Robotics Contest

ROBOTICS

Contact: Erin Persche at epersche@uwyo.edu

Ag Robotics Mission Challenge (Junior, Senior) This is a challenge based contest. Some known challenges will be released prior to the contest, and the remaining on contest day. Teams build and program their robot for known challenges prior to the contest. On contest day, the remaining unknown challenges will be revealed and teams will be given time to build and program the robot to account for the newly revealed challenges.

Mini-Sumo Robot: (Junior, Senior) Teams will design and build a self-propelled or sensing robot designed to force another robot outside a circle four (4) feet in diameter. This contest will be divided by age divisions (junior and senior) with a double elimination bracket configuration.

Please note: Teams must bring their own robot kit (preferably the Lego Mindstorms NXT, EV3 or SPIKE) and any additional Lego pieces necessary for their contests. It is also required that teams bring their own laptops/software. Please see game rules for specific equipment requirements

Requirements: The contests are open to any 4-H member currently enrolled in the Robotics project. Teams may enter one or all of the contests. Teams may consist of 1-4 members. Team names and designations are due to contest officials ONE WEEK prior to the contest.

Age Groups:
Junior (8-13)
Senior (14 & up)

Judging
All of the contests are ranked based on the criteria in the rules and score sheets. Members are judged on their application of technological principles and concepts and their ability to solve difficult problems. During the judging for each contest, only the contest facilitator and judges/officials are permitted in the designated contest area. Leaders, other members, parents and additional competition attendees are prohibited from entering the designated area of the contest while judging is occurring. For all contests and special awards, the decisions of the judge(s) are final and binding.

Awards:
Awards will be given to each of the 2 age groups for each of the contests (Mini-Sumo and Agrobotics Mission Challenge).

The Mini-SUMO Robot Contest requires the member to build an autonomous self-propelled or sensing robot, designed to force another SUMO Robot outside a four (4) foot diameter circle. The competition circle will be a flat black, 4 foot in diameter, surrounded by a two-inch (2”) wide (painted or taped) flat, white ring. When one Sumo causes the wheels of the other to fall off the competition surface, that sumo is declared the winner.

Rules

1.The SUMO can use sensing devices to govern the motion of the SUMO and can use sensors todetect the other SUMO and/or the edge of the white circle.
2.Sumos cannot exceed 3 Kilograms in weight.
3.Sumos cannot exceed a maximum size of 20cm x 20cm x 20cm at the start of the contest. Theymay have attachments however that upon the start of the contest extend beyond the 20x20x20footprint.
4.All Lego® Mindstorm pieces must be in their original factory condition. No additionalpieces may be included, such as weights, washers, coins, etc.
5.No 3D printed pieces are allowed.
6.The SUMO drive wheels must be non-destructive to the playing surface.
7.The SUMO may not have a remote off/on switch.
8.The contest will be run in a double elimination tournament format for each age group.
9.At the beginning of each competition, with the power switch in the “off” position, the SUMOhandler(s) will position their SUMO with a wheel or track on the starting line as instructed by thejudges. At the command of the judge/facilitator, the handler(s) will turn the power switch to the"on" position.
10.When one SUMO causes the wheels of the other SUMO to fall off the competition boardsurface, that SUMO bot is declared winner of that engagement.
11.If one SUMO is disabled by another, it is automatically eliminated from that round
12.If the SUMO match continues for 3 minutes without a winner, there will be an automatic re-match. If after 3 consecutive re-matches, no winner is determined, both SUMOs will be given 5minutes to re-program/build for a final match up. If no winner is determined from that re-match, both SUMOs will go into the loser’s bracket or be eliminated from the contest.
13.If both SUMOs leave the circle at the same time, a "non-contest" is declared and the two SUMOsare repositioned and the contest begins anew.
14.Decisions of the judges are final and binding.

The AgRobotics contest is a robotics competition where teams design, build, and program a Lego robot to complete challenges autonomously and score points in a 5-minute match. The theme and challenges change each year, but all are focused on some aspect of agriculture.
Each team will decide on their challenge strategy and will launch their robot from a designated home base. The robot will be programmed to move outside of that base and attempt to complete challenges within the given timeframe.

CONTEST FORMAT AND SCORING
The contest will consist of a set of known and unknown challenges that the robot must be programmed to complete autonomously. This adds an element of unpredictability that mimics real-world conditions, where farmers and agricultural technologists must often adapt to unexpected circumstances.

There will be approximately 5-8 known challenges and 1-4 unknown challenges. Known challenges will be released in January, and the unknowns will be released on the day of the contest.

