2024 MATE ROV COMPETITION TECHNICAL DOCUMENTATION SCORING REQUIREMENTS - NAVIGATOR

Overall Report

Max Points: 44 Weight: 15%

Document Specifications

Document met requirements: length no more than 10 pages, inclusive of SID, safety checklist, and all appendices. Font size of at least 12 points, used Times New Roman, Arial, or Calibri font, all measurements were in SI units (except things traditionally specified in other units, e.g. PVC diameter)	This scale applies only to first two questions. See Rubric for the remainder of the questions.
Note: Linked or attached documents will not be judged as part of the technical report score.	All 4 requirements met = 4 points 3 requirements met = 3 points 2 requirements met = 2 points 1 requirement met = 1 point
Title page met the following content requirements: (1) company name, (2) organization/school name and location (city, state, country), (3) team members and their roles, (4) and mentor name(s)	
Abstract provided clear, concise summary of work in 150 words or less	

Use of Images and Data

- Photo of complete vehicle was included
- Effective use of photos and sketches to capture the vehicle's design features
- Photos accompanied by appropriate captions
- Sketches used sensible labeling of symbols, dimensions, and components

Document Design

- Thorough attention to grammar and spelling
- Document presented a professional view of the company

Acknowledgements and References

- Document provided a properly documented list of references - books, journals, web sites, etc. used as sources; documented contributions of companies, individuals who contributed funds, equipment, and/or technical/moral support
- Document provided adequate acknowledgement of contributions of companies and individuals that contributed funds, equipment, and/or other support to the team

Teamwork

Max Points: 12 Weight: 10%

Project Management

- Included a description of the company (overview or company profile) and personnel (individual members and their roles and responsibilities)
- Developed a schedule to aid in building the vehicle
- Described how resources, procedures, and protocols were managed to meet mission objectives and solve day-to-day operational problems

Design Rationale

This section should include a detailed description of the vehicle, tools, and other subsystems

Max Points: 52 Weight: 40%

Engineering Design Rationale

- Described a logical, step-by-step planning and design process
- Described how design ideas were originated, evaluated, and selected
- The science or techniques behind the tasks is discussed
- Provided clear description and sensible rationale for design choices related to cost and size

Innovation

- Innovation demonstrated in vehicle design, tools, or other features

Problem Solving

- Described how the company brainstormed ideas and used information and data to evaluate them

Vehicle Systems

- Described how components and materials were selected
- Described how the design evolved to meet the mission specifications
- Explained the number and placement of thrusters
- Description of buoyancy that demonstrates application of buoyancy principles

Payload and Tools

- Payload tools were designed to meet mission requirements

Build vs. Buy, New vs. Used

- Explained build (in-house) vs. buy (outsource) decisions and how they related to mission requirements
- Explained new vs. reused/inherited decisions and how reused components meet this year's requirements

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System Integration Diagram (SID)

Max Points: 1 Weight: 5%

System Integration Diagrams

SID was included with the report

Note: Pre-competition safety inspectors will review and score in greater detail

Safety

Max Points: 12 Weight: 10%

Content

Described the safety rationale, including how it covers personnel, equipment, and operational safety

Highlighted safety features and other vehicle-specific safety precautions related to tasks

Safety Procedures

Document included a checklist for construction and operation

Critical Analysis

Max Points: 8 Weight: 10%

Testing and Troubleshooting

Described how the fully assembled vehicle was tested

Described troubleshooting strategies and techniques used

Accounting

Max Points: 12 Weight: 10%

Budget

Thorough and accurate description of budget planning and following [Cost provided in USD]

A clear distinction was made between items purchased, re-used, and donated

All donations (items, services, and time) were acknowledged [Financial donations provided in USD]

Discretionary Points

Max Points: 8 Weight: 100%

Document described exceptional design of vehicle, sensors, instruments, software, tools or other features

Other (explanation/example is required in comments)

Deductions

Min Points: -8 Weight: 100%

Evidence that the work was performed by coaches, mentors, parents, or other non-team members

Significant overuse of commercial or reused components without adequate justification

Final Score

Max Points: 50 + Disretionary & Deductions

SCORING RUBRIC - ALL QUESTIONS (Except Discretionary & Deductions)

Missing: Not included, can't evaluate	**0**
Needs Work: Effort made, meets some key requirements. Understanding or treatment of key requirements needs more depth. Judges had to question deeply to find answers.	**1**
Partially Meets Requirement: Response demonstrates understanding and addresses most key requirements. Simple prodding from judges encouraged team to answer.	**2**
Meets Requirement: Response demonstrates thorough understanding and addresses all key requirements. Team addressed topic without prompting.	**3**
Exceeds Requirement: Response extends beyond key requirements, demonstrating exceptional depth and breadth of understanding	**4**

SCORING RUBRIC - DISCRETIONARY POINTS

Novelty, Depth of Understanding, Depth of Analysis, Effectiveness (functions as intended), Quality of Implementation

None	**0**
Minor	**1**
Fair	**2**
Good	**3**
Extraordinary	**4**

SCORING RUBRIC - DEDUCTIONS

Extent to which team relied on outside help, existing work and/or purchased components and services

None	**0**
Minor	**1**
Fair	**2**
Medium	**3**
Extreme	**4**