Regional Championship Information

December 4th-6th
North Dakota State University
Fargo Civic Center
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Dear coaches, mentors, team members and guests,

Congratulations on qualifying for the Northern Plains BEST Regional! You have already proven your skills and abilities to get to this point through your robot design, notebook writing, team exhibit design, and marketing presentation delivery. We are very proud of your accomplishments…and you should be too!

North Dakota State University is proud to welcome you to Fargo, ND for the Northern Plains BEST Regional Competition. It may be cold in Fargo in December…but please know that our welcome will be warm as we strive to make this a memorable and pleasurable experience for each of you. (That being said, you may still want to bring a warm coat!) 😊

We are providing this championship handbook to assist you in your preparations for Northern Plains BEST. Please don’t hesitate to contact us with additional questions in the weeks leading up to the event.

Again, congratulations to each of you and best of luck in the regional competition!

Sincerely,

Nancy Rossland
Co-Director
Northern Plains BEST

Alan Kallmeyer
Co-Director
Northern Plains BEST

Holly Erickson
Co-Director
Northern Plains BEST
PLEASE NOTE: The times listed in this schedule are subject to slight changes, but the overall series of events will remain as indicated.

**Thursday, December 4th** *(All events are in the Fargo Civic Center, unless otherwise noted)*

3:00 PM – 6:00 PM  Team Check-In, Outside of Centennial Hall  
Team Exhibit Set-up, Centennial Hall

6:00 PM  Project Engineering Notebooks Due, Team Check-In Table

**Friday, December 5th** *(All events are in the Fargo Civic Center, unless otherwise noted)*

6:30 AM – 8:30 AM  Team Check-In, Outside of Centennial Hall  
Team Exhibit Set-up for Late Arrivals, Centennial Hall

9:00 AM – 5:00 PM  Practice Driving & Compliance Checks, Arena  
*Sign up for practice times at team check-in table (before 8:30 AM) or in the Arena (after 8:30 AM)*

8:30 AM – 12:10 PM  Team Exhibit & Interview Judging, Centennial Hall  
*Specific judging times will be assigned*

Lunch on your own  
*Concessions will be available in the Civic Center*  
*No outside food or drink may be brought into the Civic Center*

12:15 PM – 1:15 PM  Women in Engineering Luncheon, Howard Johnson Banquet Room  
*Seating will be limited*  
*Please RSVP by November 21st with your requested number of spaces to the Google Doc link provided or by clicking [here](#). Based on the demand, we will accommodate as many of the requests as possible.*

1:30 PM  Team T-shirt Award Entries Due, Team Check-In Table, Outside of Centennial Hall

1:30 PM – 5:30 PM  Marketing Presentation Judging, Centennial Hall Lower Level  
*Specific judging times and rooms will be assigned*

1:30 PM – 3:30 PM  Team Exhibit Teardown, Centennial Hall
5:45 PM – 6:30 PM  **MANDATORY Drivers Meeting, Arena**  
*Attendance at this meeting is required for anyone who will be in the pit or on the field during the competition.*

6:30 PM – 9:00 PM  **Northern Plains BEST Extravaganza, Centennial Hall**  
*More details to come…*

* All robots **MUST** go through compliance check on Friday and all robots will remain in the pit area overnight on Friday. Compliance will re-open on Saturday morning from 7:00 – 8:00 AM for any final inspections.

**Saturday, December 6**

*All events are in the Fargo Civic Center - Arena*

- **7:00 AM**  
  - Doors Open  
  - Pit Area Opens

- **7:00 AM – 8:00 AM**  
  - Final Robot Compliance Check

- **8:30 AM – 9:00 AM**  
  - Opening Ceremony

- **9:00 AM – 4:00 PM**  
  - Blade Runner Robot Matches
  
  *Lunch on your own*  
  *Concessions will be available in the Civic Center*  
  *No outside food or drink may be brought into the Civic Center*  

- **4:00 PM (estimate)**  
  - Awards Ceremony  
  *ALL teams must be present!*
**2014 Team Information Form**

**Deadline for Form Submission**
This completed form must be e-mailed (sher.eberle@ndsu.edu) or faxed (701.231.8957) as soon as possible, or received no later than Friday, November 7th, 2014.

Team Number: __________ School Name: _____________________________________  
(as it should appear on all printed materials)

Hub (check one):
- ❏ Bison BEST (Fargo, ND)
- ❏ Blue Hawk BEST (Dickinson, ND)
- ❏ Penn State DuBois BEST (DuBois, PA)
- ❏ Falcon BEST (Bowling Green, OH)
- ❏ Jackrabbit BEST (Brookings, SD)
- ❏ Minnesota BEST (New London, MN)
- ❏ Wolverine BEST (Grove City, PA)

<table>
<thead>
<tr>
<th>Primary Teacher</th>
<th>E-mail</th>
<th>Cell #</th>
</tr>
</thead>
<tbody>
<tr>
<td>School Mailing Address</td>
<td>City, State/Zip</td>
<td></td>
</tr>
<tr>
<td>School Phone</td>
<td>Hometown Newspaper</td>
<td></td>
</tr>
</tbody>
</table>

The majority of communication for Northern Plains BEST will be done via email. Please list any additional email addresses for other teachers or mentors who should receive competition updates.

**BEST Award Registration**

Teams are eligible to participate in the BEST Award at Northern Plains BEST only if they participated in the BEST Award at their local competition.

