

2017

SDSU

Extension



• South Dakota  •

Robotics & Engineering

Challenge Packet

Robot Sports Skill-a-Thon



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South Dakota State University, South Dakota counties, and USDA cooperating. South Dakota State University adheres to AA/EEO guidelines in offering educational programs and services.

EVENT OVERVIEW

The South Dakota 4-H Robotics Challenge is an opportunity for youth who have been learning about robotics to demonstrate their learning, celebrate their accomplishments, and interact with others who share an interest in robotics.

EVENT LOCATION

The event will be held Saturday September 2, 2017 on the South Dakota State Fairgrounds, Huron, SD. The challenge will be held in the SD National Guard Armory on the State Fair Grounds.

TENTATIVE SCHEDULE

8:00 Advanced Division (Autonomous) Teams check-in: Receive team table assignment

8:20 Advanced Division (Autonomous) rules and challenge release

8:30-9:45 Advanced Division (Autonomous) team work period – presentations begin at 9:45

10:15 Advanced Division (Junk Drawer) Team check-in: Receive team table assignment

10:35 Advanced Division (Junk Drawer) rules and challenge release

10:45-12:30 Advanced Division (Junk Drawer) team work period – presentations begin at 12:00

1:00 Competitive Division Team check-in: Receive team table assignment

1:20 Competitive Division Team Challenge rules and challenge released

1:30-4:00 Competitive Division team work period

4:00 Final judging Competitive Division

4:45 Awards for Competitive Division

****This schedule is tentative and subject to change based on facility capacity and number of teams.***

ELIGIBILITY

1. Team registration is taken on a first-come-first-serve basis through **August 1, 2017**. This registration deadline will be strictly enforced for Advanced and Competitive divisions.
2. It is highly recommended that novice teams register prior to August 1, but Novice registrations will be taken through Sept 2 provided resources allow.
3. Teams **must have at least three members** with a **max of 5**.
4. Novice teams are not required to have any experience with the robotics platforms.
5. Advanced and Competitive team members need to be proficient with their chosen platform before the event.
6. All participants must be at least 5 years old by January 1, 2017, but not have turned 19 years old prior to January 1, 2017.
7. The Novice Division has both a Cloverbud (5-7) and 4-H (8-18) division.
8. The Advanced Division is for all 4-H ages (8-18)
9. The Competitive Division is divided into age groups Beginner/Junior (8-13) and Senior (14-18). The committee reserves the right to divide teams into appropriate groupings during check-in.

EVENT CONTENT

The South Dakota 4-H Robotics Challenge is divided into the following divisions: Novice, Advanced and Competitive. After check-in and set-up, teams will gather for the Challenge Release. Each team within a division will receive their Challenge at the same time. Time has been allotted for questions and clarification after the Challenge Release. After the Challenge Release, each team returns to their pit area to program their robot to complete the tasks outlined in the challenge. The last 15 minutes of each Division will be utilized for showcasing each team's final program.

Novice Division

The Novice Division is a real time challenge for youth who are new to robotics and it does **NOT** require any previous experience. These are basic missions designed for entry-level teams that are just getting started. NOTE: First year teams DO NOT have to participate in the Novice Division.

Novice – Cloverbud: This division is for youth (ages 5-7) who are new to robotics and it does NOT require any previous experience. Youth will be provided with a LEGO® WeDo™ kit and technical assistance to guide them through building and programming a robot.

Novice – 4-H: This division is for youth (ages 8-18) who are new to robotics and it does NOT require any previous experience. Youth will be provided with a LEGO® MINDSTORMS® kit and technical assistance to guide them through programming a robot to complete basic tasks. Skills may include: moving forward and backward, turning in circles, making precise turns, playing music, or displaying messages on the robots screen.

The Novice Division will be scheduled for 1 hour 45 minutes; the last 30 minutes of that time will be used by the team to demonstrate their robot skills.

Advanced Division (Autonomous)

This division is for youth (ages 8-18) who have minimal experience with autonomous robot platforms (LEGO®, VEX, etc.). Youth will design, build, and program a robot to accomplish the tasks laid out in the appendix. **It is highly encouraged that the majority of their build and programming is completed prior to arriving at the fair** as they will only have one hour and fifteen minutes to make adjustments. They may use a stock build or design their own.

The Advanced Autonomous Division is a modified real time challenge; this means that portions of the challenge are provided in the Appendix A, but teams need to be prepared for changes on the day of the challenge.

Advanced Division (Junk Drawer)

This challenge does not use a robotics platform, rather teams are provided a 'trunk of junk' that they must utilize to complete a task. This challenge requires teams to be creative and use their engineering skills. Teams may only use materials provide at the challenge release.

The challenge will be introduced in Appendix C, but the materials within the 'trunk of junk' will remain a mystery until the challenge day. Teams will have 1 hour 15 minutes to design and construct their robot. In order to best prepare for the challenge, teams should familiarize themselves with topics covered in the 4-H Junk Drawer Robotics curriculum.

Competitive Division

This division is for youth wishing to try a competitive robotics event. The team should have previous experience using an autonomous robotics platform (LEGO® MINDSTORMS®, VEX, TETRIX®, etc.) and arrive at the challenge with their robot built and programmed.

