sealed packages. (Food projects are fine, but for display use photographs or drawings, or empty boxes, packages, or wrappers. Candy glued to a board must be removed or the project will be rejected at the door.)
4. **NO** drugs of any kind, including non-prescription items like aspirin or tooth paste.
5. **NO** fluids, including water, ink, or dish detergent.
6. **NO** chemicals of any kind (exceptions include minerals or crystals.)
7. **NO** dirt, no soil, no animal or other waste.
8. **NO** photographs or drawings of vertebrate animals in other-than-normal conditions. NO displays showing surgical techniques, dissections or necropsies. (A project investigating why local frogs are dying off is ok, a photographic presentation of your autopsy of a pet turtle is forbidden.)
9. **NO** portrait photographs, or displayed names and addresses. Items which clearly and purposefully identify the contestants are forbidden on the front of the display. However, photographs showing the contestant involved in doing the project are acceptable-faces do not need to be taped over. BUT: PLEASE DO PUT THE NAME OF STUDENT, SCHOOL, AND SCHOOL OR HOME ADDRESS ON THE BACK OF THE PROJECT. These are often important in helping friends, relatives, and others locate a project at the conclusion. Remember, no school logos on the front of the project.
10. **NO** dangerous materials, including weapons, poisons, sharp edges, needles, syringes, pipettes, loose nails or nails sticking out of boards, unshielded live electrical wires, compressed gas tanks, matches, flames, lasers, etc. Bare wire and exposed switches may be used with batteries in circuits of 12 volts or less. All belts and pulleys must be shielded.
11. **NO** Business cards, medals, or awards from previous school fairs.
12. **NO** Product LOGOS or BRAND NAMES.
13. **ALL LETHAL LIMITS AND CRUELTY PROJECTS ARE BANNED.** A dead cockroach in a 100% dead insect collection is legal; a project which asks what percentage of roaches will die at 20 degrees Centigrade, 30 degrees Centigrade, 40 degrees Centigrade, etc., is a Lethal Limits study, and will not be accepted. A project asking which bait catches which fish should release rather than cook the fish.
14. **NO Liability projects.** An intriguing study asks what percentage of drivers will swerve to run over a rubber snake. Unless you are willing to take legal responsibility for any and all wrecks generated, avoid such studies. Traffic projects in which the student is a passive observer are acceptable, such as "Do drivers speed up at a yellow light?"

15. **No Models of dangerous materials.** In Colorado, police raided a science fair and confiscated an inert bomb. Although technically the project was not immediately dangerous, it was judged inappropriate.
16. NOT BANNED, but a word of caution-be very careful about valuable materials as part of a display. A slide projector, computer, or compact video display might be an important part of a project presentation. In the 2007 Fair, an expensive digital picture frame video display disappeared. **WE CAN NOT AND DO NOT ASSUME RESPONSIBILITY FOR THE SAFETY OF SUCH ITEMS.** Several hundred persons pass through the fair, and especially when we are open to the public, we cannot police every detail. USE SUCH ITEMS to your advantage in your presentation to the judges Wednesday night, then take them home.

Specific Rules concerning the project display can be found here:

<http://www.societyforscience.org/page.aspx?pid=314#notallowedbooth>

Awards:

Local

Certificates of recognition, prizes and special awards will be offered by a number of organizations such as Converse College and the Rotary Club of Downtown Spartanburg.

Additional Awards

In addition to the awards listed above, there will be special awards presented for projects that meet specific criteria. The number and type of special awards vary year by year. A list of special awards presented in the past along with a brief description and link (if available) to the organization's website can be found below.

[ASM International Foundation Award](#): A certificate and medallion will be awarded to the most outstanding exhibit in materials science and engineering. The winning project will need to use materials-related concepts, demonstrate some aspect of the materials paradigm, be clear in presentation, and demonstrate a clear understanding of the scientific method.

[Association of Women Geoscientists Award](#): Certificates, cash (\$30-\$100), and a science-related gift will be awarded to female students whose projects exemplify high standards of innovativeness and scientific excellence in the geosciences.

[Intel Excellence in Computer Science Award](#): Best senior high project related to computer science (not math project).

In vitro award: A certificate will be awarded to the most outstanding 11th grade student exhibiting in the areas of plant or animal in vitro biology or tissue culture.

[I-SWEEEP](#): A certificate and invitation to attend I-SWEEEP Olympiad will be awarded to the project that displays outstanding work in the theme of environmental sustainability and innovation, within the categories of Energy, Engineering, and Environment.

[Mu Alpha Theta](#): A certificate will be awarded to the project demonstrating the most challenging, original, thorough, and creative investigation of a problem involving mathematics accessible to a high school student.

[National Society of Professional Engineers Award](#): A certificate and lapel pin will be given to the most innovative engineering project that demonstrates principles of applied engineering. The winning project will demonstrate technical competence, superior verbal and written presentation, and awareness of ethical implications of engineering.

[NOAA Award](#): A certificate, letter, and medallion will be awarded to a project whose research emphasizes NOAA's mission: to understand and predict changes in Earth's environment and to conserve and manage coastal and marine resources to meet our Nation's economic, social, and environmental needs.

[Ricoh Corporation Award](#): A certificate will be awarded to an individual or team whose principles and technical innovations offer the greatest potential for increasing our ability to grow environmentally friendly and socially responsible businesses.

Spartanburg Science Center Award: Elementary projects that best exemplify science as judged by the Spartanburg Science Center. (Local Award)

[US Metric System Award](#): A certificate will be awarded to the project that involves quantitative measures and which best uses the SI metric system for those measures.

US Public Health Service (Surgeon General's Award): A certificate and medallion will be given to projects that creatively illustrate and expand upon key areas of health prevention as outlined in the National Prevention Strategy. Topics may include, but are not limited to: tobacco-free living, preventing drug abuse and excessive alcohol use, healthy eating, active living, injury and violence-free living, mental and emotional well-being, reproductive and sexual health.

[US Stockholm Junior Water Prize Regional Award](#): Prize for environmentally-related projects.
Water Environment Association of South Carolina: Best water-related project (particularly if it involved the environment).

[Yale Science and Engineering Association Award](#): The YSEA Award is given to an 11th grade student for the most outstanding exhibit at a state or regional high school Science Fair in Computer Science, Engineering, Physics, or Chemistry.

[Broadcom MASTERS](#): A certificate and invitation to enter the Broadcom MASTERS national competition will be awarded to students in grades 6-8 for mastery of S.T.E.M. principles. All applicable forms must be filled out to compete in the competition. Visit the Broadcom Master's website for more information:
<https://student.societyforscience.org/broadcom-masters>

Science Fair Registration Information:

- 1) School coordinators are asked to email me at sciencefair@uscupstate.edu between now and January 8, 2016 in order to indicate their school's participation in the Piedmont Region III Science Fair. Please include your complete **contact information**, and the **number of projects you anticipate** sending to the fair.
- 2) Coordinators will be given instructions in January on how to register their school's projects between February 1st and 19th. PLEASE NOTE: Coordinators must register individual student winners and their projects for participation in the Piedmont Region III Fair in advance of the fair.

Thank you for your service as Science Fair Coordinator. Please let me know if I can be of further assistance.

Sincerely,

Dr. Stephen Bismarck

Director, Piedmont Region III Science Fair
Assistant Professor of Middle/Secondary Mathematics Education
USC Upstate, School of Education
800 University Way
Spartanburg, SC 29303
Office: 864-503-7407 Fax: 864-503-5574
sciencefair@uscupstate.edu

*Please note that the scorecard format has changed slightly for Elementary and Middle School Projects.

**The scorecard and criteria for High School projects has been changed to better reflect the Intel ISEF judging guidelines.

