Engineering Notebook Rubric

Team Number:_____ **Judge Name:**_____

GLOBAL ROBOTICS & SCIENCE FOUNDATION

Criteria	Exemplary (4 points)	Proficient (3 points)	Developing (2 points)	Beginning (1 point)	Points
Notebook Organization (16 points)					
Information is easy to reference	Pages are numbered, entries are ordered chronologically or by section, and a table of contents leads to specific entries.	Pages are numbered with a table of contents, but finding an entry takes searching.	Some organization is present, but locating information is difficult.	No pagination or table of contents. Information cannot be located.	
Contributors are identifiable	The team number appears on the notebook, and all entries are signed or initialed by the student who wrote them.	The team number appears, and most entries are attributed to a student.	The team number appears, but entries are rarely attributed.	The team number is missing, or entries are not attributed at all.	
Record spans the season	Dated entries span the season, demonstrating a consistent habit of notebooking.	Dated entries span the season, showing notebooking habits with some gaps.	Entries cluster in a few short periods, or large stretches of the season are missing.	Entries are undated, or all appear to have been created at one time.	
Outside sources are credited	Outside sources (designs, mechanisms, code, and ideas the team built on) are named where they appear.	Most outside sources are named, though some appear without credit.	A few sources are named, or credits appear only as a list, not where they were used.	Outside work appears with no credit.	
Engineering Design Process – Define (12 points)					
Criteria and constraints are defined	The notebook defines and explains the problem along with the rules and constraints that could impact possible solutions.	The notebook defines a problem without explanation,and lists related criteria and constraints.	A problem is defined without specific criteria or limits.	The problem to be solved is not defined and no criteria and constraints appear.	
Game strategy is documented	The notebook describes the team's scoring priorities with reasoning and tradeoffs that come with those priorities.	The notebook describes the team's scoring priorities with some reasoning. No tradeoffs are documented.	Strategy is mentioned without reasoning.	No strategy is documented.	
Brainstorming is documented	Several distinct approaches (coding, engineering, and/or strategy) are recorded with enough detail to see how they differ.	Three or more approaches are recorded without comparison, or one or two ideas appear with comparison.	One or two ideas appear with no comparison.	No brainstorming appears, or a single solution appears already chosen.	
Engineering Design Process – Develop Solutions (16 points)					
Prototypes are documented	The notebook shows continuous prototyping with three or more attempts at a solution that clearly connect to one another.	The notebook shows two or more attempts at a solution with a connection between the attempts.	A single build appears, with little sense of what preceded it.	No prototyping is documented.	

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Criteria	Exemplary (4 points)	Proficient (3 points)	Developing (2 points)	Beginning (1 point)	Points
Test procedures are defined	Tests state what was measured, how, and under what conditions, so the test could be repeated.	Tests state what was measured and how.	Testing is mentioned without saying what was measured or how.	No testing is documented, or the robot was tried with no test described.	
Data is collected	Tests produce recorded qualitative and quantitative results in a form that can be used for data-based decision making.	Tests record only qualitative or quantitative measurements (not both) to be used for decision making.	Results are described in general terms, without measurements.	No results are recorded.	
Decisions are explained with evidence	The notebook states what the team decided, how the decision was made, who was part of the decision, and what evidence led to the choice.	Decisions are stated with reasoning and evidence. No indication is made of who was involved in the decision.	Decisions appear with little or no reasoning or evidence.	Changes appear with no indication of why.	
Engineering Design Process – Optimize (12 points)					
Mechanisms are documented	Sketches, images, or CAD show a built solution. Descriptive labels show how or why parts of the mechanism exist.	Sketches, images, or CAD show the built solution with basic labels.	Images appear without explanation of how or why the mechanism works.	The built solution is not documented.	
Code is documented	Pseudocode, flowcharts, annotated screenshots, or commented code show the intention behind the code and how the code was developed.	Code is documented in any of these forms, with explanation of the intention behind the code.	Code appears with little or no explanation.	No code documentation appears.	
Changes are traceable to results	Changes to the robot or code follow from recorded test results, and the notebook makes the connection explicit.	Changes follow from testing, though the connection is sometimes implied.	Changes and testing both appear, but they are not connected.	Changes appear with no testing behind them.	
Engineering Design Process – Reflection and Iteration (8 points)					
Reflection appears throughout	The notebook shows a continuous pattern of reflection throughout the season, and reflections shape what happens next.	Reflections appear at more than one point in the season.	Reflection appears only at the end, or only as a general summary.	No reflection appears, or entries record activity without evaluating it.	
Iteration is visible in sequence	The notebook shows a continuous pattern of iteration throughout the season using the Engineering Design Process for building, strategizing, and coding.	The notebook shows a pattern of iteration throughout the season in one or two categories (building, strategizing, coding).	The notebook shows some iteration in one of the categories (building, strategizing, coding).	The notebook shows little to no iteration.	
				TOTAL (out of 64)	

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