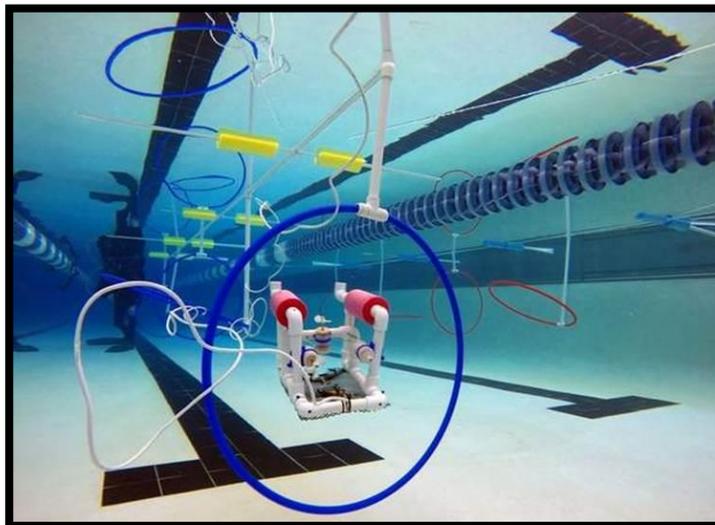# Winter 2017 SeaPerch Design Challenge

Challenger Colorado, with the financial support of the United States Air Force Academy, is again sponsoring a SeaPerch Design Challenge event for middle and high school students. Challenger is awarding grants to qualified teachers at this time.

SeaPerch is an innovative, project-based engineering activity in which students build a remotely operated vehicle (ROV) from off-the-shelf parts. Working in teams, students learn about robotics, problem solving, and engineering through designing, building, and testing a SeaPerch ROV. The project can be accomplished in either a classroom or in an after-school club setting. SeaPerch is sponsored by the Office of Naval Research (ONR) and managed by the Association for Unmanned Vehicle Systems International (AUVSI) Foundation. Additional information about SeaPerch, including photos and videos, can be found on their website, www.seaperch.org.

The SeaPerch Design Challenge event will be divided into two divisions, the Junior Division for grades 6 – 8 and the Senior Division for high school students in grades 9 – 12. The Design Challenge is comprised of two separate competitions. In the Obstacle Course, teams must maneuver their SeaPerch through a submerged PVC obstacle course in six minutes or less. The Real-World Design Challenge presents teams with a "real-life" engineering situation on competition day; teams then have one hour to reconfigure their SeaPerch to meet the challenge. A team consists of up to 8 students and one coach. **The TENTATIVE date for the event is Saturday, February 25, 2017.** The event is open to all middle and high school students and teachers.

Grants are available for qualified teachers that include (up to) 4 SeaPerch kits, 1 SeaPerch toolkit, and teacher training/support from Challenger staff. Teachers who participated in a past Design Challenge or have built SeaPerch in the past are eligible to receive two new SeaPerch kits. Please specify which grant you are applying for.

The SeaPerch ROV comes with curriculum that closely aligns with Colorado state standards (see chart on the following page) in the areas of science, technology, engineering and mathematics for both middle and high school students.

Winter 2017 SeaPerch DESIGN CHALLENGE

Colorado State Standards

	Subject Area	Project Phase	
		Design, Construction & Testing	Reporting & Presentation
High School	Science	1.1, 1.5	
	Math	1.2, 3.1, 4.4, 4.5	
	Reading/Writing/Communicating	1.2, 4.1 (12th grade) 2.2, 2.3 (11th grade) 1.2, 4.1 (10th grade) 1.2, 4.1, 4.2 (9th grade)	1.1, 1.2, 3.1, 3.2, 3.3, 4.1 (12th grade) 2.2, 2.3, 3.2, 3.3, 4.1, 4.2 (11th grade) 1.2, 3.2, 3.3, 4.1 (10th grade) 1.1, 1.2, 3.2, 3.3, 4.1, 4.2 (9th grade)
	Educational Technology-Information Literacy*	I, II, III, IV, VI	I, II, III, IV
Grade 8	Science	1.1	
	Math	3.1, 2.2	
	Reading/Writing/Communicating	2.2, 4.1	2.2, 3.3, 4.2
	Educational Technology-Information Literacy*	I, II, III, IV, VI	I, II, III, IV
Grade 7	Science	n/a	
	Math	2.2, 4.2	
	Reading/Writing/Communicating		1.1, 3.2, 3.3
	Educational Technology-Information Literacy*	I, II, III, IV, VI	I, II, III, IV
Grade 6	Science	1.4	
	Math	2.2, 3.1, 4.1	
	Reading/Writing/Communicating	1.1, 4.1	1.1, 3.2, 3.3, 4.1
	Educational Technology-Information Literacy*	I, II, III, IV, VI	I, II, III, IV

*Although there are no state subject standards for Technology or Engineering, the Colorado Department of Education has created ET-IL Standards for Students:

I. Creativity and Innovation: Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology.

II. Communication and Collaboration: Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.

III. Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.

IV. Critical Thinking, Problem-Solving & Decision-Making: Students use critical thinking skills to plan and conduct research, design and manage projects, solve problems, engineer solutions and make informed decisions using appropriate digital tools and resources.

VI. Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations.