2022 REC FOUNDATION COACH SUMMIT

JUDGING: AN INTEGRAL PART OF REC FOUNDATION COMPETITIONS
Carol Kujawa and Ben Mitchell
BEFORE WE BEGIN
BEST PRACTICES

This is for YOU - the Coaches. Please ask questions when you have them.

- Utilize the Chat
- Share Pro Tips
- Take Breaks
- Ask Questions in the Chat
- Be Respectful
JUDGING INTEGRAL TO REC FOUNDATION PROGRAMS

TAKEAWAYS FOR COACHES

- Why Judging?
- How your team can prepare for judging
- Engineering Notebook and Team Interview best practices
- Differentiation between judged awards
The Judging Process gives students an opportunity to:

- practice written communication skills through the Engineering Notebook
- practice verbal communication skills through the Team Interview
- demonstrate the values of the REC Foundation Code of Conduct and Student-Centered policies

Judging recognizes and celebrates what teams have learned and the hard work they have put into the robotics competition as an educational activity

Judged awards can qualify teams to higher levels of competition
STUDENT CENTERED
TEAMS SHOULD KNOW AND UNDERSTAND

STUDENT-CENTERED LEARNING
Students actively involved in learning to increase knowledge and skills under the guidance of adult mentorship

STUDENT-CENTERED APPLICATION
Student ownership of robot design, build, programming and utilization

CODE OF CONDUCT
Act with integrity, honesty, reliability, courtesy and respect of others
Exhibit maturity and class in difficult and stressful situations
Good sportsmanship
THE ETHOS OF JUDGING

CORE PRINCIPLES FOR TEAMS

● A team that earns an award should be Student-Centered
● A team that earns an award should abide by the REC Foundation Code of Conduct
● The Team Interview is a conversation between students and judges - it is not a prepared presentation
● The Interview and Notebook are genuine reflections of student work
● The Engineering Notebook is developed by the team, for the team - not a “presentation notebook” designed for the judges to look at
● There is no magic formula for winning an award
● Each award is a worthy accomplishment in its own right - no award should be seen as a consolation prize
QUICK JUDGING OVERVIEW
A TEAM-CENTRIC VIEW OF THE JUDGING PROCESS

TEAM TRACK
- Engineering Notebook Submissions
- Team Interviews and Matches
- Finals Matches

JUDGE TRACK
- Engineering Notebook Judging
- Team Interviews and Observations
- Deliberations and Observations
- Awards
KNOW BEFORE YOU GO!

- Read and understand the Student Centered and Code of Conduct Policies
- Read and understand the Judge Guide
- Review the Team Interview Rubric, the Engineering Notebook Rubric, and the Award Descriptions
- Two components of Judging at events
  - Engineering Notebook evaluation
  - Judged team interview (10-15 minutes)
- Have students self-evaluate their notebook throughout the season
- Conduct mock interviews and notebook reviews with trusted adults
- Do the Skills Challenges at events - Match rankings (qualification and Skills Challenges) factor into the Excellence Award
- Manage expectations - it is possible to do everything ‘right’ and still not earn an award

HOW TO PREPARE FOR JUDGING
● Highlighted the **Engineering Design Process** Criteria in criteria list

● Teams earn 5 points for evidence that Notebook creation is contemporaneous with the design process

● Format-neutral verbiage applies to both bound and digital notebooks alike

● Cleaner formatting

● More instructive language for ease-of-use by judges and to help teams prepare
IDENTIFY THE PROBLEM
At the start of each design cycle, identify the game and robot design challenges in detail, using words, pictures, and diagrams. State goals for accomplishing the challenge.

REPEAT DESIGN PROCESS
Show that the design process is repeated multiple times to improve performance on a design goal, robot or game performance.

TEST SOLUTION
Record all steps in detail to test the solution. Record the results of testing. Record notes and observations from competition performance.

BRAINSTORM SOLUTIONS
List three or more possible solutions to the game or robot design challenge with labeled diagrams in detail. Citations provided for ideas from outside sources like videos or other teams.

SELECT BEST SOLUTION
Explain why the solution was selected - by design matrix? by testing? Fully describe in detail the plan to implement the chosen solution.

BUILD AND PROGRAM
Record in detail the steps to build and program the solution. Include enough detail for reader to follow the logic and recreate the design.

