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| <b>Project #</b>      | <b>Judges Initials:</b> |
| <b>Project Title:</b> |                         |

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| <p><b>Abstract</b><br/>To what degree does the abstract describe the project?<br/>(Maximum of 250 words)</p>   | <p>0=No abstract.<br/>1=Poorly written and does not describe the project.<br/>2=Poorly written and does not describe all components of the project.<br/>3=Well written but does not describe all components of the project.<br/>4=Well written and completely describes the project.</p>   | <i>Points</i> |
| <p><b>Define A Problem Or Need</b><br/>The purpose is clearly and succinctly stated. It may be an improvement or a new design.</p>   | <p>0=No need or problem is stated.<br/>2=Poorly written Problem Statement or unclear focus.<br/>4= Well-stated problem or need however approach to the design taken from a source.<br/>6=Original and unique project that addresses or solves a real need and has a good approach. Clear logical objective that is succinctly stated.</p>  |               |
| <p><b>Background Research-</b><br/>Research should show that the student has acquired new knowledge about the nature of the problem and what others have done on similar problems.</p> | <p>0=No evidence of investigation or research.<br/>1=Minimal evidence of research.<br/>2=Some research with evidence of reading about the problem but lacking depth, (minimal sources cited or information used to guide work).<br/>3=Good background research, however student does not fully apply found knowledge to his or her project (multiple sources are used).<br/>4=Good research and evidence that student has used new knowledge as the foundation to move in a new direction (multiple sources used).</p> |               |
| <p><b>Design / Criteria</b><br/>Design criteria are requirements that the student specifies that will guide the development of the design.</p>   | <p>0=No design criteria or specifications of design listed.<br/>2=Poor design criteria or constraints outlined.<br/>4=Minimal design criteria may be incomplete in scope or constraints.<br/>6=Complete design criteria outlined, design is clear and constraints are clearly outlined.</p>  |               |
| <p><b>Prepare Preliminary Designs</b><br/>Does the student clearly understand the design that was developed and used? Does the student consider multiple solutions?</p>                | <p>0=No initial design provided.<br/>2=No iteration of the design process is considered and some sketches are evident.<br/>4=Multiple iterations of the design solutions are considered. Sketches, models and dimensional drawings are shown.<br/>6=Multiple solutions are generated and alternatives seriously considered. Criteria for rejecting alternatives are well stated and used. Quality sketches, models, and two-dimensional drawings are evident and their use is apparent.</p>                            |               |
| <p><b>Build, Test And Retest A Prototype</b><br/>Students will need to test and retest their design noting any adjustments and making design changes as needed.</p>                    | <p>0=No test or prototype evident.<br/>2=A prototype has been created yet tested only a minimal number of times.<br/>4=The prototype has been tested multiple times however adjustments and changes are not made.<br/>6=The prototype has been tested multiple times and adjustments and changes have been noted and logical corrections made.</p>   |               |
|  | <b><i>Subtotal front</i></b>   |               |

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| <p><b>Analysis And Evaluation Of The Design</b><br/>To what degree does has the design been developed</p>  | <p>0=No written narrative or analysis or evaluation.<br/>2=Analysis of design may not be logical or may not mention the criteria used for success.<br/>4=Analysis of the design solution is logical and there is some mention of economic and ecological feasibility.<br/>6=Analysis is logical and there is good analysis of economical and ecological feasibility and or scale in the application of the design solution.</p>  |  |
| <p><b>Notebook</b><br/>The development of problem/need is evident at the beginning of the journal. It continues to explain the engineering goals and what is being tested. Sketches, models and diagrams are evident. Design criteria and redesigning adjustments are noted. There is an on going record of the tests and it shows analysis, reflection and application.</p> | <p>0=Little evidence of recording information as it was completed. Or analysis on the board has no support in the notebook<br/>2=Some evidence of recording information as it was completed. Some evidence of analysis is included, but not all calculations/analysis are shown in notebook.<br/>4=Daily work was recorded as it happened. The data is recorded in raw format in an organized manner. All trials are recorded and relate to the board.<br/>6= Daily work was recorded as it happened. The data is recorded in raw format in an organized manner. All trials are recorded and relate to the board. Both raw data and written observations are recorded. Evidence of multiple trials is clearly evident.<br/>8=Detailed, well written, and organized, includes all of the above and in-depth analysis and reflection of the project.</p> |  |
| <p><b>Display Attributes</b><br/>Attractive, clear, legible and in appropriate order. Workmanship on the design is thorough and attention to detail is noted.</p>  | <p>0=Unsatisfactory display – attributes missing.<br/>1=Poor quality of display with little attention to detail.<br/>2=Average quality but board organization hinders communication.<br/>3=Good quality – but the addition of more components would improve communication or layout hinders communication.<br/>4=Superior display – layout and organization facilitates communication.</p>   |  |
| <p><b>Overall Quality</b><br/>To what degree does this project relate to broader scientific principles and real world applications, is original or has an innovative approach to the topic or shows a high degree of complexity.</p>   | <p>0=Very little degree of originality and just building from found directions.<br/>2=Some relevance to real world application but low degree of originality or complexity.<br/>4=Some originality (changing a variable or two), or complexity, may relate to real world yet not identified by the student.<br/>6=A degree of originality, complexity, and has real world application to broader scientific principles and innovative.<br/>8=Very innovative and original. Complexity and application to broader scientific principles is high.</p>  |  |
|  | <p><b>Subtotal back</b></p>  |  |
|  | <p><b>TOTAL POINTS _____ / 58</b></p>  |  |