Scorecards can be found on the next two pages of this document

Piedmont Region III Science Fair Judges' Score Card for Elementary and Middle School Projects

					← Project numbers
					1. Scientific Thought – The Problem (10 Points) Is the project title in question format or imply a question to be answered? Is the problem/purpose clearly and concisely stated? Is there a comprehensive review of related research included? Is the hypothesis based upon the review of related research and stated in “If...then” format?
					2. Scientific Thought – The Design (10 Points) Are the procedures listed, appropriate, logical, organized, and thorough? Are the materials appropriate and listed in a way that the project can be replicated? Do the project procedures demonstrate a long-term commitment by using multiple trials? Does the project use and identify the manipulating/responding and/or dependent/independent variables correctly? Does the project specify the control and experimental groups used?
					3. Scientific Thought – The Results (10 Points) Does the project show the results of multiple trials? (3 or more) Are the results accurate and complete? Are the data tables and graphs accurately identified and labeled? If needed, are the results of individual trials and averages included? Is an interpretation of the tables and graphs included? Is there a discussion/summary of the results? Does the project show considerable time commitment in the objective analysis of the results?
					4. Scientific Thought – The Conclusions (10 Points) Are the conclusions based upon the stated hypothesis and results? Does the project show considerable time commitment in the interpretive analysis of the results? Do the conclusions address the following: The status of the hypothesis after the study. Practical applications. What was learned? How the present study relates to earlier studies cited in the review of related research? Sources of error and limitations. Suggestions for improvement. Suggestions for future studies.
					5. Scientific Thought – The Concepts, Ideas, and Principles (10 Points) Are the scientific concepts, ideas, and principles clearly developed, explained and used correctly? Are the scientific concepts, ideas, and principles appropriate for the student’s grade level?
					6. Acknowledgements/References (10 Points) Does the student clearly show use of related research and prior studies? Is a bibliography of necessary references listed and available? Has the student acknowledged help they received from others? Are acknowledgements clearly stated?
					7. Creative Ability (10 Points) Does the project show original thinking or a unique approach? Does it demonstrate ideas arrived at by the student?
					8. Thoroughness & Clarity (10 Points) Does the project tell a complete story? Does it explain what the student did and learned? Does the project show considerable time commitment overall? Are all parts of the project presented in a logical order? (Top middle – Title; from left to right - purpose, review of related research, hypothesis, procedures, materials, results, discussion of results, conclusions, and acknowledgements/bibliography).
					9. Dramatic Value (10 Points) Are all parts of the project attractive and neatly done? Is the font size and style easy to read? Does it catch your attention? Do you really want to look at the project further? Are illustrations and/or photographs used appropriately? Is proper emphasis given to the most important ideas?
					10. Technical Skill (10 Points) Does the project show good craftsmanship by the student? (Legibility, Layout, etc.) Is the written and presented material both organized and accurate? Has the student used correct grammar and punctuation? Have computer-generated text, graphs, tables, illustrations been used correctly?
					Totals (out of 100)

Intel ISEF Judging Guidelines For Senior High Projects

Project numbers:					
I. Research Question (10 pts)					
Clear and focused purpose					
Identifies contribution to field of study					
Testable using scientific methods					
II. Design and Methodology (15 pts)					
Well-designed plan and data collection methods					
Variables and controls defined, appropriate and complete					
III. Execution: Data Collection, Analysis and Interpretation (20 pts)					
Systematic data collection and analysis					
Reproducibility of results					
Appropriate application of mathematical and statistical methods					
Sufficient data collected to support interpretation and conclusions					
IV. Creativity (20 pts)					
Project demonstrates significant creativity in one or more of the above criteria					
V. Presentation (35 pts)					
a. Poster (10 pts)					
Logical organization of material					
Clarity of graphics and legends					
Supporting documentation displayed					
b. Interview (25 pts)					
Clear, concise, thoughtful responses to questions					
Understanding of basic science relevant to project					
Understanding interpretation and limitations of results and conclusions					
Degree of independence in conducting project					
Recognition of potential impact in science, society and/or economics					
Quality of ideas for further research					
For team projects, contributions to and understanding of project by all members					
Totals: (out of 100 total points)					