ENGINEERING NOTEBOOK
EXPERT PROFICIENCY LEVEL

ROBOTICS EDUCATION & COMPETITION FOUNDATION
Inspiring students, one robot at a time.
ENGINEERING NOTEBOOK

EXPERT PROFICIENCY LEVEL

USEABILITY AND COMPLETENESS
Record the entire design and development process in such clarity that the reader could recreate the project’s history.

RECORD OF TEAM AND PROJECT MANAGEMENT
Provide a complete record of team and project assignments.
- Provide team meeting notes including goals, decisions, and accomplishments.
- Project timeline and design cycles are easily identified.
- Resource constraints including time and materials are noted throughout.

NOTEBOOK FORMAT
The Notebook has evidence that the documentation was done in sequence with the design process.
- Signed and dated entries written in ink (for bound notebooks), or validated revision history (generated by digital platforms).
- Notebook includes a Table of Contents.
These are the minimum daily notebook entries for robotics students.

1. The Title is the type of work (or information) on that page. The Title should be on the top of every page the students worked.

2. The date the work was done. The Date should be on the top of every page the students worked.

3. The team members who are there and what they are assigned to. This should be entered once at the beginning of their day.

4. The work done that day. It can be text, drawings, or photos of any building; the code printout for any programming; or the results of any practice matches or other tests.

   Drawings and photos should have a title (or caption) with labels of important items.

   Sign and date any items taped into the notebook.

5. “X-out” any empty space, team members that were there sign in the signature area, and date the closing of the page.

   Have a Coach or Mentor witness the page.

Source: R. Miller - Engineer, Team Mentor, Key Volunteer and Judge Advisor - Tuesday Tech Talks, October 20, 2020
BEST PRACTICES ENGINEERING NOTEBOOK

- Table of Contents filled out with title and page number(s)
- Every page needs to be numbered with date and full signatures of team member(s)
- Use full names when signing each page
- Photographs of the team are good
- All team members should add comments to the Notebook
- All notes and decisions from team meetings detailed in the Notebook
- Citations from online videos, other teams, competitions should be included
- Notebooks had awesome sketches where we could tell what we were looking at
- Code changes should stay in chronological order with the robot build throughout the Notebook
- In general, when anything is changed
  - Describe reason for the change
  - What motivated the change (testing? competition results?)
  - Fully describe the change(s)
  - Describe advantages and disadvantages
  - Write the timeline to complete the change and list updates to the plan
  - Sketches need to be neat and identifiable
  - Repeat this sequence EVERY time a change occurs

Source: Slide with tips from Judge Advisor B. Sweet, 2019-2020 Judge Training presentation by S. Brasher/L. Cruse
BEST PRACTICES ENGINEERING NOTEBOOK

Source: https://www.roboticseducation.org/teams/vex-iq-competition/
https://www.roboticseducation.org/resources_library/sample-vrc-design-notebook/
UPLOAD THE ENGINEERING NOTEBOOK

- Robotevents.com > Login > “My Account”
- Digital Engineering Notebook upload button is found to the right of each registered team on Account Dashboard
- Enter **full URL** to the team’s Engineering Notebook
- Ensure sharing settings **do not require login credentials** to view
- If link requires login credentials to view, an error message will appear and the sharing settings of the link must be modified to clear the error message
- The notebook link is in the system when it appears in blue below
- Options to disable or delete the link appear after the link has been posted
- The link should allow viewing the notebook without requesting permission or requiring huge files to be downloaded
### TEAM INTERVIEW RUBRIC

**UPDATED AND IMPROVED**

- Removed reference to the Engineering Notebook as part of the Team Interview
- Added criteria to represent **all** Judged Awards
- Award names identify which criteria are linked to which awards
- Added criterion for team attributes that may not ‘fit’ other award criteria
- Reworded all criteria descriptions for ease of use by judges and for teams to prepare
- Added space for notes

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>EXPERT</th>
<th>PROFICIENT</th>
<th>EMERGING</th>
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<tbody>
<tr>
<td>TEAM INTERVIEW RUBRIC</td>
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<td>TEAM AND PROJECT MANAGEMENT</td>
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<td>ENGINEERING DESIGN PROCESS</td>
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<td>ROBOT DESIGN</td>
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<td>ROBOT BUILD</td>
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<td>ROBOT PROGRAMMING</td>
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<td>TECHNICAL INTEGRATION</td>
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<td>SOCIAL RESPONSIBILITY</td>
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<tr>
<td>SPECIAL ATTRIBUTES</td>
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**NOTES:**

All judging materials are strictly confidential. They are not shared beyond the Judging Advisory and shall be destroyed at the end of the event.
TEAM INTERVIEW

EXPERT PROFICIENCY LEVEL

ENGINEERING DESIGN PROCESS
Students clearly explain all aspects of the design process.

