robosub

team time

February 13, 2025

agenda

Edit your name to "**Name | Team Name**”
E.g., Laverne | University of RoboNation

REC

COMPETITION OVERVIEW

Introduction to the competition, including the teams, staff, and timeline.

EVENT DETAILS

Overview of the event, including schedule, hotel, testing, and shipping.

TASKS & SCORING

Breakdown of the tasks and scoring for the autonomy challenge.

robosub

welcome to robosub 2025

robosub

1 champ

6 days

6 tasks

robo staff

DAVEMAN | TECHNICAL

JULIANNA | COMPETITION

CHERI | LOGISTICS

YADIRA | LOGISTICS

JOE | TECHNICAL

ALICIA | MARKETING

ALISON | REGISTRATION

LAVERNE | COMMUNITY

EBBIE | CANINE COORDINATOR

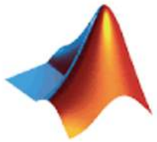
robosub

the teams as of today

- YOUR TEAM
- BEAVER COUNTRY DAY SCHOOL
- DUKE UNIVERSITY
- ÉCOLE DE TECHNOLOGIE SUPÉRIEURE
- AMRA AT EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
- HARVEY MUDD UNIVERSITY
- INDIAN INSTITUTE OF TECHNOLOGY
- ISTANBUL TECHNICAL UNIVERSITY
- MONTANA STATE UNIVERSITY
- NANYANG TECHNOLOGICAL UNIVERSITY
- TEXAS A&M UNIVERSITY
- THE OHIO STATE UNIVERSITY
- UNDERWATER ROBOTICS AT BERKELEY
- UNIVERSITY OF CALIFORNIA, LOS ANGELES
- UNIVERSITY OF MICHIGAN

REGISTER TODAY!

robosub



MathWorks®

MATHWORKS SIMULATION AWARD

Introduction
The MathWorks Simulation Award recognizes teams demonstrating innovative and effective use of MATLAB and Simulink in designing their AUV's for the RoboSub competition.

Award Prize and Recognition
- 1st Place - $1000 (and a featured post with MathWorks Student Lounge)
- 2nd Place - $750
- 3rd Place - $250

Deliverable Requirements
- 5-minute video showcasing how MATLAB or Simulink was used to solve a problem faced.
- Team introduction - high level software and strategy overview
- Explain the problem faced and the team's solution using MathWorks tools
- Demonstrate solution(supported with plots, metrics, videos, etc)
- Reflection and feedback on the tools

Contact Abhishek Shankar through email (abshanka@mathworks.com) or Discord for any questions!

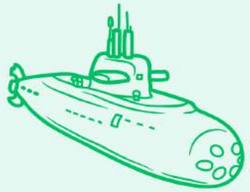
robosub

competition overview

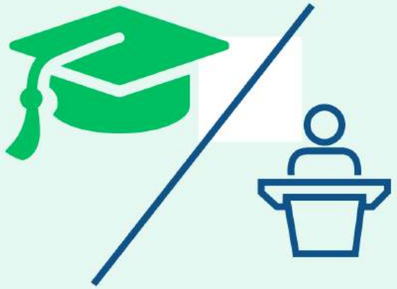
featuring Duke Robotics, 2024

robosub

ELIGIBILITY



All teams must build an AUV to compete; up to two (2) vehicles can be entered into competition.



Teams must be comprised of:

- 75% or more full-time students
- 25% or less alumni

Most team members must be college or high school students. Teams may also include middle school students. Interdisciplinary teams are encouraged.

Minimum of one (1) team member.

competition timeline

April 17 - TeamTime #2

June 23 - Event Submissions Deadline

June 30 - Design Documentation Deadline

August 04 - Pre-Qualification Deadline

August 11-17 - RoboSub 2025

robosub

pre-competition deliverables

Past Examples
robosub.org/past-programs

Technical Design Report

Write a report describing the teams' design principles and competition priorities.

Max: 6 pages

Team Website

Website documents your team, system design, and competition approach, evaluated on (1) Content and (2) Quality.

Team Video

Prepare a video that is a creative showcase highlighting the teams' personality, mission and culture.

Max: 3 minutes

Submit in registration portal:
robonation.smapply.org/acc/l/

TIP: Review your submission from the perspective of a judge.

robosub

in-person deliverables

Design Strategy Presentation

Prepare a presentation with a concise description of your team's strategic vision and how the vehicle design compliments your goals.

Time: 15 min.

System Assessment

Prepare your AUV to be inspected by judges to assess technical design, technical innovation, and craftsmanship of the design.

Time: 15 min.

TIP: Define your team's competition strategy and how that influenced your design choices, testing, and overall approach.

