



**UNMANNED
SURFACE VEHICLE
COMPETITION
SPECIFICATIONS**

2025

Versions Table

Table 1. Versions Table

Version	Date	DESCRIPTION
V1.0	08.01.2025	First Publication

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DEFINITIONS and ABBREVIATIONS

Definitions

Task: It is a set of steps to be performed at one time in order to test autonomy features, including point pursuit in an unobstructed environment, point pursuit in an obstructed environment and kamikaze engagement.

Track: It is the physical environment in which the sub-tasks, namely Track-1, Track-2 and Track-3, are performed.

Competition Area: It is the area separated by a security barrier between the Competition Tent and the starting point of the task.

Competition Tent: It is the partially closed area within the Competition Area where the table where the control console/computer etc. device used to send commands to the USV will be placed.

Competition Time: It is the TDL minute period to be started after the entry of any of the members of the competitor team whose turn has come to the Competition Area.

Abbreviations

Table 2. Abbreviations

Abbreviation	Description
TDL	To be Determined Later
USV	Unmanned Surface Vehicle
UAV	Unmanned Air Vehicle
CDR	Critical Design Report
CGS	Corporate Governance System
TQR	Technical Qualification Report
GCS	Ground Control Station
CMS	Corporate Management System

1 GENERAL INFORMATION ABOUT THE COMPETITION

1.1 Scope of the Competition

The Unmanned Surface Vehicle Competition is a competition based on measuring the success of teams developing Unmanned Surface Vehicle in fulfilling the tasks specified in the specifications. Each team will be able to participate in the competition with the prototype they have developed, and the rankings will be determined by the project evaluations to be made during the competition, the achievement of the tasks on the tracks where the competition is held, the evaluation and measurement of compliance with the rules, and the teams in the first three places according to the achievement score will be entitled to the awards in this specification.

1.2 Purpose of the Competition

Unmanned Surface Vehicles technologies are currently being used and developed for various purposes such as civil and military applications, protection and exploration of natural resources, and ensuring national security.

In line with this need, our aim is to pioneer the development of indigenous vehicles by spreading to a wider base throughout the country in the design, analysis, production and development of Unmanned Surface Vehicles that will successfully perform the tasks defined in this specification and can perform autonomously.

1.3 Competition Participation Conditions

- All university students (including Bachelor's, Associate's, Master's, Doctorate and Open Education) and graduates (It is sufficient to graduate from any educational institution) studying in Türkiye and abroad can participate in the competition.
- If the competitor has participated in TEKNOFEST competitions organized in previous years with the project to participate in TEKNOFEST 2025, he / she can apply again with the condition of developing and / or transforming his / her project / idea.
- The competitor cannot participate with an identical and/or copy report/idea of the project report/idea he/she has participated in before. Projects found to be similar or imitation will be excluded from the competition.
- Within the scope of the previous year TEKNOFEST project reports, the reports published on www.teknofest.org must be cited if they are quoted from the project reports that they have participated in previous years. You can access the citation format from the general rules heading in the specification.
- Competitors can apply to the same and/or different TEKNOFEST competitions with different projects.
- A separate application form must be filled in for each different project.
- Competitors can only apply to one category or one competition with the same project. The applications of teams or individuals applying to different categories or different competitions organized within the scope of TEKNOFEST with the same project will be deemed invalid.

- If the competitor has previously participated in another competition (TEKNOFEST or other competitions) with the same project, the name, place, date, organizer, and the result of the competition should be reported in the project file.

1.3.1 Team Formation

- Teams should be formed with minimum 3 and maximum 15 team members for all categories and education levels. (This number does not include the advisor)
- There must be a team captain in the team. Our competitors who apply individually must choose the team role as team captain.
- Individual participation in the competition is not allowed. Competitors must apply as a team.
- Students are required to upload their approved student documents and the document stating that the person who will serve as an advisor will fulfill the advisory duties must be uploaded to the system with wet signature on the date to be announced by TEKNOFEST Competitions Committee.
- For this competition, a person can only be on one team (as an advisor, captain or team member).
- Teams can be formed from a single school or a mixed team of students from two or more schools.
- Teams can be formed from a single country or a mixed team of students from one or more countries. The country where the majority of the members of a team are from can be determined as the team's country of origin; however, the team can choose any country of their choice at their discretion.
- Between the application dates, the team captain/advisor (if any) registers through the system, the advisor (if any) and/or the team captain creates the registration of the team members correctly and completely in the system and sends invitations to the e-mails of the members. The member to whom the invitation is sent accepts the invitation from the “My team information” section by logging into the application system and the registration process is completed. Otherwise, the registration process is not completed.



