

## **BIOLOGY/MICROBIOLOGY\***

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The science of life or of the origin, structure, reproduction, growth and development of living organisms collectively.

*Projects in this category could involve the biology of organisms from the macroscopic scale to the microscopic scale (e.g., bacteria, viruses, protozoa, fungi, yeast, genes, etc.)*

## **CHEMISTRY/BIOCHEMISTRY\***

The science that deals with the composition, structure and properties of chemical processes and phenomena of substances and the transformation that they undergo.

*Projects in this category could involve physical chemistry, organic chemistry, inorganic chemistry, materials, plastics, fuels, pesticides, metallurgy, soil chemistry, etc. This category also includes the chemistry of life processes such as molecular biology, molecular genetics, enzymes, photosynthesis, blood chemistry, protein chemistry, food chemistry, hormones, etc.*

## **COMPUTER SCIENCE\***

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The science that deals with the theoretical aspects of computers including storage and the transformation of data using computers.

*This category pertains to the study and development of computer hardware, software engineering, Internet networking and communications, graphics (including human interface), simulations/virtual reality or computational science (including data structures, encryption, coding and information theory).*

## **EARTH AND SPACE SCIENCES\***

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The body of sciences that include geology, mineralogy, physiographic, oceanography, meteorology, climatology, astronomy, speleology, seismology, geography, etc.

*Projects in this category could also be concerned with environmental science such as the study of pollution (air, water, and land) sources and their control as well as ecology.*

## **ENGINEERING\***

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Technology. Projects that directly apply scientific principles to manufacturing and practical uses.

*Projects in this category could involve civil, mechanical, aeronautical, chemical, electrical, photographic, sound, automotive, marine, heating, refrigerating, transportation, and environmental engineering; electronics; etc.*

## MATHEMATICS\*

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The science of numbers and their operations, interrelations, combinations, generalizations, and abstractions of spaced configurations and their structure. Development of formal logical systems or various numerical and algebraic computations and the application of these principles.

*Projects in this category could involve calculus, geometry, number theory, statistics, complex analysis, probability, etc.*

## MEDICINE AND HEALTH\*

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The study of diseases and health of humans and animals.

*Projects in this category could involve dentistry, pharmacology, pathology, ophthalmology, nutrition, sanitation, dermatology, allergies, speech and hearing, etc.*

## PHYSICS\*

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Theories, principles and laws governing energy and the effect of energy on matter.

*Projects in this category could involve solid state physics, optics, acoustics, particle physics, nuclear physics, atomic energy, superconductivity, fluid and gas dynamics, thermodynamics, semiconductors, magnetism, quantum mechanics, biophysics, etc.*

1. Only one (1) project can be entered per competition.
2. Submit six (6) copies of a double-spaced scientific paper to accompany the project to be submitted. The content of the paper, which should not exceed five (5) pages, should include: a short introduction describing the background and purpose of the work, an experimental section including both methods and results, and a concluding section discussing the results and their implications. Tables, graphs, charts, maps, photographs, raw statistical data, etc. should be included whenever possible. They must also include references used and acknowledgements of any individuals who served as direct academic resources. The student's name, page number and unit name and number must be on the top of each page. Supporting documents must be submitted with the scientific paper.

**NOTE: The deadline for submission of national registration documents is May 18, 2018. No materials or copies will be accepted after that time or at the National Competition.**

3. The contestant is to make an oral presentation (minimum 5 minutes). This time limit does not include the time required for judge's questions and contestant to responses.
4. Contestants are responsible for providing their own equipment.
5. The NAACP ACT-SO Program will provide electrical power and display tables upon request by May 18, 2018.

6. Contestants must submit a STEM Verification Form from a qualified scientist or science teacher with an earned professional degree or license. This person can also serve as a coach, working closely with the student during the course of the project to ensure the accuracy of the student's research and qualifications for entry. STEM projects will be judged by the following criteria:
- 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 (10)
  - Visual Presentation (10)

## ARCHITECTURE\*

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Plans for and models of structures and outdoor spaces.

Examples may include but are not limited to: Building designs, landscape designs, interior designs, urban plans. Can include 2D work such as hand-drawn sketches, computer-aided designs, blueprints, and floor plans, OR 3D work such as scale models made from foam core, balsa wood, cardboard, wooden blocks, polystyrene, found or reused objects, etc.

### REQUIREMENTS:

1. Only one (1) original project may be submitted. The project must be the creation of the competing contestant, rather than a replication of another architect's design.
2. Submit six (6) copies of a double-spaced paper to accompany the project. The content of the paper, which should not exceed five (5) pages, should include overall statement of goals and processes, design objectives, the history of the project and execution of the project. The student's name, page number and branch must be on the top of each page.
3. Blueprints of the project must be 24 x 36 inches in length or width. The contestant must also submit a site plan, floor plan, a minimum of two (2) elevations and a section of the design at appropriate scale.
4. Contestants are required to conduct a minimum five (5) minutes oral presentation, explaining his/her project. This time limit does not include the time required for the judges to ask questions and the contestant to respond to the judges.
5. Contestants are required to construct a scaled model of his or her project. (The national office will provide Display tables and electricity.)
6. Contestants must submit a STEM Verification Form from a qualified architect with an earned professional degree or license. This person can also serve as a coach, working closely with the student during the course of the project to ensure the accuracy of the student's research and qualification for entry.
7. Gold medalists advancing to the national competition will be required to upload images of their entries to a designated site.

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Contestants will be judged by the following criteria:

- Complexity of Project/Originality (15)
- Planning and Space Concepts (10)

- Aesthetics (10)
- Consistency and Validity of Design Concepts (10)
- Drawings (15)
  - 1. Quality of line work
  - 2. Organization of drawings
- Model (10)
  - Workmanship, Scale
- Site Analysis/Design (15)
  - Construction Materials/Methods of Construction (5)
- Written Statement (5)
  - Explaining Project, Establishing Parameters
  - Identifying Project Limitations and Design Objectives
- Verbal Presentation (5)