2019 Denver BEST Regional Championship Handbook
DECEMBER 7 & 8, 2019

Hosted by
Rocky Mountain BEST
&
Front Range BEST

The v1.2 update includes: a choice to select “No attendance” at optional Saturday activities in Sect 1.3; info about more hotels in Sect. 1.4; a link to order Regional Champion T-shirts & info about photo and scoresheet delivery in Sect. 1.5; and new maps in Sect. 9. The most important change is to move up the deadline for all signups in Sect. 1.3 to Friday, Nov 22 at 5pm MST.
Welcome to the 2019 Denver BEST Regional Championship

We extend our admiration and appreciation to the Colorado, Kansas, Ohio, Oklahoma, Pennsylvania and South Dakota BEST hubs for their outstanding work in bringing this important program to students throughout the country.

We also thank the teachers, mentors, parents, and sponsors of BEST hubs who have given generously of their time, effort, and finances in support of the many students involved in BEST.

Most of all, we congratulate all Denver BEST Regional Championship teams for a job well done!

You’re all winners!

Thanks to our generous Regional Championship Sponsors!

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Kuka Robotics
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PLEASE ALSO see http://www.rockymountainbest.org/regional/. That page has these links
   o Schedule (currently a draft, but getting close)
   o Regional Championship Handbook (that’s this document!)
   o Championship Hotel Info
   o City Attractions for cool things to do in Denver while you are here!
   o Crowne Plaza Convention Center Maps to help you get around
   o Event Volunteers to help understand our volunteer tasks

• 2019 Championship Teams (and please confirm info about your teams is correct).
• 2019 Championship Sponsors
• 2019 Championship Results
• Contact
1 Coach’s To-Do List
We recommend you follow this guide of activities that need to be completed before attending the event.

1.1 Register your team.
   https://forms.gle/dYZ8B76KurVRQBdz7 Use this link to officially register your team and provide lots of useful information.
   
   Please complete ALL steps for registration, including whether you are accepting or declining the invitation. We also need you to confirm team information, your hub, BEST Award status and to provide contact information. Your team number is the same as what you used at your hub competition. Please provide your best estimate of attendees.

1.2 Plan for Engineering Notebook and Other Early Submittals.
   Submittals for these competition components are done via the Google Drive folder link sent by Tami Kirkland. All of these are due no later than Friday, November 22 at 8pm MST. If you have questions, please contact tami.kirkland@bestinc.org.
   
   a. Engineering Notebooks as (1) one pdf file. Engineering Notebooks will be judged online by a team of judges. Linda King, the lead Engineering Notebook Judge will provide score sheets on your team’s Google Drive folder location after the Regional Championship. There will not be an opportunity for teams to negotiate Engineering Notebook scores.
   
   b. Kendrick Castillo Memorial Outstanding Student Award applications. Copy of application is in Section 6 of this handbook.
   
   c. T-Shirt Design submittals. Copy of application and score sheet are in Section 6 of this handbook.

1.3 Select Time Slots for Saturday / Sunday Activities at Regional Championship.
   
   Deadline is Friday, November 22 at 8pm MST.
   
   a. Mandatory Robot Compliance on Saturday, December 7 or Sunday, December 8 using this link: https://signup.com/go/hfeMQRO.
      
      a. Each team must also turn in a Drivers List at Robot Compliance. The Driver’s List is provided in this handbook or can be printed from the BEST National Registry.
      
      b. We assume only a few teams will arrive on Sunday for Late Compliance.
   
   b. Mandatory Team Photos on Saturday, December 7 or Sunday, December 8 using this link: https://signup.com/go/UogLwAV. Team photos will be made available to each team after the event in the Google Drive folder used for your notebook submittal. Again, we assume only a few teams will arrive on Sunday for Late Team Photos.
   
   c. Mandatory signup for Optional attendance at Educational Partner Open House on Saturday, December 7 using this link: https://signup.com/go/UKDTnPT. We have created time slots for teams in an attempt to even the number of attendees at the open house over the 3 hour time frame. This is the perfect opportunity for students, parents, teachers and mentors to meet and chat with representatives from our generous Educational Partner University sponsors. Naturally attendance is not mandatory and attending at a time other than your registered time slot is acceptable. You can select “NO attendance.” option.
   
