Middle Tennessee STEM Innovation Hub and the
Tennessee STEM Education Center present:

STEM EXPO 2020

Information, Instructions, Rules, and Guidelines

Event Details:

When: Wednesday, April 8, 2020
Where: at the Murphy Center on the Middle Tennessee State University Campus

Eligibility

The STEM EXPO 2020 is open to students in middle (5th-8th) and high school (9th-12th). Projects will be entered into one of the four categories based on teacher classification at the time of submission. Schools may register multiple entries per category.

Categories

1. **STEM Research**: Science, Mathematics, Engineering, Biotechnology, or Medicine/Veterinary Medicine
2. **Engineering**: Mechanical, Industrial, Civil, Aerospace, Automotive, Environmental, Biomedical, Chemical, Electrical or other Engineering fields
3. **Agricultural STEM**: Farming and animal husbandry
4. **Technology**: Computer programming, programming computer games, designing computer applications, or designing websites.

Rules & Guidelines

- Projects may be submitted by an individual student or a team of students (maximum of 5 students per team).
- Students may only be represented by one project in the STEM EXPO.
- Completed projects must demonstrate that student/s went through an extended process of inquiry in response to a complex question, problem, or challenge.
- Each project must be represented at the STEM Exposition by at least one student who actually participated in the project. Projects with no student representatives will not be evaluated.
- Evidence: The evidence component requires students to show proof of project completion, demonstrating an end product. Evidence will vary from project to project, but may take the following forms:
  - Physical model
  - Demonstration
  - Research log book (required for the STEM research category)

*Updated November 6th, 2019.*
• Video demonstration
• Audio demonstration
• Visual representations such as pictures, drawings, or art-work
• Scientific poster
• Portfolio
• Other forms of evidence as approved by the STEM EXPO Director

• Display guidelines:
  • A standard display must consist of one or more panels of information and any objects the student/s wish to display within safety guidelines. Exhibit panels must be constructed of stable and free-standing material not to exceed 48 inches in width and 30 inches in depth. Failure to meet these requirements will result in disqualification. Tables will be provided.

  [Display Layout diagram]

  • Each project should include an abstract of 250 words or less. Their poster should address the following six elements as part of the poster presentation. Since these are used for evaluation purposes, they should be prominently display on the research poster.

  1. **Driving Question/Need to Know**—specifically lists the questions driving the project, creating the need for learning the essential information contained within the project, and showing that student/s engaged in critical thinking and problem solving, as well as demonstrating that the project focused student work and deepened learning by framing important issues, debates, or problems

  2. **Significance of Content**—goals of the project are explicitly derived from key concepts of course content and academic disciplines

  3. **In-depth Inquiry**—shows that the student/s asked questions, searched for answers, and arrived at conclusions, leading them to construct something new: an idea, an interpretation, a product, etc.

  4. **Student Voice and Choice**—demonstrates that students learned to work independently and take responsibility when asked to make choices; were provided the opportunity to make choices, and to express their learning in their own voice

*Updated November 6th, 2019.*
5. **21st Century Skills**—reveals how the project builds communication, collaboration, and critical thinking skills essential for college and career readiness.

6. **Revision and Reflection**—reveals how student/s gave/received feedback to improve the project and illustrates what the student/s learned throughout the duration of the project in the form of a reflective conclusion.

- **Safety Guidelines**: Projects will be prohibited from displaying or using the following on the day of the STEM Exposition:
  - Combustible materials, in any combination, including chemicals
  - Chemicals, including household chemicals, that are not properly contained so as to prevent accidental spilling
  - Sharp items (including blades, cutters, knives, saws and scissors)
  - Plants that are poisonous, contain compounds that are irritating to the skin, may cause allergic reactions, or are endangered
  - Firearms (including BB, soft air, paint-ball, handguns, rifles and shotguns)
  - Invertebrate animals (including insects, worms, mollusks, spiders, slugs…)
  - Vertebrate animals (amphibians, birds, fish, mammals, and reptiles)
  - Human beings
  - Biohazards: infectious agents or hazardous biological materials that present a risk or potential risk to the health of humans, animals or the environment, including recombinant DNA; organisms and viruses infectious to humans, animals or plants.

