AUSTRALIAN UNIVERSITIES ROCKET COMPETITION

2025 AURC Deliverables Requirements

Version 1.0: January 2025

AYAA

Table of Contents

Revision History

Revision	Description	Date
Version 1.0	Initial Release	27/01/2025

1 Purpose and Scope

This document outlines the required scope and marking rubrics for each deliverable of the 2025 Australian Universities Rocket Competition (AURC). This document will be repeatedly updated in accordance with the "2025 AURC Key Dates" timeline to include further information about assessable items as the competition progresses. This document does not include information pertaining to the list of assessable items and their associated due dates, submission instructions, penalties and judging. Subsequent information is available in the "2025 AURC Rules" document.

2 General Report Guidelines

2.1 Formatting

- Submissions must be made as a single pdf document.
- If completed in Microsoft Word or similar, the report must be written in size 12 pt Times New Roman, have 'single' line spacing and must be presented in a professional and consistent manner, alternatively the use of LaTeX or comparable typesetting software is also permitted.
- All submissions must begin with a cover page which lists the team number, team name, university, title of deliverable, word count, due date and date submitted.
- Any academic referencing method is acceptable, but it must be applied consistently.
- Submitted documents must follow the naming format of "Team_#_assesed_item.pdf", for example "Team_1_Progress_Report_1.pdf".

2.2 Language

Reports must be written in English. Clear and concise presentation is important; do not confuse the encouraged brevity of components with the amount of thought required. Research is vital in producing a high-quality report. Spelling, punctuation, grammar and formatting errors will be heavily penalised. It is recommended that you proofread your work thoroughly and ensure it is readable, logical, free from errors and consistently formatted (e.g. dot point formatting is consistent).

2.3 Word or Page Limits

Written reports that exceed the allowable word or page limit will only be marked based on the information included within the limit. Appendices, references and cover pages do not contribute to the word or page limit. Information provided in an appendix section should be supporting documentation only, and the report must be assessable without reading appendices unless otherwise specified in the marking criteria.

2.4 Marking detail for in person Launch event

The rubrics for the August 2025 event will be shared at least 4 months prior to the event start date.

3 Progress Report 1

Progress Report 1 is the first assessed deliverable for the 2025 AURC. The purpose of this report is to provide an overview of each team's progression and to gain a better understanding of how each rocket project is being managed and executed. This progress report has a maximum length of 10 pages of main matter. Please use the recommended page limits as a guide for how much time and effort should be put into writing each section.

Progress report 1 submissions are required to have the following information:

1. **Executive Summary** (recommendation: 1 page) - A clear, concise, and informative overview of the rocket and competition category, the project's objectives and goals
2. **Introduction** (recommendation: 1/2 page) – Should provide an overview of the project. Includes the project aim in the context of the technical background.
3. **Design overview** (recommendation: 1-2 pages) - A conceptual design, brief overview of the rocket, its planned subsystems, and functions. A satisfactory motor selection is also expected.
4. **Systems Engineering and Design Methodology** (recommendation: 2-3 pages)
    - **Systems engineering process**, which includes the following:
        - **Problem definition** - From the initial statement given in the rules and regulations what is your team's interpretation? Use this to develop your problem context and hence definition.
        - **System requirements** - This can be developed from your problem definition and design overview. These requirements should show clear understanding of the problem and are concise, convincing, and clearly expressed aligning with the "INCOSE guide to writing requirements" good practice.
    - **Overview of design methodology and process** - This section will discuss how your team will tackle the engineering project.
        - How will your team draw on existing design methodologies and adapt it. What procedures will your team use to implement design decisions and changes?
5. **Team management and organisation** (recommendation: 2-3 pages)
    - **Overview of team management structure and responsibilities**
        - Concise overview of team management structure, roles, and their responsibilities for the project.
        - Demonstrates fair task allocation or justifies tasks allocation for various roles.
    - **Overview of communication management**
        - Concise overview of communication processes and procedures utilised to ensure efficient communication within the team.
        - Identifies and demonstrates appropriate communication with various project stakeholders.
6. **Overview of project budget**
    - Budget is discerning in its set out and is representative of all costs relevant to the project.
    - Contingencies are strongly justified.
7. **Overview of project timeline, milestones and launch schedule.**
    - All major competition milestones identified with a clear and well thought out plan of how and when they will be met.
    - Reasonable project technical and management milestones are disclosed.
8. **Conclusion** (recommendation: 1/2 page) - should summarise the report in terms of its goals and projected milestones.
9. **Appendices** – if necessary

4 Progress Report 2

Progress Report 2 is the second assessed deliverable for the 2025 AURC. The purpose of this report is to provide an overview of each team's progression and to gain a better understanding of how each rocket project is being developed, verified, and tested. This progress report has a maximum length of 20 pages of main matter content. Please use the recommended page limits as a guide for how much time and effort should be put into writing each section.

Progress report 2 submissions are required to have the following information:

1. **Executive Summary** (recommendation: 1 page) - A clear, concise, and informative overview of the rocket, progress made to date and challenges overcome so far.
2. **Introduction** (recommendation: ½ page) – Should provide an overview of the project's progress thus far.
3. **Design Overview** (recommendation: 3-4 pages) - What design choices have you made so far? Take this opportunity to highlight the modifications made since the first progress report.
   - How have you further developed your subsystems?
   - What design choices have you made in terms of rocket operation such as recovery method, chosen altimeters and materials.
   - What testing have you done to verify the behaviour of your rocket?
4. **Payload** (recommendation: 1-2 pages) - A summary of the payload system, its intended purpose, and benefits to stakeholders and/or project. It should detail the design choices made to enhance the system reliability and convincingly showcase scientific or technical viability and applicability.
5. **Systems Engineering** (recommendation: 5-8 pages) - Discuss how you determined system and subsystem functional requirements and used them to identify hazards and develop design requirements. Should expand on the system requirements from PR1 to include more detailed analysis of the required functionality of systems and subsystems. The following items are expected to be covered:
   - How have system requirements been updated and system boundaries and functions defined?
   - What design choices have you made so far to enhance your system's reliability and safety?
   - What methods and tools have you used to determine system and subsystem functional requirements? Do the system requirements support and align with the overall rocket requirements?
   - What methods and tools have you used hazard identification? Is the hazard identification based on functional failures? Are hazards defined for all operational stages? Are both safety (personnel) hazards and flightworthiness (mission performance) hazards assessed?
   - How are you planning to verify your final design against these system functional requirements?
   - A preliminary hazard log should be attached at the end of your report. A hazard log template and guidance note are provided on the AURC website for teams to use. Lists of hazards and associated mishaps and initial risk assessments must be included. Risk reduction (controls) and residual risk assessments are not required for PR2, however teams are encouraged to log any controls designed so far.
   - Note, Appendix E provides detail on the typical process in which a team should apply systems engineering to their rocket design. Although this exact process will not be a prerequisite for marking, good systems engineering should resemble this framework.
6. **Simulation and Flight Profile** (recommendation: 1 page) - From your current design what are your initial simulation results. Open Rocket or RASAero II is required and further simulation is highly encouraged.
   - How was the model setup and created? What are the input parameters?
   - Explain the rocket flight profile and key statistics. Include Table 1 in this section, these parameters must comply with the rocket specifications document.
7. **Manufacturing Processes & Plans** (recommendation: 2-3 pages) - This section should include an overview of manufacturing methods and materials. It should also cover your manufacturing progress.
   - What has been procured?
   - What has been constructed?
   - What plans do you have in the future for your manufacturing? Provide an updated timeline.