The Competitive Division is a modified real time challenge; this means that portions of the can be found in the Appendices, but teams will not necessarily know everything about the challenge prior to the event. The

Competitive Division will be divided into two categories Beginner/Junior (ages 8-13) and Senior (ages 14-18). Both groups will be required to complete an autonomous robotics challenge and a junk drawer robotics challenge. Points will be awarded based upon how much of the challenge is completed, as well as for team work and technical understanding. The point breakdown can be found in the Appendix B with the corresponding challenge.

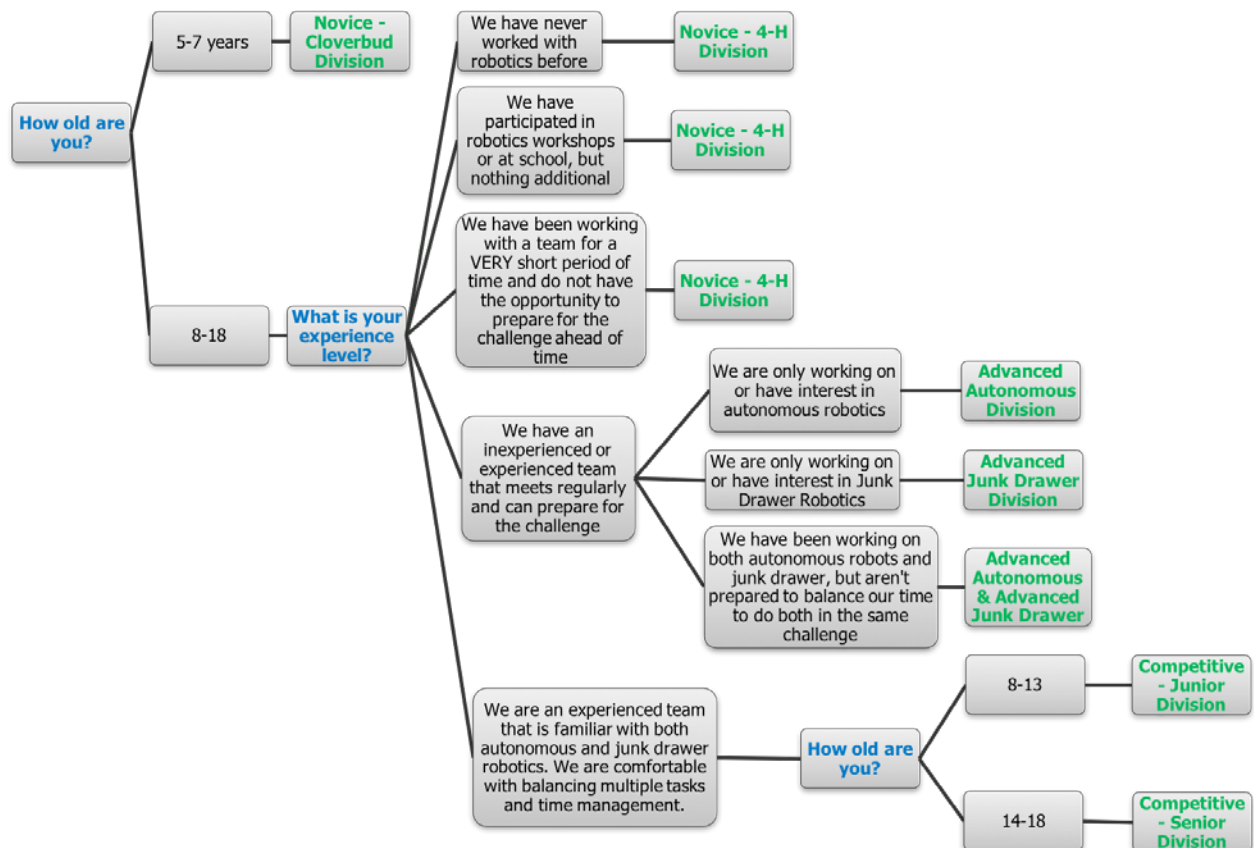
The teams will have 2.5 hours to complete both the autonomous and junk drawer challenges. It is up to them to decide how they will budget their time. During this time judges will ask questions about what they are doing/ have done and will be observing their teamwork.

Teams are required to record their building and programming process in their engineering notebook as they prep for the challenge. These records will count towards their final score and can be used as the determining factor in case of a tie.

Part 1: Autonomous robotics challenge can be found in Appendix B. Teams will need to arrive at the competition with their robots constructed and prepared to run the challenge courses found in Appendix B. The day of the Challenge, the courses will be slightly modified (locations may be changed or steps may be added) and released to teams the day of the challenge. Teams must be familiar enough with their program that they can easily adjust their program to complete the Final Challenge.

Part 2: Junk drawer robotics challenge found in Appendix C, does not use a robotics platform, rather teams are provided a 'trunk of junk' that they must utilize to complete a task. This challenge requires teams to be creative and use their engineering skills. Teams may only use materials provide at the challenge release. The challenge is introduced in Appendix C, but the materials within the 'trunk of junk' will remain a mystery until the challenge day. Teams will have 1 hour 15 minutes to design and construct their robot.

CHOOSING APPROPRIATE DIVISION



WHAT TO BRING

1. An autonomous robot, your team notebook, and/or computer if your division allows it.
2. Robot garages—It will happen...someone will drop their robot and watch the parts explode in a million directions. It's not pretty. **BRING A PLASTIC CONTAINER LARGE ENOUGH TO CARRY YOUR ROBOT DURING THE EVENT.** If it drops, you have a better chance of collecting all of the parts and reassembling your robot.
3. **Except for the Novice Division**—Knowledge of how to build and program using your chosen platform—you will not have time to learn at the event, but we will have technical advisors available.
4. Your teamwork and engineering skills—this is your chance to show them off; be innovative, creative, collaborative, and demonstrate your ingenuity.
5. A great 4-H attitude! —This is a fun chance to stretch your skills, see what other 4-Hers are doing, and show off all the hard work you've put into the past year. Come ready to have fun and learn!