Delivered in-person during the competition:
August 12-14

robosub

event details

featuring CUAUV, 2024

robosub

schedule overview

Venue Hours

0630 Venue Opens
Starting Tuesday

1900 Venue Closes
Days 2 thru 6

Monday afternoon

Day 1

1500 Start
Team Check-in
Orientation
Sponsor Networking

2200
Overnight Testing

Tuesday - Thursday

Day 2-4

0700 Start
Practice/Qualifying
Presentations
Assessments

2200
Overnight Testing

Friday - Saturday

Day 5-6

0700 Start
Practice
Semi-Finals Rounds

2200
Overnight Testing

Sunday

Day 7

0800 Start
Practice
Wild Card
Finals

1800
Awards & Pool Party

robosub

Subject to change

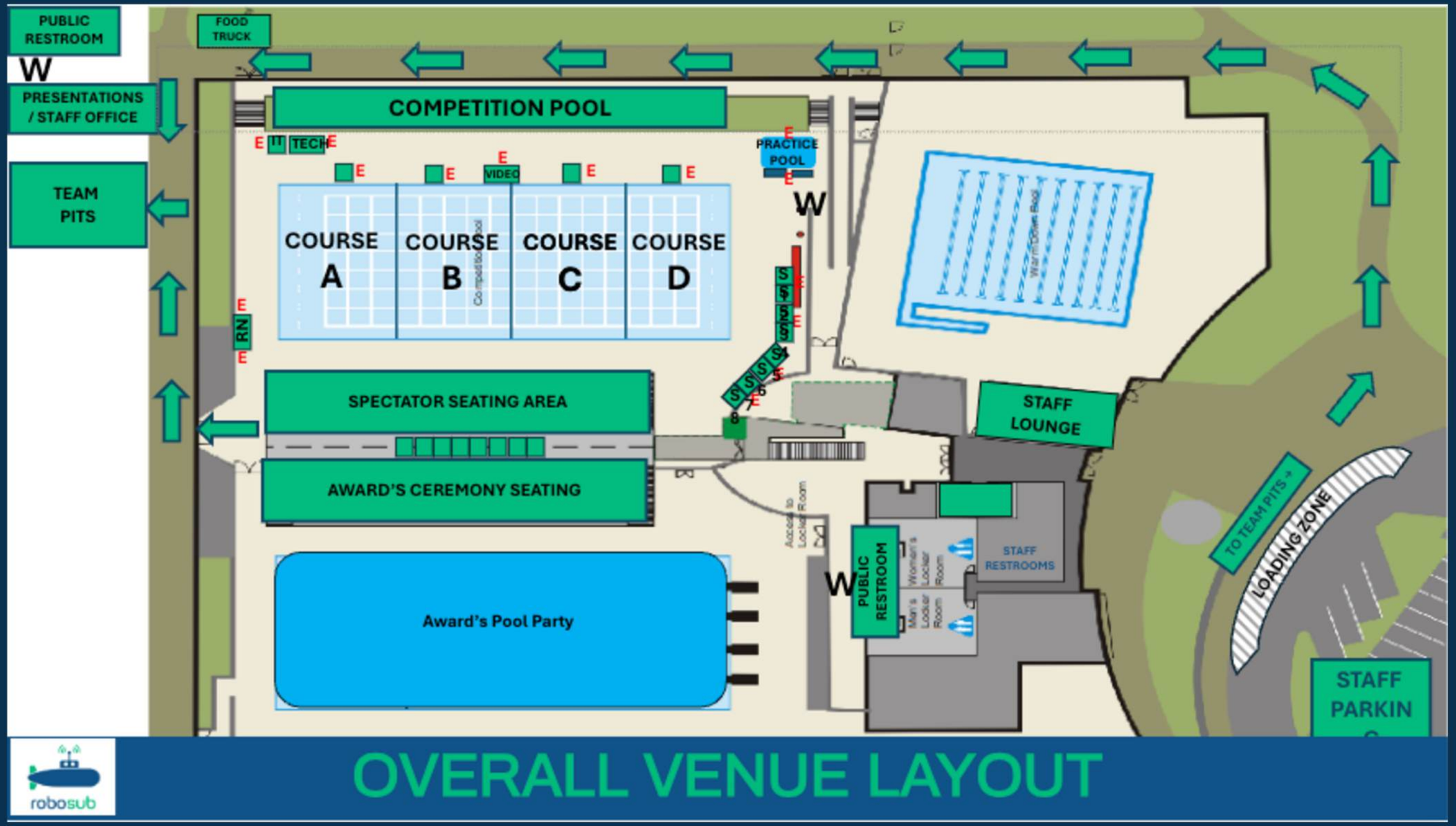
venue

Woollett Aquatics Center

Overview Site Map

1 – Competition Pool
2 – Team Pit Area
3 – Presentations / Staff Office
4 – Staff Lounge
5 – Award’s Ceremony / Party
6 - Loading Zone
7 – Team Parking
8 – Staff/ADA Parking
9 - Food

Subject to change



Subject to change

event hotel & overnight testing

TBA - Official Event Hotel

Booking Information:

- Coming soon...

Overnight Pool Testing:

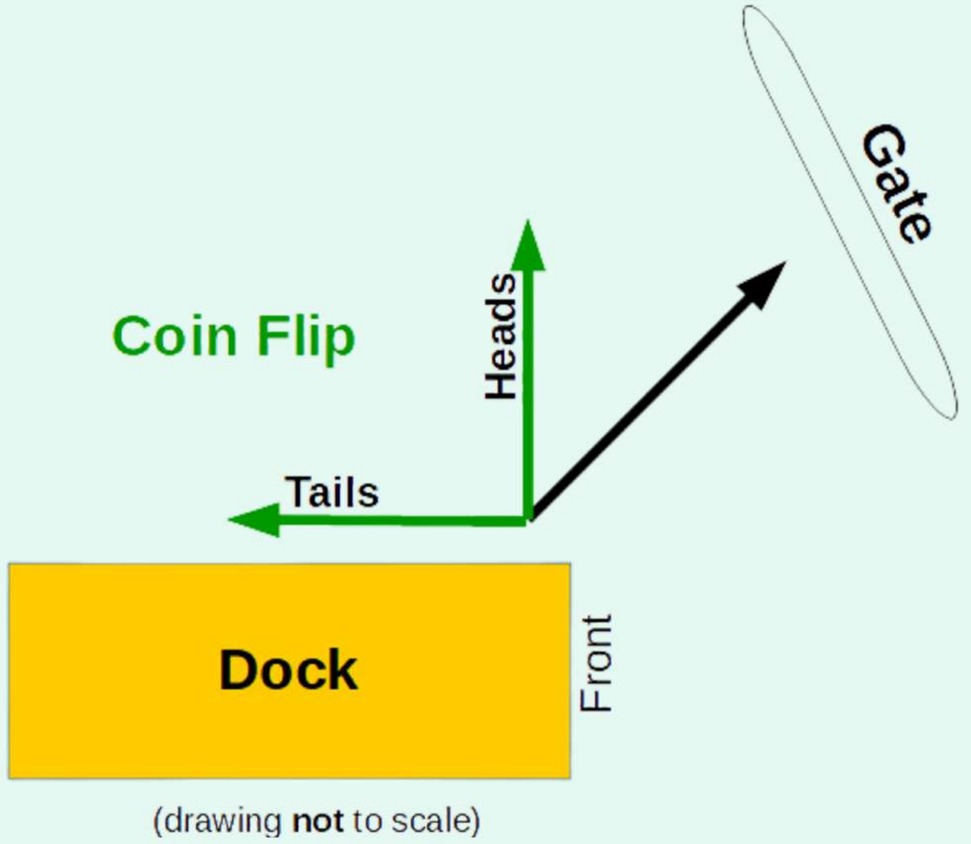
- Hours: 10pm - 2am, starting August 11
- Open to all RoboSub teams
- Follow event pool rules

robosub

task overview

Heading Out (Coin Flip)

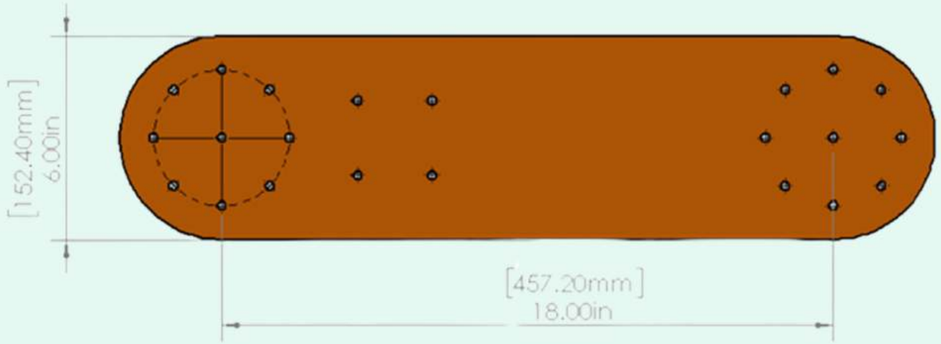
- Teams have the option to start their run with a coin flip to determine the direction of their AUV.
- Coin lands on Heads: 90°
  - AUV ~parallel to gate
- Coin lands on Tails: 180°
  - Tail of AUV is ~pointed toward gate (AUV is backward)

