AZSEF
ARIZONA SCIENCE & ENGINEERING FAIR

SENIOR DIVISION

ENGINEERING DESIGN PROJECT RUBRIC

SCORE

I. RESEARCH PROBLEM (10 PTS.)

a. Description of a practical need or problem to be solved
b. Definition of criteria for proposed solution
c. Explanation of constraints

II. DESIGN AND METHODOLOGY (15 PTS.)

a. Exploration of alternatives to answer need or problem
b. Identification of a solution
c. Development of a prototype/model

III. EXECUTION: CONSTRUCTION AND TESTING (20 PTS.)

a. Prototype/model demonstrates intended design
b. Prototype/model has been tested in multiple conditions/trials
c. Prototype/model demonstrates engineering skill and completeness

IV. CREATIVITY (20 PTS.)

A creative project demonstrates imagination and inventiveness. Such projects often offer different perspectives that open up new possibilities or new alternatives. Judges should place emphasis on research outcomes in evaluating creativity.

a. Project demonstrates significant creativity in one or more Criteria I -III or V
b. Idea appears novel – at least to the student (not copied or seen repeatedly)
c. Idea appears to be something that student cares about

V. PROJECT PRESENTATION (35 PTS.)

a. PDF-slides & quad chart (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

TOTAL

SCIENCE PROJECT RUBRIC

SCORE

I. RESEARCH QUESTION (10 PTS.)

a. Clear and focused purpose
b. Identifies contribution to field of study
c. Testable using scientific methods

II. DESIGN AND METHODOLOGY (15 PTS.)

a. Well-designed plan and data collection methods
b. Variables and controls defined, appropriate and complete

III. EXECUTION: DATA COLLECTION, ANALYSIS AND INTERPRETATION (20 PTS.)

a. Systematic data collection and analysis
b. Reproducibility of results
c. Appropriate application of mathematical methods for comparison

IV. CREATIVITY (20 PTS.)

A creative project demonstrates imagination and inventiveness. Such projects often offer different perspectives that open up new possibilities or new alternatives. Judges should place emphasis on research outcomes in evaluating creativity.

a. Project demonstrates significant creativity in one or more Criteria I -III or V
b. Idea appears novel – at least to the student (not copied or seen repeatedly)
c. Idea appears to be something that student cares about

V. PRESENTATION (35 PTS.)

Presentation/Interview: The interview provides the opportunity to interact with the finalists and evaluate their understanding of the project's basic science, interpretation and limitations of the results and conclusions.

a. PDF-slides & quad chart (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

TOTAL