Figure 1 Competition Participation Stages

1.3.2 Advisor Obligations

- Having an advisor is not mandatory.
- Each team can have at most one advisor. Applications of teams with more than one advisor will be invalid.
- Teams can have a lecturer, faculty member or research assistant as an advisor.
- The document stating that the person who will serve as an advisor will fulfil the advisory duties must be uploaded to the system with wet signature on the date to be announced by the TEKNOFEST Competitions Committee.

1.3.3 Process Information

- All notifications to be made by the TEKNOFEST competitions committee during the competition process will be made to the person who is the team's communication officer. For this reason, each team must designate a communication officer. (Notification is made to the e-mail address registered in CMS.)
- It is the duty of the communication officer to follow the processes (Application, Form/Presentation Upload Deadline, Appeal Process, Form to be filled in, etc.) and TEKNOFEST competitions committee is not responsible for delays and/or disruptions caused by the communication officer.
- All processes required within the scope of the competition (Application, Form/Presentation Receipt, Form/Presentation Results, Financial Support Application, Appeal Processes, Member addition/removal processes, etc.) are carried out through the CMS system. Teams are required to follow the processes through the CMS portal.
- Throughout the competition process, making applications, uploading form/presentation, objection process and filling out forms are within the authority of the team captain and/or advisor and the competition processes are managed through these people.
- Member additions/removals are made until the deadline of the online project presentation. No changes can be made to the teams after the presentation submission.
- Team captain changes are made until the project report submission date.
- The transportation and accommodation support to be provided to the finalist teams is limited. The number of people to be supported is maximum 3 people per team (including the advisor) and TEKNOFEST Competitions Committee has the right to make changes. This article should be taken into consideration when forming a team.
- TEKNOFEST Competitions Committee has the authority to limit the number of members in the festival area. In case of limitation, the committee will be informed by the committee.

1.3.4 Application Principles

Applications will be received through the TEKNOFEST Aviation, Space and Technology Festival Technology Competitions official website (www.teknofest.org).

Applications are made online through the application system www.t3kys.com until **February 20, 2025**. The competitor will be able to participate in the competition by reading and approving all explanations about the competition and the conditions of participation before applying. Those who apply to the competition are deemed to have accepted all conditions in the specification.

2 COMPETITION SCHEDULE

Table 3. Competition Schedule

DATE	DESCRIPTION
20.02.2025	Competition Application Deadline
14.03.2025	Technical Qualification Report Deadline
26.03.2025	Announcement of Technical Qualification Report Results
20.05.2025	Critical Design Report Deadline
02.06.2025	Announcement of Critical Design Report Results
18.07.2025	Deadline for Submission of System Capability Videos
23.07.2025	Announcement of Finalist Teams
August-September 2025	Competition Finals
September 2025	TEKNOFEST İSTANBUL

2.1 Contact and Question & Answer

2.1.1 Contact

For questions about the competition, you can join the competition [group](#) on the [TEKNOFEST website](#) on the Unmanned Surface Vehicle Competition page. It is the responsibility of the competitors to actively follow this group and at least 1 person from each team to follow the announcements, questions and answers in this group as a member. TEKNOFEST Competitions Committee is not responsible for the inability of the teams to access up-to-date information that may arise as a result of not following the specified e-mail group.

Questions about the organizational parts of the competition should be sent via iletisim@teknofest.org e-mail address.

It is important that your technical and organizational questions are sent through the correct channels above in order to respond quickly to the questions asked.

2.1.2. Question & Answer

The details of the competition are explained in this specification. In order for the competition to be carried out in a healthy process, the specification must be read carefully.

In cases where the relevant rule and/or phrase in the specification is not clear/understandable or is thought to be insufficient, it is necessary to ask a question about the relevant subject.

Q&A is not a source for the following items:

- Strategic or uncertain situations planned by the competitive team for the future
- Questioning the rule changes made by the Referee Committee in the past during the competition
- To have the vehicle design/design approved by the members of the Referee Committee

Questions that are not referenced in the specification, open-ended, unclear, unclearly understood and already answered in the specification will not be answered. The following items can be given as examples of questions that will not be answered:

- Is the part/vehicle we designed suitable for the competition?
- Questions that are not clear or not understood due to lack of references
- Repetitive questions
- Subjects specified in the specification

3 COMPETITION PROCESS

The evaluation will be carried out in four stages: Technical Qualification Report, Critical Design Report, Autonomy Capability Video and Final Evaluation Stage. Within the scope of the competition, a total of 2 reports, Technical Qualification Report and Critical Design Report, will be prepared. Teams that do not submit Technical Qualification Form, Critical Design Report and Autonomy Capability video will not be eligible to participate in the competition.

