

## Judges' 2021 Engineering Notebook Score Sheet

**Purpose:** To document the process used to design, build, and test the robot. (30 pts.)

| <b>Research Paper (4 pts.)</b>  |  |      |   | Possible Points | Points Awarded |  |
|---|--|------|---|-----------------|----------------|--|
| <b>Correlation between the game and how the science/technology is being used at a company/industry/research lab in the team's state or region</b>         |  |      |   |                 |                |  |
| 8-10  | In-depth discussion of how this year's game theme relates to industry in this region.  |      |   |                 |                |  |
| 4-7   | General discussion of how this year's game theme relates to industry in this region.   |      |   |                 |                |  |
| 1-3   | General discussion of this year's game theme, but no ties to the region  | 0    | No discussion of game theme.                  |                 |                |  |
| <i>Comments:</i>  |  |      |   |                 | <b>10</b>      |  |
| <b>Any related information of the game theme such as history, famous inventor(s), major milestones, etc.</b>  |  |      |   |                 |                |  |
| 4-5   | In-depth discussion of history and people related to this year's game theme.   |      |   |                 |                |  |
| 2-3   | General discussion of history and people related to this year's game theme.  |      |   |                 |                |  |
| 1   | Some mention of history or people.   | 0    | No discussion of related info                 |                 |                |  |
| <i>Comments:</i>  |  |      |   |                 | <b>5</b>       |  |
| <b>Analysis of the game theme/problem &amp; related technology's impact on the human experience, our needs, adaptations, and progress with solutions.</b> |  |      |   |                 |                |  |
| 4-5   | In-depth historical account of the effects to human experience, needs, adaptation and progress toward solutions.                       |      |   |                 |                |  |
| 2-3   | Some discussion about the effects of the theme/problem/technology on human experiences, needs, adaptations or progress.                |      |   |                 |                |  |
| 1   | Mentioned the effects to human experience, needs, adaptation or progress.  | 0    | No mention of history/effects to humanity.    |                 |                |  |
| <i>Comments:</i>  |  |      |   |                 | <b>5</b>       |  |
| <b>Creativity in linking the game to appropriately related science content</b>  |  |      |   |                 |                |  |
| 8-10  | Very creative in linking this year's game theme to other science/technology.   |      |   |                 |                |  |
| 4-7   | Attempted to link this year's game theme to other science/technology.  |      |   |                 |                |  |
| 1-3   | Mentioned other science/technology.  | 0    | No discussion of other science/technology.    |                 |                |  |
| <i>Comments:</i>  |  |      |   |                 | <b>10</b>      |  |
| <b>Proper formal writing - Proper use of grammar &amp; composition throughout ; source citations used to gather information; within 2-5 page limit</b>    |  |      |   |                 |                |  |
| 8-10  | Very few grammar mistakes/misspellings, included citations, 2-5 pages.   |      |   |                 |                |  |
| 4-7   | Noticeable grammar mistakes/misspellings or did not include citations, 2-5 pages.  |      |   |                 |                |  |
| 1-3   | Many grammar mistakes/misspellings, no citations, or not within 2-5 pages.   | 0    | Incomprehensible or missing.                  |                 |                |  |
| <i>Comments:</i>  |  |      |   |                 | <b>10</b>      |  |
| <b>Design Process (17 pts.)</b>   |  |      |   |                 |                |  |
| <b>Implementation of the Engineering Design Process (Evidence that the engineering design process was effectively used)</b>                               |  |      |   |                 |                |  |
| 21-25   | Process is explicitly identified; steps are obvious and explanation is thorough.   |      |   |                 |                |  |
| 16-20   | Process is identified; steps are discernible and there is some explanation.  |      |   |                 |                |  |
| 11-15   | Process is not identified; there is some discussion of a design process.   | 6-10 | Discussion of process is minimal.             |                 |                |  |
| 1-5   | You can tell there was a design process of some sort.  | 0    | No discernible design process.                |                 |                |  |
| <i>Comments:</i>  |  |      |   |                 | <b>25</b>      |  |
| <b>Brainstorming Approaches - How well organized and productive was the brainstorming approach? How well was it documented?</b>                           |  |      |   |                 |                |  |
| 21-25   | Approach is explicitly identified, organization & productivity are obvious, explanation is thorough, discussion of how decisions made. |      |   |                 |                |  |
| 16-20   | Approach is identified, organization and productivity are discernible, there is some explanation.                                      |      |   |                 |                |  |
| 11-15   | Approach is not identified, there is some discussion of brainstorming.   | 6-10 | Discussion of approach is minimal.            |                 |                |  |
| 1-5   | You can tell there were ideas generated.   | 0    | No discernible brainstorming.                 |                 |                |  |
| <i>Comments:</i>  |  |      |   |                 | <b>25</b>      |  |
| <b>Analytical evaluation of design alternatives - Use of analytical and mathematical skills in deciding upon and implementing design alternatives</b>     |  |      |   |                 |                |  |
| 21-25   | Evaluation is explicitly identified, analytic/mathematical approach is obvious, alternative designs are explained.                     |      |   |                 |                |  |
| 16-20   | Evaluation is identified, analytic/mathematical approach is discernible, alternative designs are identified.                           |      |   |                 |                |  |
| 11-15   | Evaluation is not identifiable, alternative designs are identified.  | 6-10 | Discussion of alternative designs is minimal. |                 |                |  |
| 1-5   | You can tell there were alternatives.  | 0    | No discernible evaluation.                    |                 |                |  |
| <i>Comments:</i>  |  |      |   |                 | <b>25</b>      |  |