_____ I confirm that our team **WILL NOT** participate in the BEST Award at Northern Plains BEST

_____ I confirm that our team **WILL** participate in all categories of the BEST Award at Northern Plains BEST
# Lodging Options

<table>
<thead>
<tr>
<th>Hotel Name</th>
<th>Address</th>
<th>Phone Number</th>
<th>Website</th>
<th>Details</th>
</tr>
</thead>
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<tr>
<td>Best Western Plus Kelly Inn &amp; Suites</td>
<td>1767 44th Street South</td>
<td>701-282-2143</td>
<td><a href="http://www.bestwesternfargo.com">www.bestwesternfargo.com</a></td>
<td>Sleeping room rate of $121.99 Single/Standard, Sleeping room rate of $139.99 Suites, NDSU Northern Plains BEST Regional, Guaranteed until November 19th</td>
</tr>
<tr>
<td>Days Inn Airport Dome</td>
<td>1507 19th Avenue North</td>
<td>701-232-0000</td>
<td><a href="http://www.daysinn.com">www.daysinn.com</a></td>
<td>Sleeping room rate of $82.99, BEST Robotics, Guaranteed until November 12th</td>
</tr>
<tr>
<td>Days Inn</td>
<td>3431 14th Avenue South</td>
<td>701-235-5566</td>
<td><a href="http://www.daysinn.com/hotel/45392">www.daysinn.com/hotel/45392</a></td>
<td>Sleeping room rate of $83.99, Northern Plains BEST Regional, Guaranteed until November 7th</td>
</tr>
<tr>
<td>C.Mon Inn</td>
<td>4338 20th Avenue SW</td>
<td>701-277-9944</td>
<td><a href="http://www.cmoninn.com/fargo">www.cmoninn.com/fargo</a></td>
<td>Sleeping room rate of $94.99, NDSU Northern Plains BEST, Guaranteed until November 12th</td>
</tr>
<tr>
<td>Expressway Suites</td>
<td>4303 17th Avenue South</td>
<td>701-239-4303/877-239-4303</td>
<td><a href="http://www.expresswaysuitesfargo.com">www.expresswaysuitesfargo.com</a></td>
<td>Sleeping room rate of $89.95, Northern Plains BEST Regionals, Guaranteed until November 12th</td>
</tr>
<tr>
<td>Courtyard by Marriott</td>
<td>1080 28th Avenue South, Moorhead</td>
<td>218-284-1000</td>
<td><a href="http://www.courtyardmoorhead.roomstays.com">www.courtyardmoorhead.roomstays.com</a></td>
<td>Sleeping room rate of $109, Northern Plains BEST, Guaranteed until November 5th</td>
</tr>
<tr>
<td>Homewood Suites</td>
<td>2021 16th Street North</td>
<td>701-235-3150</td>
<td><a href="http://homewoodsuites3.hilton.com">http://homewoodsuites3.hilton.com</a></td>
<td>Sleeping room rate of $94.00, Northern Plains Robotics, Guaranteed until November 12th</td>
</tr>
</tbody>
</table>
Lodging Options

**Howard Johnson**
301 3rd Avenue North
701-232-8850
[www.hojo.com](http://www.hojo.com)
- Sleeping room rate of $94
- Northern Plains BEST
- Guaranteed until **November 22nd**

**La Quinta Inn & Suites**
2355 46th Street South
701-499-2000
[www.lq.com](http://www.lq.com)
- Sleeping room rate of $100.00
- Northern Plains Robotics
- Guaranteed until **November 4th**

**My Place Hotel**
2555 55th Street South
701-532-2555
[www.myplacehotels.com](http://www.myplacehotels.com)
- Sleeping room rate of $74.00
- NDSU NPBR
- Guaranteed until **November 24th**

**Ramada Plaza & Suites**
1635 42nd Street South
701-277-9000
[www.ramada.com/fargo](http://www.ramada.com/fargo)
- Sleeping room rate of $129.00 Standard
  - Rooms available Fri. and Sat. Only!
- Sleeping room rate of $149.00 Two-Room Suite
  - Rooms available Fri. and Sat. Only!
- Northern Plains BEST
- Guaranteed until **November 10th**
Contact Information

Regional Co-Director
Nancy Rossland - 701.231.7994; nancy.rossland@ndsu.edu

Regional Co-Director, Technical & Game Coordination
Alan Kallmeyer - 701.231.8835; alan.kallmeyer@ndsu.edu

Regional Co-Director, Team Coordination
Holly Erickson - 701-231-7697; holly.erickson@ndsu.edu

Event & Logistical Coordination
Tiffany Neuharth - 701.231.9767; tiffany.neuharth@ndsu.edu
Sheri Eberle - 701.231.7494; sheri.eberle@ndsu.edu

Awards & Judging Coordination
Briana Nupdal – ndsurobotics@gmail.com

Team & Mentor Coach, Head Referee
Jim Walter – jwalter@702communications.com
Participation Waivers

Every person participating in Northern Plains BEST (including teachers, mentors and students) MUST sign a participation waiver prior to participating in any NP BEST event December 4, 5, and 6. This is an NDSU requirement for individuals participating in a University-sanctioned event.

The following two pages contain two different versions of the participation waiver:

- Participants UNDER the age of 18 (requires the signature of the parent/guardian and a witness)
- Participants 18 years of age or OLDER (requires the signature of the participant and a witness)

Please make enough copies of the appropriate version of this waiver such that every participant from your team has a copy to sign. Again, please note that all teachers, mentors and students must sign one prior to competing in NP BEST.

Signed participation waivers for your team must be turned in to the team check-in table when you arrive at the competition.
To be signed by parent/guardian if the participant is under 18 years of age.

Acknowledgement and Assumption of Risk
The undersigned parent and/or legal guardian does hereby acknowledge that he/she is aware of the dangers and the risks to the participant's person and property involved in participating in:
Northern Plains BEST Robotics Regional Competition located at the Fargo Civic Memorial Auditorium, 207 North 4th Street, Fargo, ND. The dates of the competition are December 4th-6th, 2014. This competition is hosted by the College of Engineering.