3.1. Technical Qualification Report

Teams are obliged to submit the Technical Qualification Report (TQR) on the date specified in the Competition Calendar. The mechanical, electronic, algorithm and software design of the USVs must be defined in the TQR. TQR must be submitted in order to request support within the scope of the competition. A preliminary selection will be made according to the results of TQR. As a result of TQR evaluations, the teams that pass to the Critical Design Report (CDR) stage will be announced on the date specified in the Competition Schedule.

3.2. Critical Design Report

Teams that advance to the Critical Design Report (CDR) stage must submit their CDRs by the deadline specified in the Competition Schedule. The CDR template will be

provided after the application deadline. The CDR must not exceed 30 pages, including the cover page, table of contents, and references. Reports exceeding this page limit will not be evaluated.

Teams that successfully pass the CDR stage will be evaluated for financial support, and the list of teams eligible for such support will be announced as per the Competition Schedule.

3.3. Autonomous Capability Demonstration Video

The Autonomous Capability demonstration video is a continuous video showcasing that the Unmanned Surface Vehicle (USV) participating in the competition meets the basic autonomy and maritime requirements. Teams that successfully pass this stage will qualify to compete in the final stage.

3.3.1. Expectations in the Demonstration of Autonomy Capability

- Wireless connection will be provided between the USV and the Ground Control Station (GCS). In this context, USV information will be displayed on the GCS.
- A 4-point task will be defined on the GCS. These mission points will be positioned to form a rectangle and this mission will be sent to the USV.
- The task will start with a command given via GCS or an RC controller and the autonomous task will be completed when the last point of the 4-point task defined and sent via GCS is reached. After this stage, the USV will be returned to the starting point manually.
- After the demonstration, the motors or power of the USV will be switched off with the safety button / switch and it will be shown that the motors do not move even though a manual command is given from the RC controller.
- USVs covers will be opened and it will be shown that it does not take water in any way.

3.3.1.1. General Considerations in Video

- 3.3.1. All the steps given in 3.3.1 shall be performed in a single demonstration, without interruption and without interruption.
- The video screen will be divided as follows:

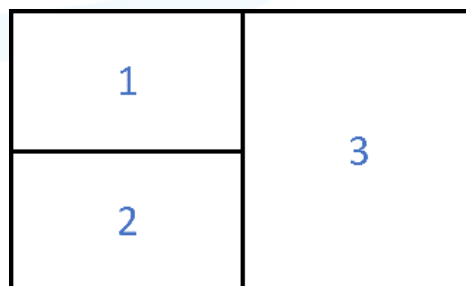


Figure 1. Video Screen

- Screen: GCS screenshot
 - Screen: Basic graphics (USV's movements synchronized)
 - Actual speed, speed request (setpoint)
 - Actual heading/yaw angle, heading/yaw angle request (setpoint)
 - Force request from the thrusters
 - Screen: External camera view (RC control, USV's movement in the water, USV's internal view, etc. according to the stage in the video). At the stage when the USV is on duty, the movements of the USV should be seen synchronously with the GCS screen.
- In the demonstration video, the Autonomy Capability Demonstration Video of the relevant team will be evaluated as unsuccessful if involuntary turning/driving is observed in the movement axes and independent of the direction of movement.
 - If the image and movement of the vehicle is not clear, the Autonomy Capability Demonstration Video of the relevant team will be evaluated as unsuccessful.
 - The resolution of the video must be at least 720p and the total duration must be at least 2 minutes and at most 5 minutes.
 - In order to participate in the competition, the Autonomy Capability video must be uploaded to the TEKNOFEST CMS system via a link until the date specified in the 2nd Competition Schedule. Teams will be eliminated in case of problems with the link.
 - Videos will be uploaded to Youtube. Videos uploaded to other platforms will not be accepted. Videos can be uploaded as 'Unlisted'.

4. DEFINED TECHNICAL SPECIFICATIONS AND RESTRICTIONS FOR VEHICLES

Below is the list of minimum requirements for the Unmanned Surface Vehicle. Teams that fail to meet the minimum requirements will not be eligible to compete in the final stage.

4.1. Unmanned Surface Vehicle (USV)

- Dimensions:
 - The end-to-end dimensions of the USV shall not be greater than 150x200x200 cm in width-length-height. This dimension is valid for all components. For example, if there is a pole on the USV, the distance between the end of the pole and the lowest point of the USV in the vertical section will be taken into account.
 - USV shall not be smaller than 75x75x30 cm in width-length-height. In the minimum size criterion, unlike the maximum size criterion, the body dimensions of the USV will be taken as basis.
- Weight: The vehicle shall weigh less than 50 kg.

- Identification: The team name will be written on the USV in 3 different places in total: port, starboard and stern. The width of this writing will be at least half of the total width of the relevant part of the boat.
- Communication:
 - There will not be any high-capacity Wi-Fi and similar communication modules using the same frequency range on the USV, the UAV and the UAV.
 - Autonomy and image processing software for the USV will run on hardware on the vehicle and the UAV will not have image processing capability.
 - Image processing software for the UAV will run on hardware on the vehicle and the UAV will not have image processing capability in the UAV.
 - The USV will be able to use transceiver modules that can only provide telecommunication and telemetry between the USV and the UAV.
 - The frequency channel of the communication modules will be selectable.
 - GCS can be used as a communication relay for USV-UAV communication.
 - It is the responsibility of the teams to take precautions against factors affecting communication such as RF pollution in the competition area, the effects of working outdoors, elevation differences between the competition tent and the sea, etc.
- Energy source: Batteries will be used as power source in vehicles. The battery compartment will be sealed. Teams may participate in the race by mounting a battery supplied by themselves directly to the vehicle.
- On-vehicle Power Cut: There will be a red switch on the vehicle that will cut the power from the motors and actuators in the vehicle when it is pressed or turned.
- Remote Power Cut-off: In addition to the physical power switch on the vehicle, there will be a remote power cut-off function that can instantly cut power from all motors and actuators when activated. Remote power disconnection can be given via the GCS software or from an RC remote control.
- Propulsion: Any drive system can be used (thruster, paddle, etc.). No combustion engine shall be used.
- Towable/ towable: There will be at least 1 drawbar for towing the vehicle in case of need.
- Atmospheric Conditions and Sea State:
 - USV will be able to operate up to Sea State-2 (including Sea State-2).
 - USVs will be able to operate in rain. In this context, sealing measures are expected to be taken. In addition, precautions will also be taken for rain-sensitive sensors (camera, lidar, etc.).
- Payload and Autonomy:
 - Vehicles will have at least one camera on board.
 - The following data used for autonomy purposes shall be recorded and delivered:
 - Camera data processed at least 1 fps
 - At least 1 Hz vehicle telemetry data

- Minimum Set: position (lat, lon), speed (ground speed), orientation angles (roll, pitch, yaw), heading (relative to north) and speed set points
- At least 1 Hz Local map or cost map
- Safety Precautions:
 - All safety precautions shall be taken, including the insulation of cables related to energy transmission.
 - Electrical connections to the vehicle and the control unit must not be tense and must be able to provide flexibility in sudden movements.
 - There shall be no open sharp ends in the motor / propeller systems that provide the movement of the vehicle, all ends shall be blunted and located in the nozzle.
 - Motor propellers must have protection in order not to harm people in case of contact with human hands.
 - Electric motors on the vehicle must be insulated against water.
 - There will be no sharp points on the main body of the vehicle and it will be rounded.
 - Components such as sensors, cameras, etc. on the USV shall not be loosely mounted and shall be fixed.
 - Each USV participating in the competition will be inspected for compliance with the safety issues defined in the rules.
 - Vehicles that do not meet all safety requirements will not be allowed to compete.

4.2. Unmanned Aerial Vehicle (UAV)

- Teams can use ready-made or self-designed UAVs. If it is preferred to use ready-made UAVs, it should be taken into consideration that there is a restriction on the use of Wi-Fi and similar communication modules using the same frequency range and that image processing is expected to be performed on the UAV.
- UAVs must have the necessary safety measures against falling into the sea.
- The UAV must have a remote control system to disable the flight.
- UAVs should not weigh more than 5 kg.
- For teams that have designed their UAV themselves, the components inside the UAV must be fixed.
- UAVs that are deemed unsuitable by the Referee Committee during the competition will not be allowed to fly. In order to prevent confusion in the competition area, it is forbidden for teams waiting for their turn to fly with their UAVs.

5. COMPETITION DETAILS

5.1. Competition Area and Working Areas

- The area where the vehicles will compete will be a seaside or lake/pond sheltered from the open sea.

- Separate from the competition area, there will be a closed area with a table for each participating team to use. 220 VAC energy will be supplied in the area.
- There will be a table in the competition area where USV and UAV will be controlled and control units will be placed.