   d. Mandatory signup for Optional attendance at Saturday, December 7 5:00-7:30pm
Student Mixer with music, food and beverages, games, dance-off, DJ and prize drawings using this link: [https://signup.com/go/HEYVzge](https://signup.com/go/HEYVzge). Teams are asked to provide 1 chaperone for every 10 students. We also ask chaperones to register as volunteers to assist with the Student Mixer fun and games. **Please sign up with 0 students attending if none of your students plan to attend. We need this information to efficiently plan the event (especially food).**

e. **Optional hour Driving Practice** on the game fields on Saturday, December 7 using this link: [https://signup.com/go/CtjHciw](https://signup.com/go/CtjHciw). Two fields are available, so eight teams at a time may practice concurrently. We have worked diligently to make the two game fields as identical as possible. Our intention is to provide an opportunity for drivers and spotters to practice on both game fields and on multiple quadrants. You can select “NO attendance.” option.

f. **Optional submittal of an application** of a student for the Kendrick Castillo Memorial Outstanding Student Award using. One BEST student per team can be nominated by a teacher or mentor. This award will be awarded to a student who is actively mentoring others, communicates well, volunteers in his/her community, and helps their team with presentations, outreach, and robot fabrication. Submittals are due no later than Friday, November 22 at 8pm MST. If you have questions, please contact tami.kirkland@bestinc.org.

g. Teams competing for the **BEST Award** must review the BEST Award Logistics included later in this Handbook and:

   - Select a **Marketing Presentation** time slot using this link: [https://signup.com/go/FQaBmiX](https://signup.com/go/FQaBmiX). It is the responsibility of each team to make sure the marketing presentation team checks in at the table near the presentation rooms 15 minutes prior to the Saturday judging.
   - Select an **Exhibit and Interview** time slot using this link: [https://signup.com/go/NuMWMKP](https://signup.com/go/NuMWMKP). It is the responsibility of each team to make sure the exhibit is set up prior to the start of judging, is staffed on Saturday for judging and at other times when the public may be viewing exhibits, and removes the exhibit when judging has ended. These details are included in Section 4. BEST Award Logistics in this document.

h. Once all teams have signed up for the Mandatory tasks (Robot Compliance, Team Photos, Optional attendance at Student Mixer) as well as BEST Award activities, those signups will be locked and the Championship Director will confirm the schedule with each team. Any team with concerns about their schedule should contact the Championship Director, Carolyn Bauer at Carolyn.bauer@bestinc.org. We have estimated how many teams will attend on Sunday only and may need to adjust the schedule. There may be other adjustments required.

1.4 **Make your hotel and travel arrangements.**


1. Crowne Plaza Denver Airport hotel is the hotel associated with the Convention Center location for the event. They have given us a favorable rate for a minimum of 104 room nights. The room rate includes a breakfast buffet coupon for every morning for guests. Deadline for this rate is November 25.
   
   i. There will be a charge of $6 for guest’s overnight self-parking, discounted $12. Parking fees (payable by credit card as you exit the parking lot) are separate and distinct from room rate and taxes.
2. If you’re booking a bus, check with the company about how long the driver can be on duty without having to take a break. Many states have laws regarding driving-time limitations for bus drivers. Some teams have hired two drivers to accommodate these limitations.
   i. Bus parking is $50/day. Buses are considered any vehicle taking more than 4 parking spots. Parking fees (payable by credit card as you exit the parking lot) are separate and distinct from room rate and taxes.
3. Information about more hotels near the Convention Center is shown at the link above. The website has additional details, costs, and direct reservation links.

1.5 Review this year’s game “TIDBITS” & Q&A updates.
   This is not a complete list of “interesting” topics this year. Nevertheless we will be paying close attention to these particular issues. We may add to this list prior to our competition.
   a. Send all this info to your team members:
      i. BESTique: We will have a number of items things to sell at this event. We’ll have great candy bars, lightning necklaces, and keychains, and holiday items. We will also have wands and rings that have flashing lights that are especially fun during the robot parade when we turn off the lights in the Convention Center.
      ii. We need volunteers! We recognize that student’s parents, grandparents and friends enjoy helping with the event. Please tell them to contact Carolyn.bauer@bestinc.org or tami.kirkland@bestinc.org and we’ll help sign them up for some important tasks.
      iii. Order Regional Championship T-shirts, using this link https://signup.com/go/RpiMONO that you can forward to all your students, parents, etc. Shirts can be viewed, ordered by size, paid for using the link and picked up at team registration in the lobby of the Convention Center. The shirts include BEST logo, hub and school names and are great souvenirs.
      iv. Score Sheets and Photos. We will provide Engineering Notebook and BEST Award Score sheets, team and award photos on your team’s Google Drive folder location after the Regional Championship. Please be patient, because there are a lot of score sheets to scan and a lot of photos to select from.
      v. Educational Partners: We are excited to have these Educational Partners sponsoring our Championship event. We encourage your team and their parents to visit with representatives of these on Saturday afternoon during the Educational Partner Open House.
2 General Information & Important Notes

**NOTE:** an item that is preceded by two asterisks (**) is considered an important note for the team’s attention

**Parking:** Parking at the Crowne Plaza Convention Center is $6/day (half the normal price). Bus parking is for vehicles that take up more than 4 parking spots.

**Registration Check-in:** Before a team can begin the event activities, a teacher or mentor must check in at the Registration Table in the East Lobby of the Convention Center. All teams must check in - even those not participating in BEST Award activities. Teams arriving Sunday must still check-in.

**Access to Non-BEST Areas at the venue:** Please respect our venue host and access only areas in the Convention Center that are marked for the Denver BEST Regional Championship. Please also pay close attention to areas marked specifically for other guests.

**Consent and Release Forms:** We will not have Consent and Release forms or BEST National Registry specifically for the Regional Championship for members of attending teams. This info has already been collected by the hubs.

**Safety Glasses:** Are required by those using hand & power tools, especially in the pit.

**Emergencies and First Aid:** A designated First-Aid station is in the Convention Center Pit.

**Incoming Calls:** Determine one adult who will be responsible for receiving any emergency phone calls coming from home while your team is at the competition. We recommend that families be given the cell phone number of that person. The Crowne Plaza Hotel and Convention Center staff cannot be responsible for such calls.

**Medical Release Form:** Keep a medical release form signed by a parent or guardian for each of the students on your team, in your possession, in case emergency medical treatment is necessary.

**Meetings / Briefings:**
- **Pit Boss Meeting for Teachers / Mentors in Pit (Saturday, 4:00pm):** This is a mandatory meeting for ALL teachers / mentors in the pit with the Pit Boss. The pit boss will explain Pit Protocol – especially for the Sunday Game-related activities. The pit boss will also discuss the Sunday robot parade as part of Opening Ceremonies.
- **Head Referee / Floor Boss / Teacher / Mentor Meeting – Game Field (Sunday, 8:00am):** This is a mandatory meeting for ALL teachers / mentors with the Head Referees and Floor Bosses. This will be the last opportunity for teachers / mentors to discuss the rules or get clarification about the game.
- **Head Referee / Floor Boss / Driver Meeting – Game Field (Sunday, 8:25am):** This is a mandatory meeting for ALL team drivers with the Head Referees. This will be the last opportunity for teams to discuss the rules or get clarification about the game.
- **Robot Parade- Opening Ceremony (Sunday, 8:45am):** Each team must have three team members & your robot line up (with a team sign we provide) in the Pit for a robot parade which is part of opening ceremonies.
**Opening Ceremony (Sunday)**

- By 8:45am -- We will prepare for Opening Ceremonies by moving everyone into the bleachers except for students and volunteers participating in Opening Ceremonies (and robot parade).
- By 8:55am - Three members of each team will line up in the pit in preparation for the opening ceremonies (teams will line up in team number order). One team member will carry the robot; one will carry the team sign (we have printed signs for photos and parade); one will wave to the audience and make sure team members are safe.
- At 9:00am - Opening ceremonies begin with a short welcome to the event and Denver.
  - Next is the robot parade during which each team will pause at the entrance of the main arena to be introduced to the audience. They will be guided into the arena, between the game fields and guided left or right to line up in front of the game fields.
  - We will complete the opening ceremonies with a color guard and national anthem.
  - Parade members will be asked to immediately return their team sign to the photography station to the left of the scoring tables in Salons A/B and to return their robot to their table in the pit.
    - If playing the first 2 matches, the teams will place robots onto the Staging Tables (Match 1: by the game fields) or (Match 2: in the pit).

**Cheerleaders, Mascots, Music, and Noise-Makers:** Teams are encouraged to bring their cheerleaders, pep squads, mascots, and musicians to rally behind them at the competition. Pep bands and cheers are limited to short musical pieces just before or after their team’s match (as are cow bells and similar noise-makers). Whistles, air horns and other similar high intensity noise-makers are prohibited inside the Convention Center. In addition, the BEST and venue staff has the right to ban any noise-makers that are deemed as a hearing hazard to those in attendance.

**Code of Student Conduct:** Denver BEST expects teams and supporters accompanying them to conduct themselves in an appropriate manner while participating in the Championship. This includes all activities associated with their participation in the event.

- Appropriate conduct of teams and supporters is the sole responsibility of school officials and other adult chaperones that have legal responsibility as supervisors.
- Students should be under the supervision of school officials or chaperones during all excursions and competition activities, and in hotels and restaurants.
- Students who violate the conduct code at any point during this event are subject to suspension from remaining competition activities.
- Denver BEST reserves the right to refuse participation in future competitions, to any team whose behavior has been disruptive.

**Inappropriate conduct includes, but is not limited to, the following:**

- Property damage, vandalism, or theft.
- Appropriation of Denver BEST memorabilia.
- Use of alcohol or illegal drugs.
- Use of water pistols, water balloons, or other creative missiles.
- Fighting or loud/foul language or other disruptive/rude behavior.
- Disruptive and excessive noise during activities other than the actual competition.
- Distractive apparel that displays design or language of a crude nature.
Financial liability for all damages or losses incurred by actions of team members and supporters shall be the sole responsibility of the team/school.

**Equipment & Materials Tagging:** We recommend that teams label or tag ALL equipment—for team exhibits, marketing presentations, and equipment in the pit. Teams should label and/or tag their battery chargers, batteries, and any other equipment and/or materials that will be used at either their pit table or the battery charging station. Likewise, tools used at the team’s table should be tagged or marked. Denver BEST does not assume responsibility for stolen or lost equipment.

**Food:** Teams should not bring their own food and beverages into the Convention Center, but food can be kept and served in your hotel rooms. We strongly suggest teachers / mentors have a plan for lunch for their teams during the Sunday lunch break!

- The Crowne Plaza hotel has these restaurants near the main entrance. This is the menu [link](#).
  - Terrace Restaurant – breakfast, lunch, dinner, dessert (6am-2pm & 5pm -10pm)
  - Atrium Lounge & Bar – lunch, dinner (4pm-12am)
- Food, beverages and cookies will be provided to students and chaperones attending the Saturday evening Student Mixer from 5:00-7:30pm. We will have gluten free, vegan and vegetarian choices.
- **You can find several choices for fast food** within an 8 minute walking distance along Chambers Rd: Wendy’s, Starbucks, Popeyes, Long John silver, Pizza Hut, KFC, Sonic and a Circle K.
- **A few near-by restaurants that accept larger groups** include:
  - Texas Roadhouse, 8470 E, Northfield Blvd, Denver, CO 80238
  - Game Works Denver. Large arcade with restaurant and bar. Laser Tag available. Northfield Stapleton
  - Torchy’s Tacos is famous! Also near many great grab and go options as well. 8281 E Northfield Blvd, Denver, CO 80238
  - Tony Roma’s, 4411 Peoria St, Denver, CO 80239

**Trash Removal from Stands/Exhibit Areas:** Please be respectful of the event and facility by using trash and recycling bins that are provided. Please also remove posters/banners, cups, and wrappers by the end of the event.

**Lost and Found:** Lost and Found is located at Registration in the Convention Center East Lobby and Robot Compliance in the Pit.

**Photos – Blanket Release Permission:** Denver BEST assumes blanket permission to photograph BEST team members, teachers, parents, chaperones, mentors, and other guests who are in attendance. These photos are used for promotional purposes in printed materials, videos, and websites affiliated with Denver BEST Regional Championship and BEST Robotics Inc.

**Sale of Merchandise:** The sale of memorabilia items (t-shirts, candy bars, lighted wands, etc.) is limited to Denver BEST Regional Championship. No hubs, teams or schools are allowed to sell items.
**Team Banners:** Teams may request help to post spirit banners on the walls in the Game Field area except where restricted. This year hotel staff must post all banners, so we are working a plan for when / where to post the banners. Please deliver banners to team registration and mark on the outside your team number and name and POC info so we can facilitate banner hanging on Saturday. Banner(s) must follow these guidelines:

- Maximum size is 2’ wide x 8’ long
- Banners may not have any design or language of a crude nature
- Banners and other team signage are not to be posted outside the arena
- Banners may be removed without warning by event staff

All banners need to be taken down and removed at the conclusion of the event. Make sure all tape and residue is removed when tearing down the banner.

**T-Shirt Design Award:** Every team is eligible to compete for the T-shirt Design Award. To be considered for judging, applications are due when Friday, November 22 at 8pm MST.

**Denver BEST Event Conclusion:** We have many teams from far away that need to get on the road as soon as possible after the event. Therefore, we will do everything possible to stick to the posted schedule. However, sometimes unexpected delays may occur, and schedules don't always work as planned.
3 Schedule

Saturday, December 7

7:00a  Event Space Opens for all participants
    Teams have access to East Lobby for registration and Salons A-D

7:00a - 3:00p  Team and Volunteer Registration (including shirt sales) – East Lobby. Teams must register prior to other activities. Submit your team T-Shirt (optional).

7:00a - 8:30a  BEST Award Teams set up Exhibits – Salon D

8:00a - 5:00p  Robot Compliance (scheduled), Repair Depot, Rules Check & First Aid – Pit - Salon C

9:00a - 4:30p  Team Photos (scheduled) – Salon B

9:00a - 3:30p  BEST Award Exhibit and Interviews (scheduled) – Salon D

9:00a - 3:30p  BEST Award Marketing Presentations (scheduled) Teams check in 15 minutes prior to scheduled presentation – Lobby near Durango and Crested Butte

10:00a - 5:00p  Robot Driving Practice on 2 Game Fields (scheduled & unscheduled) – Salons A/B

3:00p - 6:00p  Educational Partner / Student Open House – Silverton

3:30p - 4:30p  BEST Award Exhibit and Interviews (scheduled) – Salon D

4:00p - 5:00p  Pit Boss Meeting for Teachers / Mentors – Pit – Salon C

5:00p - 7:30p  BEST Award Teams Dismantle Award Exhibits – Salon D

5:30p - 7:30p  BEST Robotics, Inc. / Hub Leadership Dinner (invitation only)

8:00p  Event Space Closes for all participants

Sunday, December 8

7:30a  Event Space Opens for all participants
    Teams have access to East Lobby for registration and Salons A-D

7:30a - 3:00p  Late Team and Volunteer Registration (including shirt sales) – West Front Lobby. Teams must check in prior to other activities. Submit your team T-Shirt (optional).

7:30a - 8:00a  Late Team Photos (scheduled)

7:30a - 8:00a  Late Robot Compliance Check (scheduled),

7:30a - 3:00p  Robot Compliance, Repair Depot, Rules Check & First Aid – Pit - Salon C

8:00a - 8:25a  Head Referee / Floor Boss / Teacher / Mentor Meeting (2/team) – Game Floor – Salons A/B

8:25a - 8:50a  Head Referee / Floor Boss / Driver Meeting (2/team) – Game Floor – Salons A/B

8:25a - 8:55a  Teams get organized for robot parade (3/team) – Pit – Salon C. Others move to stands.

9:00a  Opening Ceremony.
    Welcome, Color Guard, Parade of Robots – Game Floor – Salon A/B. ALL participants must be in the stands or Game Floor.

9:30a  Seeding Matches Begin

10:00a  Deadline for student submittal of Punch cards and Passport at photo table - Game Floor – Salon B

12:30p  Seeding Matches End

12:30p - 1:15p  Lunch Break – Game Field is NOT open for teams

1:15p  Wildcard Match

1:35p - 2:15p  Semi-Finals Matches

2:30p - 3:00p  Finals Matches

3:00p  Team Mascot Dance Off – Game Floor – Salons A/B

3:15p - 3:45p  Awards Ceremony and Team Photos – Salons A/B

4:00p  Conclusion of the 2019 Regional Championship

5:00p  Event Space Closes for all participants

This schedule is also shown on the website at http://www.rockymountainbest.org/regional-schedule-information/
3.1 Denver Regional Championship Awards

**T-Shirt Design** – Awarded to the teams whose t-shirt design best demonstrates creativity while incorporating the Off the Grid game theme. First, second, and third places are awarded.

**Most Robust Machine** - Awarded to the team whose machine requires the least maintenance during and between matches and is generally the sturdiest machine in the competition.

**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; recognizes BEST founders Steve Marum and Ted Mahler.

**Software Development** – Awarded to the team that best describes their software development process, practices, and experiences in their Engineering Notebook. It is intended to recognize teams who understand that “programming” is an essential part of their overall robot design and requires just as much thought as the mechanical/electrical design.

**Engineering Notebook** – Awarded to the teams with the highest notebook score that did not finish in the top 3 of the BEST Award teams. First, second, and third places are awarded.

**Marketing** – Awarded to the teams whose marketing presentations best present a brand experience that showcases their company and product while illustrating a shared understanding of the client’s problem. Awarded to teams that did not finish in the top 3 of the BEST Award teams. First, second, and third places are awarded.

**Team Exhibit and Interview** – Awarded to the teams whose exhibits and interviews best present a brand experience that showcases their company and product while illustrating community engagement. Awarded to teams that did not finish in the top 3 of the BEST Award teams. First, second, and third places are awarded.

**Kendrick Castillo Memorial Outstanding Student** - The Kendrick Castillo Memorial Outstanding Student Award will be awarded to a student who reflects Kendrick’s values by actively mentoring others, communicates well, loves outreach, volunteers in his/her community, and takes time to help their team and other students with problems that are encountered. This student also inspires others with respect and a positive attitude.

**Simulink Design** – Awarded to one team in each of the BEST regional competitions that best applies the ‘Simulink Support Package for VEX’ based their robot’s performance in the competition and on MathWorks’ judging criteria.

**Head-to-Head Game** – Awarded to the teams whose machines finish first, second, third and fourth in the robot competition.