The undersigned parent and/or legal guardian and participant understand that this activity involves certain risks for physical injury to the participant. We also understand that there are potential risks of which may presently be unknown. Because of the dangers of participating in this activity, the undersigned parent and/or legal guardian and participant recognize the importance and the participant agrees to fully comply with the applicable laws, policies, rules and regulations, and any supervisor's instructions regarding participation in this activity. The undersigned parent and/or legal guardian and participant understand that the State of North Dakota (State) does not insure participants in the above-described activity, that any coverage would be through personal insurance, and the State has no responsibility or liability for injury resulting from this activity.

The undersigned parent and/or legal guardian acknowledges that the participant voluntarily elects to participate in this activity with knowledge of the danger involved, and hereby agrees to accept and assume any and all risks of property damage, personal injury, or death.

Waiver of Liability and Indemnification:
In consideration for being allowed to voluntarily participate in the above-referenced event, on behalf of myself, the participant, his/her personal representatives, heirs, next of kin, successors and assigns, the undersigned parent and/or legal guardian forever:

a. waives, releases, and discharges the State of North Dakota and its agencies, officers, and employees from any and all liability for the participant's death, disability, personal injury, property damages, property theft or claims of any nature which may hereafter accrue to the participant, and the participant's estate as a direct or indirect result of participation in the activity or event; and

b. defend, indemnify, and hold harmless the State of North Dakota, its agencies, officers and employees (State), from any and all claims of any nature, including all costs, expenses, and attorney's fees, which may in any manner result from or arise out of this agreement, except for claims resulting from or arising out of the State's sole negligence.

Consent is given for the participant to receive medical treatment, which may be deemed advisable in the event of injury, accident or illness during this activity or event. This release, indemnification, and waiver shall be construed broadly to provide a release, indemnification, and waiver to the maximum extent permissible under applicable law.

I, the undersigned parent and/or legal guardian, affirm that I am freely signing this agreement. I have read this form and fully understand that by signing this form I am giving up legal rights and/or remedies which may otherwise be available to myself, the minor participant regarding any losses the participant may sustain as a result of participation in the activity. I agree that if any portion is held invalid, the remainder will continue in full legal force and effect.

Read Before Signing

Name of Minor: _______________________________ Age of Minor: ________

Name of Parent/Guardian: _______________________________

_________________________________________ Date __________________________
Signature of Parent/Guardian

_________________________________________ Date __________________________
Witness Signature

Return this completed form to the sponsoring department.
Acknowledgement and Assumption of Risk

I am aware of the dangers and the risks to my person and property involved while participating in:
Northern Plains BEST Robotics Regional Competition located at the Fargo Civic Memorial Auditorium, 207 North 4th Street, Fargo, ND. The dates of the competition are December 4th-6th, 2014. This competition is hosted by the College of Engineering.

I understand that this activity involves certain risks for physical injury. I understand that equipment, if any, which may be provided for my protection may be inadequate to prevent serious injury. I also understand that there are potential risks of which I may not presently be aware.

Nevertheless, I voluntarily elect to participate in this activity/class with knowledge of the danger involved, and I hereby agree to accept and assume any and all risks of property damage, personal injury, or death.

The University does not insure participants in the above-described activity and participants who want to be covered must obtain their own insurance. The University asserts lack of responsibility or liability for injury resulting from this activity.

Waiver of Liability and Indemnification

In consideration for being allowed to voluntarily participate in the above-referenced activity and or intramural event, on behalf of myself, my personal representatives, heirs, next of kin, successors and assigns, I forever:

a. waive, release, and discharge the State of North Dakota, its agencies, officers, and employees from any and all negligence and liability for my death, disability, personal injury, property damages, property theft or claims of any nature which may hereafter accrue to me, and my estate as a direct or indirect result of my participation in the above referenced activity or event; and

b. defend, indemnify, and hold harmless the State of North Dakota, its agencies, officers and employees (State), from any and all claims of any nature, including all costs, expenses, and attorney’s fees, which may in any manner result from or arise out of this agreement, except for claims resulting from or arising out of the State’s sole negligence.

I hereby consent to receive medical treatment which may be deemed advisable in the event of injury, accident or illness during this activity or event. This release, indemnification, and waiver shall be construed broadly to provide a release, indemnification, and waiver to the maximum extent permissible under applicable law.

I, the undersigned participant, affirm that I am at least 18 years of age and am freely signing this agreement. I have read this form and fully understand that by signing this form I am giving up legal rights and/or remedies which may otherwise be available to me regarding any losses I may sustain as a result of my participation. I agree that if any portion is held invalid, the remainder will continue in full legal force and effect.

Read Before Signing

Name: ____________________________

Signature ____________________________ Date ____________

Witness Name: ____________________________

Witness Signature ____________________________ Date ____________

Return this completed form to the sponsoring department.
Awards and Judging Guidelines

Robotics Game Awards

Trophies are awarded to the top three teams in the robotics competition. In addition, the fourth place team will also receive a trophy ("Robotics Finalist") recognizing the significant accomplishment of making it to the final championship round of play.

Northern Plains BEST awards plaques in each of the following categories (all teams are eligible):

Founders Award for Creative Design

Awarded to the team that makes best use of the engineering process in consideration of offensive and defensive capabilities in machine design; awarded in recognition of BEST founders Steve Marum and Ted Mahler.

Most Robust Robot

Awarded to the team whose machine requires the least maintenance during and between matches and is generally the sturdiest machine in the competition.

Most Photogenic Robot

Awarded to the team whose machine is the most eye-pleasing and photo-ready. First, second, and third place will be awarded.

Blood, Sweat, and Duct Tape Award

Awarded to the team that displays the most perseverance and hard work in the face of disparity before and during the competition. (In short…this robot takes a lickin' & keeps on tickin'!)