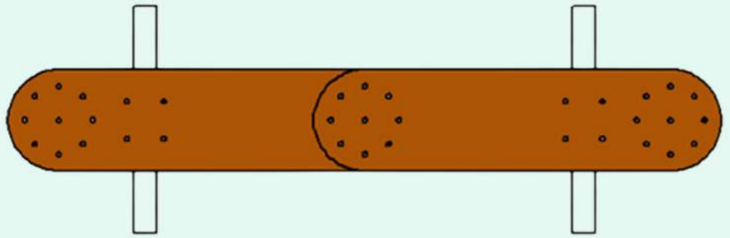


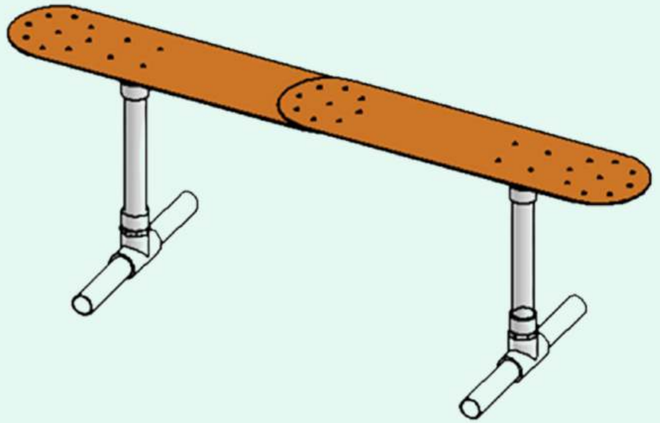
Path

No points associated with the Path

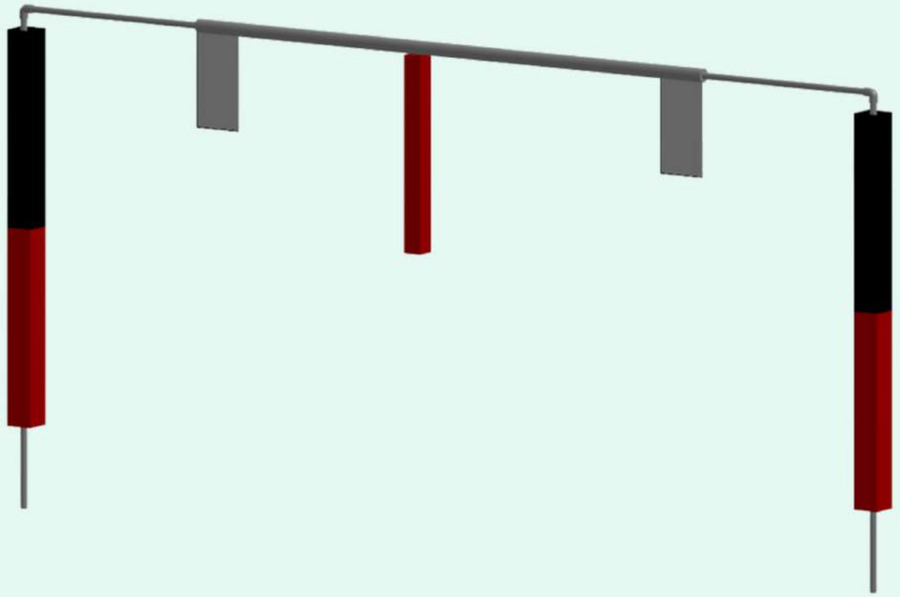
- Two path markers are placed to aid navigation through the course.







Task 1: Collecting Data (Gate)



Reef shark

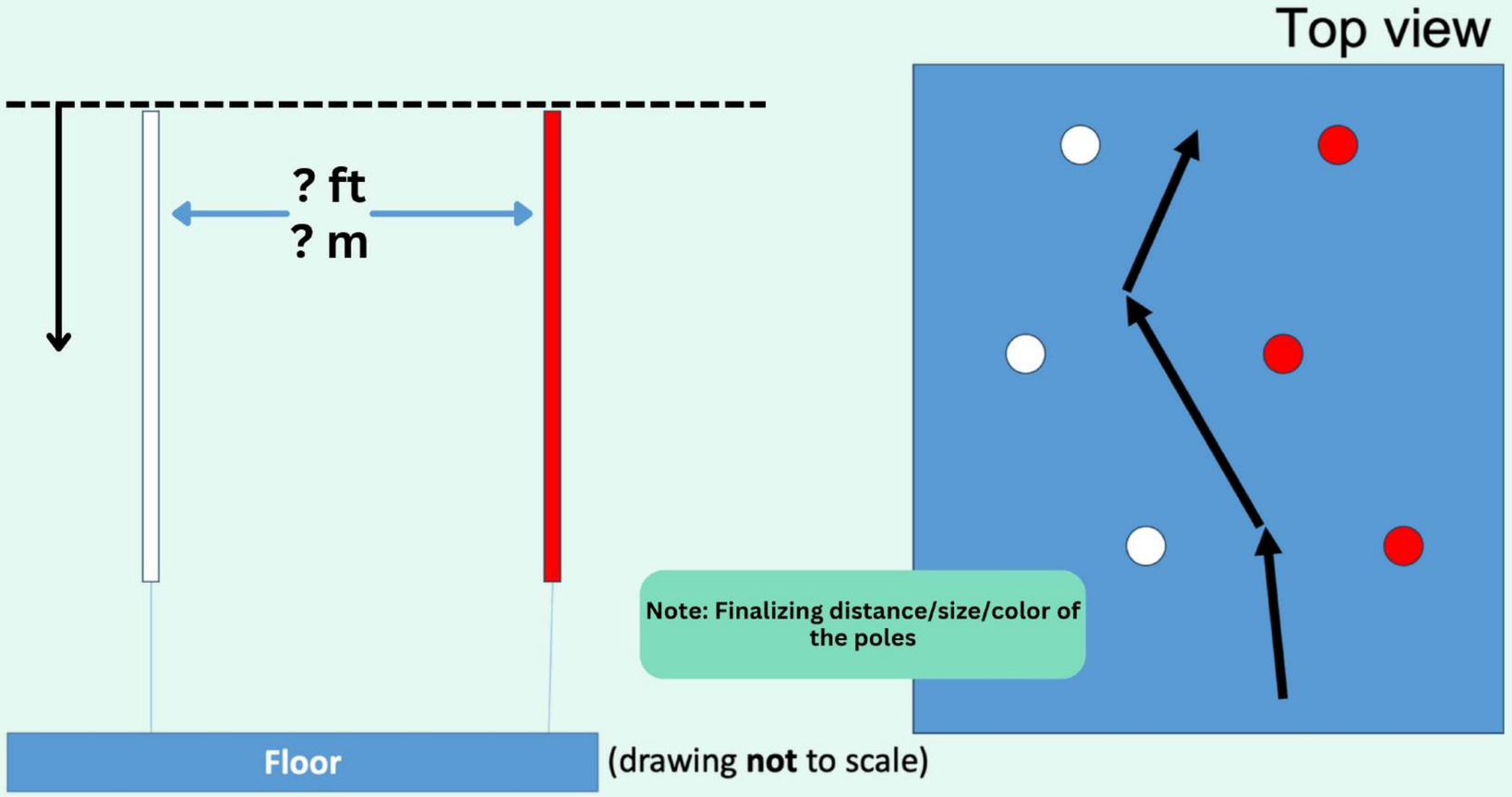
Sawfish

- The AUV navigates through the gate, and chooses a marine animal:
  - Reef shark
  - Sawfish
- Extra points awarded for AUV staying with the choice for the remainder of the tasks