Teams must build and program their robot for known challenges prior to the contest. On contest day, the unknown challenges will be revealed, and teams will be given 60 minutes to build, program, and test the robot for known and unknown challenges.

On the day of the contest, teams will practice and compete on the same game table. A table schedule will be posted so teams know when they will be completing challenges.

Point values for each game challenge may vary, depending on the level of difficulty. Penalties will also depend upon challenge design, but examples may include: knocking over pieces, restricted human interaction with robot or game pieces, excessive retrievals, etc.

Teams will have two preliminary matches, and points from both will be added together. Additionally, teamwork score(s) will be assessed by judges and the team interview score will be added to the match total to form the total score.

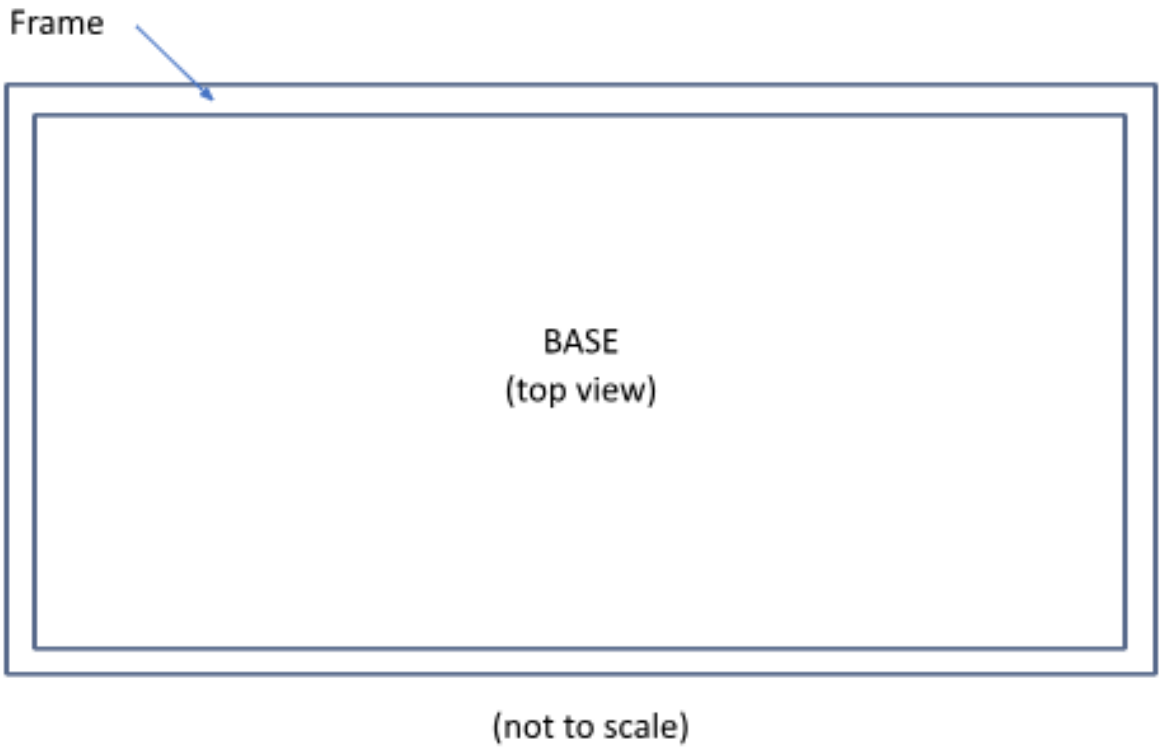
After each match, the team captain will initial the score sheet, indicating agreement to the points awarded. Once signed, the match score is final and cannot be challenged. Scoresheets will be delivered to the contest tabulator who will review the score sheet, correct any mathematical inaccuracies, and record the match score.

The contest results, as announced, will be final.

GAME TABLE

The game table consists of two parts:

- Base – made of 4’x8’ sheet of plywood or comparable material.
- Rectangular Frame – made of 2”x4” (actual dimensions are 1.5” x 3.5”) lumber attached on top of the base. The inner dimensions of the frame are 45” x 93”.



(not to scale)

One or more resource trays will be located outside and next to the game table. The trays will hold additional game pieces used during the match. Contestants can pick up or place game items into the resource tray once the match begins. Teams may place those game pieces onto their robot or in the Player Zone (see definition below) as allowed. Neither the tray(s) nor the game pieces it holds are part of the playing field.

GAME MAT

A vinyl game mat will be placed flat inside the frame of the game table. The game mat will be approximately 45” x 93”. It will generally consist of the following areas:

- Player Zone – the area where the robot must launch from. There is typically only one player zone, but there may be more depending on the game design. This is an area where game pieces may be collected from and/or placed upon the robot for retrieval/delivery.
- Robot Zone – the area outside of the player zone where the robot performs its tasks autonomously. Players are not allowed to touch game pieces.

THE ROBOT EQUIPMENT

1. Each team must supply their own equipment. Each team may only bring the items and respective maximum quantity listed in the table below. Any extra equipment or item that does not meet specifications will be returned to the team coach. No infrared beacons (remote) or sensors allowed.
2. All Lego® Mindstorm pieces must be in their original factory condition.
3. No 3D printed pieces are allowed.
4. Teams may use any software that facilitates autonomous movement of the robot, so long as the robot is solely controlled by the programs stored on the HUB or microSD card.
5. No remote controllers of any type are allowed.
6. No computers or tablets may be brought up to the game tables during Build Time or Match Play. Programming must take place at their individually assigned team “pit” table. (revised 10/31)
7. Note paper may only be used for note-taking purposes only. Teams may bring notes to the game table during matches. The paper is not allowed to be used for any other purpose (used on the robot for example).
8. Teams are not allowed to bring their own game mat and/or pieces.

ITEM	MAXIMUM QUANTITY
• Lego® Mindstorm® EV3, Spike Prime, or Inventor brick/hub • Portable, battery powered AC power station (must fit under table work station) • 3-pronged extension cord up to 25' (power is not provided at SALE) • Plastic container or cardboard box for transporting robot and attachments to and from game area	1 each
Laptop computer or tablet with programming software (Lego® or non- Lego® is acceptable)	2
Lego® Mindstorm® EV3, Spike Prime, or Inventor: • Building pieces (excludes brick/hub) • Battery • Motors • Ultrasonic sensor • Touch sensor • Light/color sensor • Gyro sensor	Unlimited
• USB cable • Build Plans (paper or digital) • Backup laptop battery • Ruler or tape measure • Pencil/pen and notepad for design and note-taking purposes • Digital or printed game rules (study guides may not be used during match play)	Unlimited

BLUETOOTH AND INTERNET CONNECTIVITY

1. Bluetooth connections can be made and utilized during Build Time. It is not allowed during the Match Play or Finals while the robot is on the playing field.
2. No internet connectivity will be provided.
3. Teams are HIGHLY encouraged to ensure their computers' operating system, software/app, and robot firmware are up to date prior to the contest.
4. When teams check-in and are assigned to their "pit", members and their coach should test and resolve any connectivity/pairing issues.
5. Contestants should be well-trained on how to resolve Bluetooth or USB connection issues.
6. Teams are encouraged to create a unique name for their hub so that pairing is less confusing and will minimize any mistaken pairings with other robots/computers.

MATCH SETUP AND INSPECTION

1. Before the match begins, the robot and all its attachments must be placed and fit into the boundary of the Player Zone for inspection by a contest official.
2. The Player Zone is 11"x17"x12" (length/width/height).
3. To pass inspection, the robot and ALL attachments may not break the plane of the Player Zone boundary nor be taller than 12 inches from the surface of the game mat.
4. Once the official inspects and approves the size of the robot, team members may set up their robot to prepare for the match.
5. At all times during the match, the robot (including attachments) must not exceed the 11"x17"x12" (length/width/height).
6. No game pieces found in the Resource Tray may be touched until the match begins. The tray may not be used by the robot nor placed on the game table for any reason.
7. Contest officials reserve the right to remeasure the robot after a match. Any robot deemed to exceed the dimensions will forfeit the match.

TIP: Build designs that use fewer parts can not only save you space for maneuvering but may also save you time and present fewer mechanical/programming problems.

	RULES OF PLAY
1.	The robot must be programmed to perform all challenges autonomously.
2.	All parts of the robot, attachments, and game pieces must **completely fit** within the Player Zone each time the robot is launched from the Player Zone.
3.	Teams must pre-build and program a robot prior to the competition.
4.	Teams will report to the designated location and time for check-in and submit their robot and additional pieces/equipment for initial inspection.
5.	After check-in, each team will be directed to a team pit (table and chairs) where they can work on their robot and programming. In some cases, teams may have to share a table with another team.
6.	In some contests, electricity will be available. San Antonio will not have power available. Teams are encouraged to bring a portable battery powered AC power station.
7.	An orientation will be provided for all participants where superintendents will review the challenges, rules and scoring.
8.	After orientation, each team will have 60 minutes of Build Time for additional designing, building, programming and testing of their robot.
9.	Teams will practice and compete on the same game table. a. In the case where a team has to move tables (example: for finals), teams will be given a designated amount of time to practice on the new table.

	RULES OF PLAY (continued)
10.	If time permits, teams are allowed to make alterations to their robot design and/or program between matches.
11.	When match play begins, teams must report immediately to the game table when called. The robot must be powered up and ready for inspection when they arrive at the game table. Failure to report to the game table and/or get the robot to a ready-state in a timely manner may result in the team forfeiting the match.
12.	Contestants may retrieve their robot at any time during the match without penalty. When retrieved, the robot must be returned to the PLAYER ZONE.
13.	Contest officials will not assist with any retrievals.
14.	When the contestant is retrieving the robot, he/she may do so any time during the match in order to start/re-attempt challenges, but must not manipulate, interfere, or intercept game pieces on the board during retrieval *unless game piece is in robot's possession - see Rules of Play #15-18. If contestants physically alter where game pieces sit or land on the game board during retrieval, they may be subject to penalties or disqualification from the match.
15.	Possession is defined as a game piece that is not touching the playing surface and is under the control of the robot. Items in possession of a robot may be retrieved once any part/piece of the robot has broken the plane of the PLAYER ZONE boundary.
16.	If the robot is in possession of a game piece in the GAME ZONE, and the robot is retrieved by the player, the game official will return the game piece(s) to its original location/state.

	RULES OF PLAY (continued)
17.	A robot that has possession of a game piece may be retrieved during the match. A robot that loses possession of a game piece during the match (ie - robot drops piece outside of the player zone) the piece can no longer be retrieved by contestants.
18.	A player is not allowed to touch any game piece except when the piece is completely inside the PLAYER ZONE boundary, OR if the robot is deemed in the PLAYER ZONE AND in full possession of a game piece(s).Once the piece is deemed inside the PLAYER ZONE, contestants may remove the game piece from the game table/robot and store it in the RESOURCE TRAY.
19.	If a contestant intentionally touches a game piece in the GAME ZONE, the team will be given a 100-point penalty per occurrence. In such cases, the piece will be returned to its original starting position by contest officials as quickly as possible.
20.	All competing team members are allowed around the game table during competition, and any member may touch the robot when necessary.
21.	Teams not competing must remain at their tables or staging area.
22.	Good sportsmanship is always expected. This is crucial during practice times. Practice time on the game table may be limited as build time progresses.
23.	Only registered contestants and designated contest officials will be allowed in the robot Challenge pit areas. a. Due to space limitations, parents and other spectators must remain outside the designated contest area. b. Spectators may be allowed to enter the contest area during finals.

	RULES OF PLAY (continued)
24.	Teams that experience equipment malfunction(s) may not replace the equipment with supplies outside the contest area (from leaders, volunteers, CEA, AST, or contest officials). Instead, team members must work together and be creative in completing preparations without the malfunctioning/missing equipment or visit with other teams to borrow the needed part.
25.	Depending on the challenges, contest officials may allow or require teams to use non-lego items in the design of the robot. In such cases, details will be outlined in the game release and/or orientation.
26.	Coaches will be permitted to meet with their team for a 10-minute time period prior to build time and following orientation. This time should be used to help team members develop a plan and foster positive youth development and to ensure proper Bluetooth/USB connections.
27.	No cell phones or other types of communication devices are allowed in the pit or contest areas. Exceptions include medical devices.
28.	During Build Time and Match Play, contestants are not allowed to communicate with anyone outside of the contest (coaches, parents, siblings, etc.). Exceptions include medical emergencies. Contestants are welcome to ask questions to contest officials or other contestants.
29.	A match will be 5 minutes in length. The official timekeeper and announcer will have a countdown to start and stop. Any activities performed by the robot after time has been called will not count for points.
30.	Any structures built by the team or game pieces cannot be placed onto the ROBOT ZONE by human players but may be permitted to be placed by the robot so long as it is done autonomously and is permitted by challenge rules.

	RULES OF PLAY (continued)
31.	Tie-breaker procedures/order will be as follows: a. Highest total teamwork score b. Highest total preliminary match scores (does not include teamwork) c. Highest individual preliminary match score d. Contest officials will determine additional measures if a tie persists.
32.	Any contestant, coach, or spectator that becomes disruptive or does not exhibit sportsmanship, may be removed from the contest area at the sole discretion of contest officials and/or show (host) management.
33.	Teams must clean up their pit areas prior to the awards ceremony. Teams not advancing to finals are free to leave once their pit area has been cleaned and are dismissed by contest officials.
34.	Final rankings will be shared with the contest host for them to post or distribute following the contest.

Coach's Pre-Contest Checklist

- Does your team have all the parts to their kit/laptop/tablet? (cables, chargers, batteries, etc.)?
- Does their robot connect to the computer/tablet via Bluetooth or USB?
- Can your team download programs onto their robot?
- Does anything need charging?

2024-2025 THEME:
Coastal Cultivators

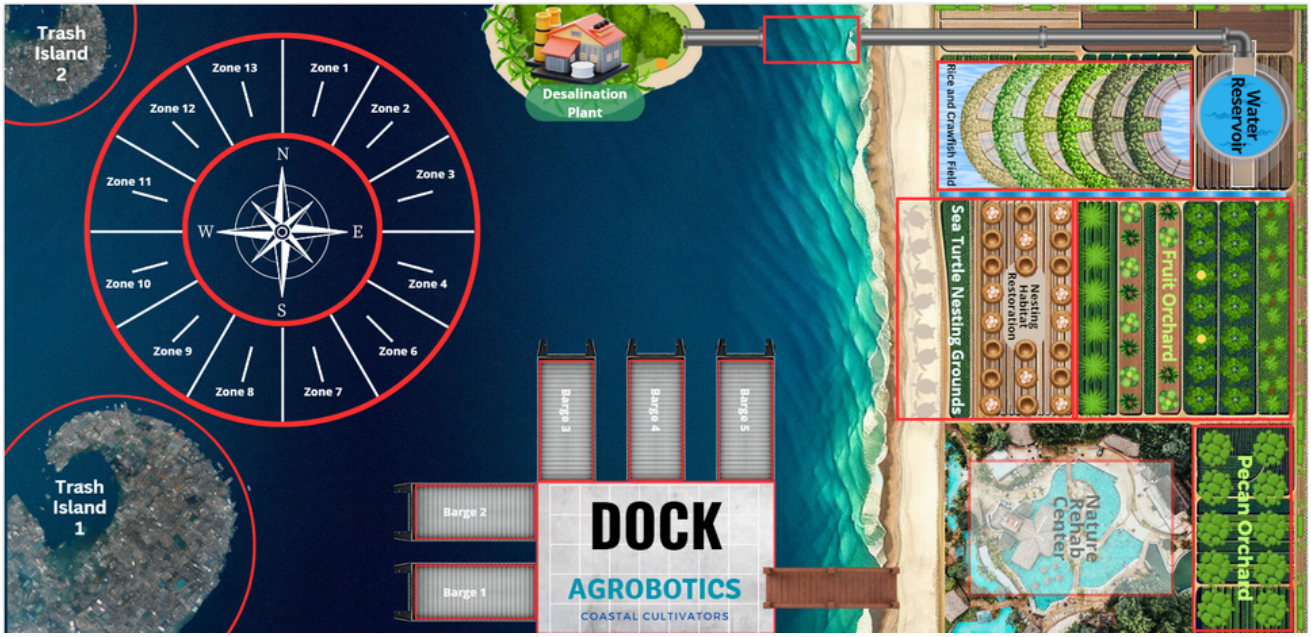
Introduction

Get ready for an exciting adventure with this year's AgRobotics contest theme, "Coastal Cultivators"! Dive into the dynamic world of coastal agriculture and aquaculture, where you will tackle real-world challenges using cutting-edge robotics. From mastering navigation at sea to enhancing sustainable seafood production, each task is designed to spark your creativity and test your tech skills. This thrilling theme not only connects you with the critical role of coastal ecosystems in our global food supply but also empowers you to innovate for a sustainable future. Gear up, young innovators—let's make waves with technology at the forefront of agriculture!

Known Objectives

- Navigating the Sea
- Desalination Pipeline Replacement
- Turn the Valve
- Feed the World Etouffee!
- Collect and Deliver Fruit Baskets
- Collect and Deliver Pecans
- Sea Turtle Rescue

Game Mat Design/Layout



The game mat image shown above is available for teams to download (PDF) and printed at a source of your choosing. It will also be available to order at Geyer Instructional Products (search "AgRobotics"). Direct link to Geyer's Coastal Cultivators game mat: LINK

The Player Zone for this game is the Dock. Everything outside of that is the Robot Zone, which consists of the following areas:

- Barges 1-5
- Trash Island 1 and 2
- Compass
- Desalination Plant
- Rice and Crawfish Field
- Water Reservoir
- Fruit Orchard
- Nesting Habitat Restoration
- Sea Turtle Nesting Ground
- Pecan Orchard
- Nature Rehab Center

Known Objective 1: Navigating the Sea

Navigating the sea is a difficult and challenging part of the agricultural trade industry. Importing and exporting goods is vital to feeding the world. In this challenge you must demonstrate your skills by navigating a prescribed course within the Compass.