8. **Flyer of Record Documentation** (recommendation: ½ page)
   - Include Table 2 in this section.
9. **Conclusion** (recommendation: ½ page) - should summarise the report in terms of its current progress and projected plans in completing the rocket. Discuss potential issues that might arise and how you plan to account for them.
10. **Appendices** - The following sections are required.
    - Hazard log

Table 1: Simulation Results

Simulation Results	Value	Additional Comments (Optional)
Liftoff Thrust-Weight Ratio:		
Launch Rail Departure Velocity (m/s):		
Minimum Static Margin During Boost:		
Maximum Acceleration (G):		
Maximum Velocity (m/s):		
Target Apogee (feet AGL):		
Predicted Apogee (feet AGL):		
Fin Flutter Velocity (m/s):		

Table 2: Flyer of Record

First Name	
Last Name	
Relationship to team	
Email	
Phone	
State and Country of Residence	
TRA #	
Certified Level	
Date of certification attainment	

5 Technical Report

The technical report is the third and highest weighted assessed deliverable for the 2025 AURC. The purpose of this report is to provide technical insight for the design of the rocket and the justification for all design decisions.

This progress report has a maximum page length of 80 pages of main matter content (i.e. after executive summary and before appendices).

Technical report submissions are required to have the following information:

1. **Abstract** - A single paragraph summary of the focus, purpose, results and contents of the technical report.
2. **Introduction** – Should provide an overview of the project. Includes a brief description of your team, project aim and a short description of the activities undertaken this year.
3. **System Architecture Overview** - This shall provide an overview of the technical specifications on the rocket. The following sections are used for an overview of the rocket systems. You may add subsections to this if necessary for your rocket and they will be grouped to the closest applicable heading. If any simulations were used to justify the following systems it is recommended that this information is written in Section 5.1.
    - **Structures** - This may include design description and justification of nose cone, coupler (payload and/or recovery), body tubes, fins. See Section 3 and 4 of Rocket Specifications for technical guidelines.
    - **Recovery** - This may include design description and justification parachute choice, stage separators, ejection mechanisms and electronic systems See Section 5 and 6 of Rocket Specifications for technical guidelines.
    - **Avionics** - This may include design description and justification for the sensors, telemetry, firmware architecture and processors. See Section 6 and 7 of Rocket Specifications for technical guidelines.
4. **Payload** - This section is dedicated to the design description of the payload. This is either a CanSat for 5000ft AGL or a CubeSat for 10,000ft AGL. It should include the functionality and significance of the payload. This section may include information such as structure, electronic systems and more to justify the design decisions made with the payload. See Section 8 of Rocket Specifications for more payload specifications.
5. **Design Verification and Validation**
    - **Simulations** - Flight simulations are required to verify the performance of your rocket. This section should justify the selection of the flight simulation software and methods of verifying the software results. Table 1 should also be completed and included in this section. **If results have changed since Progress Report 2, it should be highlighted and explained why.** See Section 4 of Rocket Specifications for flight simulation targets and further guidelines.
    - **Calculations** - This section shall summarise any calculations (outside of simulations) that were used to verify the performance of the rocket. Please include further information in the Appendix 9.3.
    - **Test Procedures and Results** - This shall detail any procedures done to validate the performance of the rocket on meeting or exceeding simulation results, desired behaviour, or design criteria. This can include but is not limited to compression, ejection, parachute, payload tests, and destructive or non-destructive sample tests.
    - **System Requirements Compliance** - This shall provide an overview on whether the system has successfully met the System Requirements. System requirements include AURC specified requirements (rocket specifications, rules etc.) as well as additional team determined ones. If all requirements were not met, they should be noted and a mitigation plan should be described to handle the additional risks that this unmet requirement may bring.
6. **Mission Concept of Operations** - This should include a plan of how your team is planning to follow safe launch and recovery procedures. Include the different activities that your team will undergo from a preparation checklist to retrieval after launch. See Section 2 of Rocket Specifications for further guidelines.
7. **Budget** - A section to summarise how the team's budget was used on the project. This includes material and service costs used.

