HTSNA STEM Fair 2026

Background: HTS is committed to providing our youth with educational opportunities in a diverse range of academic fields at the HTS Ganesha Patasala - Language, Religion, Visual and Performing Arts, Math, Science and Technology. HTS has held programs such as Art Exhibition, Battle of the Brains, and Debate/Elocution to give participants a forum to showcase their talents.

STEM is an acronym for the integration of four disciplines - Science Technology Engineering and Math. STEM education has been a focus in the school systems and has tremendous application potential in the global economy. STEM education prioritizes the study of science and mathematics, plus the meaningful integration of technology and engineering that offers opportunities for innovative problem solving, while making Science and Math relevant and engaging (The New York City Department of Education STEM Framework, 2018[1]). In recognition of the growing importance of STEM education, HTS will hold the 5th STEM Fair on March 8, 2026.

What are the goals of the 2026 HTSNA STEM Fair?

1. To provide a forum where science, math, technology, engineering skills and knowledge can be applied to answer questions or solve problems in the same manner as scientists, engineers, and technology developers/ analysts/ mathematicians do in the real world.

2. To understand different approaches in developing a STEM fair project is to identify problems, develop and test possible solutions, and reach a final resolution.

3. To learn how to develop a STEM project with the HTS advisors:
   Science: Dr. Deepa Subramanian
   Technology Dr. Deepa Subramanian
   Math: Chandrashekar Vellur
   Engineering: Dr. Deepa Subramanian

4. To learn to organize a project and put together a presentation that is written clearly, communicated effectively, and justifies the conclusion based on research and data evidence.

5. To encourage the exploration of STEM as career options.

1 https://www.weteachnyc.org/resources/resource/stem-framework/

GUIDELINES

1. Projects for categories III and IV (defined below) should be presented on a tri-fold board with appropriate steps/process, charts, results, and diagrams clearly displayed in a neat and organized fashion (refer to recommendations from "how to put together a project").
2. Prepare a 2–3-minute oral presentation of your project.
3. Be prepared to answer questions from the judges and visitors.
4. Choose one of the STEM subjects for your project. The advisors/mentors can guide you and assist you in deciding what project would be right for you (see each subject guideline attached).
5. Decide if the scientific method or engineering process is appropriate for your project.
6. Projects/demonstrations should NOT include:
   - Flames, explosives or flammable materials
   - Dry ice, dangerous chemicals liquid containers
   - Animals, live or preserved, no parts of animals (vertebrate or invertebrate)
   - Hazardous and/or controlled substances
   - Projects involving eating, drinking, exercise, inhaling, injection, etc.
7. Your final project presentation should include a logical sequence of events while presenting, and the logical sequence is that of common knowledge. (also see recommendations/suggestions from each advisor/mentor)
8. You should answer questions related to research using presentation material and concepts that are of common understanding.
9. Group projects are allowed with only 2 participants per project.
10. Categories:

I - Grades 1- 2	**III** - Grades 6-8
II - Grades 3- 5	**IV** - Grades 9-12

TOPICS

- **S**cience**, T**echnology**, E**ngineerin**g, M**ath
- Choose a problem or phenomenon in our world today that you would like to address.
- Gain background knowledge/stats regarding that topic.

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- Define the Problem: Causes, Scope of the problem and related impact [Provide some credible statistics]
- In terms of science, what aspect of the problem would you want to address/focus on?
- Provide a hypothesis that you would like to explore.
- Provide a literature review of the background information regarding your project. Add credible references where applicable including journal citations and web links.
- Summarize key findings and relevance to solving the defined problem
- Provide figure legends, or captions, explaining the figures.
- An idea can be copied as long as "it is owned and nourished by the participant" and appropriate acknowledgement of original idea is incorporated.

SCIENCE

Science is a systematic and logical approach to discovering how things in the universe work. It is also the body of knowledge accumulated through the discoveries about all the things in the universe.

The Scientific Method:

The scientific method is a logical problem-solving approach that is used to explore observations and answer questions.

Your Question & Approach:

- One of the most important considerations in picking a topic for your science fair project is to find a subject that you consider interesting.
- You must be able to control other factors that might influence your experiment, such as environment, fairness & others.
- Is your project safe to perform?
- Do you have all the materials and equipment you need for the STEM fair project?
- Is your family okay with the time and cost for the science fair project?
- Do you have enough time to complete your experiment before the STEM fair?
- Does your science fair project meet all the rules and requirements?

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Science Project Conclusion:

- Summarize and conclude your science project results in a few sentences.
- State whether your results support or contraindicate your hypothesis.
- Summarize and evaluate your project methodology, making comments about its success and effectiveness.
- Suggest changes in the methodology (or design) and/ or possibilities for further study.

In addition to the above guidelines, 2nd - 4th graders can also pick a scientific or engineering topic of their choice and explain how it works. Some examples listed below

Project Suggestions

- Are fingerprint patterns inherited?
- Why aren't all medicines pills?
- Explain how the solar system works
- Explain how electricity is generated (say hydroelectric power or solar power)
- Explain how pollution is caused and how it can be mitigated or resolved
- Explain the water cycle

You may use some of the websites provided below for inspiration. However, your idea should be original.

www.madsci.org
www.science-fair.org,
http://www.all-science-fair-projects.com/category0.html
https://climatekids.nasa.gov/menu/teach

For further guidance, contact:

Dr. Deepa Subramanian - email: patasala@nyganeshtemple.org

TECHNOLOGY

Technology follows the engineering design process. Scientific method asks the question "why" and engineering method asks "how" or "what". Any project should start with a question that states a problem. For example, "*Plants die without water when we go on a vacation, how can we automate this task?"* The next step is to research the different methods and materials available. For example, *"Arduino humidity sensors and triggers for water to go off using an electric switch".* If alternatives are available, document why

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the alternatives were eliminated. If no alternatives are available, document sufficient proof. All the research steps should be duly documented and presented on the day of the STEM fair. Project design and list of required materials should also be documented and presented. If required build a prototype and test before building the final product.
As a reminder - Present the final product with the following supporting documentation:

- Problem being solved
- Research findings
- Alternatives and elimination process
- Final design
- Final presentation will be judged based on the ability to coherently talk about the problem design and the solution.