Setup:
The robot must travel autonomously from the Dock and **enter the center red ring** of the Compass **before starting the navigation sequence** that is provided at the contest. This sequence will change at each contest. Four 1" foam blocks will be available in the Resource Tray.

Scoring Rules:
The robot must drop a single block inside the designated zones in the color and zone sequence provided. The robot must remain within the outer red circle of the Compass when placing blocks onto the game mat. The block must not be touching any white or red lines of the zone boundary. The color sequence for all contests will be blue, red, green, and orange. In other words, the blue block will always be placed first, followed by red, then green, then orange. A new zone sequence will be announced at each contest. All 4 blocks must be delivered in a single attempt. Any Lego container used in the delivery of a game piece is subject to the same boundary rules as the game piece itself. (added 10/31)

Block	Zone Sequence (Example)
Blue	11
Red	3
Green	7
Orange	9

Points:
Each correct block = 100 points
All correct = 500 points (includes 100 point bonus)
Not completed or Attempted = 0 points
Points will be awarded once the robot exits the Compass (autonomously or by Player retrieval)

Example zone sequence: 11, 3, 7, 9. In this example, the blue block is placed in zone 11 first, followed by red in zone 3, green in zone 7, and orange in zone 9.

All blocks are in correct zones, assuming colors were placed in the correct sequence.

Blue is not completely in zone 11, red is not in zone 3, green is touching boundary, orange is outside of zone 9.

(not to scale)

Known Objective 2: Desalination Pipeline Replacement

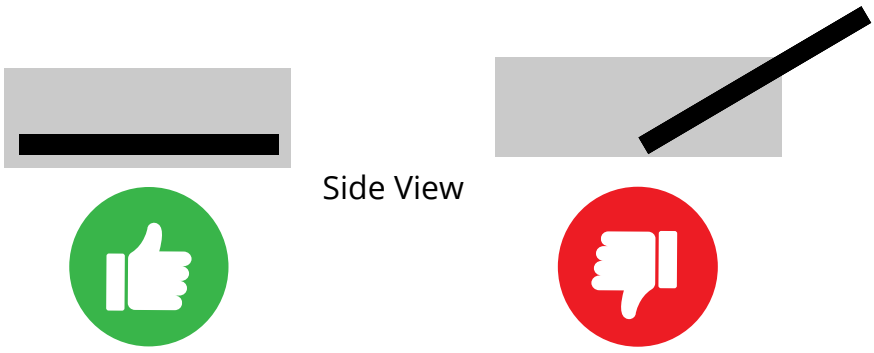
Prerequisite to Known Objective 3

A recent hurricane has knocked out a section of pipeline from the Desalination Plant to the Water Reservoir. A maintenance barge is stationed in that location and workers await your replacement pipeline delivery. Use your robot to autonomously deliver the replacement pipe to the maintenance barge.

Setup:
The cutoff riser (pipe) will be located in the Resource Tray at the beginning of the match. The barge (black box) will be centered in the red rectangle in between the two sections of pipeline and secured to the game mat using 3M Command Strips.

Scoring Rules:
The pipe must be placed fully inside the barge (black box). The pipe must not extend outside of the box. If the pipe delivery is unsuccessful, a **Player may pick up the pipe and retry the objective without a touch penalty**. In such case, the robot and pipe must return to the Dock prior to the subsequent attempt. A delivery attempt in this case is defined as the robot releasing the game piece from its possession while in the Robot Zone (outside of the Dock). (Added 1/23/25)

Points:
Delivered on first attempt = 100 points
Delivered on second attempt or more = 50 points
Not attempted or delivered = 0 points
Points will be awarded at the time of completion.



Side View

(not to scale)

Known Objective 3: Turn the Valve

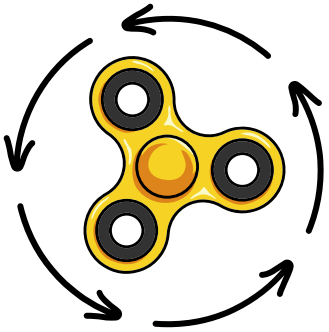
Now that you have replaced the pipeline, we can resume the freshwater flow to the reservoir. Use your robot to turn on the valve at the Desalination Plant.