**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 can accomplish. First, second, and third place finishes are awarded. This award 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.
4 BEST Award Logistics

The BEST Award will be judged using the following scenario:

<table>
<thead>
<tr>
<th>Judged Components</th>
<th>Point Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering Notebook</td>
<td>30 points</td>
</tr>
<tr>
<td>Marketing Presentation</td>
<td>25 points</td>
</tr>
<tr>
<td>Team Exhibit and Interviews</td>
<td>20 points</td>
</tr>
<tr>
<td>Interviews</td>
<td></td>
</tr>
<tr>
<td>Spirit and Sportsmanship</td>
<td>10 points</td>
</tr>
<tr>
<td>Robot Performance</td>
<td>15 points</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100 points</strong></td>
</tr>
</tbody>
</table>

4.1 Engineering Notebook (30 points)
Engineering Notebooks as a pdf file are due no later than **Friday, November 22 at 8pm MST**. Submittal is done via the Google Drive folder link sent by Tami Kirkland. If you have questions, please contact tami.kirkland@bestinc.org.

4.2 Marketing Presentation (25 points)
- The Marketing Presentations will be held on Saturday, December 7 in a Crowne Plaza meeting room near the lobby.
- Each BEST Award team must sign up for a Marketing Presentation time slot on Signup.com at [https://signup.com/go/FQaBmiX](https://signup.com/go/FQaBmiX)
- The time slots are every 30 minutes with a break from 12:00pm – 1:00pm for the judges to go to lunch and submit score sheets. The available time slots begin at 9:00am with the last time slot at 3:00pm.
- Marketing Presentation Time Breakdown:
  - The times for the marketing presentations may be modified depending on the number of participating BEST Award teams.
  - There will be a Marketing Presentation check-in station near the presentation rooms.
  - Teams should check in 15 minutes prior to their time slot.
  - At least five minutes will be scheduled between presentation sessions to allow judges time to confer without the team present.

Equipment Guidelines
- The rooms for the presentations are equipped with smart screens. **Teams should bring their presentation on a thumb drive** (pdf and PowerPoint formats are recommended). Teams must bring any additional equipment they would like to use.
- Direct questions about equipment and facilities to Ben Straub, Marketing Presentation Lead Judge, at ben.straub@bestinc.org
4.3 Team Exhibit and Interviews (20 points)
- The Team Exhibit and Interviews will be held on Saturday, December 7 in Salon D of the Crowne Plaza Convention Center.
- Each BEST Award team must sign up for an Exhibit and Interviews time slot on Signup.com at https://signup.com/go/NuMWMKP.
  - Each team will be provided with a power strip, 6’x30” tables and two chairs. Tables and chairs will be available on racks in Salon D.
  - Maximum allowed floor space for table displays will be 9' x 9'.
  - Maximum allowed height for table displays will be 8’.
  - On Saturday, December 7, exhibits can be set up in Salon D between 7:00am and 8:30am. We realize this is a very short time frame, so plan your time wisely.
  - Students and exhibit materials is most conveniently brought into the Convention Center east lobby doors.
  - The times for the exhibits and interviews may be modified depending on the number of participating BEST Award teams.
  - The exhibit should be staffed as much as possible by student representatives between 9:00am and 3:30pm. They must staff the booth during the 30-minute pre-arranged Interview schedule. All students are being incentivized to visit the other team exhibits.
  - Teams should expect to be interviewed by two different judges during their interview period. We realize this is a short time frame, so plan your time wisely.
  - Teams cannot break down their exhibits before judging is completed at 3:30pm.
  - Each team is responsible for breakdown of its team materials and clean-up of their area between 3:30pm and 4:30pm. NO Exceptions!
  - Direct questions about equipment and facilities to Kayla Straub, kayla.straub@bestinc.org.

4.4 Spirit and Sportsmanship (10 Points)
- The following noise-makers will not be allowed during the competition:
  - Powered instruments
  - Sirens
  - Air horns
Applying for the Simulink Design Award

To apply for the award, teams are required to submit their Simulink model and a link to a short video describing their program design using Simulink. Teams will submit their entries by completing a form at the following location:

http://www.bestrobotics.org/simulink_award/form.php
PASSCODE = Bl@ck0ut

The entries must be submitted before 11 PM (local time) November 23, 2019 for all regions. Note: this is 2 weeks before the Denver BEST Regional Championship.