- With Style
  - 10 ft (3m) before/after gate
  - Extra points: Yaw, Roll/Pitch
    - Every 90° change in orientation
      - Yaw +100
      - Roll/Pitch +200
    - Up to 720° (8x)

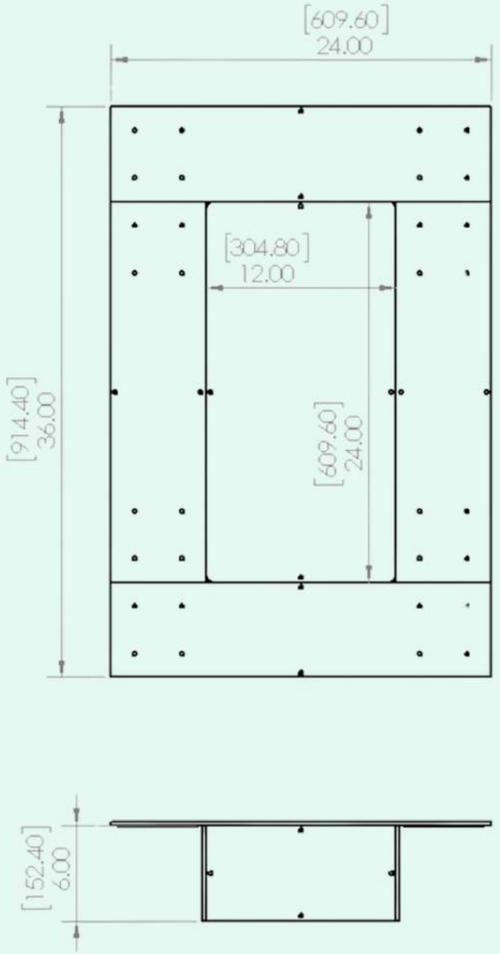
Task 2: Navigate the Channel (Slalom)

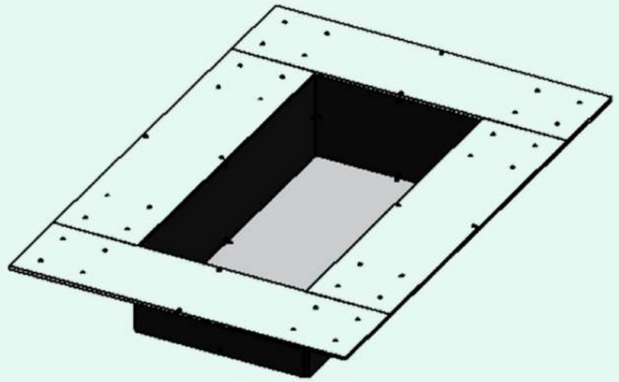
- (**NEW**) The AUV navigates the channel of white and red vertical PVC pipes, in a slalom maneuver. More points for passing below the plane of the pipes.



Task 3: Drop a BRUVS (Bin)

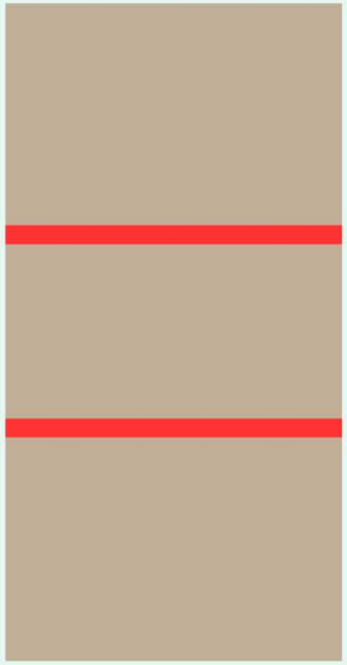
BRUVS: Baited Remote Underwater Video System