GAME STRATEGIES
Students explain the entire evolution of their game strategy.

ROBOT DESIGN
Students can fully explain the evolution of their robot design to the current design.

ROBOT BUILD
Students can fully explain their robot construction, and ownership of the robot build is evident.

ROBOT PROGRAMMING
Students can fully explain the evolution of their programming.
TEAM INTERVIEW
EXPERT PROFICIENCY LEVEL

TEAM AND PROJECT MANAGEMENT
Students can explain how team progress was tracked against an overall project timeline, students can explain management of material and personnel resources.

TEAMWORK, COMMUNICATION, PROFESSIONALISM
Students can explain how multiple team members contributed to the robot design and game strategy. All students answer questions independently.

RESPECT, COURTESY, POSITIVITY
Students answer respectfully and courteously. Students make sure each team member contributes. Students wait to speak until others have finished.

SPECIAL ATTRIBUTES
Special attributes, accomplishments, or exemplary effort in overcoming challenges at the event.
**WHAT ARE THE JUDGED AWARDS?**

**THE REQUIRED AWARDS**

<table>
<thead>
<tr>
<th>DESIGN AWARD (Engineering Notebook Required)</th>
<th>EXCELLENCE AWARD (Engineering Notebook Required)</th>
<th>JUDGES AWARD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Be at or near the top of Engineering Notebook Rubric rankings</td>
<td>All Design Award criteria, plus:</td>
<td>Team displays special attributes, exemplary effort, and perseverance at the event</td>
</tr>
<tr>
<td>Exhibit a high-quality team interview</td>
<td>Be ranked in the top 10 or top 30% of teams in Qualification Rankings</td>
<td>Team <strong>overcomes an obstacle or challenge</strong> and <strong>achieves a goal or special accomplishment</strong> at the event</td>
</tr>
<tr>
<td>Team demonstrates effective management of time, talent, and resources</td>
<td>Be ranked in the top 5 or top 20% of teams in Robot Skills Rankings</td>
<td>Earned by a team that distinguishes themselves in some way that may not fit in other award categories</td>
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<tr>
<td>Team interview demonstrates their ability to explain their robot design and game strategy</td>
<td>Be a candidate in consideration for other Judged Awards</td>
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## WHAT ARE THE JUDGED AWARDS?

### OPTIONS FOR EVENTS

<table>
<thead>
<tr>
<th>Award</th>
<th>Description</th>
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<tr>
<td><strong>INNOVATE AWARD</strong></td>
<td>Recognizes an effective and well documented design process. The team who earns this award should be among the top contenders for the Design Award. The submission of an Engineering Notebook is a requirement for the Innovate Award.</td>
</tr>
<tr>
<td><strong>THINK AWARD</strong></td>
<td>Recognizes the most effective and consistent use of coding techniques and programming design solutions to solve the game challenge.</td>
</tr>
<tr>
<td><strong>AMAZE AWARD</strong></td>
<td>Recognizes a consistently high-performing and competitive robot.</td>
</tr>
<tr>
<td><strong>BUILD AWARD</strong></td>
<td>Recognizes a well-constructed robot that is constructed with high attention to detail to hold up to the rigors of competition.</td>
</tr>
<tr>
<td><strong>CREATE AWARD</strong></td>
<td>Recognizes a creative engineering design solution to one or more of the challenges of the competition.</td>
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<tr>
<td><strong>ENERGY AWARD</strong></td>
<td>Recognizes outstanding enthusiasm and excitement at the event.</td>
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<tr>
<td><strong>INSPIRE AWARD</strong></td>
<td>Recognizes passion for the competition and positivity at the event.</td>
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<tr>
<td><strong>SPORTSMANSHIP AWARD</strong></td>
<td>Recognizes a high degree of good sportsmanship, helpfulness, and positive attitude both on and off the competition field.</td>
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**Note:** Full Award Descriptions Are Found In the Judge Guide
Thumbnail descriptions of each Judged Award for quick reference and side-by-side comparison

Interview Checklist and Best-Practice Interview Tips facilitate consistency among interviews... all on one page!!
IN SUMMARY

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- A team that earns an award should abide by the REC Foundation Code of Conduct
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