Information that teams need to provide when submitting their entry:

- Name of School
- BEST Hub (know which hub you belong to)
- Team Contact
- Team Contact Email Address (important: all entries are tied to this email address)
- # Students on the Team
- Simulink Model File (.slx file)
- Link to YouTube Video (3 min. maximum)
- Brief Description (256 chars) of how the team used Simulink to program their robot

Jose Avendano Arbelaez, Educational Technical Evangelist – Student Competitions, The MathWorks, Inc., will attend our competition and will present this award to the winning team.
Denver BEST Kendrick Castillo Memorial Outstanding Student Award

Kendrick Castillo was a person who made a difference. He was talented, patient, kind, supportive and loved engineering. He took time to help others through failures using innovative solutions with a positive attitude and helped his team become a community. We would like to honor other students who exemplify the things Kendrick stood for.

The Kendrick Castillo Memorial Outstanding Student Award will be awarded to a student who reflects Kendrick’s values by actively mentoring others, communicates well, loves outreach, volunteers in his/her community, and takes time to help their team and other students with problems that are encountered. This student also inspires others with respect and a positive attitude.

One BEST student per team can be nominated by a teacher or mentor.
* Required

Email address *
Student Name *
Team Number *
School Name *
Nominating Teacher/Mentor Name *

Please tell us why you are nominating this student and how they engage Kendrick’s values. (2000 character limit) *

How has this student demonstrated mentoring, communication, outreach, and volunteering on your team and in your community? (1500 character limit) *

Please describe or give an example of how this student has inspired your BEST team and/or student/s through positive and respectful problem solving. (1500 character limit)

Note: The application form is available in your team’s Google Drive folder and must be submitted using the supplied form.
Best T-Shirt Design Submittal Form

T-shirts are scored based on:
- Incorporation of game theme (40 out of 120 points)
- Creativity (30 out of 120 points)
- Identification of BEST, use of BEST logos (30 out of 120 points)
- Well-explained design (20 out of 120 points)

Include a short description explaining your design, where you can explain how you came up with the design, the meaning of any symbolism in your design, and why the design is significant to your team.

Include at least one picture of your t-shirt design, even if you plan to provide a t-shirt for judging at the Regional Championship event. Please include enough pictures to show all elements of your t-shirt design, e.g., front and back.

If your team has an extra t-shirt to loan to our judges, you can provide that at team registration. All provided t-shirts will be returned to the teams after t-shirt judging finishes on Sunday.

* Required

Email address *

Team Number *

Team Name *

Describe your t-shirt design. (600 character limit) *

Explain how you came up with the design, the meaning of any symbolism in your design, and why the design is significant to your team.

Upload pictures of your t-shirt design. *

Will you provide / loan an extra t-shirt for judging at the Regional Championship? *

   Note: Any provided t-shirts will be returned to your team after t-shirt judging finishes on Sunday.

Yes - I will provide a team t-shirt at registration on Saturday.
Yes - I will provide a team t-shirt at registration first thing Sunday morning.
No - I will not provide a team t-shirt. Please score our t-shirt using the images provided.
Maybe - I'm not sure if we will have a spare shirt.

Note: The application form is available in your team’s Google Drive folder and must be submitted using the supplied form.
<table>
<thead>
<tr>
<th>Team Number</th>
<th>Team Name</th>
<th>Incorporation of Game Theme (4 pts)</th>
<th>Creativity (3 pts)</th>
<th>Identification of BEST, Use of BEST Logos (3 pts)</th>
<th>Well-Explained Design (2 pts)</th>
<th>Total (12 pts)</th>
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7 Pit & Match Protocol

**Critical Information** - The following are the most critical areas regarding the game itself and the various aspects of the Pit.

**Compliance Check-In**
- Teams must do robot compliance
- Teams whose machines are non-compliant cannot practice drive or compete until compliant.

**Access to the Pit**
- Access is limited to two entrances.
- Each team will receive six (6) Pit Wristbands, five (5) for team members and one (1) for a mentor.
- The team determines who needs to be in the Pit and how passes will be swapped during the competition.
- Access to the Pit will be closely checked and only those individuals with Pit Wristbands will be allowed access.
- NO wristband means NO access to the pit.

**Pit Monitors & Mentor Work on the Robot**
- The Pit Monitors carefully view how much work is being done on the robots by mentors. Mentors are allowed to help with repairs, etc., but must not take over the repairs.
- If a mentor is consistently working more on the robot than the team, a warning will be issued by the Pit Monitors. A second warning will be issued if this appears to be a pattern. If it persists, the Pit Boss will be notified and the mentor will be asked to leave the Pit and no other adult may take his/her place.

**Other Important Notes**

These are in alphabetical order and not by order of importance.

**Access to Power**
- A power strip is provided for each team on the charging tables in the pit against the wall. Team name and number indicates each team’s charging location.

**Battery Management**
- We recommend charging batteries the day prior to each BEST Event.
- We recommend teams designate a team member to manage its batteries during the competition.