- **Interviews**: Each individual or team entering a project will be interviewed by 1-2 evaluators.

**Project Recognition & Awards**

The STEM Exposition is not designed as a competitive event between students/teams; however, projects will be evaluated using a common rubric. (See the Rubric at the end of this document.) Projects will be able to receive a maximum of 100 points. Awards will be granted using the following scale:

- **Gold**—an average score from all evaluators of 95% or greater
- **Silver**—an average score from all evaluators of 85% to 94%
- **Bronze**—an average score from all evaluators of 75% to 84%
- **Participation**—an average score from all evaluators of less than 75%

School Districts, Higher Ed Institutions, and Business Partners who desire to support the STEM EXPO financially, will have the opportunity to create special awards and will identify recipients based on their own criteria. A common rubric will not be used for special award categories. If you are interested in supporting the STEM EXPO financially, please email midtnstem@mtsu.edu or 615-898-5762 for more information.

**Registration & Applications**

*Updated November 6th, 2019.*
Registration will be online this year, with either a document upload or an easily fillable form. The URL will be provided in the near future. **Registration entries are due by March 1st, 2020.**

**There is $8.00 registration per student to cover the costs of the Expo.** Schools may bring checks to the registration desk the day of the Expo or they can be mailed ahead of time to:

Middle TN STEM Innovation Hub  
820 Fairview Ave  
Suite 102  
Murfreesboro, TN 37132

Registration includes the completion for the Student Participation Form, which must be signed by parents. These have to be scanned and uploaded into the system by March 13, 2020 to be in order to participate. These forms must be uploaded by March 13, 2020 for the application to be complete.

In order to ensure a smooth event process, this year will hold fast to the following:

**No changes in registrations will be accepted after March 13, 2020.**

Please help us let the teacher know about this change. This will enable the project team to have time to process, organize and prepare for your participation. We are looking forward to your participation in the STEM EXPO!
# Middle Tennessee STEM Innovation Hub STEMEXPO Judging Rubric

<table>
<thead>
<tr>
<th>Student(s) Name(s):</th>
<th>School:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Title:</td>
<td>Project #:</td>
</tr>
<tr>
<td>Evaluator’s Name and Number:</td>
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<table>
<thead>
<tr>
<th>Evaluation by Standard</th>
<th>GOLD (G)</th>
<th>SILVER (S)</th>
<th>BRONZE (B)</th>
<th>Participation (P)</th>
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<tbody>
<tr>
<td>Participation (P):</td>
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<td>Bronze (B):</td>
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<td>Silver (S):</td>
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<tr>
<td>Gold (G):</td>
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## Project Based Learning / Design Process

### Driving Question / Need to Know
- lists the question driving the project, creating a need for learning essential information, showing that students engaged in critical thinking and problem solving and demonstrating that the project focused student work and deepened learning by framing important issues, debates, or problems

### Significance of Content
- goals of the project are explicitly derived from key concepts of academic disciplines

### In-depth Inquiry
- shows that student(s) asked questions, searched for answers, and arrived at conclusions, leading them to construct something new: an idea, an interpretation, a product, etc.

### Student Voice & Choice
- demonstrates that students learned to work independently and take responsibility when asked to make choices; provided the opportunity to make choices, and to express their learning in their own voice

### 21st Century Skills
- communicates the reason learning about and understanding the information and concepts related to the project is essential to college and career readiness

### Revision & Reflection
- reveals how student(s) gave/received feedback to improve the project and illustrates what the student learned throughout the duration of the project in the form of a reflective conclusion

## Presentation / Interview

- Presentation/interview communicates both the merits of the final product and the process the student(s) went through
- Student(s) communicate effectively about the project (e.g., provides logical responses to questions or defends the design choices and conclusions made)
- Evidence of final product (poster, model, demonstration, video, report, portfolio, etc.) provides ample evidence of project completion
- Overall display significantly contributes to the project (i.e., grammar, spelling, formatting, etc. do not significantly detract from project)

## Number of Marks in Each Column

## Overall Rating for the Project (G, S, B, or P):