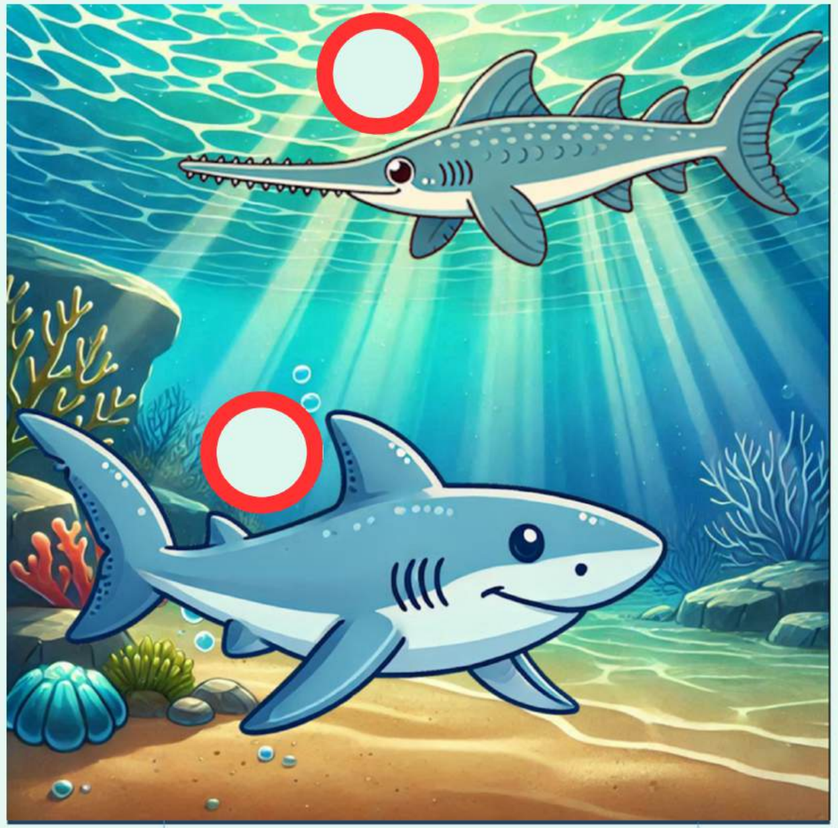


Note: Finalizing the image at the bottom of the bins

- AUV drops up to two (2) markers into the bin. More points awarded for dropping the marker in the center of the bin.



Task 4: Tagging (Torpedoes)

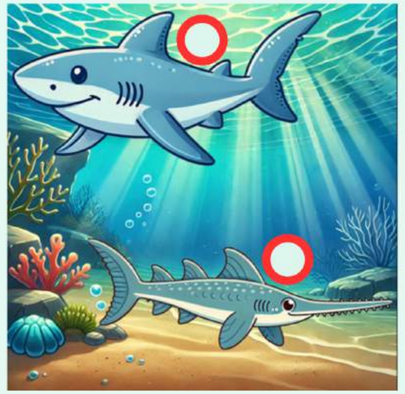


Floor

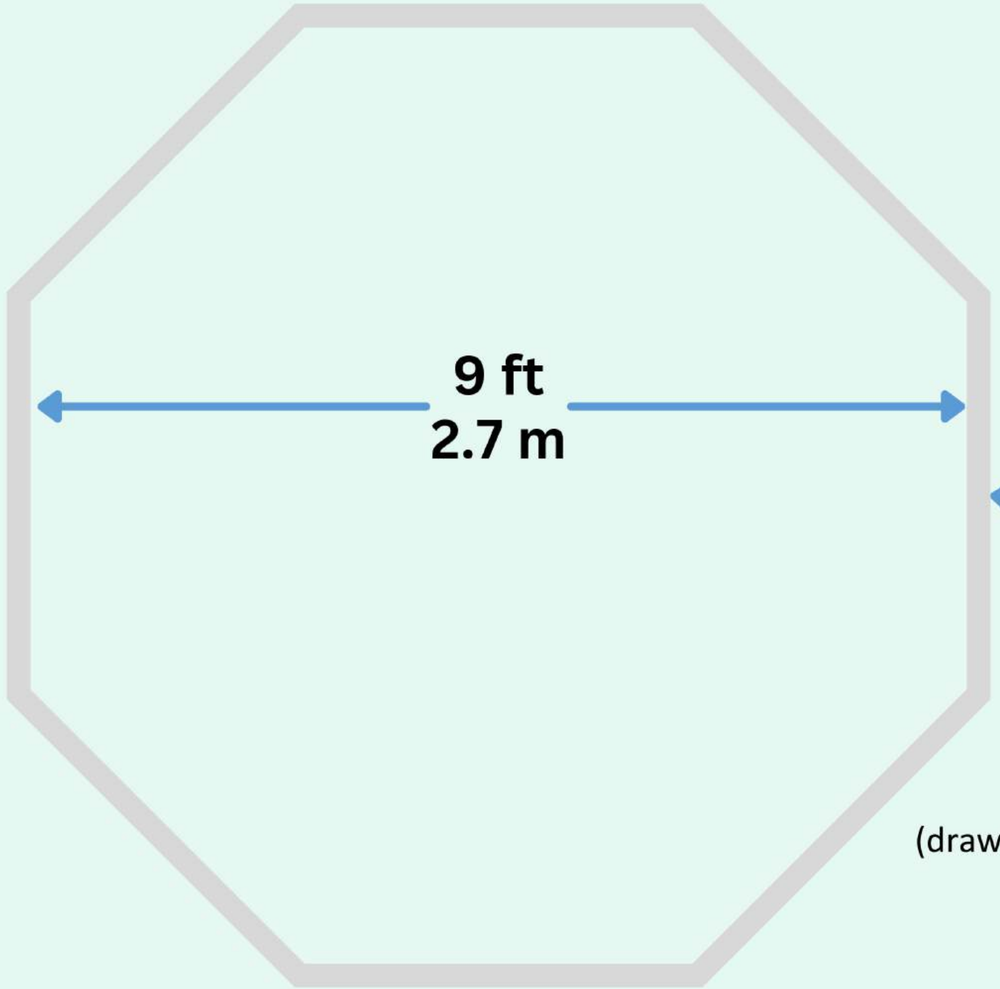
(drawing **not** to scale)

- Tag the Sawfish and/or the Reef Shark with a projectile.
- Most points are awarded for tagging the chosen animal from the Gate (Task 1) first, then the other.