Setup:
The spinner will be centered on the orange dot and secured to the game mat with a 3M strip. A colored indicator (sticky dot, permanent marker, etc.) will be placed on one arm of the spinner to track rotation. The position of the spinner arms will be random. Teams may not pre-position the game piece before the match. (added 11/18/24)

Scoring Rules:
Your team must first successfully complete Known Objective 2 before attempting this challenge.

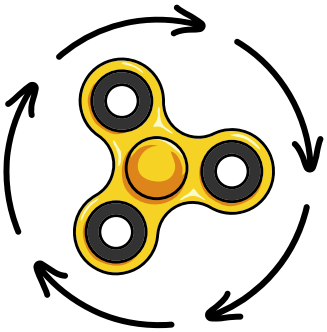
The robot must turn the valve (spinner) clockwise for a minimum of one revolution. The judge will use the colored indicator to determine if the spinner has completed at least one full revolution. Teams will not be penalized for errant spinning (wrong direction) but must complete one full clockwise revolution to receive points.

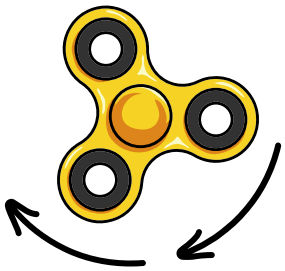
Points:
Completed = 100 points
Not completed or attempted = 0 points
Points will be awarded at the time of completion.



spun the wrong direction (counter-clockwise)

1 full, clockwise revolution completed





Not a full revolution

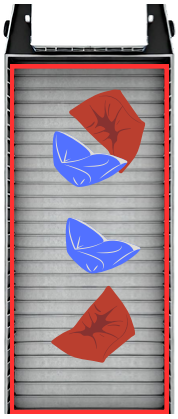
Known Objective 4: Feed the World Etouffee!

What's better than a good bowl of crawfish etouffee? Let's gather the main ingredients to send to our seafood restaurant suppliers. Send your robot autonomously to collect crawfish and rice bags located in the Rice and Crawfish Field and deliver those to Barge 1.

Setup: Four mini cornhole bags will be randomly placed inside the red, rectangular boundary of the Rice and Crawfish Field at the beginning of the match.

Scoring Rules:
The robot must retrieve the game pieces from the Rice and Crawfish Field and deliver the items to Barge 1. Items must be placed inside the barge and once placed, the piece cannot break the plane of the red boundary. Any Lego container used in the delivery of a game piece is subject to the same boundary rules as the game piece itself. (added 10/31)

Points:
Each bag delivered = 25 points
All bags delivered = 100 points
Not attempted or delivered = 0 points
Points will be awarded at the end of the match



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Known Objective 5: Collect and Deliver Fruit Baskets

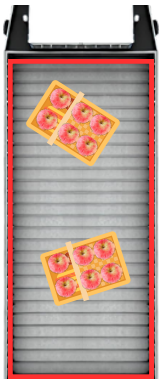
Fruit is in high demand all across the country and the time is right for picking! Use your robot to collect the crates of fruit and deliver those to Barge 4.

Setup: Two wood baskets with apples will be placed in the Fruit Orchard centered on the yellow dots at the beginning of the match. For matches, the apples will be secured inside the basket (for practice purposes, the apples are for aesthetics only and to designate a full or empty basket). Two empty wood baskets will be placed in the Resource Tray at the beginning of the match. (added 9/30/24) The full baskets will be oriented as shown in the picture below. 6 marbles will be placed and secured inside the full baskets to add weight/stability. Two cotton balls will also be secured on top of the marbles for easier apple placement.

Scoring Rules:
The robot must retrieve and deliver the items to Barge 4. When transported, the baskets must not touch the Robot Zone part of the (added 10/31) game mat until delivered ~~directly~~ (deleted 10/31) to Barge 4. Full baskets must be placed inside the barge and once placed, the piece cannot break the plane of the red boundary. The baskets must be placed in an upright position.

Empty baskets must be delivered from the Dock into the boundary of the Fruit Orchard. When transported, the baskets must not touch the game mat until delivered. Once placed, the basket(s) cannot break the plane of the red boundary. The baskets must be placed in an upright position. Any Lego container used in the delivery of a game piece is subject to the same boundary rules as the game piece itself. (added 10/31)

Points:
Each full basket = 100 points
Each empty basket = 25 points
All basket delivered = 250 points
Not attempted or delivered = 0 points
Points will be awarded at the end of the match



(not to scale)

Known Objective 6: Collect and Deliver Pecans

The pecans have been harvested and are ready for you to collect and deliver to the Barge 2.

