# ECASD MIDDLE SCHOOL STEAM FAIR 2018

Science-Technology-Engineering-Art-Mathematics

## 2018 STEAM Fair Rubric: Design/Engineering Projects

Project #: _____ Grade: _____ School: _____

Student 1: _____ Student 2 (if applicable): _____

***PLEASE DOUBLE CHECK SPELLING OF STUDENTS' NAMES (BEFORE DECLARING WINNERS).**

| Engineering/Design Rubric | | |
|---|---|---|
| **Type of Project** | Accurately labeled as either **"Science"** or **"Design"**<br>➢ *Science investigations attempt to explain a phenomenon/answer a question*<br>➢ *Design projects attempt to solve a problem/refine a design* | 0 1 |
| **NGSS** | Scientist appropriately describes (1 sentence each) how each of the following is involved in the project [1 pt each]:<br>● **1 x Disciplinary Core Idea** (DCI): *Grade appropriate science content (e.g., genetics, forces, chemical reactions)*<br>● **1 x Science** or **Engineering Practice** (SEP): *What scientists do (e.g., ask questions, develop models, explanations)*<br>● **1 x Crosscutting Concept** (XCC): *Big ideas that cut across all sciences (e.g., patterns, cause and effect, energy)* | 0 1 2 3 |
| **Design Problem** | ● Engineer/Designer provides a clear description of the problem to be solved (e.g., who the end-user is and what their needs are, why the problem is worth focusing on) | 0 1 2 |
| **Background Research** | ● Engineer/Designer describes previously developed solutions and their shortcomings<br>● Engineering/Designer describes grade-appropriate **science concepts** involved in their design | 0 1 2 |
| **Criteria & Constraints** | The following are clearly described, appropriate, well thought through:<br>● **Criteria**: desires of the end-user (e.g., desired features, function(s) to be performed, durability, cost, etc.)<br>● **Constraints**: limitations/boundaries (e.g., time, materials, cost, size, weight, safety considerations, ethical considerations, etc.) | 0 1 2 |
| **Design Plan & Prototype** | ● Prototype design was well planned out<br>● Blueprint/sketch is neat, drawn to scale (including measurements with units), and materials are labeled<br>● Prototype is well constructed | 0 1 2 3 |
| **Testing Data** | ● Prototype was tested in multiple conditions/trials<br>● Appropriate data from tests are accurately and neatly represented in tables, charts, diagrams, and/or graphs<br>● Any calculations/labels are accurate, correct units are included | 0 1 2 3 |
| **Redesign & Tradeoffs** | ● Engineer/Designer explains how the data collected during testing was used to enhance the design (or how it informs their *plan* for redesign).<br>● Tradeoffs: Engineer/Designer explains how the solution addresses the criteria and balances conflicting constraints | 0 1 2 3<br>0 1 |

**Total: ____/20**