

# **Paterson Public Schools STEM Expo**

## **Project Requirements**

1. Projects may be individual or group-based. Please do not exceed three (3) students per group.
2. Class projects **will not be eligible** for District Competition.
3. Please select a first, second, and third place winner for your school in each of the following categories:
  - K-1
  - 2-3
  - 4-5 Scientific Inquiry
  - 4-5 Inventions
  - 6-7 Scientific Inquiry
  - 6-7 Inventions
  - 8 Scientific Inquiry
  - 8 Inventions
  - 9-10 Scientific Inquiry
  - 9-10 Inventions
  - 11-12 Scientific Inquiry
  - 11-12 Inventions

There may only be one winner per category: a project cannot be entered into 2 different categories, nor can students submit two different projects for both categories at their grade level. Additionally, there cannot be ties for first place.

4. Please send **only the first place winners in each category** to the District STEM Expo on **Tuesday, December 19, 2017**.
5. In order to provide your school with the appropriate help for the exhibition of your projects on December 19<sup>th</sup>, please send all information, via e-mail, to the Science Office by November 29<sup>th</sup>.

### **NOTES:**

- ✓ **Please bring your own electrical cords**– none will be provided on the day of the event.
- ✓ The presentation space does not have wireless internet access.

# **Paterson Public Schools STEM Expo 20167**

## *Grades 4-12 Category Descriptions & Requirements*

**Invention Category Description:** An invention is a new device, contrivance, process, or an improvement on an existing machine or product that solves a real or perceived problem or need. This category provides a means of presenting an invention to the general public.

### **Pertinent Information and Definitions**

1. **Presentation Display-** A successful entry display in this category should contain the following:
  - a. A description of the use of the invention, and the benefits associated
  - b. A ‘mock-up’, prototype, or construction of all or part of the invention
  - c. Any marketing or promotional concept for the invention
2. **Descriptive Document-** A descriptive paper may be provided to show additional information:
  - a. Overall invention clearly described including what it is, how it would be used, benefits, and intended audience
  - b. Description of the design process that occurred in the creation of the invention, including any problems encountered and the solutions
  - c. Drawings or descriptive text that describes the construction process and any materials required
  - d. Any further steps taken beyond initial concept, including competitor research, publicity, etc.

### **Entry, Review, and Judging**

1. An entry in this category will be reviewed and judged on the following:
  - a. General requirements and judging points
  - b. Preparation and display of the invention and/or its component
  - c. Prototype or mock-up design and construction
  - d. Descriptive paper showing further details about the invention
2. Additional items which will affect the review and judging conclusions
  - a. Research evidence that no similar product or process exists
  - b. Invention offers functionality that solves a problem efficiently
  - c. Invention addresses a real-world need
  - d. Practicality in terms of size, cost, materials, etc. for the problem being solved
  - e. Unique or innovative methodologies used

3. Rubric- Please review the judging rubric for this category for other items that may be considered.

## **Paterson Public Schools STEM Expo 2017**

### *Grades 4-12 Category Descriptions & Requirements*

**Scientific Inquiry Category Description:** The Scientific Inquiry category requires students to use higher order thinking skills as they learn science using a hands-on, minds-on approach. This is the basic experimentation category where a question is asked, a hypothesis is created, an investigation is performed, and a conclusion is reached.

#### **Pertinent Information and Definitions**

1. **Scientific Method**-The Scientific Method is a fundamental part of this category. It is, in essence, a sequence of operation for any Scientific Inquiry. The steps are:
  - a. Ask a testable question. • Research the topic.
  - b. Make a hypothesis about the outcome based on that research and/or the entrant's own knowledge.
  - c. Design the investigation.
  - d. Conduct the investigation.
  - e. Collect data.
  - f. Make sense of the data and draw a conclusion.

#### **Entry, Review, and Judging**

2. An entry in this category will be reviewed and judged on the following:
  - a. General requirements and judging points
  - b. The scientific method (including completeness of thought processes and presentation of cause and effect)
  - c. Preparation and display of information about the entry
3. Additional items which will affect the review and judging conclusions
  - a. Presentation of the inquiry findings for peer review.
  - b. Understanding of how the inquiry relates to broader scientific principles and real world applications
  - c. Originality and/or innovative approaches or concepts
4. Rubric- Please review the judging rubric for this category for other items that may be considered.