Setup:
Two burlap bags, filled with 5 marbles and tied closed, will be randomly placed inside the red, rectangular boundary of the Pecan Orchard at the beginning of the match.

Scoring Rules:
The robot must retrieve the bags from the Pecan Orchard and deliver the items to Barge 2. Items must be placed inside the barge and once placed, the piece cannot break the plane of the red boundary. Any Lego container used in the delivery of a game piece is subject to the same boundary rules as the game piece itself.

Points:
Each bag delivered = 25 points
All bags delivered = 50 points
Not attempted or delivered = 0 points
Points will be awarded at the end of the match

(not to scale)

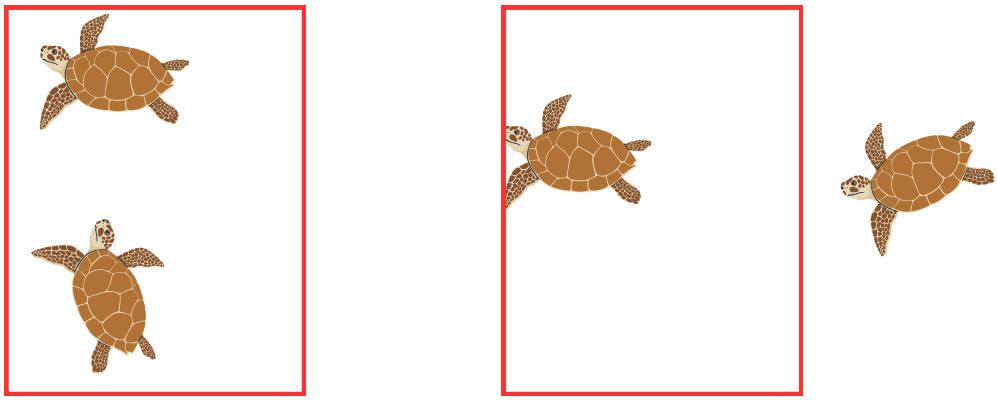
Known Objective 7: Sea Turtle Rescue

Sea turtles are considered a keystone species. That means when they disappear, it will have a big impact on other aquatic life. In a tragic turn of events, some sea turtles off our coast have become entangled in trash located in what ecologists are calling Trash Island 1. Rescue these animals and take them to the Nature Rehab Center so they can be rehabilitated and released back into the ocean.

Setup:
Two sea turtles will be randomly placed inside the red, circular boundary of Trash Island 1 at the beginning of the match.

Scoring Rules:
Collect turtles and deliver each to the Nature Rehab Center. Turtles must be placed on the game mat and inside the red, rectangular boundary (the plane of the red boundary cannot be broken by the game piece). Turtles must be placed in an upright position. Any Lego container used in the delivery of a game piece is subject to the same boundary rules as the game piece itself.

Points:
Each turtle delivered = 100 points
All turtles delivered = 300 points (includes a 100 point bonus)
Not attempted or delivered = 0 points
Points will be awarded at the end of the match



(not to scale)

Game Piece Supply List

Product Description	Number of Pieces Used in the Game	Suggested Purchase Link
1" Foam Blocks (Red, Orange, Green, Blue)	1 each color	LINK
Black Utility Box	1	LINK
1/2" Cutoff Riser (6" long)	1	LINK
Fidget Spinner	1	LINK
Mini Cornhole Bags	4	LINK
Wood Basket	4	LINK
Mini Toy Apples (optional)	TBD	LINK
Burlap Bag (2..7" x 3.5")	2	LINK
14 mm Marbles	10 (5 for each burlap bag)	LINK
3M Command Strips	TBD	LINK
Sea Turtles	2	LINK

Game Table Setup

Below is a picture showing how the game table will be setup with known challenge game pieces prior to each match.

Note: there will be additional game pieces for the unknown challenges on the mat and/or Resource Tray at each contest. For obvious reasons, those are not shown here.

Q&A

Q: Do objectives need to be completed in the listed order?
A: No, teams may complete objectives in any order, with the exception of challenges that have a prerequisite.

Q: Is it permissible to place the gaming pieces (the pecans, apple baskets, and crawfish and rice) that have been picked up and delivered to the dock by the robot into a Lego made box and then deliver the box to the barge?
A: Yes, so long as the structure and the game pieces are all within the boundary of the Dock before the robot pushes it out into the barge. Since the pieces will be delivered inside a container, the container will also need to be inside the boundary (since we cannot see through the structure to see if the piece itself is inside the boundary).