

robosub

Judge's Brief

RoboSub 2021

Agenda

- Welcome
- RoboSub 2021
- Instructions, Assignments & Judges' Page
- Submission Requirements
 - TDR | Skills Videos | Website
- Evaluation Forms
- Optional Scoring Rubric & Worksheet
- Important Dates
- Questions





RoboSub is an international competition that invites participants to tackle simplified versions of challenges facing the underwater maritime industry.

These challenges may include oceanographic exploration and mapping, detection and manipulation of objects, and pipeline identification and tracking.



Welcome Evaluators

Kelly Cooper
ONR

Tom Curtin
U of WA APL

Kallie Crowell
*NASA ASTRO CAMP-
Stennis, MS*

Connell D'Souza
MathWorks

Dan Deitz
ONR

**Chase
Gruszewski**
*ONR Reservist;
Codeable*

Kevin Hagan
Peraton

Anthony Jones
NIWC Pacific

Alex McNair
*Raytheon/Navy
Reserves*

Travis Moscicki
NIWC Pacific

Rick Nagle
Peraton

Sean Newsome
Shorebreak Tech

Dave Novick
*RoboSub TD/Sandia
National Laboratory*

Yiannis Papelis
*Old Dominion
University*

Rich Patterson
Kongsberg Maritime

Mark Post
*Northrop
Grumman*

Rob Simmons
*Grey Hawk
Strategic*

Tom Swean
ONR (ret.)

Chris Thorton
Peraton

Joshua Vaughan
*ULL / Oak Ridge
National Labs*

Chris Weekley
Peraton

Mingxi Zhou
*University of Rhode
Island*



RoboSub 2021

- Physical competition cancelled
- Team submissions collected
 1. Technical Design Report (TDR)
 2. Skills Videos
 3. Website

Number of teams:
54 teams



Instructions

Judges Page:

www.robosub.org/judges

To follow along with the information on the next few slides, please go to the [Judges Page](#).



Access Submissions

- Access the Judges Page and navigate to the Teams section
- TDRs, skills videos and websites linked for each team



Evaluate Submissions

- Review submission criteria
- View your Judges assignments
- Click the applicable Evaluation Form link to submit scores

[July 25 | Scores Due](#)



Debrief & Awards

- Judges will meet to debrief final standings and awards on **August 4 at 1800 ET**
- Judges are invited to join the virtual awards celebration on **August 7 at 1300 ET**



02 | Amador Valley High School
Amador Valley Robotics | AVBOTZ
[Read More](#) ^

Pleasanton, California, USA
[Website](#) | [Twitter](#) | [Instagram](#)
[Technical Design Report](#)

Skills Videos: [Hull Design](#) | [Sensor Optimization](#)

AVBotz is a student-run robotics team of Amador Valley High School students in Pleasanton, California, a suburb on the East Bay of Silicon Valley. The Amador Valley HS Robotics Club (AVBotz) was founded in 1999 as a means for students at Amador Valley to explore and apply technologies related to the field of robotics. Since then, our members have perpetuated a legacy of learn-by-doing problem solving and independent learning, designing our own AUVs from scratch.

Website Tip:

Click on the links in this section to access each submission.

Technical Design Report (TDR) Requirements

Abstract (20 points) - The abstract is a short summary of the main points in the paper. The paper should primarily describe the linkage between your overall competition strategy and your system architecture, design and engineering decisions.

Competition Strategy (50 points) - This section should discuss how the team plans on approaching the course and how the vehicle design relates to this approach. The course consists of multiple tasks with associated points for accomplishment. The only required task is passing through the start gate. Other tasks are optional and can be attempted in any order. The more tasks a vehicle is designed and engineered to accomplish, the more complex the overall vehicle system will be. The discussion should include the team's consideration of the trade-offs between system complexity and reliability. For example, teams have a limited number of working hours to prepare for the competition; this time could be spent adding additional capabilities or testing and improving the reliability of an existing capability. As system complexity grows, changes in subsystems can propagate in unmanageable ways when time is limited. Clearly, the goal of a competition is to score more points than the other teams. There are many ways to do this. Studying past competitions may be instructive. Based on history and the system engineering talents of your current team, describe your strategic vision.

Design Creativity (40 points) - Given your strategy for winning and your approach to managing complexity, describe the creative aspects of your system. Novelty may occur at component, subsystem, and/or integrated system levels. Describe your experience in making both architectural/design decisions and system engineering decisions. This section should not include detailed component descriptions and/or specifications not of original design. The latter should be described in Appendix A.



TDR Requirements provided in Scoring Rubric -TDR Req tab



Technical Design Report (TDR) Requirements (cont'd)

Experimental Results (40 points) - This section should describe various tests accomplished to date and planned, both in-water and in simulation, including pre-qualifying runs. There is a strong correlation between in-water testing time and competitive performance in the arena. Given typical student time constraints, balancing creative design and system engineering with testing and experimentation can be a challenge. How did your team estimate the amount of testing required to meet your reliability goals? How did you balance the demands of design and engineering with those of testing and experimentation?

