**S.T.E.A.M. (Science, Technology, Engineering, Arts and Mathematics)**

**Arduino Project Rubric**

Rubric created by: Kurt Lichtenwald’s and John Barry’s 2016-2017 students at Gloucester High School

**Student’s Name and Term:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Project Name and Number: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Top of Form

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | | | |
| **The 3 sections below are weighted heavier than the other criteria.** | **Excellent** **(20 -15 points)** | | **Good** **(14 - 10 points)** | | | **Fair** **(9 - 5 points)** | | **Undeveloped** **(4 - 0 points)** | | **Student’s self-analysis Rubric Grade** | | **Teacher’s Analysis Rubric Grade** |
| **Program Analysis:**  **Full explanations of program operations and**  **Schematic set up.**  **Program printouts in the Serial Monitor** | Full and clear description of what the program does and how to set the circuit up.  Every line of code has been fully explained using K.I.S.S. Principle.  Student’s work demonstrates all inputs and outputs and variables printed as feedback for trouble shooting. | | Partial and or unclear clear description of what the program does and how to set the circuit up.  Most of the code has been fully explained using K.I.S.S. Principle.  Student’s work demonstrates several inputs and outputs printed as feedback for trouble shooting. | | | Student has failed to meet the High Standards and as such will go back and do it again until they are successful.  Student’s work demonstrates a few inputs and outputs printed as feedback for trouble shooting. | | Student has failed to meet the High Standards and as such will go back and do it again until they are successful.  Student’s work demonstrates a minimal attempt to print inputs and outputs for feedback in trouble shooting. | |  | |  |
| **Video Presentation:**  Video must have a full explanations of the following:  1) Fritzing Schematic  2) Fritzing Breadboard  3) Working Project  4) Program  5) Serial Monitor  **Cool Factor:**  **Creativity / Originality**  **Cosmetic/Aesthetic Quality of Product** | **Excellent**  **(20 -15 points)**  Student’s has all work neatly organized and professionally done. Pictures cropped and videos professionally made.  **Excellent**  **(20 -15 points)**  The student developed a product **that is unique and impresses peers and teacher.** | | **Good**  **(14-10 points)**  Student’s has most work neatly organized and professionally done.  **Good**  **(14 -10 points)**  The student developed a product **that is unique and impresses peers.** | | | **Fair**  **(9 - 5 points)**  Student’s project show limited understanding of programming / circuitry.  **Fair**  **(9 - 5 points)**  Student’s has some work neatly organized and professionally done. | | **Undeveloped**  **(4 - 0 points)**  Student has failed to meet the High Standards and as such will go back and do it again until they are successful  **Undeveloped**  **(4 - 0 points)**  Student has not met the High Standards and expectations of this class and as such will go back and do it again until they are successful. |  | | |  |
|  |  |  | | | |  | |  | | | **Student’s self-analysis Rubric Grade** | **Teacher’s Analysis Rubric Grade** |
|  |  | | |  | | |  |  | | |  |  |
| **Time Management** | **Excellent**  **(10-8 Points)**  Progression Time Log **done to Professional Standards. Accounting for daily progress towards project completion.** This will be done in their engineering notebook**.** | | | **Good (7-5 Points)**  Progression Time Log **done to Adequate Standards. Accounting for daily progress towards project completion.** This will be done in their engineering notebook | | | **Fair**  **(4-3 Points)**  Progression Time Log **done to Introductory Level Standards.** **Accounting for daily progress towards**  **P**  **roject completion.**  This will be done  in their engineering notebook | **Undeveloped (2-0 Points)**  Student has failed to meet this section of the rubrics criteria and as such **student will conduct a self-analysis and try again until they are successful.** | | |  |  |
| **All-Encompassing Design:** | **Excellent**  **(10 - 8 points)**  Student’s project **shows a mastery** **of programming / circuitry** by combining five or more aspects of projects, programs, and circuitry into a final product. | | | | **Good**  **(7 - 5 points)**  Student’s project **shows an understanding of programming / circuitry** by combining at least three aspects of projects, programs, and circuitry into a final product. | **Fair**  **(4 - 3 Points)**  Student’s project **shows a limited understanding of programming / circuitry** and shows little connection to other aspects of projects or programs in their final product. | | **Undeveloped**  **(2 - 0 Points)**  Student **has failed to meet the High Standards** and as such will go back and do it again until they are successful. | | |  |  |
| **Organization:**  **Student maintains a clean work area and 101 Lab Kit. Electronic components are well organized, protected and undamaged.**  **Modified Circuit Projects in a term folder with:**    **1) Arduino Program**  **2) Project Video**  **3) Fritzing File** | **Excellent**  **(10 - 8 points)**  Student is fully organized, need and exceeds class standards. | | | | **Good**  **(7 - 5 points)**  Student is organized and meets class standards. | **Fair**  **(4 - 3 points)**  Student is unorganized and fails to meet class standards. | | **Undeveloped**  **(2 - 0 points)**  Student has not met the High Standards and expectations of this class and as such will go back and do it again until they are successful. | | |  |  |
| **Peer Teaching:** | **Excellent**  **(10 - 8 points)**  Student **peer teaches entire class** and is able to answer **all** project questions thus transferring their knowledge and proving subject Mastery. | | | | **Good**  **(7 - 5 points)**  Student **peer teaches a majority of the class** and is able to answer **some** project questions thus transferring **most** of their project knowledge. | **Fair**  **(4 - 3 points)**  Student **peer teaches a few students** by transferring their project knowledge. | | **Undeveloped**  **(2 - 0 Points)**  Student has failed to meet the High Standards and as such will go back and do it again until they are successful | | |  |  |

Totals: \_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_

Final Project Grade: \_\_\_\_\_\_\_\_\_