Teamwork Award

Awarded to the team who is displaying cooperative, technically proficient, and successful work accomplished by all members of the team during the competition. First, second, and third place will be awarded.
**T-shirt Design Award**

Awarded for the most original game-specific team t-shirt design. If desired, teams may submit a brief explanation of their design (no longer than one page) with their t-shirt. The explanation sheet should clearly identify the team # and school name and be attached to the t-shirt by pin, clothespin, paperclip, or some similar device. T-shirts will be returned to teams Saturday in the pit area. _T-shirts should be submitted to the team check-in table by 1:30 PM on Friday, Dec. 5th to be considered for judging._ First, second, and third place will be awarded.

**Best YouTube Video Award**

Awarded to the team with the most exciting and informative video posted about the BEST Robotics competition, the school, and the team’s activities. Teams are allowed to submit only ONE video that is a maximum length of 5 minutes long. The video URL must be submitted to the Google Doc provided to teams or that are found on the Northern Plains website, no later than noon on Wednesday, December 3rd. Please make sure your video is complete and active by Friday, December 5th when judging will take place. First, second, and third place will be awarded.

**Best Team Website Award**

Awarded to the team with the most effective and professional website documenting and presenting the team activities and efforts in all categories of the competition. The web address must be submitted to the Google Doc provided to teams or that are found on the Northern Plains website, no later than noon on Wednesday, December 3rd. Please make sure that your web pages are completed and active by Friday, December 5th when judging will take place. First, second, and third place will be awarded.

**Best Simulink Design Award**

Awarded to the team that best applies the “Simulink Support Package for VEX” based on the judging criteria and robot performance in the competition. Each team competing for this award must submit their BEST Simulink model and a short description of your Simulink model (up to 256 characters max). Teams may also choose to submit an optional short YouTube video describing your program. These items are due by 11:00 PM EST on November 30th. The link to submit your model and video is http://www.bestinc.org/simulink_award/form.php. More information can be found on the BEST Inc. website.

Northern Plains BEST will award honors in the BEST Award categories as follows (only BEST Award teams are eligible):

**BEST Award**

- Awarded to the team that best embodies the concept of _Boosting Engineering, Science and Technology_. Winning the BEST Award is considered the highest achievement any team in the competition can accomplish. Trophies recognizing the top 3 overall BEST
Award teams will be awarded. In addition, plaques recognizing 1st – 3rd place in each BEST Award category will be awarded. The BEST Award categories are:

- Project Engineering Notebook (all teams eligible)
- Marketing Presentation
- Team Exhibit and Interview
- Spirit and Sportsmanship

- Ties will be allowed only after detailed review by the judges.

**Team Exhibit Hardhat Award**

Awarded to the team with the most creative, best engineered, and well-built team exhibit.

**Best Team Mascot Award**

Awarded to the team with a mascot who generates the most cheer and excitement. First, second, and third places will be awarded.

**BEST Award Guidelines**

- The BEST Award is presented to the team that best embodies the concept of *Boosting Engineering, Science, and Technology*. This concept recognizes that inclusiveness, diversity of participation, exposure to and use of the engineering process, sportsmanship, teamwork, creativity, positive attitude and enthusiasm, and school and community involvement play significant roles in a team’s competitive experience and contribute to student success in the competition beyond winning an award.

- In accordance with the BEST philosophy, materials submitted by teams must be the work of students. The involvement of student peers in auxiliary roles to support a school’s official BEST team with the documentation – i.e., journalists, photographers, and/or artists – is encouraged.

- To be eligible to compete for the BEST Award at the regional championship, the team must have competed for the BEST Award at their local hub competition.

**Evaluation and Judging Procedures**

**Criteria**

- Evaluation of competitors will be based on the criteria outlined in these guidelines. An evaluation score of a total possible 100 points will be composed of the following:

  1. Project Engineering Notebook submitted in advance of Northern Plains BEST (30 points)
  2. Marketing Presentation on Friday of Northern Plains BEST (25 points)
3. Team Exhibit and Interviews on Friday of Northern Plains BEST (20 points)
4. Spirit and Sportsmanship review on Friday and Saturday of Northern Plains BEST (10 points)
5. Robot Performance on Saturday of Northern Plains BEST (15 points)

**Categories of Competition**

- The team must commit to active participation in all five categories of the BEST Award competition.

**Judging Procedure**

- A distinguished team of judges from private and public sectors with technical and non-technical expertise will evaluate teams. Judges will serve on a rotation schedule.

- Category scores will be the average of individual scores of the judges reviewing each category. In addition, a statistical normalization process will be used to minimize scoring discrepancies between judges. Team scores will be normalized by calculating their “z-score”, which takes into account the mean and standard deviation of the scores from each judge.

- Teams should know in advance that scores among many teams frequently differ by only fractions of a point.

**Category I: Project Engineering Notebook (30 Points)**

- ALL participating teams are required to submit a Project Engineering Notebook in order to compete.

- During the championship, the notebook scores of all teams will be used to determine which four teams will play a wildcard match at the end of the preliminary rounds. The winner of the wildcard match will advance to the semi-final rounds.

**Notebook Guidelines**

- The purpose of the notebook is to document the process the team used to design, build, and test their robot.

- ALL Teams (both BEST Award and non-BEST Award competing teams) are required to submit a Project Engineering Notebook.

- The Project Engineering Notebook **MUST** be received by 6:00 PM on Thursday, Dec. 4th.

- Teams may either deliver their notebook to a specified area at team check-in OR mail the notebook to:
Regardless of the method of submission, the notebook must be received by the specified time or the team will not be eligible to compete.

It is recommended that teams competing in the BEST Award print a hard copy of their notebooks and place it in their Team Exhibit.