5.2. Technical Controls

- The vehicles of the teams that qualify for the finals of the Unmanned Surface Vehicle Competition will undergo technical controls before the competition.
- Technical controls will be carried out by the Referee Committee.
- Each team will have the technical controls of their vehicles in the order determined. Team members are obliged to follow the technical control order. A team that has not carried out the technical controls will not be able to compete in any way and will not be able to claim any rights related to the competition.
- These controls will be carried out by the Referee Committee and 2 team members.
- Vehicles that cannot complete the technical controls will not be included in the race.
- A team that enters the technical controls and is found unfavourable or inadequate as a result of the technical controls will not be able to compete in any way and will not be able to claim any rights related to the competition. The Referee Committee is authorized in this regard.
- The technical checks shall be carried out in accordance with the requirements of clauses 4.1 and 4.2 of this document. In addition, basic desktop control (engine test) tests of the propulsion system will be carried out.

5.3. Briefing to be given to the Competitors by the Referees

- At the final stage, there will be a referee briefing where general aspects of the competition will be explained to the competitors.
- The briefing will include the rules to be applied in the final competition.
- The information given in the briefing is of a rule nature and it is the responsibility of the teams to get the necessary information.
- In case of any safety concerns or problems that may arise during the competition, the Referee Board is authorized to stop the competition and bring the USV ashore.
- The Referee Board may request an interview about the teams' systems after the competition if needed. It is expected that the competing team that developed the USV will be able to answer technical questions about the vehicle. Consultants will not be able to participate in the interview.

5.4. Competition Details, Tracks, Scoring and Evaluation

5.4.1. Competition Details

- Technical controls and the competition will be held in the same order. A draw will be made to determine the order of the competition. After the ranking is made

by drawing lots, all teams that can pass the technical controls will compete in order.

- Vehicles will be dropped to the competition area from the previously determined starting point.

5.4.2. Competition Tracks

- The competition consists of 3 tracks.
- All tasks for each track will be done in one go respectively.
- The transition from one track to another track will only be possible by completing the previous track.
- Task points will be given to the competitors as geographical coordinates before or after the technical controls. Each team will have defined the task points in their GCS before it is their turn to compete.
- Task loading will be done after the USV is powered after entering the competition area.

The general view of the Competition Tracks is given in the figure below. All information given is representative.

