

Competition Classes Overview

SeaPerch Challenge 2023

www.seaperch.org

The 2023 SeaPerch Season will include three (3) competition classes. These classes are updated from past years so please review the below chart carefully. **Please note, stock classes are limited to PVC, CPVC, and PEX pipe for the ROV frame and may not include 3D printed frames.** All classes may include 3D printed attachments or non-frame parts.

Rules	Middle School Stock Class	High School Stock Class	Open Class
BUDGET*			
The total cost of modifications to the final ROV must be \$25 or less	X	X	
The cost of modifications may exceed \$25			X
MATERIALS			
Frame built using <u>only</u> PVC, CPVC, PEX pipe and fittings.	X	X	
Frame may include 3D printed or additive manufactured parts as well as other materials.			X
Frame parts may be made using CNC machinery.			X
Attachments and non-frame parts(i.e., hook, gripper, propeller shroud) may be made from various materials to include 3D printed or additive manufactured parts.	X	X	X
POWER SUPPLY			
Must design for and utilize a 12-volt power source	X	X	X
May utilize a second power source (no more than 12-volts) to power auxiliary equipment	X	X	X
MOTORS			
Must include waterproofed motors	X	X	X
Must use ONLY stock SeaPerch motors (Jameco Electronics 232022) for propulsion**	X	X	X
Additional non-stock motors may be used for non-propulsion uses	X	X	X
May include more than 3 thrusters (i.e., motor and propeller assembly)			X

Rules	Middle School Stock Class	High School Stock Class	Open Class
CONTROLLERS			
Must only use simple on/off switches for thruster controls	X	X	
May use power conditioning or pulse-width modulation (PWM) controls for thruster controls			X
May use microcontrollers such as Arduino or Raspberry Pi for thruster controls			X
May use PWM, microcontrollers, or other devices for non-thruster controls	X	X	X
May use a fixed or variable resistor to reduce voltage	X	X	X
STRUCTURE/SIZE			
Must fit through 18" diameter hoop	X	X	X
COMPETITION CRITERIA			
ROV must not be modified after compliance check (except for buoyancy)	X	X	X
The same ROV must be used for both pool events	X	X	X
Team may include a student in 8 th grade or below	X		X
Team may include a student in 9 th grade or above		X	X

*Budget Guidelines include:

- Donated material will be assessed at what the cost would be to procure the material.
- Spare parts and tools are not included in this budget.
- Materials used on earlier prototypes are not included in this budget. Only materials and supplies used on the competition ROV and controllers that are not part of the standard SeaPerch ROV kit should be included.
- Proof of budget compliance must be made available to the judges upon request.
- 3D printed parts will be costed out at \$0.05 per gram.

** Thrusters used for propulsion are thrusters that directly exert force against the water causing the ROV to move in any direction.