Project Suggestions

Problems that need technological solutions:

- How can we sell products across the world?
- How can I show my talent to the world?
- How can I share my thoughts with the world?
- How to test the life of a battery?
- How can I protect my secrets in a box?
- What does it take to know the location of your pet at any given time?
- How can we build a tool that helps detectives to catch a lie?
- What does it take to graphically display the New York weather for any given period?
- How can computer tools be used to animate any given sport and analyze the outcome?
- How can computer aid as a study tool for subjects like mathematics and science?
- Some suggested tools:
  - Arduino programming
  - Scratch
  - Excel or similar tools
  - Web technologies
  - Other programming tools such as python or c#.

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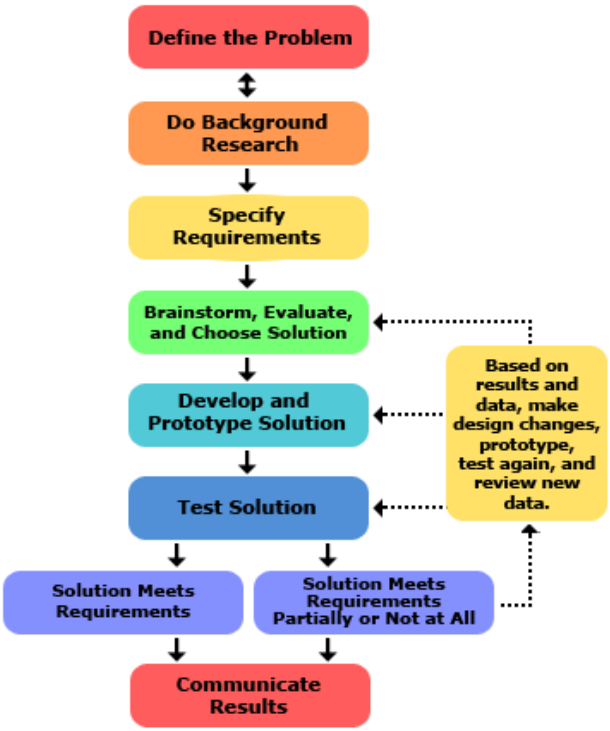
ENGINEERING

Engineering projects involve creative problem solving, and they are not hypothesis testing. Each engineering design, software application or device project should have a clear engineering goal, which can fit the following model statement: Engineering Design Process - *"The design and construction of an (engineered product) for (target user) to do (some useful function)".*

The below outlines an overall design process and guidelines for the science fair engineering projects:



- Define or identify a need or problem.
- Conduct background Research
- Establish design criteria and constraints (Specify Requirements)
- Brainstorm, Evaluate and choose alternative design solutions.
- Build or develop a prototype of the best design.
- Test and evaluate the prototype against important design criteria to show how well the product meets the need.
- Analyze test results; make design changes, and retest.
- Communicate, Prepare and Present the design - All steps to be documented and presented on the day of the STEM Fair.

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MATH

- The project need not be complicated or conceptually big. Even a simple subject of adding two 3-digit numbers is acceptable, if the participant has something creative and convincing.
- The core concept should be clear and described in simple words.
- Proof or support for the core concept should be one of:
  - Deduction
  - Induction
  - Mixture of Induction & logical reasoning
  - Regression/Extrapolation/Quantitative type
- Proof or support for the core concept could be based on an existing proof provided; the existing proof is not the core concept. Meaning, there should be some original idea as that of the participant and that is proved using other proven concepts.
- Participant should have supporting arguments to convince the judges. To repeat, the supporting arguments should be in proper sequence, logical and using proven concepts.
- Participant should have a minimum write-up of one page and that should carry:
  - Problem statement.
  - Expected background.
  - Breaking up the problem into simple ideas.
  - Providing convincing proof for each idea.
  - Putting all the related ideas into one common goal.
  - Conclusion: and that should include what is participant's idea.
  - Resource references.
  - Participant can use an optional project display board with pictures/presentations to help “sell” the idea.
  - Participant can use an optional model or working exhibit or computer demo to help “sell” the idea.

For further guidance, contact:

Chandrashekar Vellur - email: patasala@nyganeshtemple.org

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Project Suggestions:

- Please note that these are just suggestions, any other project is always welcome. If in doubt, please refer with the relevant subject advisor, mentor or teacher.
- You may get additional suggestions or feedback from teachers, advisors or mentors.
- Quality entries from previous fairs are good sources of ideas and best practices.
- Some high school technology curricula address the engineering design process, and many college and professional engineering societies have on-line resources.

All of those involved in developing, advising, judging and promoting the HTSNA STEM Fair 2026 are volunteers and all judges' decisions are final. We welcome recommendations/suggestions from participants and/or parents.

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