ODDS AND ENDS

Attendance – When you registered for this event you indicated the number of team members attending. We understand that things happen, and a team who planned to attend may not be able to. If this situation arises, and you know in advance, please email Christine Wood at Christine.Wood@sdsu.edu so we can allow another team in.

Supplies Check out – Teams may be required to check supplies in and out (robots for novice division, and a 'trunk of junk' for advanced and competitive divisions). The equipment check-out agreement can be found in Appendix D. After the event, teams will be required to disassemble their robots, put every piece back in the proper compartment, and return them to the equipment check out tables. Event staff will verify that equipment is sorted properly. If not, the team will be instructed to take the kit back and finish sorting it. ***Teams may not leave the building until an event staff has signed off on their Equipment Check Out Agreement.*** Please plan sufficient time at the end of the event to clean up and return equipment before leaving.

Resources – Before the Event: if you have any questions or concerns contact Christine Wood at Christine.Wood@sdsu.edu. **At the Event:** we will have technical advisors to offer limited assistance with computer, programming, or component problems. Event staff will also be available to answer questions about and clarify the challenges. We want you to have fun, learn something, and discover the amazing things you can do. We will do everything possible to make this fun and educational while keeping the playing field level. So, if you have a question, ask!

Robot Specifications – Competitive teams will be required to use an autonomous robot. This means robots should be programmed to run the course without any type of human intervention. No push button commands, Bluetooth, or remotes may be utilized.

Role of the Adult Leader/Coach – This is the kids' event! Thank you for all the hard work you do to make these amazing experiences and learning opportunities available to 4-Hers. Now is the time to watch with pride as they once again put it all together and show their stuff. You're here to supervise and provide guidance and encouragement from your coach's box. Let's watch them shine!

Safety – We expect everything will go smoothly and safely. No injuries, no accidents, nothing that a hug or a bandage couldn't remedy. However, as a leader you have to be aware of your responsibilities for the care and safety of your team members, their belongings, those around you, and the facilities. It starts when you get behind the wheel and doesn't end until the last team member is safely home. There will be a lot of valuables sitting on tables around this event. The State Fair Grounds are a busy place, and there will be many people in and out of the building and spectators watching the teams work and cheering them on during the Challenge Events. Use common sense. Don't leave valuables unattended. Establish and encourage rules for your team before you arrive. Keep your team members and their belongings safe.

SCORING OVERVIEW FOR COMPETITIVE DIVISION

Each challenge will have its own individual score sheet (found in Appendix A, B, and C). However, the challenges are not the only aspect that the teams will be scored upon. Teams will be judged according to their 4-H values, technical understanding, records, robot builds, and programming abilities.

4-H Values – Total possible points 1,400

Skills	Criteria				Points
	50	100	150	200	
Participation – All members take an active part of the team effort	Rarely	Some of the time	Most of the time	All of the time	_____
Teamwork – It is clear that the team works together as a unit	Rarely	Some of the time	Most of the time	All of the time	_____
Communication – Members take time to listen to one another and communicate issues well. Members can also communicate process with judges	Rarely	Some of the time	Most of the time	All of the time	_____
Respect – Team members are knowledgeable of and follow all rules involving Challenge Day. Students respectfully listen to one another, their coaches, and officials.	Rarely	Some of the time	Most of the time	All of the time	_____
Integrity – Coaches, parents, or other adults offer assistance, but the students are CLEARLY doing the work among themselves	Rarely	Some of the time	Most of the time	All of the time	_____
Time Management – Team is able to efficiently utilize time given to them to complete both the Junk Drawer and Robot missions	Rarely	Some of the time	Most of the time	All of the time	_____
Sportsmanship – Team members display a good attitude towards all participants and show grace in winning and losing	Rarely	Some of the time	Most of the time	All of the time	_____

Technical Understanding and Team Notebook – During the work period, judges will be stopping to talk with each team. They will be asking questions regarding their robot designs and programs. Also, if the team has a notebook or journal of their work, judges will look at these during this time. The notebooks can simply describe the robot build and program, but we highly encourage teams to document their entire preparation process. Notebooks can include a variety of materials: diagrams, drawings, photos, screenshots, etc. Knowing how to keep thorough records is a great skill to have and this is a great way to build it. Additionally, thorough records of your process can help with any troubleshooting that needs to be done the day of the challenge. For information on what could be included in your notebook refer to the iGrow article: '[Importance of Good Record Keeping: The Science & Engineering Notebook](#)'.

Technical Understanding and Notebook Scoring Rubric – Total possible points 800

Skills	Criteria				Points
	50	100	150	200	
Questions – Teams are able to answer questions from judges	Rarely	Some of the time	Most of the time	All of the time	_____
Organization – Records are kept in the notebook in a structured fashion that can be easily understood and followed	Rarely	Some of the time	Most of the time	All of the time	_____
Neatness – Notebook are easily read	Rarely	Some of the time	Most of the time	All of the time	_____
Understanding – Notebook provides a clear picture of the robot design process and programing process	Rarely	Some of the time	Most of the time	All of the time	_____

Autonomous Robot Design – Teams are expected to bring a fully constructed robot the day of the challenge. While they can use a stock build, they are encouraged to be creative and design their own robot. Along with the creativity of the build, judges will be looking at its efficiency and effectiveness. The judges will also expect the teams to be able to explain why they chose their design.

