

January 12, 2017

The Wyoming State Science Fair is sponsored by the University of Wyoming. This event will be held on the University of Wyoming Campus March 5-7, 2017. Judging will take place on Monday March 6, 2017. This is an excellent chance to get an early start recruiting enthusiastic students and to encourage the next generation of STEM professionals.

I am currently recruiting judges for the Wyoming State Science Fair. There are 11 categories with a Jr. (6<sup>th</sup>-8<sup>th</sup> grade) and Sr. (9<sup>th</sup>-12<sup>th</sup> grade) division in each. My goal is to have three to four judges for each category and division – 83 total category judges. Category judges will select recipients of 1<sup>st</sup>, 2<sup>nd</sup>, and 3<sup>rd</sup> place awards in each category and division. The critical time commitment for a category judge is to be available for at least 3 hours on Monday March 6, 2017 between **12:15 and 5 pm** to interview the students at their displays. The interview process of the competition is usually one of the most exciting and rewarding experiences for students and judges alike. Judges may also view project displays without the students present on Sunday March 5, 2017 after 8 pm and Monday March 6, 2017 between 9 am and noon.

I am also seeking judges for a few special awards from organizations. In most cases, judging criteria is provided. Special awards typically take less time to judge than category awards. One or two judges are needed for each special award. Category and special award descriptions are included at the end of this document.

Please put the word out to your department faculty and graduate students that we are now actively seeking judges. If interested in volunteering as a judge, please respond to me directly no later than January 31, 2017. Please include in your response, the category and division or special award you would prefer to judge and your contact information.

Please do not hesitate to call or write if you have any questions or concerns.

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Thank you,  
~Erin Stoesz, Wyoming State Science Fair Coordinator



## **JUDGING SCHEDULE – 2017 WYOMING STATE SCIENCE FAIR**

### **Sunday March 5, 2017**

8:00 p.m. Exhibit hall open for optional preview of student exhibits  
(students not present)

### **Monday March 6, 2017**

8:00 – 8:30 a.m. Judges registration – Wyoming Union Senate Chambers  
8:30 -- 9:00 a.m. Judges orientation meeting for category award judges (recommended,  
especially for 1st time judges) – Wyoming Union Senate Chambers  
9:00 a.m. – noon Judges initial review of projects without students (recommended)  
– Wyoming Union Ballroom and Family Room  
12:15 p.m. – 5:00 p.m. Student interviews by judges (students remain at their displays)  
– Wyoming Union Ballroom and Family Room

\*\*If unable to attend the morning registration/orientation, please check in at the Judging Table in the Senate Chambers when you arrive.

# 2017 Wyoming State Science Fair Categories

Adapted from the International Science & Engineering Fair rules.

More detailed descriptions of all of these categories and sub-categories are available at <https://student.societyscience.org/intel-isef-categories-and-subcategories>.

**Animal & Plant Sciences** – This category includes all aspects of animals and animal life, animal life cycles, and animal interactions with one another or with their environment. The category also includes studies of plants and how they live, including structure, physiology, development, and classification.

**Behavioral & Social Sciences** - The science or study of the thought processes and behavior of humans and other animals in their interactions with the environment studied through observational and experimental methods.

**Biomedical & Health Sciences/Biomedical Engineering/Translational Medical Sciences** – This category combines several disciplines. 1) Biomedical & Health Sciences: Studies that are specifically designed to address issues of human health and disease. 2) Biomedical Engineering: Projects that involve the application of engineering principles and design concepts to medicine and biology for healthcare purposes including diagnosis, monitoring and therapy. 3) Translational Medical Science: Studies that aim to improve human health and longevity by translating novel discoveries in the biomedical sciences into effective activities and tools for clinical and public health use. Projects can be those that developed through basic research moving toward clinical testing or those that provide feedback about the applications of new treatments and how they can be improved.

**Biochemistry/Cellular & Molecular Biology/Bioinformatics & Computational Biology** – This category combines several disciplines. 1) Biochemistry: The study of the chemical basis of processes occurring in living organisms, including the processes by which these substances enter into, or are formed in, the organisms and react with each other and the environment. 2) Cellular & Molecular Biology: This is an interdisciplinary field that studies the structure, function, intracellular pathways, and formation of cells. Studies involve understanding life and cellular processes specifically at the molecular level. 3) Bioinformatics & Computational Biology: Studies that primarily focus on the discipline and techniques of computer science and mathematics as they relate to biological systems. This includes the development and application of data-analytical and theoretical methods, mathematical modeling and computational simulation techniques to the study of biological, behavior, and social systems.

**Chemistry/Energy: Chemical** – This category combines several disciplines. 1) Chemistry: Studies exploring the science of the composition, structure, properties, and reactions of matter not involving biochemical systems. 2) Energy: Chemical - Studies involving biological and chemical processes of renewable energy sources, clean transport, fossil fuel energy, and alternative fuels (including solar materials).

**Earth & Environmental Sciences/Environmental Engineering** – This category combines several disciplines. 1) Earth & Environmental Sciences: Studies of the environment and its effect on organisms/systems, including investigations of biological processes such as growth and life span, as well as studies of Earth systems and their evolution. This includes atmospheric science, climate science, environmental effects on ecosystems, geosciences, and water science. 2) Environmental Engineering: Studies that engineer or develop processes and infrastructure to solve environmental problems in the supply of water, the disposal of waste, or the control of pollution. This includes bioremediation, land reclamation, pollution control, recycling /waste management, and water resources management.

**Mathematics** - The study of the measurement, properties, and relationships of quantities and sets, using numbers and symbols. The deductive study of numbers, geometry, and various abstract constructs, or structures.