The notebook must meet the following specifications:

- Submitted in a standard 3-ring binder with a maximum 2” ring size
- 30 typed single-sided pages or less (note that title page and Table of Contents page will not be counted as part of the 30 pages)
- Research paper: Within the 30 pages, include a description of how the current year’s game theme is related to current technological practices or scientific research (minimum of 2 pages, maximum of 5 pages out of the 30 allotted)
- Binder cover must identify the school, team name, teacher contact, and team number
- Provide description of the process the team used to design and complete its robot
- Standard, 8½” x 11” paper, double-spaced, 1” margins, and Times New Roman (preferred) or similar business-style font no smaller than 12 point. Single-spacing is acceptable in tables and outlines.
- Teams may include a supplemental appendix of no more than 20 pages of information. The appendix may include support documentation used as drawings, photos, organization charts, minutes of team meetings, test results, etc. This material should directly support the process described in the primary document and NOT reflect activities related to community or promotional efforts, spirit development, or team-building.
- Prior to submitting the Notebook, teams must complete the “BEST Team Demographics Form 2014” and include it as the first page of the Notebook. Failure to include this form will result in ineligibility to participate in the competition.
Notebook Evaluation

• The notebook will be judged on the documentation of the team’s:

  • **Implementation of the Engineering Design Process**
    o Evidence that the engineering process was effectively used.

  • **Research Paper**
    o Correlation between game and how the technology is being used at a company/industry/research lab in the team’s state or region; any related information of game theme, such as history, famous inventor(s), or major milestones; creativity in linking game theme to appropriately related science/technology content; proper use of grammar and composition throughout paper; citations of sources used to gather information for paper; staying within 2-5 page limit.

  • **Brainstorming Approaches**
    o How well organized and productive was the brainstorming approach used and documented?

  • **Analytical Evaluation of Design Alternatives**
    o Use of analytical and mathematical skills in deciding upon and implementing design alternatives.

  • **Offensive and Defensive Evaluation**
    o Analysis of gaming strategies and design elements to achieve goals.

  • **Safety**
    o 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.

  • **Support Documentation**
    o CAD / other drawings, photos, organization, team minutes, test results, etc. that support the main document.

  • **Overall Quality and Completeness of Notebook**
    o Team Demographics form completed and included.
    o Organization, appearance, adherence to specifications, quality of content and submission of required Team Demographics Form.

Category II: Marketing Presentation (25 Points)

• Marketing Presentation time slots will be assigned prior to regionals. Presentations will take place on Friday from 1:30 pm to 5:30 pm in the lower level of the Civic Center.
• For the marketing presentation, the team should view themselves as employees of a “company” that is marketing their “product” (robot) to a potential buyer/investors (judges). This marketing team is an integral part of the engineering team that has designed a specialized robot. The marketing presentation should provide information about their company, the engineering team involved in the design and construction of the product, and why their product is the best one on the market that can complete the assigned task. The potential buyer will be assessing the following:

  o The company’s demographics, budget, and operations (e.g., company structure and operations, evidence of diversity of employees, evidence of budget that includes sponsorship and expenditures, etc.)
  
  o The company’s design and manufacturing process (engineering process of “design to market”, including a discussion on the advantages of your company’s robot design)
  
  o Marketing strategies to promote the product (e.g., school and community involvement, promotional efforts, etc.)
  
  o Use of technological resources the company used to accomplish the task (e.g., CAD, programming tools, computer simulation, diagnostic tools, web page development, presentation software, etc.)
  
  o Overall quality of presentation, including adherence to guidelines for this category

**Marketing Presentation Guidelines**

• A minimum of 4 and a maximum of 8 students should actively participate in the presentation.

• An audience will be allowed to quietly observe the presentations. The maximum number of audience members will be 10 per presentation. Preference will be given to the audience members affiliated with the team presenting.

  o Each presentation room will have an official Room Monitor (not a judge) to ensure that the presentation team is not being disturbed or coached by audience members.
  
  o Audience members are not allowed to ask questions during the Q&A session.

• Adults are not allowed to participate, including setting up or taking down equipment for the presentation.

• Representation by student presenters from more than one grade level is encouraged and will be considered in the evaluation as part of the team’s recruitment efforts.
• Videotaping/photographing by team representatives (student team members) will be allowed during the presentation, however, the person(s) handling videotaping/photographing will be counted in the 8 maximum number allowed.

• Audience members may NOT videotape or take photographs during the presentation.

• The presentation format is the prerogative of the team.

• The following equipment is available to all teams in each presentation room: Computer and projector with screen. (Computer will be equipped with PowerPoint and have flash drive and CD drive access) Teams must provide any additional equipment it wishes to use.

**Marketing Presentation Time Breakdown**

• Teams should check in 10 minutes prior to their time slot. The check-in station will be located in the hallway just outside the presentation rooms.

• The order and breakdown for the 25-minute presentation time period is as follows:
  - 5 minutes  Set-up
  - 12 minutes Presentation
  - 5 minutes  Q&A with judges
  - 3 minutes  Break-down and clear room

Note: Teams not requiring set-up or break-down time may utilize that time for their presentation (for a total presentation time of up to 20 minutes).

• It is the responsibility of the team to stay within the time limit for the presentation. The judges will provide a 5 minute, 3 minute, and 1 minute cue for teams.

• Teams are allowed to use their own equipment, however, they should account for the extra time needed to set up their equipment.

**Marketing Presentation Evaluation**

• Presentations will be evaluated with consideration of:

  • **Company Demographics, Budget & Operations**
    - Well-defined roles as company employees/owners/managers; methods of company decision-making; organization of company departments for product development; company demographics; evidence of budget including sponsorship and expenditures

  • **Design and Manufacturing Process (Engineering Design Process)**
    - Brainstorming approaches; game strategy evaluation; analytical evaluation of design alternatives; effective implementation of the engineering process
**Marketing Strategies**
- Publicity efforts to inform school and community of company’s product (e.g. school newsletters, presentations to community and/or school groups, fliers/brochures, posters, press releases, commercials, etc.)