**Driver’s List**
- Each team must turn in a Drivers List at Robot Compliance. Team members that are not on the list and who attempt to drive will not be allowed to do so.
- Drivers will drive in the order provided on the list and will cycle through the list as many times as necessary.
Equipment Labeling/Tagging
- Teams should label/tag any personal equipment, tool, or materials that will be used in the pit area.

Matches
- See Section 1.4 Head-to-Head Competition Rules (especially 1.4.1 General, 1.4.3 Drivers and Spotters, and 1.4.5 Match Protocol) in the competition rules document.
- We have a Rules and Game “answer person” in the pit near compliance that serves as the Team Advocate. If teams have questions about a match, they can approach one of the floor bosses.
- Our plan is that each team will play six 3-minute matches during the Seeding Round.
- Each team will get a printed match schedule. It is up to the team to monitor when their next match is and have their robot at the In-The-Hole and then On-Deck areas prior to the beginning of the match that precedes theirs.
- A 20-second penalty is assessed if a team starts early or fails to turn on their robot when the match starts.
- Matches are timed this way: 60 seconds to get on and set, 3 minutes to play, and approximately 2 minutes to get off. Each driver verifies items scored with their referee, signs the score card, and exits the game field.
- When a Driver signs a score sheet after a match, the Driver is agreeing that the Referee completed it properly.
  - If a Driver disagrees with any of the results of the match (e.g., scoring or penalties), s/he must discuss it with the Referee prior to signing.
  - The Referee and the Driver must be respectful of one another in any discussion.
  - For any questions or disagreements, the conversation must be between the student(s), Referee, Head Referee, and/or Floor Boss, NOT a teacher, mentor, parent or fan.

Pit Monitor – Teams’ Contact for Problems
- The Pit Boss oversees all Pit operations.
- The Pit Monitors work for the Pit Boss.
- If a team has problems regarding equipment, personnel, or other teams, they should address them to a Pit Monitor, who will handle issues.
- Only one (1) team member (not a mentor) can approach a Pit Monitor concerning a problem.

Pit Briefing
- There is a mandatory meeting for ALL team members, mentors and teachers who expect to be in the Pit during the competition prior to the start of the matches.

Power Tool Requirements
- Teams must provide their own power tools. Power tools are limited to a/c-powered drills (battery powered preferred) and soldering irons.

Soldering
- Teams must provide their own soldering irons and solder.
Safety Glasses
• Team members and mentors are strongly encouraged to wear their own safety glasses while working in the Pit.

Staging
• In 2019 teams will place robot flags on their robots in the On Deck Staging area and remove them after each match before leaving the game field.
• No show, no go. If a team is not On Deck when the current match is over and their match is starting, the team cannot compete.

Team Numbers & Names
• Robots must prominently display their machine number and the school or team name or logo.
Driver List

Event: Denver BEST Regional Championship
School Number: ___________ Team Members at the Event: ________
School Name: ________________________________________________

Please print legibly. List due at Robot Compliance Check-In

1. __________________________________________________________
2. __________________________________________________________
3. __________________________________________________________
4. __________________________________________________________
5. __________________________________________________________
6. __________________________________________________________
7. __________________________________________________________
8. __________________________________________________________
9. __________________________________________________________
10. _________________________________________________________

From the BEST Competition Rules Section 1.4.3:
“Only one person per match is allowed to drive the machine (i.e., operate the VEXnet Joystick). Prior to the competition, each team must submit a driver list to the organizers. The minimum number of student team members on the driver list is shown in the following table:

<table>
<thead>
<tr>
<th>Student team members present at competition</th>
<th>Minimum number of students on driver roster</th>
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<tbody>
<tr>
<td>2-4</td>
<td>2</td>
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<td>5-6</td>
<td>3</td>
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<td>7-8</td>
<td>4</td>
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<td>9 or more</td>
<td>5</td>
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</table>

The first person on the driver list is the driver for the first match; the second person on the list is the driver for the second match, etc. This rotation will continue for successive matches until the list is exhausted, at which time the rotation will start again at the top of the list. Rotation in successive phases of the competition (e.g., seeding, semi-finals, and finals) will begin where the previous phase rotation left off. If the organizers eliminate a match for any reason, the driver rotation will continue in accordance with the driver list with the driver scheduled for the eliminated match (or matches) being the first driver for the following match.
9 Parking and Event Location Info

Cars parking in the lot east of the Convention Center will be charged $6/day and buses will be charged $50/day as they exit the lot. Payment is by credit card. A bus is any vehicle that takes up 4 or more parking spaces. See also Section 1.4 of this handbook.

9.1 Crowne Plaza Campus Map with Driving, Parking, Drop off, Walking Information
9.2 Crowne Plaza Convention Center 1st floor Layout