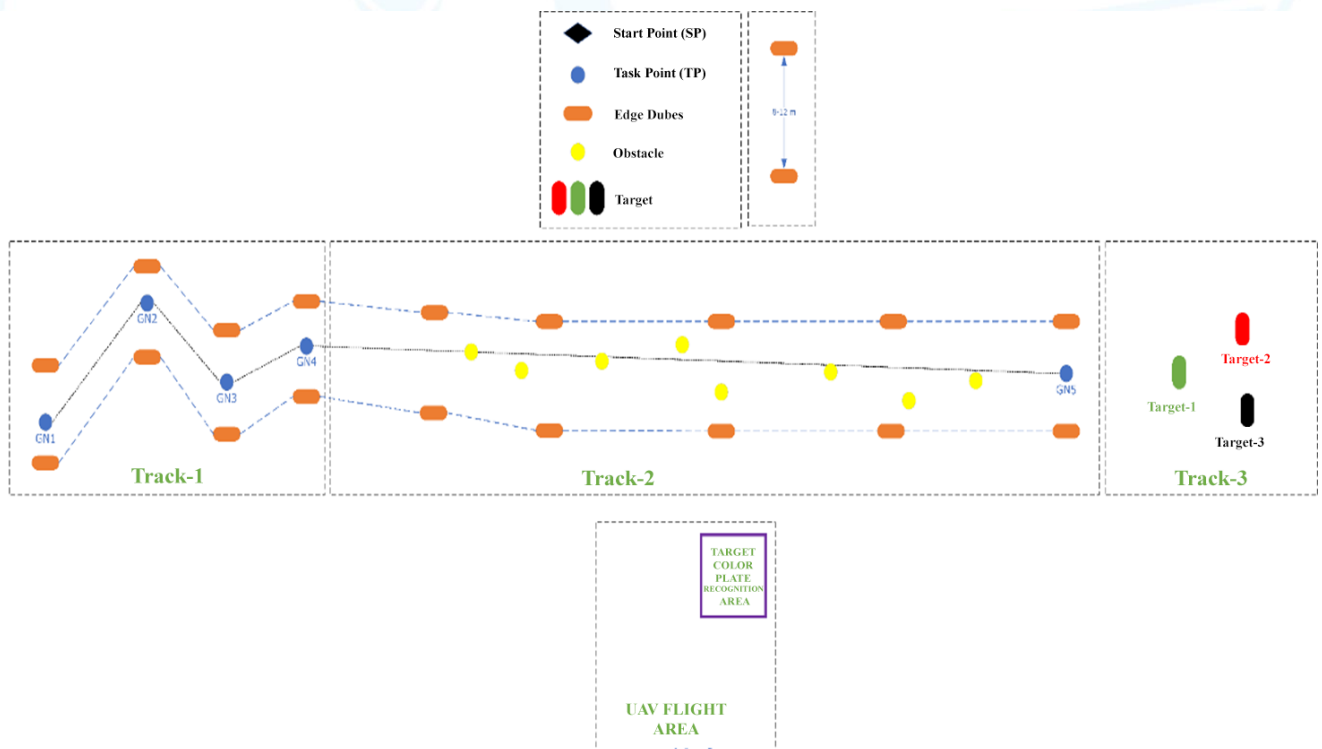


Figure 2. General View of the Track

5.4.2.1 Track-1: Point Tracking Mission

Scope: Point tracking will be demonstrated to demonstrate basic boat control and navigation.

Track Completion Requirement: To pass through all pontoon pairs for Track-1.

Track Feature: The distance between pontoon pairs will be 8-12 m.

5.4.2.2. Track-2: Point Tracking Task in an Obstacle Environment

Scope: To demonstrate reaching the final task point by avoiding obstacles between multiple task points.

Track Completion Requirement: Passing through at least 1 pair of pontoons (except for the final task point of Track-2) and reaching the final task point defined for Track-2.

In other words, it is expected to pass through a total of 2 pontoon pairs out of 5 pontoon pairs, one of which is the last task point.

Track Feature: The distance between the pontoon pairs will be 8-12 m.

5.4.2.3. Track-3: Kamikaze Engagement Mission

Scope: To provide a demonstration of kamikaze engagement skills.

Track Completion Requirement: To contact the target to be determined after entering the Competition Area or to be detected by the USV in case of competition with UAV.

Track Feature: There will be 3 different targets in Green, Red and Black colours. The colour codes and dimensions of the targets will be shared with the competitors later.

5.4.2.4. Track and Competition Area Rules

5.4.2.4.1. Track Rules

USVs must be able to operate in the Sea State and Atmospheric conditions defined for USVs in the specification. The suitability of the conditions can only be evaluated by the Referee Board. The team that fails to participate despite the Referee Board's approval of the competition will be deemed to have withdrawn from the competition.

- **Team Distribution in the Competition Area:**
 - There will be a maximum of 6 team members in the competition area.
 - The advisors of the teams will not be present in the Competition Area and the Competition Tent.
 - A maximum of 4 people will be able to drop the USV into the sea from the starting point before the mission. Team members who drop the USV into the sea will not be allowed to enter the Competition Tent.
 - Maximum 2 team members can be present in the Competition Tent, and these team members will not be able to see the race area and USV during the competition.

- No external information and guidance will be received regarding the movements and position of the USV at sea. In the event that any external information and guidance is understood, the competing team may be excluded from the competition with the decision of the Referee Committee.
- **Communication:**
 - Task loading can be done wired or wirelessly. The start command will not be given via cable. During the task loading phase, no operations such as code initialization will be performed in any way, the task will be loaded only from the GCS.
 - For teams that will compete without UAVs, the target information to be engaged will be given after entering the Competition Area.
 - This information can be transferred to the USV during the task loading or before the command is given for the start of the task. Target information cannot be transferred to the USV after the USV has started the mission.
 - No command can be given to the USV via the GCS or RC control after the USV has started the task.
 - The Referee Committee will be able to determine separate frequencies for the test and the competition. Each team must switch to the competition frequency channel determined before the competition. If this frequency channel is not entered into the modules before the competition, the time spent during this process is the responsibility of the team.
 - Teams may power their communication modules only when no team is in the competition area (including the preparation phase). They may only operate their modules on the frequency allocated by the Referee Committee. If the allocable frequency is not available, teams will not be able to power their communication modules in the Competition Tent.
- **Periods and Restart:**
 - After the team name is announced, the team will be given 3 minutes to come to the competition area.
 - The competition time of the teams that do not arrive at the competition area within 3 minutes will be started automatically.
 - If the announced team enters the competition area before the 3-minute period expires, the competition time will start from the moment of entry.
 - There may be time differences between the start/announcement times of the teams due to reasons such as race area arrangement, protocol visit, technical problems, referee meeting, etc. Since it is essential that teams and vehicles are ready before the start of the competition, objections to these time differences will not be taken into consideration.
 - Competition time is TDT minutes. The time to return to the starting point of USV after the completion of Track-3 is not included in the Competition Time.

