

## 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.	
<i>Comments:</i>				<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	
<i>Comments:</i>				<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.	
<i>Comments:</i>				<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.	
<i>Comments:</i>				<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.	
<i>Comments:</i>				<b>30</b>
<b>Adherence to specifications</b>				
Cover sheet and/or title page that identifies the school team name, teacher contact information, and team number 1" margins; Business font no smaller than 12 pt., double-spaced (single spaced ok in tables and outlines) ; 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 for or more specs.	
<i>Comments:</i>				<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.	
<i>Comments:</i>				<b>30</b>
<b>SCORE CALCULATION</b> and Additional Comments:		<b>Total</b>		300
				÷10
		<b>Final Score</b>		<b>30 max</b>

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

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