# 2017 Wyoming State Science Fair Categories Continued

**Engineering Mechanics/Materials Science/Energy: Physical** - This category combines several disciplines. 1) Engineering Mechanics: Studies that focus on the science and engineering that involve movement or structure. This includes aerospace and aeronautical engineering, civil engineering, computational mechanics, control theory, ground vehicle systems, industrial engineering-processing, mechanical engineering, and naval systems. 2) Materials Science: The study of the integration of various materials forms in systems, devices, and components that rely on their unique and specific properties. This includes biomaterials, ceramic and glasses, composite materials, computation and theory, nanomaterials, polymers, and electronic, optical and magnetic materials. 3) Energy: Physical – The application of engineering principles and design concepts to study energy production and efficiency. This includes hydro power, nuclear power, solar, sustainable design, thermal power, and wind.

**Microbiology** - The study of micro-organisms, including bacteria, viruses, fungi, prokaryotes, and simple eukaryotes as well as antimicrobial and antibiotic substances.

**Physics & Astronomy** - Physics is the science of matter and energy and of interactions between the two. Astronomy is the study of anything in the universe beyond the Earth.

**Robotics & Intelligent Machines/Embedded Systems/Systems Software** – This category combines several disciplines. 1) Robotics & Intelligent Machines: Studies in which the use of machine intelligence is paramount to reducing the reliance on human intervention. This includes biomechanics, cognitive systems, control theory, machine learning, and robot kinematics. 2) Embedded Systems: Studies involving electrical systems in which information is conveyed via signals and waveforms for purposes of enhancing communications, control and/or sensing. This includes circuits, microcontrollers, networking and data communications, optics, sensors, and signal processing. 3) Systems Software: The study or development of software, information processes or methodologies to demonstrate, analyze, or control a process/solution. This includes algorithms, cybersecurity, databases, languages and operating systems, mobile apps, and online learning.

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## 2017 Special Awards Needing Judges

**American Psychological Association Certificate** - The American Psychological Association Education Directorate recognizes a student or team of students for outstanding research in psychological science. Eligible projects may come from any category relating psychological science (e.g., behavioral & social science, animal sciences, biochemistry, computer science, environmental science, mathematical science, medicine and health). Projects are judged based on creative ability, scientific thought, thoroughness, skill, and clarity.

**ASM Materials Education Foundation Special Medallion & Certificate** - The ASM Materials Education Foundation provides a medallion and certificate to the best materials engineering project at the Wyoming State Science Fair. Selection will be based on use of materials-related concepts, demonstration of structure-processing-properties-performance relationships, presentation, understanding of the scientific method, and project display aesthetics.

**Yale Science & Engineering Association Award** - The Yale Science & Engineering Association, Inc. provides a certificate and medallion to the most outstanding 11th grade project in Computer Science, Engineering, Physics or Chemistry.

**Arizona State University Rob and Melanie Walton Sustainability Solutions Initiative Award** - The ASU Rob and Melani Walton Sustainability Solutions Initiative recognizes a 9th, 10th, 11th, or 12th grade student who seeks innovative solutions to humanity's most challenging problems. Eligible projects may come from any category, but they should convey intent to solve a complex problem that involves social justice, environmental and economic prosperity. The winner will receive a certificate and the opportunity to enter competition for a Grand Prize trip to Arizona for the 2018 Sustainability Solutions Festival.

**Mu Alpha Theta Special Certificate** - Mu Alpha Theta, the National High School and Two-Year College Mathematics Honor Society, recognizes a project that demonstrates the most challenging, original, thorough and creative investigation of a problem involving mathematics accessible to a high school student. Projects in any category are eligible. Judging will be based on creative ability, use of mathematics, scientific thought, thoroughness, skill, clarity, and teamwork (if applicable).

**Ricoh Sustainable Development Certificate** - Ricoh Americas Corporation provides a certificate to a project that has principles and technical innovations that offer the greatest potential for increasing our ability to grow environmentally friendly and socially responsible businesses. The winning project must also protect the environment and conserve resources, emphasize pollution prevention, and promote conservation of biodiversity.

**Society for In Vitro Biology Special Certificate** - The Society for In Vitro Biology provides a certificate to the most outstanding 11th grade student whose research project is in the areas of plant or animal in vitro biology or tissue culture. The award recipient will receive publicity in the society's newsletter and might be invited to submit an abstract at the society's annual meeting.

**U.S. Metric Association Award** - The U.S. Metric Association recognizes a student whose project involves quantitative measures and correctly uses units of the SI metric system for those measures. Winning projects should use a variety of metric units for different kinds of measures, and use of those measures should be integrally important in the student research. The subject of the winning project should not be the SI system itself. Detailed judging guidelines are provided at <http://www.us-metric.org/wp-content/uploads/2016/03/science-fair-judging-guide.pdf>

**Genius (Global Environment Issues) Olympiad Awards** - **Three** projects done by students in grades 8-12 will be invited to apply to compete in the 2017 Genius Olympiad competition. The Genius Olympiad is the most prestigious high school event designed to engage youth in searching for solutions to the environmental challenges of today. This international event will be held at SUNY Oswego June 12-17th, 2017. Eligible projects must fit within one of the following disciplines: ecology and biodiversity, environmental quality, resources and energy, human ecology, or innovation.

**NASA Earth System Science Award** - NASA recognizes a project that best demonstrates insight into Earth's interconnected systems (atmosphere, lithosphere, hydrosphere, cryosphere, and biosphere). The project should incorporate studies of the different components of Earth systems, their interactions and their evolution over time.