**Use of Available Technology**
- CAD or other drawings; computer programming (e.g., easyC or RobotC); Web page development, computer simulations, use of presentation software

**Quality of Presentation**
- Well organized and prepared; met required specifications; communication skills and professionalism; achieved goal of marketing company’s robot; creativity of format; quality of question and answer session with judges

**Category III: Team Exhibit and Interviews (20 Points)**

- The purpose of the exhibit and interviews category is to creatively:
  
  a. Communicate an understanding of the game theme
  b. Demonstrate how the team has promoted BEST in the school and community

- Team Exhibits will be located at the Fargo Civic Center in the Centennial Hall. Team locations for displays will be assigned by the Northern Plains BEST staff. Teams will be directed to their assigned table at check-in.

- Team Exhibit set-up is on Thursday, December 4th from 3:00 PM – 6:00 PM and Friday, December 5th from 6:30 AM – 8:30 AM. Exhibits should be completely set up and students should be prepared for judges to begin visiting their exhibit by 8:30 AM on Friday. Exhibit judging will be finished by 12:10 PM on Friday.

- Teams will be assigned times for their judging team visits.

- Teams should be sure that their exhibit is clearly marked with school name and team number.

- Teams will be able to tear down team exhibits starting at 1:30 PM on Friday, unless it is announced earlier that it is OK to do so. Tear down of exhibits should be completed by 3:30 PM.

**Exhibit and Interview Guidelines**

- One standard eight foot (approximately 30 inches wide) table will be made available for each team

- There will be no skirting provided for the tables.

- There will be no pipe and drape around exhibits. Exhibit area will be marked on the floor.
• The maximum allowable floor space for team exhibits will be a 10’ X 10’ X 10’ space. The entire exhibit structure must be contained within that area.

• A single electrical outlet will be provided near each exhibit. If a team requires additional outlets, the team must supply their own power strip. **It is required that each team brings at least one extension cord to ensure power to reach their exhibit.**

• Any audio-visual equipment needs and extra extension cords will be the responsibility of the team.

• All material should be clearly marked with the appropriate identification and contact information.

• Although reasonable effort will be made by Northern Plains BEST staff to monitor the exhibit area, each team is responsible for security of its own material.

• Each team is also responsible for breakdown of its team materials and clean-up of its exhibit area starting at 1:30 PM and must be completed by 3:30 PM on Friday.

• Fog machines and strobe lighting are not allowed in booths.

• Heat generating devices are not allowed in booths (e.g., blow dryers, soldering irons, utility lamps, etc.). Standard string/Christmas lights are acceptable.

• Candy and other food or drink items are **not** permitted at Team Exhibits as complimentary handouts.

• Teams should expect to be visited by three different judging teams over the entire judging period.

• Judges may also interview team members in the pit area and seating area.

• During the designated interview time (8:30 AM – 12:10 AM), at least one student representative from the team must be present who is able to respond to informal questions asked about the exhibit. In addition, student representatives should be aware that judges may ask questions concerning robot design and construction. These questions will be part of the interview evaluation of the team.

**Exhibit and Interview Evaluation**

• **Exhibits** (13 points) will be evaluated on:
  
  o Sharing information and/or technology resources, and mentoring other schools, including other BEST teams

  o Presentations and robot demonstrations to other schools and community groups
- Publicity (print materials, media/press) generated within the school and within the community about BEST
- Fundraising and/or sponsorship efforts (strategies used to recruit sponsors, team fund raisers, description of how funds were allocated to support team, team budget information available for review)
- Use of technology, display models or boards, or multi-media at exhibit in promotion of BEST
- Creativity in incorporating game theme into design and presentation of this exhibit
- Compliance with specifications (did not exceed space allocation)

- **Interviews** (7 points) will be evaluated on:
  - Evidence of students’ enthusiasm, learning experience, and understanding of the game theme
  - Evidence that recruitment efforts for the team included multiple grade levels and students from a cross-section of the school population
  - Evidence that students were the primary designers and builders of the robot

**Category IV: Spirit and Sportsmanship (10 Points)**

**Spirit and Sportsmanship Guidelines**

- Judges will evaluate this category throughout the competition.

- They will observe the spirit promoted by the team during the competition rounds as well as the team’s conduct throughout the day in the seating area, team exhibit area, game floor, and pit area. Judges may also consider the teams’ conduct at the entire competition (Saturday, Friday evening, hotels, etc.).

- Teams will also vote for the BEST Award teams they think are demonstrating good spirit and sportsmanship. Points will be awarded for both casting your vote and receiving votes. These points will be factored in along with the spirit and sportsmanship judges’ results to determine a final score for each team. Your team ballots along with further instructions will be provided at team check-in.

**Spirit and Sportsmanship Evaluation**

- Spirit includes the vigor and enthusiasm displayed by team representatives.

- Teams can use posters, props, t-shirts, cheerleaders, musicians, mascots, costumes, and **lower-frequency, lower-intensity** noise-makers to increase the level of spirit.
• Teams are responsible for bringing their own supplies to secure spirit items to arena surfaces.

• Banned noisemakers: air-horns, vuvuzela horns, whistles (and similar high frequency items), amplified sound or amplified instruments.

• The Regional Directors, Awards & Judging Coordinator, and Head Judge have the right to ban any noise-makers that are deemed to potentially cause hearing damage by those in attendance or cause game interference or excessive distraction at Northern Plains BEST.

• Community involvement: number of team supporters present at competition (other than students).

• Sportsmanship includes outward displays of sportsmanship (e.g. helping other teams in need), grace in winning and losing, and conduct and attitude considered befitting participation in sports.