Acknowledgements (10 points) - Participating in the competition, as in all research projects, involves marshalling resources and support beyond the efforts of individual team members. This support can take many forms, such as technical advice, labor, equipment, facilities, and monetary contributions. Acknowledging those who have underwritten your efforts is important.

References (10 points) - As with any technical publication, original ideas and content not generated by the paper's authors should be properly cited. While there are many citation styles, the IEEE Conference Proceedings style is recommended, found on the following link:

www.ieee.org/conferences/publishing/templates.html.

Adherence to Formatting Guidelines (10 points) –

- 10 page limit (excluding References and Appendices)
- 8.5 x 11 in. page size
- Margins \geq 0.8 in.
- Font: Times New Roman 12pt
- Header on every page including team name and page number
- Submitted in pdf format

Maximum of 180 points available for TDR

TDR Requirements provided in Scoring Rubric -TDR Req tab



Skills Video Requirements: Technical Review (part 1)

TECHNICAL REVIEW

Team Introduction (5 points) - Team members who are presenting on the video, should introduce themselves (name, academic discipline and level of education) and highlight their role and relevance to the topic. All team members are not required to make an appearance.

Sub-System Overview (15 points) - This section should contain a brief overview of the Autonomous Surface Vehicle (ASV) sub-system requirements of the topic selected. Topics allowed: 1) Hull Design, 2) Power Management, 3) Propulsion System, 4) Sensor Optimization.

Competition Strategy (30 points) - Teams should discuss their competition strategy, based on the topic they have selected. This section should also discuss rationales for design and assign a confidence rating (for successful completion) for tasks the team is planning on attempting.

Development Testing (30 points) – Realizing that teams may or may not have been able to test their vehicles, this section should address the efforts that teams have safely exercised to continue development of their system. Describe the types of testing efforts planned and/or implemented during your development cycle (component, software, and simulation).

- Keep in mind that each team has experienced different ripples of COVID-19.
- The intent of this category is to award points for testing efforts planned, but may also include implementation

Skills Video Technical Review SUB-TOTAL = 80 points max



*Video Requirements provided in **Scoring Rubric-Skills Video Req tab***



Skills Video Requirements: Non-Technical Review (part 2)

NON-TECHNICAL REVIEW

Video Format (5 points) - Video is no more than eleven (11) minutes in length and includes all required topics: Introduction, Sub-system overview, Competition strategy, Development and testing

Visual Quality (30 points) - Through use of visuals and text, video showcases different aspects of sub-system development in a compelling, cohesive way.

Effective Communication (45 points) - Strong communication skills are critical to bringing projects to life and garnering support. Whether presenting in person or through video, ideas must be delivered in a clear and convincing manner. Project supporters, such as supervisors, sponsors, or advisors must understand ideas, and be convinced of their potential. Successful teams will use the video medium to effectively communicate the sub-system they chose and the associated competition strategy and testing plan for that sub-system.

Skills Video NON-Technical Review SUB-TOTAL = 80 points max



Maximum of 160 points available for Skills Videos



Video Requirements provided in Scoring Rubric-Video Req tab

Website Requirements

Team Information (30 points) Teams must maintain a website that reflects their current competition team, including team information (name and team contact information), team member information (name, picture, contact information) and a list of sponsors with logos.

Design Documentation (50 points) - Teams must maintain a website documenting the development of their vehicle. Layout and contents of the website are left for the teams to develop; however, the website should include media (pictures, videos, etc.) taken during development and testing. Teams are encouraged to build an archive of previous vehicles and design reports, if applicable.

Website Quality (50 points) - Layout and contents of the website are left for the teams to develop. Through use of visuals and text, the website showcases the team and vehicle development in an organized and cohesive manner.

Maximum of 130 points available for Website

Website Requirements provided in Scoring Rubric-Website Req tab



Evaluation Forms

robosub

About Program Resources Get Involved Stories

Evaluation Forms

TDR Evaluation Form
Follow steps below to submit scores:
[Read More](#) ▾

Skills Video Evaluation Form
Follow steps below to submit scores:
[Read More](#) ▾

Website Evaluation Form
Follow steps below to submit scores:
[Read More](#) ▾

Website Tip:
Click on "Read More"
to access instructions
& link to forms

Teams



Example taken from Evaluation Forms section of Judges Page



Evaluation Forms - Instructions

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Evaluation Forms

TDR Evaluation Form

Follow steps below to submit scores:

[Read More ^](#)

1. Click the link for **TDR Evaluation Form**: robosub.org/judges/tdr.
2. Fill out your **name** & **team** you are evaluating
3. Add **scores** & **comments** for each component
4. Click **submit** to complete

Repeat steps 1-4 for each submission

Skills Video Evaluation Form

Follow steps below to submit scores:

[Read More ^](#)

1. Click the link for **Skills Video Evaluation Form**: robosub.org/judges/video
2. Fill out your **name**, **team** & **skills category*** you are evaluating
3. Add **scores** & **comments** for each component
4. Click **submit** to complete

Repeat steps 1-4 for each** submission.