- Teams have the right to restart the course for 1 time. In this case, the competition time will continue without stopping.
 - The points collected by the team using the restart right will be reset and penalty points will be applied.
- The team whose competition is completed will be able to bring their USV to the departure pier/point manually.
 - Teams can participate in the competition with or without a UAV. Whether or not to compete with a UAV must be specified during the entry to the Competition Area.

In case of a competition with a UAV;

- One of the green, red or black license plates will be randomly selected and dropped at a certain point on the shore.
 - The color of the dropped license plate will be automatically detected by the UAV. The UAV can be controlled manually.
 - The UAV may be removed at any time from the start of the competition period.
 - The flight zone of the UAV will be limited to the area to be determined on the shore side. If the UAV flies outside this area or on the sea side, the Track 3 task will be deemed unsuccessful.
- The duty points to be assigned by the Referee Committee may not be directly between the two side pontoons. In addition, the side pontoons and obstacles may be displaced due to sea conditions. Considering these, it is left to the competitors to distinguish and avoid the side pontoons. During the competition, any objections from the teams due to these and similar situations will not be taken into consideration by the Referee Committee.
 - It is necessary to complete at least Track 1 and Track 2 Tasks in order to enter the prize ranking.
 - The criteria for hitting the pontoon and hitting the obstacle will be that each hit will be counted, including multiple hits to the same pontoon. In addition, continuous contact with the same pontoon for TDT time will be counted as TDT times.
 - The number of times off the course also depends on the time spent outside the course. A team that stays out for more than TDT time will be counted out TDT times.
 - In case of any deviation or safety risk, the Referee Committee may terminate the competition by ending the course and bringing the vehicle ashore.
- Additional equipment that may be needed (tripod, extension cable, USB extension cable, Ethernet cable, etc.) will be brought to the competition area by the teams. No request will be made to the members of the Referee Committee regarding these equipment.

- Teams will be able to use laptops inside the USV. However, the competition and the Referee Board will not be held responsible for any losses that may occur due to any malfunction, falling into the sea, sinking, getting wet, etc.
- Each team will have the right to restart the competition once and pass once. If a team passes, the competition will continue with the next team depending on the draw of lots. The order of the competition will be updated with the team that passes last.

5.4.2.4.2. Competition Area Rules

- Appeals:
 - To be made in writing by the Team Captain representing the team. Each team has a maximum of 2 (two) appeals.
 - At least one of the appeals must be related to the team's own competition.
 - Appeals can only be made after the team's own competition.
 - Appeals will be answered by the members of the Referee Committee.
- The entire Final Round will be recorded on camera. Members of the Referee Committee will review the camera footage if they need to do so.
- The camera recording system will be activated in case of any objection by the teams and to prevent possible cheating. In addition, the performance of the teams during the competition will be recorded and can be used as promotional material.
- For special situations that may arise during the competition, the Referee Board will convene and decide on a case-by-case basis.
- The decisions of the Referee Board are final and conclusive.
- TEKNOFEST team and the Referee Board are not responsible for any damage that may occur to the vehicles of the teams participating in the competition.

5.4.2.5. Scoring

The Final Score will be the sum of report, task, penalty (-) and bonus points.

5.4.2.5.1. Report Scoring

Table 4. Report Scoring

Report	Scoring
Critical Design Report	15 Point

5.4.2.5.2. Task Scoring

Table 5. Task Scoring

Track No	Criteria	Task	Scoring
Track-1	Starting and Arriving at Track-1	Start, Engine Start and Movement	1
		Entering Track -1 (USV passing 100% of the first pontoon pair)	1
	Transition	Do not cross each pair of pontoons	1 Point
		Passing N pontoon pairs	N x 1 Point
	Crashing into a Pontoon	Not hitting any pontoons	4
		Hitting a pontoon x 1	3
		Hit the pontoon x 2	2
		Hit a pontoon x 3	1
		Crashing into a pontoon x 4 and More	0
	Going Outside the Track	Staying on Course	5
		Going Out of Track x 1	3
		Going Out of Track x 2	2
		Going Out of Track x 3	1
		Off Track x 4 and More	0
	Maximum Track Score		
Track-2	Transition	Do not cross each pair of pontoons	2 Point
		Passing N pontoon pairs	N x 2 Point
	Crashing into a Pontoon	Not hitting any pontoons	12
		Hitting a pontoon x 1	8
		Hit the pontoon x 2	6
		Hit a pontoon x 3	4
		Hit the pontoon x 4	2
		Bumping into a pontoon x 5 and More	0
	Hit an Obstacle	Not hitting any obstacle	20
		Hit an obstacle x 1	16
		Hit an obstacle x 2	14
		Hit an obstacle x 3	12
		Hit an obstacle x 4	10
		Crashing into an obstacle x 5 and More	0
	Maximum Track Score		
Track-3	Kamikaze Engagement	Successful Engagement	30
		Use of UAVs in Successful Engagement	15
	Maximum Track Score		
Maximum Total Task Score			100 Point

