

# Engineering & Communication: Engineering Evaluation

**Team name and # AS IT APPEARS ON THE TEAM LIST:**

**Judge's name:**

**1 0 = Yes (1) or No (0)    2 1 0 = 2: Excellent, 1: Good, 0: Poor or missing**

**SCORE**

**Teamwork/Presentation**

**16 pts max**

- The team was prepared for the presentation 1 0
- The presentation was thought through, organized, and articulate 1 0
- The presentation covered design and building process 1 0
- The presentation addressed possible safety issues 2 1 0
- The presentation highlighted design innovations/creative ideas 2 1 0
- The team demonstrates an understanding of the ROV systems and operation 2 1 0
- Each member understands its systems and operations 2 1 0
- Team members exemplify teamwork and ideals for working together 2 1 0
- Team members demonstrated they encountered challenges with determination and resolve as well as with a sense of humor 2 1 0
- Team demonstrates an understanding of the role that ROVs play in the mission theme 1 0

**Overall Design and Workmanship**

**12 pts max**

- Ready for the water 1 0
- Been tested prior to the event 1 0
- Passes the safety inspection (team has inspection card) 1 0
- Team developed a safety and/or vehicle checklist or protocol 1 0
- Meets the competition safety requirements 1 0
- Displays warning labels and safeguards 1 0
- Made of non-corrosive materials 1 0
- Cannot release hazardous waste into the pool 1 0
- Systems well laid out 1 0
- Components easy to access for maintenance & troubleshooting 2 1 0
- Built to accomplish mission 1 0

**Systems Design and Operation**

**Overall Vehicle System**

**13 pts max**

- Team built the systems "from scratch" or using individual commercial components. (Score this item by adding one point for each sub-system built in this manner) 7 6 5 4 3 2 1
- Safety is increased with design innovations 2 1 0
- Cost is decreased with design modifications 2 1 0
- Functionality is increased with design or modifications 2 1 0

**Control and Electrical System**

**7 pts max**

- Control System is thought through and designed logically 1 0
- Components logically and neatly incorporated 1 0
- Fuse(s) in place on the positive side 1 0
- Computer or Manual Controllers (**Score one set**)
  - Computer - software code is thought thru 1 0
    - designed by students 1 0
    - team has a good command of s/w flow 1 0
    - the system is operational 1 0
  - OR**
  - Manual - switches laid out intuitively 1 0
    - switches are clearly labeled 1 0
    - students are able to manipulate switches easily 1 0
    - the system is operational 1 0

<b>Propulsion</b>	<b>5 pts max</b>	
Thrusters are securely attached	1 0	
Thrusters do not obstruct water flow	1 0	
Thrusters are waterproofed and protected	1 0	
Appropriate number of thrusters to accomplish mission	1 0	
Appropriate size of thrusters to accomplish mission	1 0	
<b>Buoyancy and Ballast</b>	<b>3 pts max</b>	
Vehicle has buoyancy/ballast system	1 0	
System takes stability into account	1 0	
System takes missions into account	1 0	
<b>Sensors</b>	<b>6 pts max</b>	
Cameras are suited to mission objectives (i.e., waterproofed, no obstructions to view)	2 1 0	
Sensors demonstrate creativity and application of knowledge and skills	2 1 0	
Other sensors present (1 pt for each up to 2 pts)	2 1 0	
<b>Payload Tools</b>	<b>8 pts max</b>	
Payload tools are appropriate for accomplishing mission	2 1 0	
Payload tools incorporate unique features	2 1 0	
Single payload tool has multiple uses	2 1 0	
Payload tools demonstrate creativity and application of knowledge and skills	2 1 0	
<b>Tether</b>	<b>4 pts max</b>	
Tether is securely attached to ROV	1 0	
Tether is neatly bundled and protected	1 0	
Tether is easy to handle	1 0	
Team developed tether management protocol	1 0	
<b>Originality</b>	<b>4 pts max</b>	
Contains original concepts and unique designs in vehicle	1 0	
Team completed actual construction of ROV	1 0	
Team designed and completed electrical system	1 0	
Team developed software for ROV	1 0	
<b>Budget</b>	<b>2 pts max</b>	
Project stayed on Budget	1 0	
Companies, individuals who contributed funds, equipment, and/or technical/moral support are acknowledged	1 0	
<b>Engineering Evaluation Score:</b>		
<b>Discretionary Points</b>	<b>3 pts max</b>	
Bonus points for a job well done	3 2 1	
<b>Penalty Points</b>	<b>-5 pts max</b>	
Mentor, instructor, etc. exercised more than advisory role	-3 -2 -1	
Overuse of commercial, off-the-shelf systems	-2 -1	
<b>Engineering Evaluation Total Score:</b>		