**NOTE: Skills categories are Hull Design, Power Management, Propulsion System and/or Sensor Optimization.*

***NOTE: Complete a form for each skills category for each team. If you are reviewing the Hull Design and Power Management videos for #00 TeamX, please complete two (2) evaluation forms for #00 TeamX – one (1) for Hull Design + one (1) for Power Management.*

Website Evaluation Form

Follow steps below to submit scores:

[Read More ^](#)

1. Click the link for **Website Evaluation Form**: robosub.org/judges/website
2. Fill out your **name** & **team** you are evaluating
3. Add **scores** & **comments** for each component
4. Click **submit** to complete

Repeat steps 1-4 for each submission



Example taken from Evaluation Forms section of Judges Page



Evaluation Forms – Example



RoboSub 2021 Team Website Scoresheet

Evaluation Tip:

Don't forget to let us know who you are!

Team Website Scoresheet

Judges will review team websites for content, usability and design using the website guidelines.

* What is your first and last name?

Evaluation Tip:

Select one team at a time to enter and submit scores

* What RoboSub team are you judging?

- 01 | AGH University of Science and Technology
- 02 | Amador Valley High School
- 03 | Arizona State University
- 04 | California Institute of Technology
- 05 | California State University Los Angeles
- 06 | Cornell University
- 07 | Delhi Technological University
- 08 | Duke University

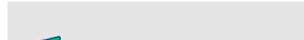
maintain a website that current competition team, n information (name and

Example taken from Website Evaluation Form



Evaluation Forms – Entering Scores

*** Team Information**
(30 points)



Evaluation Form Tip:

Key in the score for each evaluation section.

This example is for the Website Evaluation Form at the “Team Information” section.

Rubric:

Teams must maintain a website that reflects their current competition team, including team information (name and team contact information), team member information (name, picture, contact information) and a list of sponsors with logos.

Exceptional (21-30): Team website includes team name and contact information, team member information (name, picture, contact information), and a list of sponsors with logos.

Excellent (11-20): Team website provides a brief introduction on the team, team members and sponsors.

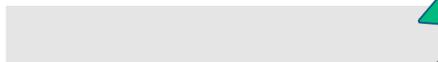
Good (6-10): Team website provides a mention of the team and team members.

Fair (1-5): Team website mentions the team.

Evaluation Form Tip:

Rubric for each section summarizes the requirement and suggested levels for scoring.

*** Judge Comments for**
Team Information



Evaluation Form Tip:

Provide feedback/comments for the team

Example taken from Website Evaluation Form



Evaluation Forms - Submit

Any additional comments for the team? These comments will be shared with the RoboSub team you are evaluating.

Any comments for RoboNation? These comments will only be shared with RoboNation.

Thank you for your evaluation!

Ready to submit? Click the blue button below.

All evaluations are due on July 25.

Submit Evaluation

Evaluation Form Tip: You may include any overall feedback to teams here

Evaluation Form Tip: Your answers will be saved, but you can not navigate back if you close the tab/window. Be sure to keep the window open if you are not ready to hit "Submit"

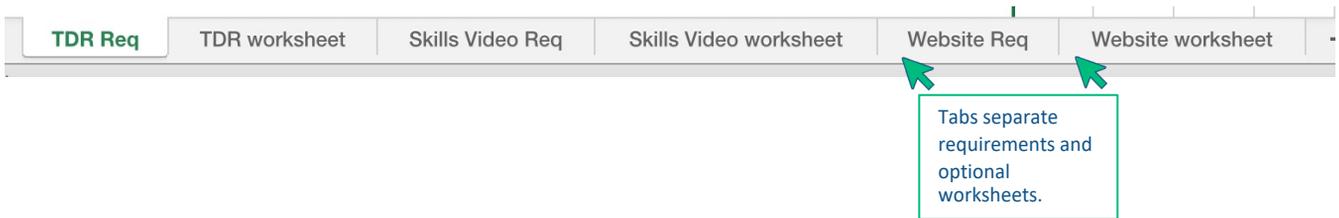
Evaluation Form Tip: Don't forget to click "Submit Evaluation" for each form to complete your score submission

Example taken from Website Evaluation Form



Optional Scoring Worksheet – recommended tool for you!

- “Req” tabs
 - Submission Requirements
- “Worksheet” tabs
 - Scoring Rubric & optional offline Worksheet
 - Keep track of your scores before “officially” submitting via the online form
 - Draft comments for teams and yourself



Screenshot pulled from *Submission Rubric*



Important Dates

Important Dates

07 July | Judges Orientation +

07-25 July | Evaluation Period +

25 July | Scores Due +

04 August | Judges Reconciliation +

07 August | Virtual Awards Party +

Website Tip:

Click on the plus icon to view more details for each important date!



RoboSub T-Shirt Design



We have a winner!
During the t-shirt design contest, Federal University of Rio de Janeiro submitted this design, which received the most votes.

Our thanks to you

The winning design will be printed on your official RoboSub 2021 shirt. If you haven't already, please email your preferred size and shipping address to Janelle (jcurtis@robonation.org)



Questions?

Any questions or uncertainty of the next step, email Janelle Curtis!

[Email Janelle ↗](#)

