

Science Projects Required for High School Students in Honors Science Courses

A science or engineering project will be required for all high school students in honors and Pre-IB science courses, beginning with the 2006-07 school year. The intent of this requirement is to support the benchmarks in Strand H: Nature of Science in the Sunshine State Standards for Science and to provide students with an in-depth experience in the way scientists work. Projects are not required for students enrolled in and doing college level work for AP, Dual Enrollment, or IB science courses.

A science project is defined as an investigation of a scientific question, that is, a testable question. It must follow the steps of the scientific method, including an introduction that states the problem, the student's hypothesis, a description of what prompted the research, and what the student hopes to achieve in the project. Background research must be done using a variety of current sources and should include a bibliography using an appropriate format, such as APA or MLA style. Materials and methods used, data collected, a discussion of the results, and a conclusion summarizing results must be included. Details may be found in the Student Handbook portion of the ISEF Rules and Guidelines.

A science project involving mathematics or computer science often consists of inventing and writing new algorithms to solve problems or improve on an existing algorithm. Projects to explain existing phenomena or prove new concepts using equations, proofs, simulations, models, and/or virtual reality are areas for experimentation that are also permissible (ISEF 2007, p.29).

An engineering project should state the engineering goals, the development process, and the evaluation process. Details for the steps involved in engineering projects are found in the Student Handbook portion of the ISEF Rules and Guidelines.

High school science projects may be done individually or as a team of two students. A team project must demonstrate collaboration between the two students with equal amounts of work completed by each. The two students must secure the approval of the teacher for the division of work in the various parts of the project. Individual projects require the approval of the teacher for the research plan.

All projects must follow International Science and Engineering Fair (ISEF) rules in order to ensure the safety of students. Workshops for teachers are available during the first semester of 2006-07 to support teachers in the science project process. ISEF Rules and Guidelines for 2007 are available at these workshops and by contacting Susan Biehler at the district Science Resource Center, 732-5120.

Projects involving humans (other than the experimenter), vertebrate animals, potentially hazardous biological agents, microorganisms, tissues, and rDNA require approval by the Scientific Review Committee/Institutional Review Board **before** the student begins the project. Projects involving hazardous chemicals, activities, or devices or regulated substances must complete the risk assessment form prior to experimentation but do not require SRC/IRB approval. However, if you are unsure about whether or not prior approval is needed, please feel free to submit the project to the SRC/IRB. **The SRC/IRB will meet each Tuesday from 4:30 – 6:00 p.m. beginning September 12 at the Science Resource Center, 2924 Knights Lane East.** The committee welcomes teachers and parents to this meeting to clarify the need for various statements, citations, and forms. Additional information can be found in the ISEF Rules and Guidelines booklet and at the workshops.

Teachers should keep an electronic file (Excel) with students' names and titles of projects for 2006-07. This file will be requested by the Science Office in December from all schools and in May for schools on 4x4 block schedule (for students in second term Honors science classes). A sample will be posted to the science website. The intent is to begin a district database for keeping track of students' projects, including multi-year projects.

Teachers should plan for students to present projects in class. The presentation process develops organizational skills and public speaking ability. Schools may then choose selected students to send to the Regional Science and Engineering Fair (RSEF). All schools should affiliate with the regional fair, whether you plan to send projects or not. The quota of spaces for each school will be assigned by the RSEF.

We encourage students to engage in relevant scientific research, which could lead to the opportunity to participate in the 2007 State Science and Engineering Fair in Ft. Myers, FL in April and the 2007 International Science and Engineering Fair in Albuquerque, NM in May. Please address questions and concerns to Dr. Ruth Senftleber, Science Supervisor (390-2129) or Susan Biehler, Science Fair Director (732-5120).