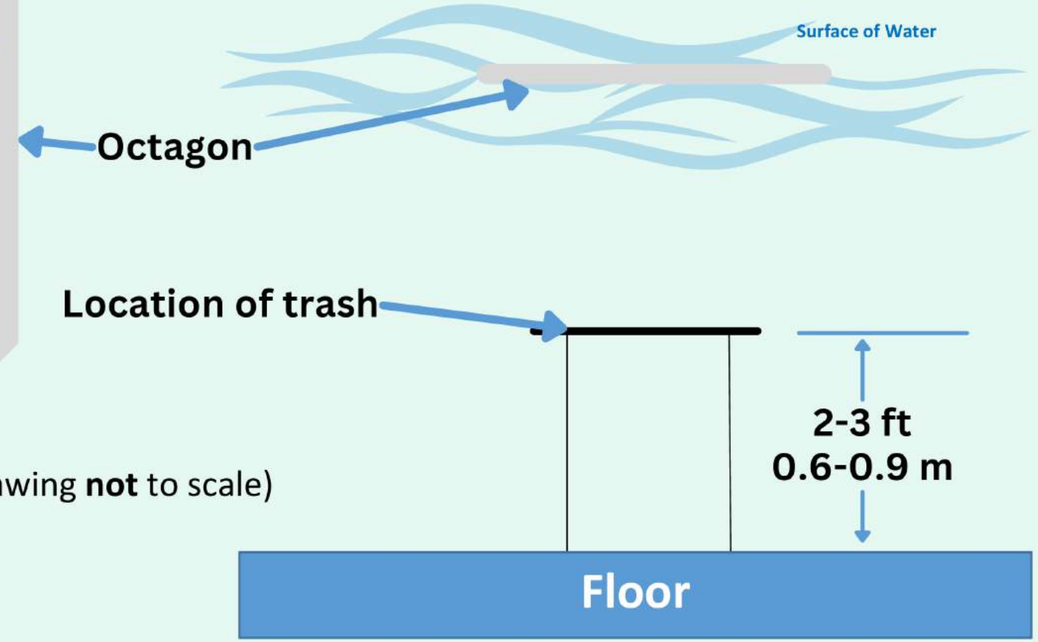
Note: Finalizing the shape/size/color of the opening



Task 5: Ocean Cleanup (Octagon)



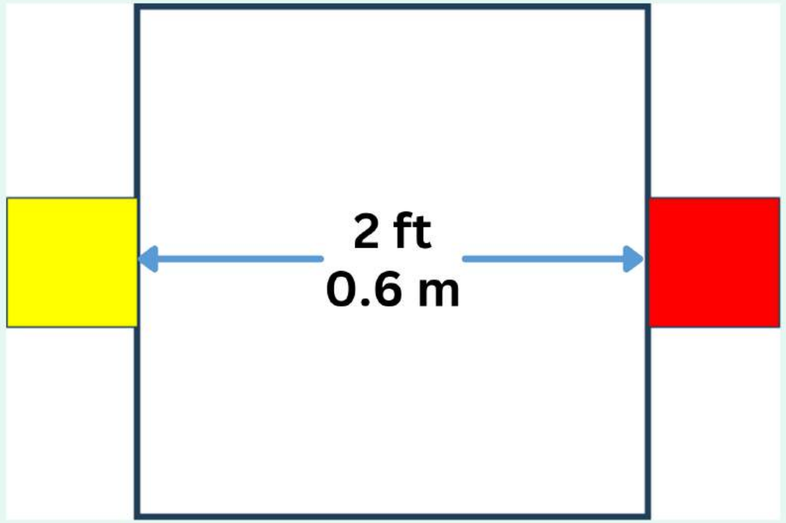
- The acoustic pinger, located on the floor near the center of the octagon, guides the AUV to the task.
- Below the octagon (1/2" PVC pipe) is a table



(drawing **not** to scale)

continued

Task 5: Ocean Cleanup (Octagon)