Autonomous Robot Design Scoring Rubric – Total possible points 800

Criteria				Points
50	100	150	200	
Design shows little to no creativity	Design has some creative aspects	Design is creative	Design is very creative	_____
Design is inefficient or uses an excessive number of parts	Design is somewhat efficient	Most of the time	All of the time	_____
Design is ineffective and does not allow tasks to be completed	Design is effective at accomplishing some tasks	Design is effective at accomplishing most tasks	Design is effective at accomplishing all tasks	_____
Team has little to no knowledge of why some parts are located as they are on the robot or what they do	Team shows minimal knowledge of the robot design	Team shows moderate knowledge and understanding of their robot design	Team can thoroughly explain the design of their robot	_____

Autonomous Robot Program – Teams are expected to bring the program for each challenge written. The day of the challenge they will have the opportunity to tweak their program for any minor changes made to the course and to account for environmental factors that may affect the robots.

Autonomous Robot Program Scoring Rubric – Total possible points 1,000

Criteria				Points
50	100	150	200	
The program is disorganized	The program is somewhat organized	The program is organized	The program is logically organized	_____
Program shows little to no creativity	Program has some creative aspects	Program is creative	Program is very creative	_____
The program is inefficient – uses an excessive number of commands	Program is somewhat efficient at completing tasks	Program is efficient	Program is very efficient	_____
The program is ineffective	Program is effective at completing some tasks	Program is effective at completing most tasks	The Program can complete all tasks	_____
Team is unable to describe what the program does or why commands were chosen	Team can describe some of the pieces of the program and why they were chosen over other programming commands	Team can describe the entire program and explain why most of the commands were chosen	Team can describe the entire program and explain why all pieces were chosen	_____

AWARDS FOR COMPETITIVE DIVISION

Award	Description
Clover Award	Team notable for exemplarity demonstration of 4-H values
4-H Engineer Award	Top scoring team from all areas
Autonomous Robot Award	Top scoring team for the autonomous robot challenges
Junk Drawer Award	Top scoring team for the junk drawer robot challenge

4-H ROBOTICS CONTACT INFORMATION

Christine Wood – Robotics Committee Advisor

SDSU Extension 4-H Science Technology Engineering and Math (STEM) Field Specialist
 605-782-3290
 Christine.Wood@sdstate.edu

Chuck Martinell

Robotics Committee Co-Chair
 SDSU Extension 4-H Youth Program Advisor
 Chuck.Martinell@sdstate.edu
 605-367-5655

Nathan Skadsen

Robotics Committee Co-Chair
 SDSU Extension 4-H Youth Program Advisor
 Nathan.Skadsen@sdstate.edu
 605-367-5655

Please contact us with any questions or concerns.

APPENDIX A – ADVANCED AUTONOMOUS ROBOTICS CHALLENGE

The challenge includes a scenario description and a diagram with specific measurements for each part of the course.

CHALLENGE — SOCCER SHOOTOUT 2256

Scenario

We here at the Robot Sport Skill-a-Thon are focused on the future of all sports, both robot and non-robot. Therefore, we have created the Soccer Shootout 2256 challenge! If successful, we will use this version of the game for human competitions by the year 2256. With four different goals, four different colored balls, and the dreaded restricted area we think this version of soccer is sure to be a hit!

Soccer (Figure 1)

1. The goal is to score as many points as possible within the 2-minute time limit.
2. Take the matching color ball to the matching score zone. Balls have to remain in the score zone to count for points at the end of the timer. 250 points scored per ball. If a ball does not remain in the scoring area no points will be scored.
3. If a team enters a restricted area 100 points will be deducted for each infraction. There are four restricted areas. Ex. If your robot enters and leaves and re-enters the same restricted area, the team will be penalized 200 points.
4. The shootout ends when either the robot returns to the starting area, the timer reaches zero, or your robot is unable to continue.
5. Your team will get one attempt to accomplish the mission.

