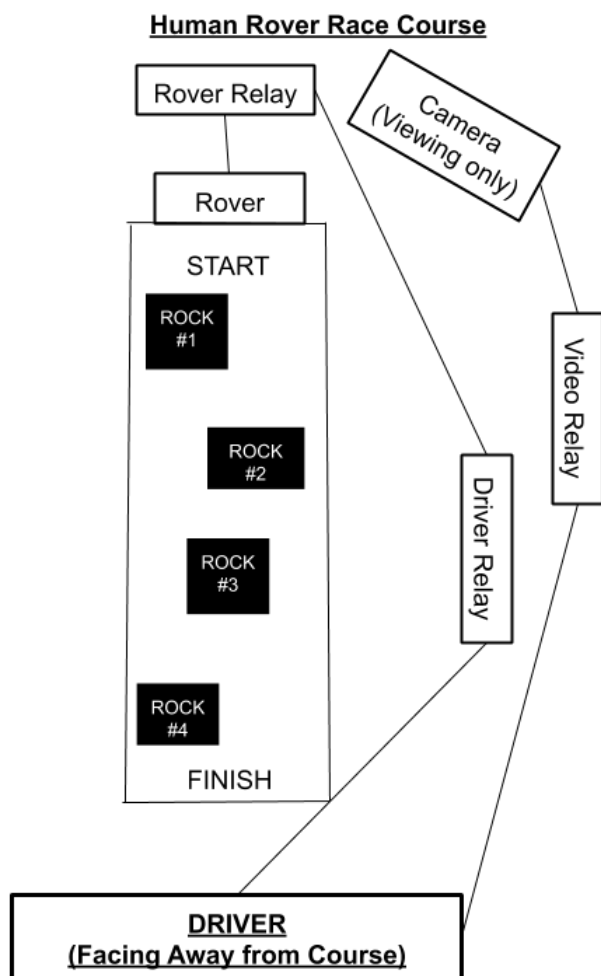


NCC 2019 Robotics Briefing

Robotics Part One: Rover Races

Description: The task at Hand will require all Six members of the cadet team to get a “rover” from point A to point B while avoiding obstacles and completing a team specific mission. Each team may face disastrous “anomalies” that will have to be Problem Solved on a moments notice. Every team will have 30 minutes to complete the mission.

- There will be two identical rover courses set up and two teams competing simultaneously
 - There will be Two staff (judges) assigned to this portion of the activity one grading each participating team.
- Each member will be given a card with their job duty which will have a correlating area in the course where they will be stationed.
 - The Driver will be given a mission card which only they will be allowed to view, as well as two “video Image” request cards.
 - No cadets are allowed to trade their cards after they have been handed out, and they will NOT be allowed to do anything outside of their job description for the Rover Race.
- The driver will be given time to view team objective and the course to write down all the commands needed to guide the rover to the finish line and complete the secondary task.
- At any time the Judge may call out “Mission Challenge” When this is called out the main objective will be put on pause and the Rover will take out the Envelope they were given, then the Rover Relay will take it to the Driver Relay, the Driver Relay will take it to the Driver.
 - There will be an “Anomaly Solutions Page” that driver will have to find the correct solution and give the instructions in the same manner the commands are given to the Rover before the Anomaly occurred.
- Obstruction Violation
 - If the Rover hits either a Boundary or Rock it is the Rover Relays responsibility to tell the Rover to stop, then tell driver relay “Obstruction Violation”. At this point the Driver must find a way to get the rover back on course.



NOT TO SCALE

30 Minutes for Each team (2 minute penalty if the task is not complete at the 30 minute mark)

Grading will be based on the following:

- Obstacles or “rocks” that get hit by the rover
- Time elapsed during the Event

Anomaly

The anomaly will occur immediately after ROCK#3 has been properly moved

Warning:

- No member of the team will work outside of the parameters set for their Job Duty Position
- Any Obstruction violation will cause a point Penalty

If the Rover ends up out of the boundary one of the Judges will direct the rover back to the boundary line after the Rover Relay stops the Rover.

