

Team Attributes (TA)

REQUIRED TEAM ATTRIBUTE (TA) QUESTION:

CONNECT:

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| REQUIRED | 1 | Team must describe, display, or document a team plan that covers all of the following : A. The team's goals for the development of team member skills, and B. The steps the team has taken or will take to reach those goals |
| ENCOURAGED | 2 | Provide examples of developing in person or virtual connections with individuals in the engineering, science, or technology community. |
| ENCOURAGED | 3 | Provide examples of how it actively engages with the engineering community. |

REACH:

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| REQUIRED | 1 | Team must discuss, describe, display, or document their outreach objectives and how their outreach activities support the FIRST community. |
| REQUIRED | 2 | Team must discuss, describe, display, or document their successful recruitment of new teams, or coaches, or mentors and/or volunteers who are not otherwise active within the FIRST community. |
| ENCOURAGED | 3 | Is an ambassador for FIRST programs in a way that makes FIRST loud. |
| ENCOURAGED | 4 | Has a creative and evolving approach to outreach materials that market their team and FIRST. |

SUSTAIN:

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| REQUIRED | 1 | Team must discuss, describe, display, or document their plan(s) which includes at least one of the following: A. finances and financial sustainability plan, B. season project planning, and/or C. team sustainability plans and/or objectives. |
| REQUIRED | 2 | Team must discuss, describe, display or document how a team tracks their progress towards their plan(s) listed above. |
| ENCOURAGED | 3 | Team has clear team roles for all members of the team and a process for developing leadership |
| ENCOURAGED | 4 | Team can discuss, describe, display, or document how they manage the team's constraints and/or risks |

Make notes on reverse side

MACHINE, INNOVATION, AND CREATIVITY (MCI)

REQUIRED MACHINE, INNOVATION, AND CREATIVITY (MCI) QUESTION:

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INNOVATE:

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| REQUIRED | 1 | Team must describe, display, or document examples of the team's engineering content that illustrate how the team arrived at their design solution. |
| REQUIRED | 2 | ROBOT or ROBOT MECHANISM is creative and unique in its design. |
| REQUIRED | 3 | The innovative element must be stable, robust, and contribute positively to the team's game objectives most of the time. |
| ENCOURAGED | 4 | Designs often come with risks, the team should discuss, describe, display or document how they mitigated that risk |

CONTROL:

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| REQUIRED | 1 | Team must submit a PORTFOLIO. The PORTFOLIO must include all of the following : A. hardware and/or software control COMPONENTS on the ROBOT, B. which challenges each COMPONENT or system is intended to solve, and C. how does each COMPONENT or system work |
| REQUIRED | 2 | Team must use one or more hardware or software solutions to improve ROBOT functionality by using external feedback and control. |
| ENCOURAGED | 3 | The control solution(s) should work consistently during most MATCHES. |
| ENCOURAGED | 4 | Team could describe, display, or document how the solution should consider reliability either through demonstrated effectiveness or identification of how the solution could be improved |
| ENCOURAGED | 5 | Use of the engineering process to develop the control solutions (sensors, hardware and/or algorithms) used on the ROBOT includes lessons learned. |

DESIGN:

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| REQUIRED | 1 | A team must be able to describe or demonstrate how their ROBOT is elegant, efficient (simple/executable), and practical to maintain. |
| REQUIRED | 2 | The entire machine design, or the detailed process used to develop the design, is worthy of this recognition, and not just a single COMPONENT. |
| ENCOURAGED | 3 | The ROBOT distinguishes itself from others by its aesthetic and functional design. |
| ENCOURAGED | 4 | The basis for the design is well considered (that is inspiration, function, etc.). |
| ENCOURAGED | 5 | Design is effective and consistent with team's game plan and/or strategy. |

Make notes on reverse side

Think Award

☐ **Team submitted a PORTFOLIO**
(Required for this award)

Team Number: _____

Team Name: _____

Judge's Name: _____

THINK:

| | | |
|------------|---|---|
| REQUIRED | 1 | Team must submit a PORTFOLIO. The PORTFOLIO must include engineering content which includes at least one of the following: A. evidence of use of the engineering process, B. lessons learned and implemented related to the design of their ROBOT C. trade off analysis /cost benefit analysis, and/or D. mathematical analysis used to make design decisions. |
| ENCOURAGED | 2 | Team PORTFOLIO may include information about resources which includes any number of the following examples: A. how the team learns from team mentors, and/or a development plan for team members to learn new skills, B. how the team recruited new people into <i>FIRST</i> , and/or C. how the team identified goals and tracked progress towards their goals throughout the season. |
| ENCOURAGED | 3 | PORTFOLIO information is organized in a clear and intuitive manner. |

Questions

(Not required to ask of the teams but items to ask yourself as you review the team's portfolio):

- Did the team describe the engineering process(es) used in designing their robot?
- Did the team document how their robot improved throughout the season?
- How did the team decide what aspects needed to be improved - did they use data or any analysis?

Notes: