DESIGN DIVISION GUIDE

2027 Digital Ship Challenge

Version 1.2 | November 2026

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Guide Information
Version 1.2

This guide is subject to revision throughout the challenge season.

Any changes to this guide will be communicated through the official DSC Change Log found on the VDMC website (https://digitalmaritime.org/digital-ship-challenge/). Teams are responsible for reviewing the DSC Change Log and incorporating applicable updates.

Contact Information
If there are any questions regarding any aspect of the Digital Ship Challenge, please contact Jennifer Renne.
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Welcome to the 2027 Digital Ship Challenge
The Digital Ship Challenge provides students with authentic challenges that reflect the work, processes, collaboration, and problem-solving used by professionals in the maritime industry. Throughout the challenge season, your team will take on the role of industry professionals, applying technical knowledge, collaboration, creativity, and problem-solving to complete a real-world maritime challenge.

The Digital Ship Challenge follows the development of a professional project over time. Teams are expected to research, plan, develop, evaluate, document, and refine their work throughout the challenge season while completing a series of project checkpoints leading up to the final competition. Checkpoints are scored and contribute to the team's overall competition score, recognizing consistent progress and engagement throughout the challenge season.

This Division Guide serves as your primary reference throughout the season. We encourage your team to review this guide regularly, stay informed with the DSC Change Log, and document your process throughout the challenge.

We look forward to seeing the innovative solutions your team develops and wish you the best throughout the 2027 Digital Ship Challenge.

About This Guide
Throughout this guide you'll find information to help your team successfully complete the challenge, including:

- Competition overview and important dates
- Checkpoints
- Documentation Expectations
- Technical Requirements
- Competition Procedures
- Judging Information
- Additional Resources

Before You Continue
The Division Brief introduced your team's mission, professional role, and the real-world context behind this year's challenge.

This Division Guide builds on that foundation by providing the information you'll use to successfully complete the challenge.

We recommend keeping both documents available as you work through the challenge.

In the Design Division, your team will take on the role of a maritime design team. Maritime designers and engineers use research, technical knowledge, creativity, and testing to develop vessels that meet specific performance requirements. Throughout the challenge season, your team will apply the Engineering Design Process as you design, build, test, and refine a next-generation vessel for a shallow-water sea trial.

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1. Challenge Season Overview

1.1 Challenge Timeline

Milestone	Date	Description
Final Team Registration	September 30, 2026	This includes the team's name, all student names, and email addresses (for Google Drive sharing purposes only)
Checkpoints	Ongoing through the challenge season	See Section 2 for more details
Withdrawal Date	November 30, 2026	This is the final date for teams to withdraw from the Digital Ship Challenge without impacting competition planning. Schools unable to continue should notify the Challenge Coordinators by this date.
Mid-Year Review	December 17, 2026, and December 18, 2026	The Mid-Year Review will be broken into 2 dates based on divisions. More information will be available in October.
Final Professional Poster Submission	March 1, 2027, by 5:00pm	Submitted on Google Drive using template provided within your team's folder to be printed by the DSC organizers
Competition Day Schedule	March 1, 2027	Will be emailed out to teachers/advisors and placed in the team's Google Drive Folders
Final Digital Notebook Submission	March 12, 2027, by 5:00pm	Submitted on Google Drive in the Final Digital Notebook folder within your team's folder.
Competition Day	March 18, 2027	The event will be held at Nauticus in downtown Norfolk. It will be open to the public.

Team Changes & Withdrawals
Teams are expected to maintain their registered team membership throughout the challenge season. The Digital Ship Challenge recognizes that circumstances may arise that require changes to team participation.

Team Member Changes: Any changes to registered team members must be communicated to the Digital Ship Challenge organizers by the team's teacher/advisor. Students may not independently switch teams or divisions. Requests to add, remove, replace, or transfer team members will be reviewed based on the timing of the request and applicable team requirements.

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Division Changes: Teams wishing to change divisions must contact the Digital Ship Challenge organizers for approval. Division changes may be limited after challenge materials, mentors, standardized components, or other division-specific resources have been assigned.
Team Withdrawal: If a team is no longer able to participate in the Digital Ship Challenge, the teacher/advisor must notify the Digital Ship Challenge organizers by the published withdrawal deadline. Timely notification allows competition planning, mentor assignments, materials, schedules, and event logistics to be adjusted accordingly.

Changes requested after published deadlines may not be accommodated.

1.2 Team Expectations
Participation in the Digital Ship Challenge is intended to reflect the collaborative nature of today's maritime industry. Teams are expected to work together throughout the challenge season while demonstrating professionalism, effective communication, and steady progress toward completing the challenge.

Team Composition

- Teams must consist of 2-4 students.
- Individual schools will determine how teams are selected.
- Each team must have a teacher or advisor who serves as the primary point of contact throughout the challenge season.
- Students may participate in one Digital Ship Challenge team during the challenge season.
- Students may compete in only one division.

School Participation

- Schools may register multiple teams.
- Schools may participate in multiple divisions.
- There is currently no limit to the number of teams a school may register within a division.

Team Commitment
The Digital Ship Challenge is designed as a season-long experience that mirrors the development of professional maritime projects. Teams are expected to remain actively engaged throughout the challenge season and complete all required Checkpoints and other required challenge deadlines.

Throughout the challenge season, teams are expected to:

- Participate actively throughout the challenge.
- Complete all required Checkpoints as stated.
- Maintain accurate division documentation.
- Monitor the DSC Change Log and incorporate applicable updates.
- Demonstrate professionalism in all communications and presentations.
- Follow all competition rules and safety requirements.

Student Work & Outside Assistance
Teams may seek guidance, feedback, instruction, and technical advice from teachers, advisors, mentors, industry professionals, and other resources throughout the challenge season. However, all competition deliverables and evaluated work must be completed by registered student team members. Outside assistance should support student learning and decision-making, not complete the work on behalf of the team.

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Artificial Intelligence (AI)
Artificial intelligence (AI) tools may be used to support learning, brainstorming, proofreading, or formatting when permitted by the team's teacher or advisor. However, AI may not be used to generate the team's design, documentation, software, presentation, or other competition deliverables. All submitted work must accurately reflect the team's own thinking, decision-making, and original work.

Safety
Safety is a shared responsibility throughout the Digital Ship Challenge. Teams are expected to follow appropriate safety practices during development, construction, testing, transportation, and Competition Day. Tools, materials, equipment, and technology should be used with appropriate supervision and in accordance with school policies, manufacturer guidance, and all published challenge requirements.

1.3 Industry Mentors
Throughout the Digital Ship Challenge, teams will have the opportunity to work with an industry mentor. Mentors are maritime professionals who can provide guidance, feedback, and an industry perspective as your team works through the challenge.

Your mentor is a resource for your team, not a member of the team completing the challenge for you. The purpose of mentorship is to help you think through problems, ask questions, consider different approaches, and learn more about how similar challenges are approached in the maritime industry.

Your Mentor May:

- Ask questions that help your team think through ideas and decisions.
- Provide feedback on designs, plans, testing, and challenge progress.
- Share relevant professional experiences, industry practices, and career pathways.
- Suggest topics, tools, processes, or resources for your team to research.
- Help your team identify potential problems or considerations you may have overlooked.

Your Mentor Should Not:

- Design or build your team's solution.
- Complete calculations, drawings, code, documentation, or other deliverables for the team
- Make project decisions for your team.
- Complete work that will be submitted or evaluated as part of the competition

Remember: Your mentor may not have expertise specific to every aspect of your challenge, and that is okay. Mentors bring valuable professional experience, problem-solving skills, and knowledge of the maritime industry. Your team is responsible for asking questions, seeking feedback, and making the most of the mentorship experience.

Make the most of your mentor meetings. Come prepared with an update on your team's progress, questions you would like to discuss, and specific areas where you would like feedback. Your mentor meetings are most valuable when your team is prepared to lead the conversation.

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1.4 Communication & DSC Change Log

Official Communication

All official announcements will be communicated through the Digital Ship Challenge website or emailed to the team's teacher or advisor.

Teachers and advisors are responsible for sharing important updates with their teams and ensuring students remain informed throughout the challenge season.

Questions regarding the challenge should be directed to the Digital Ship Challenge organizer using the contact information provided on page two of this guide or on the Digital Ship Challenge website.

DSC Change Log

The Division Guide may be updated throughout the challenge season to clarify requirements, correct errors, or communicate important changes. This will be done through the DSC Change Log.

Teams are responsible for reviewing the DSC Change Log and ensuring that they are using the most current version of the Division Guide throughout the season. We recommend checking for updates prior to each Checkpoint and before Competition Day.

When updates are made:

- The DSC Change Log will be updated describing the change.
- The revised Division Guide will be posted on the Digital Ship Challenge website.

2. Checkpoints

The Digital Ship Challenge is designed as a season-long experience that encourages teams to make consistent progress throughout the challenge season. Rather than completing the challenge just before Competition Day, teams will complete a series of checkpoints that document their work, decision-making, and demonstrate progress toward the final competition.

Each checkpoint focuses on a different stage of the project and contributes to the team's overall competition score. While the specific checkpoint requirements vary by division, all teams are expected to submit their work by the published deadlines.

Partial points are not awarded for checkpoints. If a submission does not meet the required checkpoint criteria or is not submitted by the published deadline, the team will not receive points for that checkpoint.

2.1 Submission Process

All checkpoint requirements should be documented within the team's Digital Notebook. Teams will maintain one continuous Digital Notebook throughout the challenge season and update it to reflect the work required for each checkpoint. The Digital Notebook must be accessible through the team's designated Google Drive folder by each published checkpoint deadline. See Section 4: Digital Notebook for additional requirements and guidance.

Each submission should accurately reflect the team's progress at that stage of the challenge season. Organizers may review documentation, revision history, and supporting materials as part of the evaluation process to verify continued progress throughout the season.

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2.2 Evaluation

Checkpoints are evaluated to measure each team's progress throughout the season rather than the completeness of their final solution.

Evaluators will review each submission using the criteria outlined for that checkpoint and determine whether the team has demonstrated appropriate progress for that stage of the project. Teams may also receive feedback if evaluators identify major concerns.

Following each checkpoint evaluation, updated team scores will be shared in the team's Google Drive so teams can monitor their progress.

2.3 Checkpoint Timeline

Checkpoint Date and Time	What needs to be submitted	Points
Review Challenge and Overview of Digital Notebook **October 7, 2026 11:59pm**	Initial section of the digital notebook including: • Title Page with team name and school • Table of contents page • Challenge Interpretation and problem summary • Preliminary team roles and schedule	10
Research and Brainstorming **November 4, 2026 11:59pm**	Notebook Updates • Research Notes • Brainstorming sketches or concept drawings • Notes on materials or systems being considered	10
Mid-Year Review **December 17/18, 2026 Time TBD**	In-person attendance at the mid-year workshop. Bring to the event: • First iteration prototype(s) • Talking points/questions for division Q & A and Maritime Connect (see section 2.4 for more detailed information)	25
Refined Design and Prototypes **January 13, 2027 11:59pm**	Notebook Updates • Refined vessel design • Updated sketches/technical drawings • Updated material list • Evidence of prototype development • Initial sea-trial/testing results	20
Refined Prototypes and Testing **February 3, 2027 11:59pm**	Notebook Updates • Evidence of multiple sea trials/tests • Collected observations and/or performance data • Design changes made • Include photos and/or videos when appropriate	20

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Final Design Build and Test **February 24, 2027 11:59pm**	Notebook Updates • Final test results • Design validation • Documentation of final construction • Final technical drawings and material list Ensure all constraints are met	10
Professional Poster Submission **March 1, 2027 5:00pm**	Online submission of the Professional Poster for printing	10

Presentation Preparation
 	
March 10, 2027 11:59pm
	Presentation outline submitted
	• Prepare for your oral presentation (7-10 minutes)
	  • Team's challenge understanding, design process, key design decisions, supporting evidence, testing and refinement, and final vessel
	  • Practice answering judging questions
		10

Digital Notebook Submission **March 12, 2027 5:00 pm**	All Divisions: Online submission of Digital Notebook	10
Digital Ship Challenge **March 18, 2027 Time TBD**	In person event at Nauticus	N/A

2.4 Mid-Year Review

The Mid-Year Review provides teams with an opportunity to ask questions, clarify challenge requirements, and connect directly with maritime industry professionals midway through the challenge season. The event is designed to help teams strengthen their understanding of the challenge and gain industry perspective as they continue their work.

During the Mid-Year Review, teams will participate in two activities:

<u>Division Question & Answer Session</u>

Teams will participate in a division-specific question and answer session focused on the challenge, technical requirements, and other division-related topics. Teams should review their progress and challenge materials prior to the event and arrive prepared with questions they would like addressed.

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Maritime Connect

Teams will interact with industry partners connected to their division to learn more about the maritime industry careers, organizations, and the real-world work related to their challenge. Students should come prepared with questions for industry partners and be ready to engage in professional conversations.

Teams are expected to arrive prepared with questions for both the Division Question & Answer Session and Maritime Connect. Additional event schedules and participation details will be provided prior to the Mid-Year Review.

3. Professional Approach

Every profession has its own way of approaching complex challenges. While the tools, responsibilities, and day-to-day tasks may differ, successful professionals rely on structured approaches to organize their work, collaborate effectively, evaluate information, and continuously improve their solutions.

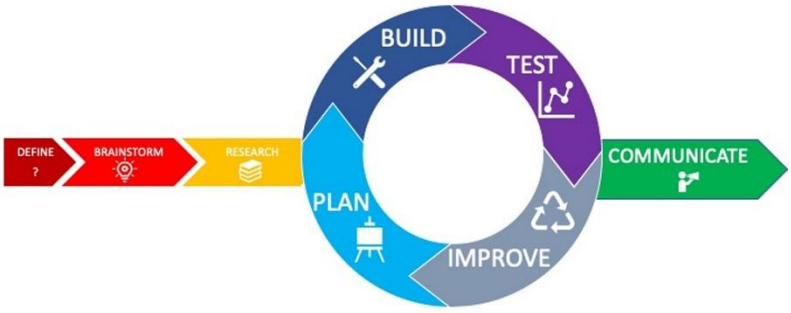
Throughout the Digital Ship Challenge, your team is encouraged to adopt the same mindset. The professional approach presented in this section reflects common practices used and is intended to guide your team's planning, decision-making, and progress throughout the season.

While there is no single "right" way to complete the challenge, following a structured professional approach will help your team stay organized, make informed decisions, and develop a stronger final solution.

3.1 Engineering Design Process

The Engineering Design Process is a structured approach used by engineers and designers to solve complex problems. Rather than relying on a single idea, professionals work through an iterative process of researching, developing, testing, evaluating, and refining solutions to meet project requirements.

While every organization may follow a slightly different process, the fundamental principles remain the same. Throughout the Design Division, your team is encouraged to use the Engineering Design Process to guide decisions, document progress, and continuously improve your vessel design.



3.2 Applying the Engineering Design Process

Throughout the Digital Ship Challenge, your team will encounter many of the same decisions faced by professional designers. From understanding project requirements and evaluating design alternatives to testing prototypes and refining performance, the Engineering Design Process provides a framework for approaching each stage of the challenge. While every team will develop its own solution, the examples below illustrate how the Engineering Design Process can be applied throughout the Design Division.

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Engineering Design Process	Application to the Design Division
Define	Review the division brief and division guide to understand the mission, design requirements, constraints, and evaluation criteria. Clearly define the problem your team is trying to solve before developing solutions.
Brainstorm	Generate multiple ideas for your design. Explore different hull shapes, propulsion layouts, construction approaches, and innovative concepts before selecting a preferred direction.
Research	Investigate vessel designs, stability, buoyancy, propulsion systems, construction materials, and emerging maritime technologies. Use research to expand your understanding, evaluate design ideas, and make informed decisions throughout the design process.
Plan	Select your preferred design concept and develop a plan for construction, testing, and documentation. Consider materials, measurement, team responsibilities, and how you will evaluate success.
Build	Construct your vessel using your selected materials and the standardized propulsion system. Focus on creating a design that can be tested, evaluated, and improved throughout the challenge season.
Test & Improve	Conduct sea trials to evaluate your vessel's performance, collect data, identify areas for improvement, and refine your design. Engineering is an iterative process, so expect to test, modify, and test again.
Communicate	Document your design process, testing results, decisions, and improvements in your Digital Notebook. Be prepared to explain your design approach, the reasoning behind key decisions, and how testing and evaluation influenced the development of your final vessel.

Successful engineers rarely create the best solution on their first attempt. They use testing, data, and collaboration to continually improve their designs. Throughout the Digital Ship Challenge, don't be afraid to test new ideas, learn from failures, and refine your solution.

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4. Digital Notebook

Throughout the challenge season, your team will maintain a Digital Notebook using Google Slides that documents the development of your work from your initial understanding of the challenge through your final solution.

Your Digital Notebook should demonstrate how your team thought, planned, developed, tested or evaluated, and improved your solution, not simply what you completed. It should provide judges with a clear understanding of your team's process, the decisions your team made, and how your solution evolved throughout the challenge season.

A strong Digital Notebook is:

- Accurate: represents your team's work and decision-making throughout the season
- Organized: uses clear section headings, logical organization, and consistent formatting
- Complete: includes the information needed to understand your design process and development
- Evidence-Based: supports design decisions with research, calculations, testing, observations, and data
- Professional: communicates ideas clearly using appropriate sketches, drawings, photographs, videos, tables, and diagrams

Your Digital Notebook is a living document and should be updated throughout the challenge season. Teams will use one continuous Google Slides presentation for their Digital Notebook throughout the challenge season. Checkpoint requirements should be completed and documented within the Digital Notebook, which will serve as the primary evidence reviewed during each Checkpoint and will also support final judging. See Section 2: Checkpoints for specific Checkpoint requirements, deadlines, and evaluation procedures.

4.1 Recommended Digital Notebook Organization

Your Digital Notebook should tell a story, from your initial understanding of the challenge to your final design. A clear and organized Digital Notebook makes it easier to communicate your team's Engineering Design Process, design decisions, testing, and improvements. While teams have flexibility in how they organize their Digital Notebook, the following structure is recommended to help ensure all major aspects of the project are documented in a logical and professional manner.

Section	Purpose
Title Page	Digital Ship Challenge 2027, Division Name, Team Name, School, Teacher/Advisor, Team Members
Table of Contents	Organized navigation for the notebook
Challenge Interpretation	Your team's understanding of the challenge, requirements, constraints, and goals
Project Planning	Team roles, project schedule, milestones, meeting notes, planning documents
Research	Research and supporting information used to understand the challenge and inform design decisions
Brainstorming & Concept Development	Initial ideas, sketches, comparison of design concepts, preferred concept, and reasoning for its selection
Engineering Design	Technical Drawings, calculations, material selections, propulsion-system integration, vessel specifications, and design rationale

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Development	Photos, videos, construction progress, prototype iterations, observations, and challenges encountered
Testing & Evaluation	Sea-trial procedures, collected data, observations, performance results, photos/videos, and lessons learned
Design Improvements	Changes made throughout the season and evidence or reasoning supporting those changes
Final Design	Final vessel, technical drawings, specifications, material list, and summary of the completed design
Appendix	References (APA format), additional calculations, photographs, videos, diagrams, and other supporting materials

4.2 Technical Drawing Requirements

As part of the Digital Notebook, each team must develop technical drawings that communicate the final design and configuration of its vessel. Drawings may be created by hand or using CAD or other digital design tools but should be accurate, legible, and appropriately labeled.

Each team must include:

Orthographic Drawing

- Top, side, and front views of the final vessel.
- Overall length, beam, and height
- Key dimensions necessary to understand the vessel design.
- Location of the standardized propulsion components
- Major vessel components and design features identified as appropriate.

Isometric Drawing

- One three-dimensional view representing the overall form and configuration of the final vessel.
- Major vessel components and design features identified as appropriate.

Technical drawings should represent the vessel in its final competition-ready configuration.

4.3 Supporting Evidence

Your Digital Notebook should include supporting evidence that helps communicate your team's work. Examples include but are not limited to:

- Hand sketches
- Technical drawings, including appropriately labeled views and dimensions.
- CAD Models
- Photographs
- Testing data
- Charts and graphs
- Calculations
- Videos (linked when appropriate)
- Material lists
- Design comparisons

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- Research and Meeting notes.
- Project schedules

Supporting evidence should demonstrate how your team used information to understand the challenge, make design decisions, test and evaluate its work, and improve its approach, rather than simply documenting completed activities. Teams are not expected to include every type of evidence listed above; evidence should be included when it helps demonstrate your team's design process, decisions, testing, or progress.

4.4 Submission Requirements

The Digital Notebook serves as the official record of your team's work throughout the challenge season. Teams are responsible for maintaining their Digital Notebook, ensuring it is accessible throughout the season and submitting it by the published deadline.

- The Digital Notebook must be created using Google Slides.
- Each team will be provided with a dedicated Google Drive folder for maintaining their Digital Notebook and any supporting files throughout the challenge season.
- The Digital Notebook should be maintained as one continuous document throughout the challenge season rather than creating a new Digital Notebook for each checkpoint.
- Teams are encouraged to update their Digital Notebook regularly as work is completed rather than waiting until checkpoint deadlines or final notebook submission.
- The Digital Notebook must remain accessible in the Google Drive folder to the Digital Ship Challenge organizers throughout the challenge season.
- Teams are responsible for ensuring that all linked files, videos, and supporting documents have the appropriate sharing permissions prior to submission.
- The final Digital Notebook must be submitted by the deadline listed in the challenge timeline.
- Any external resources used to support the challenge, including research, reference materials, images, or other published content, must be properly cited.

The Digital Notebook is expected to reflect continuous work throughout the challenge season. Digital Ship Challenge organizers may review document revision history and other available version history tools as part of the checkpoint evaluation process to verify ongoing project development.

The Digital Ship Challenge is a student-centered competition. All work submitted throughout the challenge season must be completed by the student team. Teachers, mentors, parents, and other supporters may coach, encourage, and provide guidance throughout the challenge season, but the ideas, decisions, documentation, and final deliverables must be created by the student team.

Student teams are expected to:

- Develop and document their own ideas and solutions.
- Conduct their own research, testing, and analysis.
- Create their own design documentation, presentations, and competition materials.
- Accurately represents the work completed by the team throughout the challenge season

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5. Professional Poster and Team Presentation

Communicating information clearly and professionally is an essential skill across the maritime industry. Maritime professionals regularly present their work to clients, project managers, leadership teams, stakeholders, and colleagues to explain their approach, share findings and results, and support decisions and recommendations.

As part of the Digital Ship Challenge, each team will develop a professional-style poster and deliver a professional presentation summarizing their work throughout the challenge season. Together, these components should communicate the team's approach to the challenge, key decisions, supporting evidence, findings, and progress throughout the challenge season.

5.1 Professional Poster

Each team will create a professional poster that visually communicates the development of their vessel design throughout the challenge season. The poster should summarize the team's work in a clear, organized, and engaging format while highlighting the most important aspects of the project. The poster will serve as the primary visual aid during the team presentation and will be displayed throughout the Competition Day.

A successful poster should:

- Clearly communicate your team's design journey from initial understanding and concept development through the final vessel
- Highlight the process used throughout the division challenge.
- Present information in a logical and visually organized manner
- Include relevant graphics, photographs, technical drawings, calculations, and testing data that support your work.
- Be readable from several feet away using concise text and effective visuals.
- Demonstrate professionalism through consistent formatting and visual design.

To promote consistency while allowing for creativity, an official professional poster template will be provided in each team's Google Drive folder. The template will include recommended content sections, formatting guidance, technical specifications, and design best practices to support the development of a professional-quality poster. Each team must submit a digital copy of their professional poster by the published deadline that follows the submission requirements. Posters will be professionally printed by the Digital Ship Challenge organizers and displayed throughout Competition Day. Posters should be carefully reviewed prior to submission, as revisions will not be accepted after the submission deadline.

5.2 Team Presentation

Communication is an essential skill across the maritime industry. Maritime professionals regularly present their work to clients, stakeholders, leadership teams, and colleagues to explain their approach, communicate findings and results, and support decisions and recommendations.

As part of the Digital Ship Challenge, each team will deliver a 7–10-minute professional presentation summarizing their work throughout the challenge season. Using their professional poster as the primary visual aid, teams should communicate their understanding of the challenge, design approach, key design decisions, supporting evidence, and results. Following each presentation, judges will have an opportunity to ask questions. Every team member should be prepared to participate in the team presentation.

Successful presentations should:

- Clearly explain the team's understanding of the challenge

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- Describe the professional process or approach used throughout the challenge.
- Explain the vessel design and highlight key design decisions and the reasoning behind them.
- Use relevant research, calculations, testing data, observations, or other evidence to support design decisions.
- Explain how sea trials and evaluation influenced changes to the vessel.
- Communicate the development and final outcome of the vessel design.
- Reflect on the contributions of all team members.

Presentation Requirements:

- Presentation length must be 7-10 minutes.
- The professional poster will serve as the primary visual aid.
- All team members are expected to actively participate in the presentation.
- Professional attire is encouraged.

Each team will be assigned a presentation time and location for Competition Day. The official presentation schedule will be distributed to teachers and advisors by the published deadline. Teams are responsible for arriving at their assigned presentation location on time and prepared to present.

6. Division Challenge Requirements

The following division challenge requirements establish the design specifications, competition constraints, and operational requirements for the Design Division. Teams are responsible for ensuring their vessel complies with all requirements prior to Competition Day. Failure to meet these requirements may result in penalties or disqualification from portions of the competition.

6.1 Design Requirements

The vessel developed for the Design Division must satisfy the following functional requirements. These requirements define the intended capabilities of the vessel and should be considered throughout the design, construction, testing, and refinement process. Teams have flexibility in how these requirements are achieved unless otherwise specified.

Requirement	Description
Purpose	Design and construct a next-generation vessel capable of traveling a straight course through shallow water using the standardized propulsion system provided by the Digital Ship Challenge organizers.
Propulsion	The vessel must use both motors, both batteries, and both motor switches included in the standardized propulsion system kit. Teams are responsible for integrating the required components into their vessel design in accordance with the requirements in this guide.
Stability	The vessel must remain upright throughout the sea trial. Vessel stability will also be evaluated as part of the demonstrated performance, with points awarded based on how effectively the vessel maintains stable, controlled movement throughout the run.

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Course Performance	The vessel must travel the required distance while remaining within the course boundaries. Once the sea trial begins, team members may not touch, guide steer, or otherwise interact with the vessel. Only designated competition judges may physically interact with the vessel during the sea trial.
Construction & Innovation	The vessel must be designed and constructed by the student team. Teams are encouraged to explore creative vessel forms, materials, construction methods, and design approaches while meeting all challenge requirements.

6.2 Technical Specifications

The following technical specifications define the physical limitations and standardized competition parameters for the Design Division. All vessels must comply with these specifications unless otherwise noted. Teams are encouraged to verify compliance throughout the design and construction process.

Vessel Specifications	
Specification	**Requirement**
Maximum Length	30 inches
Beam	12 inches
Maximum Height	12 inches
Maximum Vessel Weight	The complete competition-ready vessel, including the installed standardized propulsion system, must not exceed 10 pounds.
Propulsion System	Both provided motors, propellers, both batteries, both motor switches, and required connectors must be installed and used in accordance with Section 6.3 and Appendix A
Stability Level	Each vessel must include a location where the Digital Ship Challenge provided level can be securely attached and clearly visible during the sea trial. The level must be positioned port to starboard to measure side-to-side stability. The level will be used by judges to assist in evaluating vessel stability.

Competition Course	
Specification	**Requirement**
Course Length	Competition Course specifications are currently being finalized through prototype testing and validation Final course dimensions and requirements, including course length, course width, water depth, water type, course boundaries, and course completion criteria, will be released in a future update to this guide and documented through the DSC Change Log.
Course Width	
Water Depth	
Water Type	
Course Boundaries	
Course Completion	

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6.3 Standardized Propulsion System

Each team will receive the same standardized propulsion system for use in the Design Division. The propulsion system is intended to provide a common performance baseline while allowing teams to focus on vessel design, construction, stability, and performance.

Teams are responsible for integrating the provided propulsion system into their vessel design. Both provided motors, propellers, both batteries, and both motor switches must be installed and used to power the vessel. The standardized components must be used as provided and may not be permanently modified unless specifically permitted in this guide.

A complete list of the components provided, including relevant specifications and installation information, is included in Appendix A.

All non-consumable components provided by the Digital Ship Challenge must be returned on Competition Day after the team has completed its Demonstrated Performance and Professional Poster & Team Presentation.

6.4 Demonstrated Performance Procedures

The Demonstrated Performance procedures will establish how each Design Division sea trial will be conducted on Competition Day, including vessel inspection, setup, sea trial procedures, and vessel retrieval.

These procedures are currently being finalized through prototype testing and validation to ensure a safe, consistent, and fair demonstrated performance experience for all teams. Final procedures will be released in a future update to this guide and documented through the DSC Change Log.

Teams should continue to design, build, test, and refine their vessels using the requirements and technical specifications currently provided in this guide.

Additional Competition Day information, including event schedules, team check-in procedures, venue maps, and other logistical details, will be provided prior to Competition Day.

7. Competition Readiness

Competition Day is the culmination of the Digital Ship Challenge season. Throughout the day, teams will participate in scheduled activities, including the Professional Poster & Team Presentation and the division-specific Demonstrated Performance.

Each team will receive a Competition Day schedule identifying their assigned times and locations. All teams are strongly encouraged to remain through the conclusion of the event and attend the Awards Ceremony. The ceremony is an important part of the Digital Ship Challenge experience, providing an opportunity to celebrate team accomplishments and recognize award recipients across all divisions.

Before arriving on Competition Day, teams should review the following checklist to ensure they have completed all required submissions, verified compliance with the technical specifications, and are fully prepared to participate. Take time to confirm each item before arriving to help prevent unnecessary issues during the competition.

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Project Deliverables

- ☐ All required checkpoints have been submitted.
- ☐ The Digital Notebook is complete and submitted by the published deadline.
- ☐ The Professional Poster has been submitted by the published deadline.
- ☐ The team presentation has been prepared and practiced.

Vessel Readiness

- ☐ The vessel is in its final competition-ready configuration.
- ☐ The vessel complies with all published technical specifications.
- ☐ Both provided motors, propellers, batteries, and motor switches are installed and functioning properly.
- ☐ The vessel is prepared for attachment of the Digital Ship Challenge provided stability level.
- ☐ The vessel has completed sea trials prior to Competition Day
- ☐ The team has verified that the vessel remains upright and can travel without team interaction after the sea trial begins.
- ☐ The vessel is in good working condition and ready for demonstrated performance.

Team Readiness

- ☐ All team members understand their presentation roles and are prepared to participate.
- ☐ The team has reviewed the Demonstrated Performance procedures.
- ☐ The team has reviewed all published Digital Ship Challenge change log updates.
- ☐ The team understands its assigned Competition Day schedule and locations.
- ☐ The team has reviewed the Competition Day rules and expectations.

Equipment Return

- ☐ All non-consumable equipment from the Standardized Propulsion Kit will be brought to Competition Day and returned after the team has completed its Demonstrated Performance and Professional Poster & Team Presentation.

Teams are responsible for arriving on Competition Day prepared to compete. Failure to meet published deadlines, submit required materials, or comply with the technical specifications may affect scoring or the team's ability to participate in portions of the competition. **Teams are encouraged to complete this checklist several days before the competition to allow time to address any outstanding items.**

8. Judging

The Digital Ship Challenge evaluates more than the final demonstrated performance. A team's overall competition score reflects work completed throughout the challenge season as well as performance and professional communication on Competition Day.

Teams should demonstrate thoughtful planning, evidence-based design decisions, iterative development, effective testing, professional communication, and a competition-ready vessel that meets the requirements of the Design Division.

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Teams will be evaluated on the following:

Project Development	Evidence of research, planning, concept development, technical documentation, testing, design decisions, and continuous improvement demonstrated through checkpoints and the Digital Notebook.
Vessel Performance	How effectively the vessel meets the challenge objectives during the demonstrated performance, including course performance, stability, and other published performance criteria.
Professional Communication	How clearly and professionally the team communicates its design process, key decisions, supporting evidence, testing, improvements, and final vessel through the Professional Poster, Team Presentation, and judge questions.
Professionalism	Team preparedness, participation, collaboration, organization, and professional interaction throughout Competition Day.

Detailed judging rubric for each competition component will be released at a later date and added to the Appendix of this guide. The release of the rubrics, along with any subsequent revisions, will be documented through the DSC Change Log.

Judges may ask questions throughout the team's scheduled judging activities to better understand the team's design process, technical decisions, testing, and overall project development. Teams should be prepared to explain not only what they built but why they made key design decisions and how evidence influenced the development of their vessels. Every team member should be prepared to participate in the discussion.

All judging decisions are final. Competition judges reserve the right to interpret competition rules and scoring procedures to ensure fair and consistent competition for all participants.
Successful teams typically:

- Demonstrate a clear and organized design process.
- Support design decisions with research, testing, calculations, observations, or other evidence.
- Use seal-trial results to identify problems and improve their vessel.
- Demonstrate an understanding of their vessel and the decisions behind its design.
- Communicate clearly and professionally.
- Work effectively as a team.
- Balance performance, stability, innovation, and reliability

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9. Appendix A

A.1 Provided Components

Each Design Division team will receive the same standardized propulsion system for use throughout the challenge season. Teams must use the components provided to power their vessel during Competition Day.

Component	Quantity	Size
Motor and Propeller	2	Motor Size: Approx. 5.4 x 1.8 x 1.6 inches Blade Diameter: Approx. 1.9 inches Outgoing Line Length: Approx. 31.5 inches Plug: Approx. 0.1 inches
Battery	1	Approx 4.13 x 1.3 x 0.83 inches
Motor Switch	1	Switch Size: 32mm x 25mm x 31mm Cable Length: 10cm
Battery Charger	1	N/A
Connector Adapter	1	N/A
Y-Splitter	1	N/A
Level	1	0.71 x 2.05 inches

A.2 Propulsion System Requirements

Teams are responsible for integrating the standardized propulsion system into their vessel design. The placement and mounting of the components provided are part of the team's design decisions unless otherwise specified.

Teams may design and fabricate their own mounting structures, brackets, housing, or other features necessary to integrate the provided components into their vessel.

Requirement	Description
Required Components	Both provided motors, propellers, battery, motor switch, and the required connectors must be installed and used to power the vessel during Competition Day
Component Placement	Teams may determine the placement of the components provided within their vessel while complying with all vessel specifications
Mounting	Teams may design and construct their own methods for mounting and securing the provided components to the vessel
Modification	Provided propulsion components may not be permanently modified, disassembled, altered, or damaged
Power Source	The provided battery must be used as the only power source for the vessel's propulsion system during Competition Day

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Additional Propulsion	Additional motors, propellers, batteries, or other powered propulsion devices may not be added
Charging	The provided battery charger should be used to charge the standardized battery according to the provided instructions

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