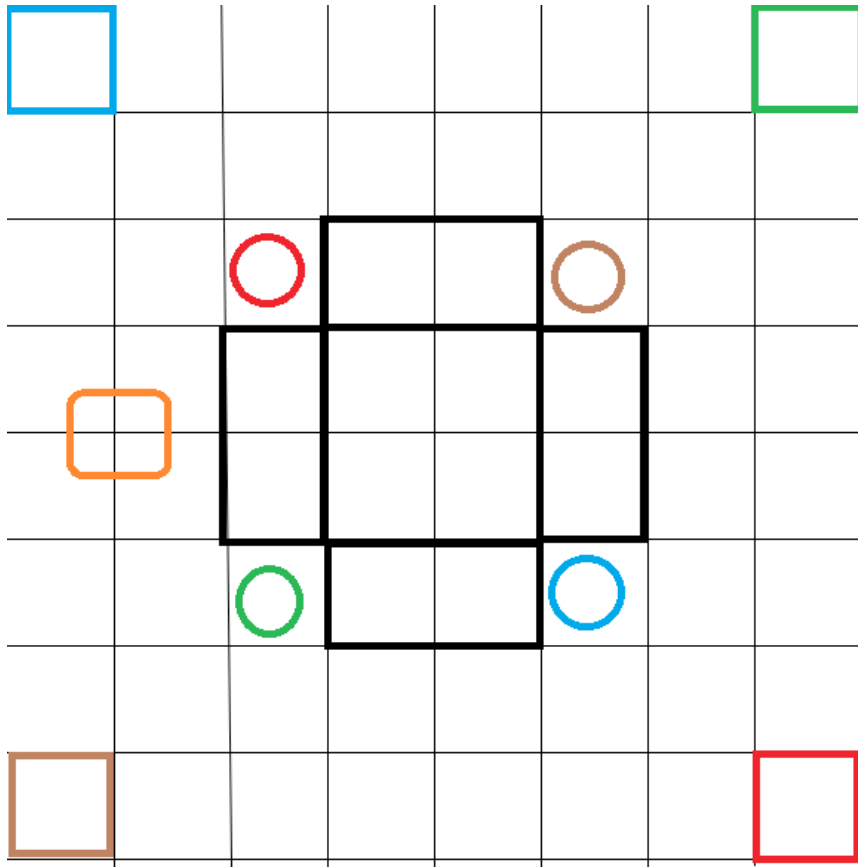
Scoring





Task	Possible Points	Max Points
Begin with Robot in Start Location	100	100
Move balls to proper scoring area (color matches color)	250	1000
Complete course with .01-30 seconds remaining	200	
Complete course with 30.01-60 seconds remaining	400	
Complete course with 60.01+ seconds remaining	800	800
Entering a restricted area per occurrence	-100	-1200
Touching or Redirecting Robot (per occurrence)	-200	-1000
Return to Start Location before time expires	100	100
	Max Points Possible	2000
Return to Start Location before time expires	100	100
	Max Points Possible	2100

Challenge Dimensions: 4'x4'

- Each Grid Represents 6"x6"

Figure 1 – Soccer Shootout



-  All circles represent a 4 inch ball
-  All squares represent color goals
-  All rectangles represent a restricted area
-  Start Area

APPENDIX B – COMPETITIVE AUTONOMOUS ROBOTICS CHALLENGES

Each challenge includes a scenario description and a diagram with specific measurements for each part of the course.

CHALLENGE 1 – WORLD’S STRONGEST ROBOT CONTEST

Scenario – Intermediate

In the days of old, robots would test their strength in the fields and forest by working the land and cutting down mighty trees. Now, robots show their feats of strength through the Robot Sports Skill-a-Thon World’s Strongest Robot Contest!! By competing, your robot will display how strong it is by lifting and moving vehicles and heavy blocks of wood! Also any good World’s Strongest Robot competitor knows to stay hydrated, how to follow directions, and of course, loves singing. These are all other talents that are rewarded for during the WORLD’S STRONGEST ROBOT CONTEST!!

Mission (Figure 2)

Your mission objective is to complete as many tasks as possible within your 3 minute time frame. Those tasks are:

1. Complete any of the following tasks
 - a. Move the red ball to the red score zone
 - b. Follow the line from end to end (either direction)
 - c. Move all blocks to the green score zone
 - d. Stop for five seconds in the watering area
 - e. Move all cars to purple score zone
 - f. Play a song at the finish area
2. If you complete at least three of the above tasks and end at the finish area, the points for each task you complete will be doubled.
3. The watering area is considered complete after five seconds (full stop).
4. In order to score points for ball, blocks, or cars, all parts of the object must remain on board in their scoring area.
5. A line sensor may be used to navigate the line
6. The mission ends when either the timer reaches zero or your robot returns to the finish area.
7. Your team will get one attempt to accomplish the mission.