• Overall team sportsmanship is also demonstrated by students (not mentors) making the majority of robot adjustments and repairs during the competition.

• Spirit Sticks: To help facilitate judging on Saturday, each team is encouraged (not required) to bring a “spirit stick” for identification in the seating area. Specifications include:
  o school name and/or team number prominently displayed and visible by judges from a distance
  o maximum of 6 spirit sticks per team
  o maximum height of 8 feet

• Spirit sticks are meant solely as a means of team identification by the judges during the competition. Please do not attach spirit sticks to the seating in the arena.

**Category V: Robot Performance (15 Points)**

• The fifth category, *Robot Performance*, will determine the final 15% of possible BEST Award points. These 15 points will be based on the total game points earned throughout the seeding competition (prior to the semi-final and championship rounds) according to the following scale:

  o Team finishes in top 20% of all teams competing 15 Points
  o Team finishes in top 40% of all teams competing 12 Points
  o Team finishes in top 60% of all teams competing 9 Points
  o Team finishes in top 80% of all teams competing 6 Points
  o Team finishes in top 100% of all teams competing 3 Points
  o Team is unable to score any points during the competition 0 Points

• Up to 15 Robot Performance points will be added to the total BEST Award points.
Additional Information

**Seating at Northern Plains BEST**
Teams may reserve seating blocks upon arrival at the Civic Center Arena on Saturday morning beginning at 7:00 AM. Seats may not be reserved before this time. We ask that teams only reserve the number of seats they need so that all teams can sit together in blocks.

**Results**
Each team will be e-mailed copies of their score sheets following the competition upon request by December 10th to Briana Nupdal at ndsurobotics@gmail.com.
BEST Team Demographics

Submission of this completed form is required as part of the Project Engineering Notebook submitted. We request that it be completed just prior to submission of the notebook for judging.

<table>
<thead>
<tr>
<th>School Name:</th>
<th>City/State:</th>
</tr>
</thead>
</table>

Most correctly describes school location: Rural Urban/City Sub-urban

<table>
<thead>
<tr>
<th>Type of school (check the box):</th>
<th>Public</th>
<th>Private</th>
<th>Home school</th>
<th>Other:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Type of school (check the box):</th>
<th>Middle/Jr. High</th>
<th>High School</th>
<th>K-12</th>
<th>Other:</th>
</tr>
</thead>
</table>

Which most appropriately describes the total student population at your school:

<table>
<thead>
<tr>
<th>1 to 399</th>
<th>400 to 799</th>
<th>800 to 1199</th>
<th>1200 to 2000</th>
<th>greater than 2000</th>
</tr>
</thead>
</table>

Number of students on BEST team by grade:

K - 5th: | 6th: | 7th: | 8th: | 9th: | 10th: | 11th: | 12th: |

Number of students on BEST team by race (optional):

African-American: Asian American: Hispanic: Native American: White: Other:

Total number of students on BEST team:

Number of males: Number of females: 

Total number of students who worked on the robot:

Total male: Total female: 

Total number of students who worked on the BEST Award:

Total male: Total female: 

Approximate number of students on your BEST team likely to pursue careers in engineering, science, math, or technology:

<table>
<thead>
<tr>
<th>Total # of male:</th>
<th>Total # of female:</th>
</tr>
</thead>
</table>

Total number of adult mentors assisting your BEST team (NOT including teachers):

This year, is BEST being integrated into any STEM (Science, Technology, Engineering, Math) curricula at your school? YES NO

As a direct result of participation in BEST, has your school adopted/developed an engineering course(s) or curriculum? YES NO N/A (our school does not offer engineering courses/curr.)

Of the software provided by BEST Robotics, our team/school used the following (check all that apply):

- SolidWorks
- MathWorks Simulink
- easyCv4
- RobotC
- Mathematica
- HSM Works
- InspirTech (SolidWorks Training)
Pit & Match Protocol

Pit Protocol

- There will be a MANDATORY team/driver meeting in the Civic Arena at 5:45 pm Friday evening (12/5) to discuss pit and match protocol.

- All robots MUST go through compliance check on Friday and be left in the Civic Arena overnight until Saturday. The compliance station will be open from 9 am – 5 pm on Friday. The compliance station will open again Saturday morning from 7:00 – 8:00 am for teams that did not pass compliance on Friday; after that, teams must make special arrangements with a compliance official to have their robot checked.

- No team may compete until its robot has passed the compliance check. A green “Compliance” card will be issued to teams once they have passed through compliance. This card must be carried and displayed to the game officials prior to competing in each match. Robots may not leave the Pit or Game area after passing through compliance without prior approval from compliance officials.

- Pit officials will monitor teams throughout the competition to ensure no illegal changes are made to robots after successfully passing the compliance check. If any rule violations are discovered at any time, the Pit Boss will be notified and the green “Compliance” card will be revoked until the robot is brought into compliance. No team may compete without a “Compliance” card. Winning teams may be checked again for compliance after the competition.

- Pit access is limited to four (4) students and one (1) teacher/mentor at any time. Students and teachers/mentors may leave the Pit area at designated entry points and exchange passes with other team members, but no more than four students and one teacher/mentor may be in the Pit at any given time. Pit passes must be worn at all times by team members (yellow passes) and teachers/mentors (green pass) while in the Pit. Pit passes will be on your table in the Pit area on Saturday morning.

- Mentors may assist students with repairs and adjustments to the robot, but must not take over the repairs. The Pit officials will monitor how much work is being done on the robot by the mentors. If a mentor is consistently dominating the work (rather than team members), a warning will be issued by the Pit officials. A second warning will be issued if
this appears to be a pattern. If this persists, the Pit Boss will be notified, the mentor will be escorted from the Pit area, and no other adult may take his/her place.

