ENGINEERING

Description

The use of scientific and mathematical principles to design, test, and build machines, structures, and processes to solve problems.

Overview

Projects that directly apply scientific principles to manufacturing and practical uses. This category could involve civil, mechanical, aeronautical, chemical, electrical, robotic, photographic, sound, automotive, marine, heating, refrigerating, transportation, and environmental engineering; etc.

Project Submission

1. Single Entry per Competition: Only one project may be submitted per competition.

2. Scientific Paper:
    a. Content: Submit a doublespaced scientific paper (maximum 20 pages) that includes:
        i. Introduction: Background and purpose of the research.
        ii. Experimental Section: Methods and results.
        iii. Conclusion: Discussion of results and implications.
    b. Formatting: Include tables, graphs, charts, maps, photographs, raw data, references, and acknowledgements.
    c. Identification: Each page must include the student's name, page number, unit name, and number.
    d. Supporting Documents: Submit all supporting documents with the scientific paper.

Oral Presentation

3. Presentation Time: Deliver a 810minutes oral presentation. Exceeding this time limit may result in point deductions or disqualification. Additional time may be allotted for the judge's questions and responses.
4. Equipment: Contestants are responsible for providing their own equipment.
5. Display Board*:

a. One Board per Entry: Each qualifying entry requires a separate display board.
b. Relevance: Ensure the display board content is directly related to the competition.
c. Shared Items: Demonstration items may be transferred between displays if necessary.
d. Power and Tables: The NAACP ACTSO Program will provide electrical power and display tables upon request (subject to deadlines).
e. *Acceptable display boards include trifold, pentafold, and foam core. Poster boards are not permitted

STEM Verification

Submit a completed STEM Verification Form signed by a qualified scientist or science teacher with a professional degree or license. This individual can also serve as a coach, guiding the student throughout the research process.

Judging Criteria

Category	Criteria	Points
Quality of Research	Scientific Approach/Method	20
	Validity of Information	10
	Validity of Conclusion(s)	10
Depth of Understanding & Oral Presentation	Knowledge Gained and Creativity	20
	Thoroughness & Individual Work	20
Written Report	Clarity and Organization	10
Visual Presentation	Effectiveness of Display	10
Point Deduction	In the event the student presentation exceeds 10 mins one point will be deducted for every minute over up to five points.	1 to 5
Total	**100**	

Notes for Judges

- This competition is presentation and interview based and requires advanced screening of the contestants' materials in order to adequately interview them on the day of the competition.
- Each contestant will have 10 minutes to present their project and then the judging cohort will have 510 minutes for any follow up questions and quick deliberations before the next contestant. Each contestant will only have an allocated time frame of 1520 minutes.
- You should not under any circumstances engage with the students before or after the competition until the Awards Ceremony has concluded.
- You must provide honest constructive feedback for each contestant that you are judging.
- Scoring Rubric:
    - 95 - 100 - Qualifies as a Gold Medalist
    - 90 & Up - Qualifies as a Silver Medalist
    - 85 & Up - Qualifies as a Bronze Medalist
        - Please take heed that the identifying word here is “Qualifies”. There can be multiple contestants that can qualify as gold medalist and if that’s the case the highest score will receive the gold, and silver and bronze will be allocated to the next two highest scores.
        - In the event the highest score is a 90 then there is no gold medalist and there’s only a possibility for a silver and bronze medalist as long as the remaining scores land within the 85+Up region.

Tips for Contestants

- Start Early: Begin your research well in advance to allow ample time for experimentation, data analysis, and report writing.
- Choose a Fascinating Topic: Select a subject that genuinely interests you to maintain enthusiasm throughout the project.
- Master Your Material: Thoroughly understand your research to confidently answer questions during the oral presentation.
- Practice Your Presentation: Rehearse your presentation multiple times to improve delivery and timing.
- Engage Your Audience: Use clear and concise language, visual aids, and storytelling techniques to captivate your audience.
- Anticipate Questions: Consider potential questions and prepare thoughtful responses.
- Seek Feedback: Consult with your mentor or teacher to receive constructive criticism and improve your project.
- Stay Organized: Keep meticulous records of your experiments, data, and observations.
- Be Creative: Use innovative approaches to present your findings and stand out from the competition.
- Have Fun: Enjoy the process of learning and discovery!