Rover Race Items List

Rover Race Materials List:

- Team Mission sheets and video request card 2 of each (page 3 of this document)
- Anomaly or “problem” sheets 2 of each (page 3 of this document)
- Anomaly solutions page 2 copies (page 3 of this document)
- Driver Information Sheet 16 Copies (Page 82 of module 19)Introduction to Robotics
- Team Assignment sheets 2 Copies (page 3 of this document)

Video Request Card

Anomaly #2

You are experiencing low energy from your solar arrays and cannot complete the command.

Solution:

Low energy from solar arrays: Go to back-up battery source (Do 10 jumping jacks to start the back-up power.) Stop.

Scenarios

Scenario #1:

Retrieve rock 3 and place on top of rock 1. Then proceed to finish line.

Scenario #2

Retrieve rock 3, place it under rock 1, and continue to finish line.

Video Relay Team Member:

Team _____

You are responsible for collecting the “Video Image” request from the driver when he chooses to use them (he will have two in total). You will then let your counterpart the “Camera” know of the request. The camera will then give you a drawn image to relay to the driver, You are not allowed to speak or write anything.

Camera Team Member:

Team _____

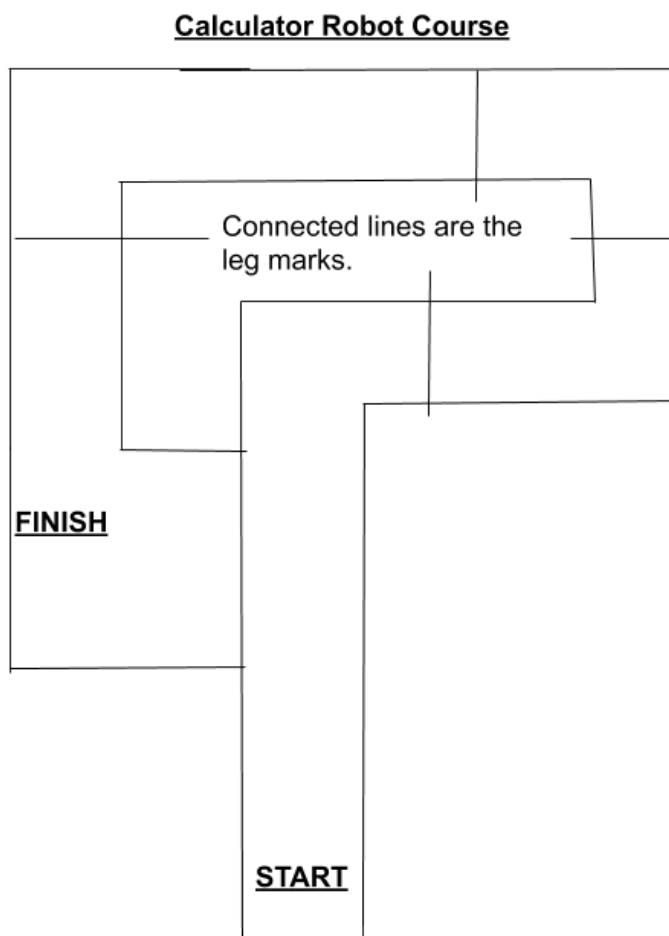
When given the command for a “Video Image” your job will be To draw the current situation of the course, meaning the location of everything on the course. Then using the Video Relay send the picture to the driver. You are not allowed to use words.

Robotics Part Two: Calculator Robot Maze

Description: A maze has been set out for the Calculator Robot, your team's objective will be to get the robot from the start to the end of the course without touching any of the boundaries.

Every team will have 30 minutes to complete the mission.