- No power is supplied to individual team tables in the Pit, but power will be supplied to the Technical Assistance and Battery Charging tables. Except for a power drill/driver and soldering iron, no power tools (including battery operated) will be allowed in the Pit area. Common hand tools are allowed in the Pit area.

- Teams should place their battery chargers (labeled with team name on painters tape) on the Battery Charging table in the Pit area. Batteries must also be labeled with team names (using painters tape). Team members are responsible for monitoring batteries during charging. All matches must be played using the batteries supplied by BEST; team-owned batteries are not allowed on Game Day.

- All teams are responsible to bring their own safety glasses on Game Day. Team members and teachers/mentors working on their robot in the Pit area are required to wear safety glasses.

- The Pit Boss oversees all Pit operations, including compliance and staging. If a team has problems or concerns regarding equipment, personnel, or other teams, they should address them to the Pit Boss, who is the only person designated to handle such concerns. Each team will be issued one Pit pass with a green sticker on it, designating the Team Representative. This student is the ONLY team member authorized to address the Pit Boss with questions or concerns.

**Match Protocol**

- Each team will compete in eight (8) matches during the preliminary rounds; however, if time runs short, this number may be reduced at the discretion of game officials.

- Teams must submit a Driver List with the minimum number of required drivers based on the size of the team (gold form provided at check-in). The Driver List must be turned in at the staging tables by 8:30 am Saturday. Teams will be issued consecutively numbered non-removable wrist bands corresponding to the number of drivers on the list. These bands must be secured on each driver’s wrist in the order of intended driver sequence. Staging officials will check the driver’s wristband at the start of each match to insure the correct order of driver rotation is being followed. The rotation of drivers will continue in the same order for all phases of the competition (i.e. preliminary, semi-finals, and finals). There are no restrictions on spotters.

- Teams should monitor the game display screens to keep track of the matches. During the match prior to your team’s next scheduled match, the driver and spotter must bring the robot to the Staging area and check in with the Staging officials. Teams must present their “Compliance” card to the Staging officials at that time.

- If a team is not at the Staging area when the prior match is over and their match is starting, that team will not compete.
• If two adjacent teams agree to cooperate during a match (Cooperative Game Play Option), both teams must present a co-op card to the referees as the teams enter the field. The referee will place the co-op cards on the appropriate cactus, and the barrier between those teams’ areas will be removed. Once the co-op cards have been provided to the referees, the cooperative status cannot be changed.

• Teams will have no more than 30 seconds to place their robot in the starting box, turn it on, and get into the appropriate driver and spotter areas. It is advised that teams turn on their VEX controllers and joysticks at staging to establish the wireless network connections prior to entering the field.

• When directed by the referees, each team will advance to their respective area on the field. The head referee will begin the 30 second setup time when all teams have reached their starting areas on the field. The match will begin immediately at the end of the 30 second setup time.

• If a team has not finished setting up their robot by the end of the 30 second setup period, they may continue to do so after the match has started. This will result in a 20 second penalty, which will begin after the team has finished setting up their robot. Teams may not touch their robot after it has left the starting area.

• If any game or rule violations are observed by the referees, a 20 second penalty or disqualification may be enforced as specified by the generic or game-specific rules. In this case, the driver in violation must surrender the joystick to the referee for the specified time period.

• If a robot becomes entangled with part of the field or another robot for more than 10 seconds, a referee will untangle the machine(s). The driver and spotter may NOT leave their positions or touch the robot after it has left the starting area.

• At the conclusion of the match, the referees will tabulate the scores. One team member (driver or spotter) must sign the scoring sheet for that match before leaving the playing field. When instructed by the referees, the team members may then remove the robot from the field and return to the Pit area.

• Any concerns or disagreements regarding scoring or game rules should be immediately brought to the attention of the Head Referee by the driver for that match. The Head Referee has final authority on all decisions involving the game rules. Once the team has signed the scoring sheet and left the field, the score for that match becomes final.
# 2014 Northern Plains BEST Regional Robot Compliance Inspection

School Name: ______________________________

School Number: ________

<table>
<thead>
<tr>
<th>Rule</th>
<th>Initial Check</th>
<th>Recheck</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>P F</td>
<td>P F</td>
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<tr>
<td>Robot size may not exceed 24 in × 24 in</td>
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<tr>
<td>Robot weight may not exceed 24 lb</td>
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<tr>
<td>Team name or logo and number must be clearly visible on robot</td>
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<tr>
<td>VEX Cortex controller and VEX battery must be easily accessible and secured to the robot (must use screws for Cortex)</td>
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<tr>
<td>No illegal parts on robot (not on returnable or consumable lists, other than non-functional items)</td>
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<tr>
<td>Returnable parts may not be modified, tampered with, or damaged (except servo horns or belt stock)</td>
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<tr>
<td>No tape/adhesives on returnable parts (other than painters tape to secure wi-fi keys, terminal joints, or label batteries)</td>
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<tr>
<td>No tape/adhesives may be used for traction or gripping (other than friction tape)</td>
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<tr>
<td>No labels or rubber bands may be placed on the joystick</td>
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<tr>
<td>No welding, structural soldering (other than wires), melting, or re-cast materials (reforming ok)</td>
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<tr>
<td>No soldering of wires on Cortex, batteries, or servo wires (wires may be soldered to motor power lugs)</td>
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<tr>
<td>Only motor controllers or servo power adapters may be plugged into Cortex motor ports 2-9 (1 &amp; 10 cannot be used)</td>
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<tr>
<td>No safety hazards or destructive devices on robot</td>
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<tr>
<td>No potential to damage game field or game pieces</td>
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<tr>
<td>Other rule violations</td>
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Compliance Card Issued (√): ____  Compliance Official: ______________________________