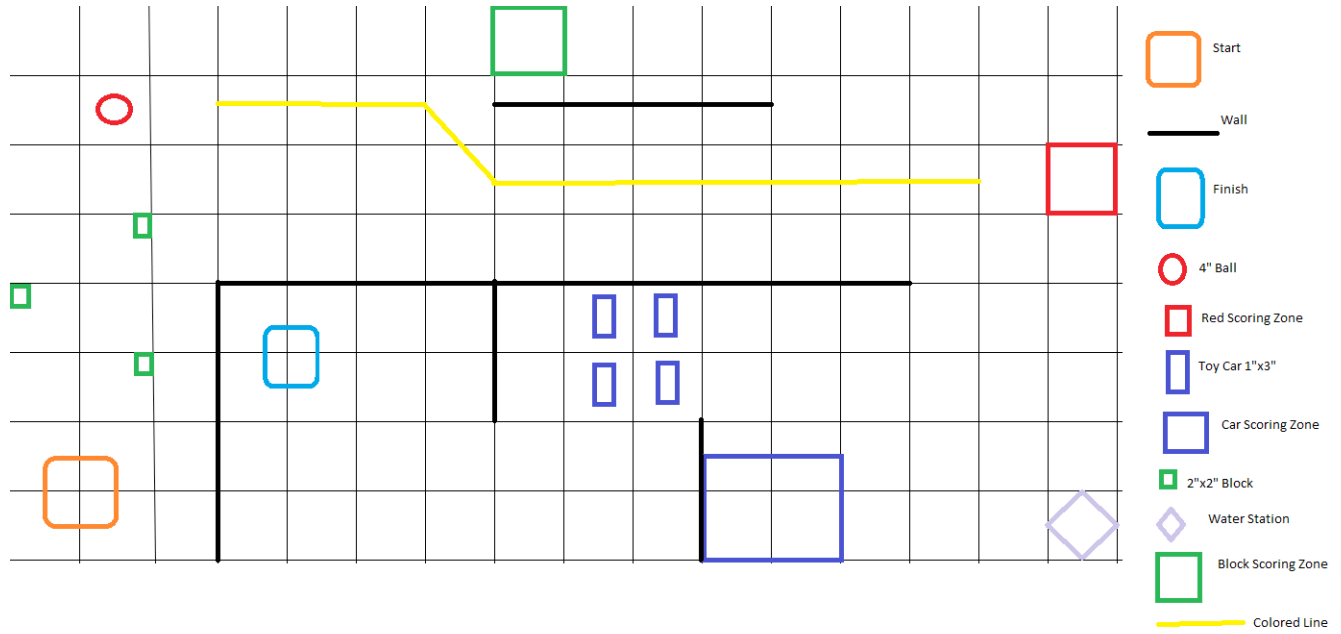
Scoring

Mission Objectives	Maximum Possible Points
Stop at the watering area (5 secs)	200
Follow the line from end to end (either direction)	300
Deliver the ball to the red score zone	400
Deliver crates (blocks) to green score area	800
Move all cars to scoring area	1200
Play a song on the finish area	200
2x Bonus for Completing 3 Mission Objectives and Returning to Start Box	2x Total Points
Additional Points Available	
Start in the Start Box	100
End in the Finish Area	250
Deductions	
Crossing a wall line	-200
Touching or assisting robot per occurrence	-250

Challenge Dimensions 4'x8'

- Each Grid Represents 6"x6"
- All walls are flat line .5"
- Walls are considered crossed if any part of your robot crosses the line

Figure 2 – Strongest Robot Challenge



CHALLENGE 2 — ROBOT SHUFFLEBOARD

Scenario – Intermediate

Although it is not the most prestigious game in the Robot Sports Skill-a-Thon, don't let the simplicity fool you! Many a great robotic athlete has underestimated the difficulty of sending each shuffle ball towards the scoring zone and not crossing the foul line. Each ball that reaches a scoring zone will add to your point total, but not until the 3 minutes are up or every ball has been moved. Good luck!

Mission (Figure 3)

The following are the rules for Robot Shuffleboard:

- a. Move the balls towards the scoring zones (green, red, blue)
- b. Any part of your robot crossing the foul line will cause a penalty.
- c. Balls that roll out of the scoring zones are not scored.
- d. Balls are not scored until game is finished.
- e. The mission ends when either the timer reaches zero or your robot returns to the start location.
(3-minute time limit)
- f. Your team will get one attempt to accomplish the mission.

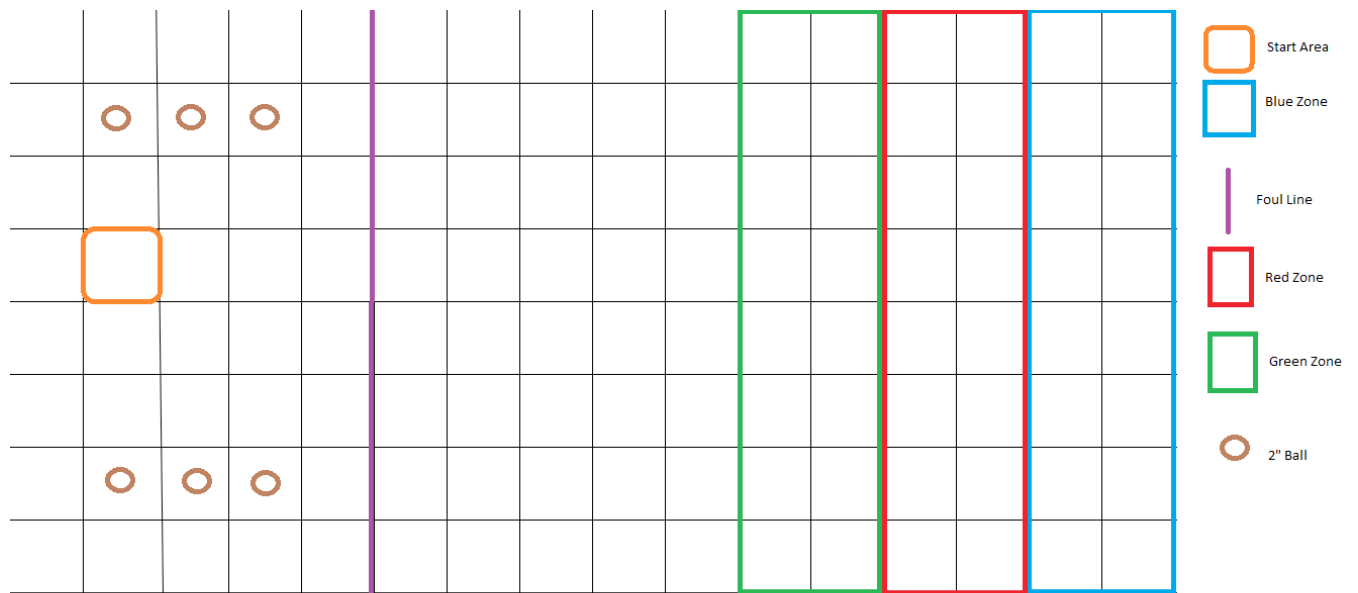
Scoring

Scoring Areas	Points
Ball in Green Zone	100
Ball in Red Zone	200
Ball in Blue Zone	300
Start Robot in Starting Zone	200
Deductions	
Partially Crossing the Foul Line (per occurrence)	-100
Fully Crossing the Foul Line (per occurrence)	-300
Touching or Assisting Robot (per occurrence)	-200