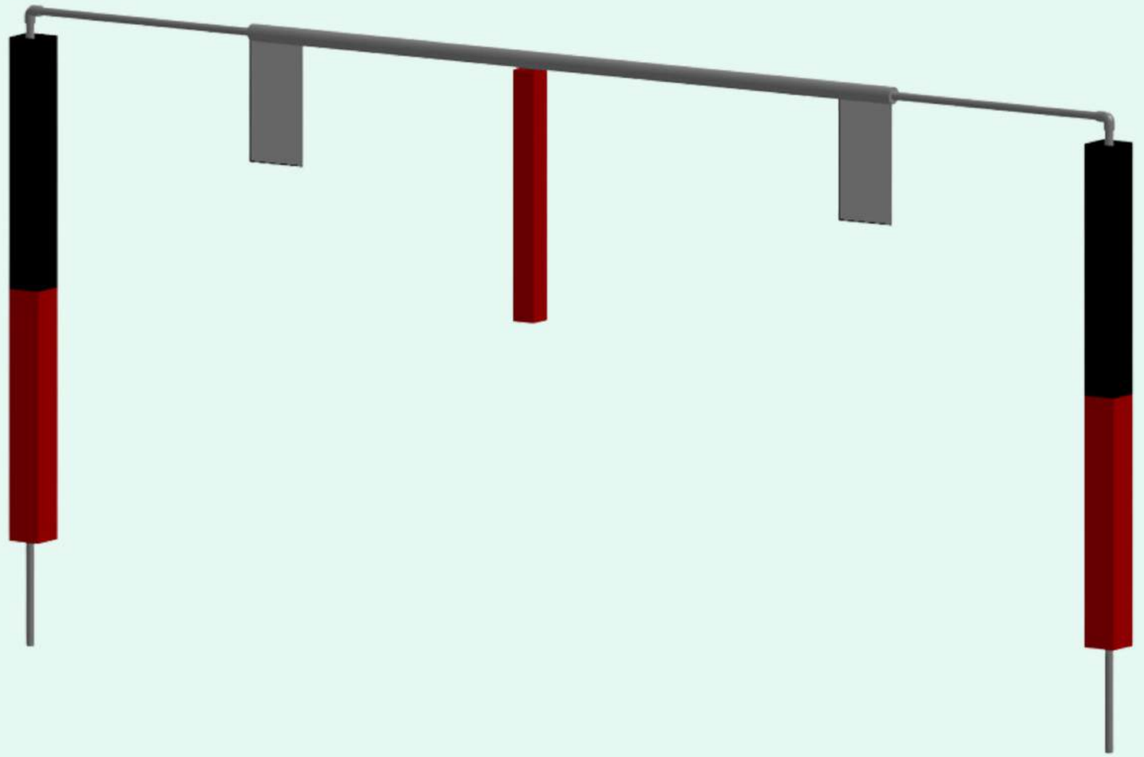


example objects

- A table with trash and two collection baskets is centered and below the octagon:
  - Most points for sorting the trash (2 of each)
- (**NEW**) Extra points for the vehicle rotating the same number of turns as the trash collected in the baskets
  - Three items in the bins? Rotate three times.

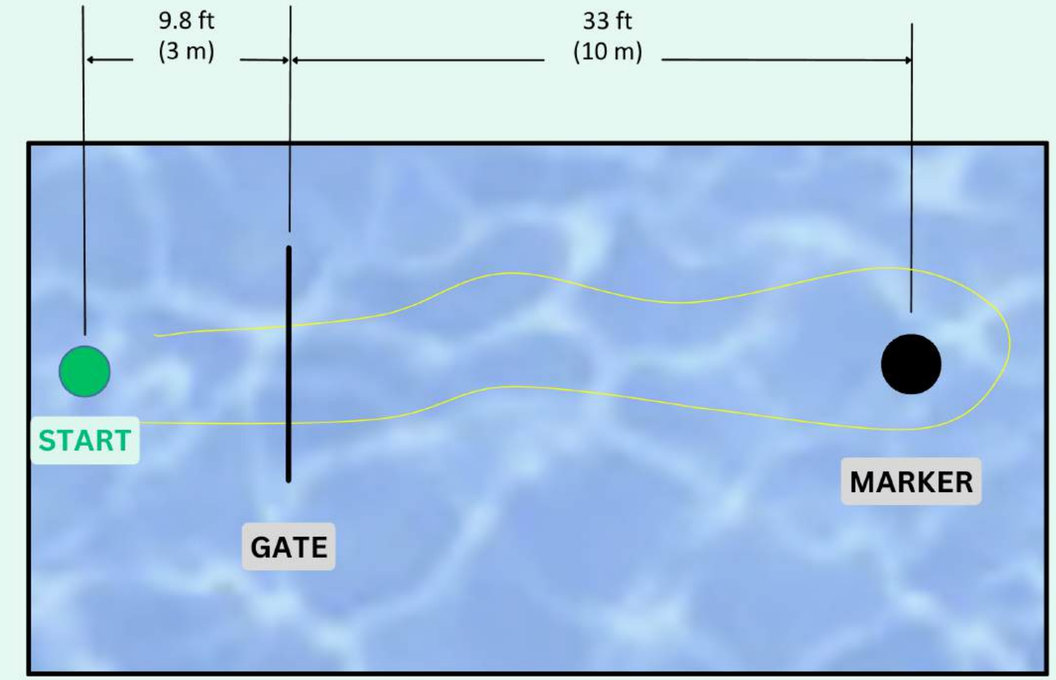
Task 6: Return Home

- (**NEW**) At the end of the run, the AUV passes back through the start gate.



Pre-Qualification

- Optional opportunity to pre-qualify before traveling to competition.
- Specific instructions on the pre-qualifying maneuver is available in the Team Handbook (also available in previous handbooks).



(drawing **not** to scale)

questions?

- robonation.org/discord
- competitions@robonation.org

robosub

robosub

next teamtime

Thursday, April 17 @ 7:00 pm Eastern Time

RoboNation is a 501c3 nonprofit organization whose mission is to provide a pathway of hands-on educational experiences that empower students to find innovative solutions to global challenges. Working together with the industry, research and educators, we have grown to include over nine student competitions and programs and engage more than 250,000 students per year.

For more information contact competitions@robonation.org