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|  |  |                    |  |               |
|--|--|--------------------|--|---------------|
| <b>Offensive and defensive evaluation - Analysis of gaming strategies and design elements used to achieve team goals</b>   |  |                    |  |               |
| 21-25  | Evaluation of offensive/defensive strategies is explicitly identified, goals of this team are clearly identified, discussion shows a deep knowledge of the game.       |                    |  |               |
| 16-20  | Evaluation is identified, goals are discernible, discussion shows a knowledge of the game.   |                    |  |               |
| 11-15  | Evaluation is not identified, there is some notion of goals and game knowledge.  |                    |  |               |
| 6-10   | Discussion of goals and game knowledge are minimal.  |                    |  |               |
| 1-5  | There is some slight mention of strategy.  | 0                  | No discernible evaluation.                           |               |
| Comments:  |  |                    | <b>25</b>  |               |
| <b>Software Development Process ( Evidence that a software development process was effectively used )</b>  |  |                    |  |               |
| 21-25  | Process is explicitly identified; steps are obvious and explanation is thorough. Design methods utilized are identified and explained.                                 |                    |  |               |
| 16-20  | Process is identified; steps are discernible and there is some explanation. Some design methods are discussed.   |                    |  |               |
| 11-15  | There is some discussion of a development process or design methods.   | 6-10               | Process is mentioned but minimal detail.             |               |
| 1-5  | You can tell there were some software design methods used.   | 0                  | No discernible software development process          |               |
| Comments:  |  |                    | <b>25</b>  |               |
| <b>Safety - Evidence that safety training occurred and safe practices were followed to prevent students' misuse of tools and other devices/equipment that may result in personal injury or damage to property</b>  |  |                    |  |               |
| 17-20  | Clear evidence that safety training occurred, clear evidence that the team verified safety procedures were followed.   |                    |  |               |
| 13-16  | Clear evidence of safety training, some evidence procedures were verified.   |                    |  |               |
| 9-12   | Some evidence of safety training, some procedures were verified.   | 5-8                | Some evidence safety training, no verifying proc     |               |
| 1-4  | Safety was mentioned; unsafe methods might be visible in photos.   | 0                  | No mention of safety.                                |               |
| Comments:  |  |                    | <b>20</b>  |               |
| <b>Support Documentation - Team organization, meeting minutes/notes, CAD/other drawings, photos, derived requirements, test results, code/algorithms, etc. that support the main document (max 40 pages)</b>   |  |                    |  |               |
| 21-25  | Clearly identifies at least 5 categories mentioned above; references made from primary document.   |                    |  |               |
| 16-20  | Items from at least 4 categories mentioned are included.   |                    |  |               |
| 11-15  | Items from at least 3 categories above are included.   | 6-10               | Items from at least 2 categories above are included. |               |
| 1-5  | Includes items from at least 1 category; but not identified.   | 0                  | No items from listed categories are included.        |               |
| Comments:  |  |                    | <b>25</b>  |               |
| <b>Overall Quality and completeness of Notebook (9 pts.)</b>   |  |                    |  |               |
| <b>Organization and appearance - Table of contents, summary, page numbers, discussion of evaluation points, linkage to appendices</b>  |  |                    |  |               |
| 21-30  | Well organized, looks good, includes Table of Contents, summary, page numbers, discussion of evaluation points (e.g. Items on the score sheet), linkage to appendices. |                    |  |               |
| 11-20  | Reasonably organized, looks good, missing one or two items from list above.  |                    |  |               |
| 1-10   | Poorly organized, no attention to looks, missing multiple items from list above.   | 0                  | Disorganized, missing most items.                    |               |
| Comments:  |  |                    | <b>30</b>  |               |
| <b>Adherence to specifications</b><br>Cover sheet and/or title page that identifies the school team name, teacher contact information, and team number<br>1" margins; Business font no smaller than 12 pt., double-spaced (single spaced ok in tables and outlines) ;<br>PDF Format Only, 35 pages max for main section, 40 pages max for appendices |  |                    |  |               |
| 21-30  | Adheres to the specifications listed above.  |                    |  |               |
| 11-20  | Violates one of the specifications listed above.   |                    |  |               |
| 1-10   | Violates two or three of the specifications listed above.  | 0                  | Violates four or more specs.                         |               |
| Comments:  |  |                    | <b>30</b>  |               |
| <b>Quality of content - Well written, clear photo labels, lack of extraneous material such as community or promotional efforts, spirit development, team building</b>  |  |                    |  |               |
| 21-30  | Everything is well written/clear/logical, everything is clearly labeled, no excess material.   |                    |  |               |
| 11-20  | You can follow everything with some effort, one or two things that are unnecessary.  |                    |  |               |
| 1-10   | Hard to understand in places, labels missing in places, unnecessary material.  | 0                  | Very difficult to follow, unnecessary material.      |               |
| Comments:  |  |                    | <b>30</b>  |               |
| <b>SCORE CALCULATION</b> and Additional Comments:  |  | <b>Total</b>       |  | 300           |
|  |  |                    |  | ÷10      ÷10  |
|  |  | <b>Final Score</b> |  | <b>30 max</b> |

Judge name/number (print): \_\_\_\_\_

Team Number: \_\_\_\_\_ School: \_\_\_\_\_