Challenge Dimensions: 4'x8'

- All grids are 6"x6"
- The balls used will be golf balls

Figure 3 – Robot Shuffleboard



APPENDIX C – JUNK DRAWER ROBOTICS CHALLENGE

CHALLENGE — HOMERUN HITTER

It's the top of the ninth inning and your final chance to score in the World Series of Robot Baseball! Luckily your team's greatest hitter, Junk Drawer Ruth, is up to bat. He's got three pitches to score as many points as possible. Can he save the day and bring the World Series of Robot Baseball trophy back to South Dakota?!

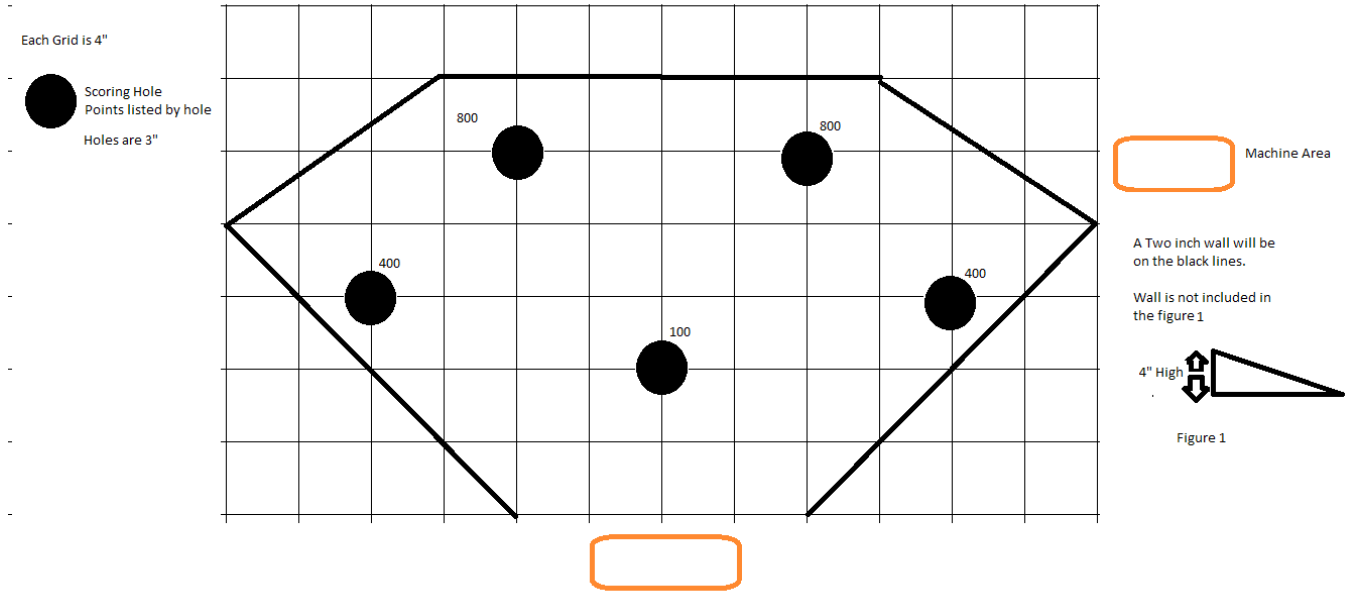
Things to keep in mind:

1. You may only use materials provided in the Junk Drawer
2. You may choose anywhere in the start area to start your robot
3. If your robot fails to move, stops, tips over, or gets stuck, you may rescue your robot and attempt to fix the problem, but your robot will incur a 'touch penalty'
 - a. A rescue is defined as any time any member of the team touches any part of the robot after time has started
 - b. Touch Penalty: If your machine just needs a little nudge or wiggle to continue on its way, but you don't want to do a restart, you can take a touch penalty instead.
4. Restarts: If your machine fails to start, gets stuck, tips over, goes astray or needs to be reoriented, moved or in any other way rescued, you may attempt to fix the situation and restart your machine, but your timer will restart the clock 30 second clock but not the overall running clock.
5. The playing area may not have anything affixed to it from your junk drawer.
6. Your machine must take a minimum of 5 seconds and a maximum of 30 seconds to complete the challenge
7. You may place your machine anywhere you like in the start area, and it can move (or not) in any direction or for any distance.
8. The countdown will not begin until the judge says "Go".
9. A round is complete when all three balls have been "batted" but not scored or when 30 seconds have elapsed since your timer started the clock, whichever comes first.
10. If restarts force an overall time of 2 minutes the round will be immediately over and no more points can be earned.
11. Only two members of your team may be in the competition area during the round. They must remain behind or to the side of your machine.
12. Quantities of materials in each team's junk drawer are identical
13. A few supplies are limited to the number provided in the kit, however you are permitted to request more of any item. If such requests can be granted without creating an unfair advantage, they will be. Requests for additional supplies should be made to the technical advisors
14. Report broken motors and dead batteries to technical advisors for replacement
15. Your team will get one attempt at the hitter's challenge.