- First two cadets from each team will be selected to participate in the activity, the rest of the team except for one escort must stay outside of the room.
 - The escort inside the may take pictures and videos of their team, but are not welcome to share them until after the awards banquet with anyone, including their fellow escort.
- The course consists of four “legs”
 - (no 2 legs should be the same length) Each leg has an end line that marks the successful completion of that leg (see course map). Each leg is worth 1 point when you cross the completion marker (finish line is the exception). No point for the final leg will be given until the robot hits the bumper against the box at the finish line.
 - If any portion of the robot cross over the boundary then there will be a one point deduction for every boundary violation. If both front wheels of the robot cross the over or touch the boundary line at the same time the teams run will be over and points earned will be added up to where the boundary was crossed.



NOT TO SCALE

30 Minutes for Each team

Width of Lanes: 15 Inches

- **1 Point Per Completed Leg**
- **1 Point Deduction Per Boundary Violation**
- **Course Run is over once either the robot hits the finish line or both wheels on the robot cross the boundary.**

Your team is allowed ONE practice run the next time the robot touches the course it will begin their scored RUN.

Programing sheets will be provided.

TEAM BRIEFING NCC ROBOTICS 2019

Robotics Event Basics:

There will be two sections of this event there is the Calculator Robot Event and there is the Human Rover Races. Every team will have 30 minutes for each section of the event.

Human Rover Race:

- There will be two different team scenarios to be drawn from
- At a certain point an “Anomaly” will occur ***Hand out Anomaly Solutions Page***
- At the 30 minute mark the event will be ended by the judge if your team is not complete you will receive a 2 minute penalty. There will be a warning when there is 5 minutes left.
- All 6 team members will be used in this section, the “Judge” and “Timer” positions will not be used, instead we will have a “Camera” and “Video Relay”
- Two courses of the Rover Race will be Happening simultaneously but there will be separation between teams. ***Their duties will be handed out and explained further tomorrow***

Calculator Robot Maze

- Only two members of the team will participate in this section, the rest of your team will be required to wait in the hallway, one escort may come in with you.
- The course is broken up into 4 legs you will receive one point per leg, on the final leg your robot must cross the finish line inside the finish line box.
- There will be 2 courses of this Section running simultaneously but start areas will be separated.
- We will provide the Programing Sheets that are in the robotics module.
- At the 30 minute mark the judge will call time and add the score from the stage you are at when time is over Judges will give a warning when 25 minutes has elapsed.
- Each team will be allowed on practice run, the second time your robot touches the course the judge will begin scoring
- Everytime your robot touches the boundary one point will be deducted, if both wheels of the robot crosses the boundary you “run” through the maze will be over.

DAY OF TEAM BRIEFING ROBOTICS

Robotics Event Basics:

There will be two sections of this event there is the Calculator Robot Event and there is the Human Rover Races. Every team will have 30 minutes for each section of the event the judges will give a warning when 25 minutes has elapsed.

Human Rover Race:

Hand out all papers required for the event to proper people

- There will be two different team scenarios to be drawn from
- At a certain point an “Anomaly” will occur the judge will call out “Mission Challenge”
- All 6 team members will be used in this section, the “Judge” and “Timer” positions will not be used, instead we will have a “Camera” and “Video Relay”

Here are the outlined rules for the two new positions

Video Relay Team Member:

You are responsible for collecting the “Video Image” request from the driver when he chooses to use them (he will have two in total). You will then let your counterpart the “Camera” know of the request. The camera will then give you a drawn image to relay to the driver, You are not allowed to speak or write anything.

Camera Team Member:

When given the command for a “Video Image” your job will be To draw the current situation of the course, meaning the location of everything on the course. Then using the Video Relay send the picture to the driver. You are not allowed to use words

Calculator Robot Maze

- Only two members of the team will participate in this section, the rest of your team will be required to wait in the hallway, one escort may come in with you.
- The course is broken up into 4 legs you will receive one point per leg, on the final leg your robot must cross the finish line inside the finish line box.
- We will provide the Programing Sheets that are in the robotics module.
- Each team will be allowed on practice run, the second time your robot touches the course the judge will begin scoring