5.4.2.5.3. Penalty Points

5.4.2.5.3.1. Passing Penalty

Each team will be allowed to use the right to pass only once. However, 10 penalty points will be applied for the use of the right to pass.

5.4.2.5.3.2. Restart Penalty

Each team will have the right to restart the competition only once. However, 10 penalty points will be applied in case of using the restart right.

5.4.2.5.3.3. Penalties for Violation of Communication

Media

Any team found to be using communication modules while a team is in competition will be penalized 10 penalty points.

5.4.2.5.3.4. Penalty for Marine Pollution

Pollution of the sea area will result in 20 penalty points to the team concerned.

5.4.2.5.3.5. Video and Data Delivery Penalty

Within 15 minutes after the end of the competition, 10 penalty points will be applied to the team that does not deliver the video and data files on the team's own USB flash drive.

5.4.2.5.3.6. Ethical Behavior Penalty

Penalty points will be applied to the teams of individuals who exhibit unethical behavior towards their teammates, other team members, the Referee Committee, the organizing committee or visitors. The Referee Committee is authorized on the amount of penalty.

5.4.2.5.4. Bonus Points

At the start of the competition, if all other teams want to pass and only one team volunteers to compete first, 10 bonus points will be awarded to the volunteer team.

5.4.2.5.5. Total Score Calculation

Table 5. Total Score Calculation

No	Definition	Point
1	Report Scoring	15
2	Task Scoring	
2.1	Track-1	15
2.2	Track-2	40
2.3	Track-3	45
3	Penalty Scoring	
4	Bonus Scoring	

6. AWARD

Among the teams ranked in the prize ranking, the teams that rank among the teams will be awarded the cash prizes specified in the table below. The prizes specified in this table show the total amount to be given to the teams that are entitled to receive awards, individual awards will not be made. The first, second and third prizes will be divided equally according to the total number of team members and deposited into the bank account specified by each individual. No payment will be made to the team advisors.

Table 6 Prize Award Table

DEGREE	AWARD AMOUNT	ADVISOR
First	250.000 TL	15.000 TL
Second	200.000 TL	12.000 TL
Third	150.000 TL	10.000 TL

Best Team Spirit Award: This award is given to the teams that aim to finalize their tasks undertaken in the competition area and their business plans in the field in the best way, and to the teams that reflect their energy in the field in the best way, regardless of whether success is achieved in this purpose. The evaluation will be made by looking at the effort, skill, intra-team and inter-team communication, etc. shown in the field as a team. The specified award is for prestige purposes and has no financial equivalent.

Most Original Software Award: Software evaluations are made by the Competition Evaluation Board together with the report stages. The submitted software product will be evaluated in terms of functionality, reliability, infrastructure and system architecture compatible with current high technology, and the team with the most original software will be determined by the relevant advisory board. The mentioned award is for prestige purposes and does not have a financial equivalent. Finalists are encouraged to use auxiliary documents such as reports, presentations or flow diagrams in order to explain their software and algorithms more easily to the software evaluation committee.

Best Design Award: Teams that design and produce their own designs in USV design and production will be considered for this award. This award is for prestige purposes and has no financial compensation.

7. GENERAL RULES

[Click here](#) to access the General Rules booklet which is valid for the competition.

8. ETHICS

[Click here](#) to access the Code of Ethics booklet that is valid for the competition.

DECLARATION OF RESPONSIBILITY

T3 Foundation and TEKNOFEST are in no way responsible for any product delivered by the competitors or for any injury or damage caused by the competitor. T3 Foundation and organization officials are not responsible for any damages caused by the competitors to 3rd parties. T3 Foundation and TEKNOFEST are not responsible for ensuring that the teams prepare and implement their systems within the framework of the laws of the Republic of Türkiye.

Turkish Technology Team Foundation of reserves the right to make any changes in this specification.

8th YEAR

NATIONAL
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