Challenge Dimensions 2'x4'

- Each Grid Represents 4"x4"
- Ping pong balls will be used

Figure 4: Homerun Hitter



Scoring

Task	Possible Points	Points Earned
Hitting ball into the Scoring Hole	Variable	
Hitting a ball into the scoring hole on First Attempt	200	
Slow Time (after 5 seconds team earns +10 point per second Ex. 22 seconds = 220 points)	30	
Touching Penalty (touching is less than a second and only moving the machine and not the ball in play)	-100	
Restart Penalty	-50	

Junk Drawer Robot Design / Engineering – Points 800 (Jr. level) or 1000 (Sr. level)

Criteria				Points
50	100	150	200	
Design shows little to no creativity	Design has some creative aspects	Design is creative	Design is very creative	_____
Design is inefficient or uses an excessive number of parts	Design is somewhat efficient	Design is efficient most of the time	Design is efficient all of the time	_____
Design does not perform the given task	Design partially performs the given task	Design is effective at performing the task	Design performs task exceedingly well	_____
Team has little to no knowledge of why some parts are located as they are on the robot or what they do	Team shows minimal knowledge of the robot design	Team shows moderate knowledge and understanding of their robot design	Team can thoroughly explain the design of their robot	_____
Team spent more than 10% over their budget*	Team spent more than their budget, but was less than 10% over*	Team was able to stay on budget but with no remaining funds*	Team was able to stay on budget with remaining funds*	_____*

*Sr. Division teams will be required to manage a budget in addition to building their robots. This part of the rubric is for those teams only

APPENDIX D – FORMS

Registration Forms Equipment Check out Agreement Team Checklist

4-H ROBOTICS CHALLENGE REGISTRATION - NON-COMPETITIVE DIVISIONS

DUE: AUGUST 1, 2017

FAX forms to:

Amanda Stade – South Dakota State 4-H Office, 605-688-4939, amanda.stade@sdstate.edu

County _____

Team _____

Coach _____ Phone Number: _____

Email _____

Team Member	Age	4-H Member?
1.		
2.		
3.		
4.		
5.		

Division? Novice Advanced Autonomous (What type of robot will you be bringing _____)
 Advanced Junk Drawer

Team _____

Coach _____ Phone Number: _____

Email _____

Team Member	Age	4-H Member?
1.		
2.		
3.		
4.		
5.		

Division? Novice Advanced Autonomous (What type of robot will you be bringing _____)
 Advanced Junk Drawer

Add pages if needed!

4-H ROBOTICS CHALLENGE REGISTRATION - COMPETITIVE DIVISIONS

DUE: AUGUST 1, 2017

FAX forms to:

Amanda Stade – South Dakota State 4-H Office, 605-688-4939, amanda.stade@sdstate.edu

County _____

Team _____ Division _____ Bg/Jr (8-13) _____ Sr. (14-18)

Coach _____ Phone Number: _____

Email _____

Team Member	Age	4-H Member?
1.		
2.		
3.		
4.		
5.		

What type of robot/software will you be bringing? _____

Team _____ Division _____ Bg/Jr (8-13) _____ Sr. (14-18)

Coach _____ Phone Number: _____

Email _____

Team Member	Age	4-H Member?
1.		
2.		
3.		
4.		
5.		

What type of robot/software will you be bringing? _____

EQUIPMENT AND FACILITIES AGREEMENT

For the South Dakota 4-H Robotics Challenge Event, on September 2, 2017, our club has received:

- one LEGO® MINDSTORMS® NXT robotics kit
- one LEGO® MINDSTORMS® EV3 robotics kit
- one LEGO® WeDo™
- one laptop computer
- one trunk of junk

We understand that these materials do NOT belong to us, and that we are responsible for treating them and the State Fair Ground facilities with care and respect.

We agree to return these materials in the same condition we received them to the Equipment Table at the end of the Event. We will return all LEGO® parts to their proper holder after event staff have had the chance to take still photos of our robot. We understand that we will not be allowed to leave the building until the pieces of these kits are properly put away, any missing pieces documented, and the kits are checked by event staff.

We will report any missing, damaged, or nonfunctioning parts to the technical advisors as soon as we become aware of the problem. Technical advisors will provide replacement parts for any missing, damaged, or nonfunctioning parts for the Robotics Challenge.

Club member signatures

Club member signatures

Coach's Signature

Date

For office use only

Robot Kit Number _____

Return inspection _____

Computer Number _____

Return inspection _____

SOUTH DAKOTA 4-H ROBOTICS CHALLENGE

TEAM CHECK LIST

Did you bring all the required documentation?

- _____ Your completed Team Roster
- _____ Your signed Equipment Checkout Agreement
- _____ Signed Medical Information/Release Forms
(One for each non-4-H member on your team and each adult mentor/chaperone)

Are you prepared for the challenges?

- _____ Computer(s) with platform software
(Limit 2 per team)
- _____ Power strip and extension cable
(To give you mobility of where to put your computer)
- _____ Robot garages
(Two plastic containers to carry your robots during the event, to minimize damage from dropping)
- _____ Knowledge of building and programming your selected robot platform
(Novice teams do not need experience; Technical advisors will be available to help teams)
- _____ Teamwork and engineering skills
(Be innovative, creative, and collaborative to demonstrate your ingenuity)
- _____ Bring a great 4-H attitude!
(This is a chance to test your skills, see what other 4-Hers are doing, and show off your hard work!)