

Pool Rules & Challenges

January 26, 2019

General Pool Event Rules

- A. The ROV must move only under its own power. Teams will incur a penalty if they pull or otherwise maneuver the ROV by the tether.
- B. If the ROV or tether becomes tangled on the course structure or is otherwise unable to move on its own power, a team member must notify the judge that they would like to try to free the ROV, or request diver assistance to free or retrieve the ROV. Under this circumstance teams may pull on the tether. The session timer will continue to time the run and a 2-minute penalty will be added to the elapsed time. If the ROV is pulled by the tether or moved by a diver, the ROV must be returned to the location that it was moved from before it may continue competing.
- C. The team must use the same ROV for all pool events.
- D. The ROV may be worked on or adjusted during competition, however the session timer will continue to run.
- E. Adjustments to buoyancy, including adding or removing buoyancy materials, may be made during competition.
- F. Only two team members are allowed on the pool deck in the competition area during an event.
- G. The on-deck team members may switch drivers at any time and as many times as they choose.
- H. All team members must wear shoes with rubber soles while on the pool deck.

1. Retrieval Mission

*Please note that this is a modified version of the National SeaPerch Competition Rescue & Recovery Mission. Complete rules can be found here: <https://www.seaperch.org/course>

- a. Teams are allowed one 5-minute run for the Rescue & Recovery Mission.

b. Course Navigation:

- i. *Start of run:* The ROV must be surfaced and touching the wall under its own power (team members may not be touching the ROV).
- ii. *The First Hoop:* Following successful completion of Task 1 – Beacon, the ROV must pass through the first hoop before proceeding to any other tasks and its tether must remain in the first hoop while the ROV is competing. No points will be awarded if the ROV exits the mission field and re-enters without passing through the hoop.
- iii. *Mission Completion (End of Run):* The ROV must exit the mission field through the course hoop. The mission is complete when the ROV touches the pool wall while surfaced (any part of the ROV is above the surface of the water). Upon return to the pool wall, teams should indicate to the judge that they have completed the mission and do not intend to conduct

additional tasks. The mission is stopped if the allotted time expires even if the ROV has not completed all tasks.

c. Task – Retrieval Mission

- i. *Task Requirement:* The ROV must retrieve canisters from under the Vault hoop opening and place them on the platform or sockets on the staging station. Attachments or accessories to move canisters will not be provided.
- ii. *Scoring:* Points are awarded for canister placement upon mission completion.
 1. Canisters placed on the Staging Station platform board may be moved to a socket at any time before the mission is completed. Points will not be awarded for canisters that fall or are knocked off of the Staging Station.
 2. The ROV must enter and exit through the Vault hoop for each canister.
 3. The canisters are wiffle balls of 3 varying sizes with rope hoops attached for transportation. For specifications, [click here](#).
- iii. *Other Notes:*
 1. Canisters may be retrieved in any order but may only be retrieved and transported one at a time.
 2. Canisters remain in play until they are placed on the Staging Station. If a canister is dropped, dragged, or pushed into an adjacent pool lane (another team's mission field) it is out of play and may not be retrieved.

2. Obstacle Course Rules

- a. Teams will be given a 5-minute period for the obstacle course event.
- b. Teams must navigate their perch through a series of 5 rings as many times as they can in 5 minutes.
- c. *Scoring:* Points will be awarded for the number of rings the team successfully navigates in the allotted time.
- d. **Course Navigation:**
 - i. *Start of run:* The ROV must be surfaced and touching the wall under its own power (team members may not be touching the ROV).
 - ii. The ROV is required to pass through each of the five obstacle course hoops in order starting at the hoop closest to the pool wall. The ROV must surface after clearing the last hoop (the hoop furthest from the pool wall). Surfacing is considered complete when any part of the ROV breaks the water surface. The ROV must re-submerge and pass through each of the 5 hoops in order heading back to the pool wall.
 - iii. *End of Run:* The run is complete when the allotted time runs out.

3. Speed Challenge

- a. Students will race their perch in a straight line from one side of the pool to the other and back.
- b. *Scoring:* Points will be awarded based on finish time to the nearest millisecond.
- c. **Task Requirement:**
 - i. *Start of run:* The ROV must be surfaced and touching the wall under its own power (team members may not be touching the ROV).
 - ii. The vehicle must navigate to a designated marker (approximately 30' away) and return.
 - iii. *End of Run:* The challenge is complete when the vehicle surfaces and touches the starting wall.

4. Judges' Interview

*For the national competition, it is strongly recommended that teams maintain an engineering notebook to document the engineering process used to design and modify their SeaPerch ROV to meet the pool challenges. Engineering notebooks are used by engineers to document ideas and the steps taken to solve engineering problems during design projects. The judges' interview portion of this competition is meant as a substitute to this.

- a. Students will sit meet with judges to discuss their understanding of engineering principles and design concepts.
- b. Students can prepare by thinking through the following:
 - i. Clearly articulated project or problem to be solved
 - ii. Project constraints and parameters
 - iii. Detailed design ideas
 - iv. Procedures to implement and test the design
 - v. Test results
 - vi. Recommendations for design modifications
 - vii. The design – test – modification cycle
 - viii. Proposed future steps
 - ix. General understanding of scientific principles involved