

Engineering Notebook Rubric

Team # _____ Grade Level ES | MS | HS | University Judge Name _____

Directions: Determine the point value that best characterizes the content of the Engineering Notebook for that criterion. Write that value in the column to the right. This rubric is to be used for all Engineering Notebooks regardless of format (physical or digital).



CRITERIA		PROFICIENCY LEVEL			POINTS
ENGINEERING DESIGN PROCESS	EXPERT (4-5 POINTS)	PROFICIENT (2-3 POINTS)	EMERGING (0-1 POINTS)		
IDENTIFY THE PROBLEM	<u>Identifies</u> the problems in the competition and workcell design challenges <u>in detail at the start of each design</u> process cycle with words and pictures. States the goals for accomplishing each phase.	Identifies the challenge at the start of each design cycle. <u>Lacking details in words, pictures, or goals.</u>	<u>Does not identify the challenge</u> at the start of each design cycle.	_____	
BRAINSTORM, DIAGRAM, OR PROTOTYPE SOLUTIONS	<u>Lists three or more possible solutions</u> to the challenge with labeled diagrams. Citations provided for ideas that came from outside sources.	<u>Lists one or two possible solutions</u> to the challenge. Citations provided for ideas that came from outside sources.	<u>Does not list any solutions</u> to the challenge.	_____	
SELECT BEST SOLUTION AND PLAN	Explains why the solution was selected through testing and/or a decision matrix. <u>Fully describes the plan</u> to implement the solution.	Explains why the solution was selected. <u>Mentions the plan.</u>	<u>Does not explain any plan</u> or why the solution or plan was selected.	_____	
BUILD AND PROGRAM THE SOLUTION	Records the steps to build and program the solution. Includes <u>enough detail that the reader can follow the logic</u> used by the team to develop their workcell design, as well as recreate the workcell design from the documentation.	Records the key steps to build and program the solution. <u>Lacks sufficient detail for the reader to follow the design process.</u>	<u>Does not record the key steps</u> to build and program the solution.	_____	
TEST SOLUTION	Defines what is considered positive and/or negative test outcomes. <u>Records all the steps</u> to test the solution, including test results.	<u>Records the key steps</u> to test the solution.	<u>Does not record steps</u> to test the solution.	_____	
REPEAT DESIGN PROCESS	Shows that the <u>design process is repeated multiple times</u> to improve performance on a design goal, or workcell performance.	<u>Design process is not often repeated</u> for design goals or workcell performance.	<u>Does not show that the design process is repeated.</u>	_____	
INDEPENDENT INQUIRY	Team shows evidence of independent inquiry <u>from the beginning stages</u> of their design process. Notebook documents whether the implemented ideas have origins within existing industries, companies, etc. For example a team was able to physically or virtually tour a local/regional/global company.	Team shows evidence of independent inquiry for <u>some elements</u> of their design process. Ideas and information from outside the team are documented.	Team <u>shows little to no evidence</u> of independent inquiry in their design process. Ideas from outside the team are not properly credited	_____	
USEABILITY AND COMPLETENESS	<u>Records the entire design and development process</u> in such clarity and detail that the reader could recreate the project's history.	Records the design and development process completely but <u>lacks sufficient detail.</u>	<u>Lacks sufficient detail</u> to understand the design process.	_____	
RECORD OF TEAM AND PROJECT MANAGEMENT	Provides a <u>complete record of team and project assignments</u> ; team meeting notes including goals, decisions, and building/programming accomplishments; design cycles are easily identified. Resource constraints including time and materials are noted throughout.	Records <u>most of the information listed</u> at the left. Level of detail is inconsistent, or some aspects are missing.	<u>Does not record most of the information</u> listed at the left. Not organized.	_____	
NOTEBOOK FORMAT	Five (5) points if the notebook has evidence that documentation was done in sequence with the design process. This can take the form of dated entries with the names of contributing students included and an overall system of organization. For example, numbered pages and a table of contents with entries organized for future reference. Partial points may be awarded if this is inconsistent or incomplete.			ZERO POINTS (DOES NOT MEET CRITERIA) If awarding zero points, please include details in the "NOTES" area below	
NOTES: 				TOTAL POINTS _____	

All judging materials are strictly confidential. They are not shared beyond the Judges and Judge Advisor and shall be destroyed at the end of the event.

Team Interview Rubric

Team # _____ Grade Level ES | MS | HS | University Judge Name _____

Directions: Determine a point value that best characterizes the content of the Team Interview for that criterion. Write that value in the column to the right.

CRITERIA	PROFICIENCY LEVEL			POINTS
	EXPERT (4-5 POINTS)	PROFICIENT (2-3 POINTS)	EMERGING (0-1 POINTS)	
ENGINEERING DESIGN PROCESS	Team shows evidence of multiple engineering design cycles including independent inquiry <u>from the beginning stages</u> of their design process. This includes brainstorming, testing, and exploring alternative solutions.	Team shows evidence of independent inquiry for <u>some elements</u> of their design process.	Team <u>shows little to no evidence</u> of independent inquiry in their design process.	_____
GAME STRATEGIES	Team can fully explain their <u>entire</u> game strategy including game analysis.	Team can explain their current strategy with <u>limited evidence of game analysis</u> .	Team <u>did not explain</u> game strategy/strategy is not student-directed.	_____
WORKCELL DESIGN	Team can <u>fully explain</u> the progression of their workcell design, detailing the specific decisions and actions that shaped the final design	Team can provide a <u>limited description</u> of why the current workcell design was chosen, but shows limited evolution.	Team <u>did not explain</u> workcell design, or design is not student-directed.	_____
WORKCELL BUILD	Team can <u>fully explain</u> their workcell construction . Ownership of the workcell build is evident.	Team can describe why the current workcell design was chosen, but with <u>limited explanation</u> .	Team <u>did not explain</u> workcell build, or build is not student-directed.	_____
WORKCELL PROGRAMMING	Team can <u>fully explain</u> the evolution of their programming.	Team can describe how the current programs work, but with <u>limited evolution</u> .	Team <u>did not explain</u> programming, or programming is not student-directed.	_____
CREATIVITY/ ORIGINALITY	Team can describe creative aspect(s) of their workcell with clarity and detail.	Team can describe a creative solution but the answer lacks detail.	Team has difficulty describing a creative solution or gives minimal response.	_____
TEAM AND PROJECT MANAGEMENT	Team can explain <u>how team progress was tracked against an overall project timeline</u> . Team can explain management of material and personnel resources.	Team can explain <u>how team progress was monitored</u> , and some degree of management of material and personnel resources.	Team <u>cannot explain how team progress was monitored</u> or how resources were managed.	_____
TEAMWORK, COMMUNICATION, PROFESSIONALISM	<u>Most or all team members contribute to explanations</u> of the design process, game strategy, and other work done by the team.	<u>Some team members contribute to explanations</u> of the design process, game strategy, and other work done by the team	<u>Few team members contribute to explanations</u> of the design process, game strategy, and other work done by the team.	_____
RESPECT, COURTESY, POSITIVITY	Team consistently interacts respectfully, courteously, and positively in their interview.	Team interactions show signs of respect and courtesy, but there is room for improvement.	Team interactions lack respectful and courteous behavior.	_____
SPECIAL ATTRIBUTES AND OVERALL IMPRESSIONS	Does the team have any special attributes, accomplishments, or exemplary effort in overcoming challenges at this event? Did anything stand out about this team in their interview? Please describe: 			TOTAL POINTS _____
NOTES: 				

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