8. **Conclusion** - Should summarise the report in terms of its technical specifications and lessons learned throughout the project.
9. **Appendices** - The following sections are required:

    - **Checklists** – To extend from the work in section 6
    - **Updated Hazard Log**- A current hazard log of the risks apparent in your project and the appropriate mitigation methods used to deal with it.
    - **System Safety Assessment (FMECA)** – A bottom-up analysis each component individually to identify hazardous failure modes.
    - **Engineering Drawings** - Both mechanical and electrical drawings are required.
    - **Calculations Extended** - To extend from the work in Item 5

6 Presentation & Poster

The presentation component of assessment will take place as a keynote presentation in front of judges at a venue with access to a projector. The target audience for the presentation is STEM professionals who might not necessarily be familiar with a typical rocket's architecture but do understand universal engineering concepts. Teams may use a number of students to present that they deem necessary. Teams may bring their own banners to display during the presentation, along with their assembled rocket which will already be present for the build quality assessment item.

Presentations must be limited to 15 minutes and cover the following areas:

- **Team introduction** - university, member quantity and backgrounds, previous projects
- **Competition goal** – premise of the competition, target altitude and notable restrictions
- **Design summary**
    - Structures: geometry, mass, motor
    - Flight profile
    - Recovery method
    - Avionics
    - Payload (brief, since expanded on during payload assessment item)
- **Tests completed**
- **Any other aspects you would like to highlight.** E.g. active control systems, novel manufacturing techniques, design optimization, modelling. This item will not be directly assessed but adds to the overall presentation.

The presentation will be followed by a Q&A of approx. 5 minutes. Full marks will be awarded to teams that are able to demonstrate a deep understanding of the design through response of the questions.

7 Inspection

The build quality of the rocket will be assessed in-person and does not require a written submission. Teams will be required to have rocket physically present for assessment along with all components that are part of the design (excluding energetics) in their launch ready configuration.

As part of the judging process, the rocket will need to be disassembled by the teams at request of the judges. Therefor tools necessary to dismantle the sections should also be present, for example screwdrivers to remove external fasteners. Teams may also bring stands for their rocket however a table will be available to rest it on. The judges will mark the build quality based on the following aspects:

1. **Preparedness** – Consideration of how much of the rocket has been completed and is present.
- **Recovery**: Parachutes, tethers, shock cord, links, shielding/ pistons, tender descenders.
- **Avionics**: Flight computers, batteries, switches, wiring, pyro terminals (empty).
- **Aerostructures**: Airframe, nosecone, fin can, launch lugs, motor retention, motor casing (empty), ballast.
- Teams must be able and willing to dismantle areas of the rocket for internal inspection.

2. **Workmanship** – Consideration of the final product's actual constructed state, including but not limited to:
- Degree to which holes, attachment points or other features appear improvised.
- Finish on external surfaces.
- Composite layup quality, state of epoxy fillets.
- Gaps between components and assembly symmetry.
- Dimensional accuracy or straightness of parts.
- Presence of chipping, burring, scuffing, sanding, grinding.
- Adherence to wiring guidelines, particularly cable management and electronics mounting

3. **Methods** – Consideration as to how has each component of the rocket been manufactured or procured.
- What degree of the construction has been completed by the teams VS external services or purchased off the shelf? Noting that student manufactured work for example sewing of parachutes, layup of composites and machining of key components will be looked on favourably, given it is of expected quality.
- Are the methods of construction appropriate to their application and typical of engineering conventions?

8 Payload

The payload within the rocket will be assessed in-person and does not require a written submission. Teams will be required to have their payload and rocket physically present for assessment where they will be judged on the following aspects of the payload:

1. **Presentation** – Students show the payload to judges and verbally describe the key details in a short presentation lasting for a minimum of two minutes. The presentation will take place by the rocket without the aid of a slideshow with physical demonstration of the payload functionality highly encouraged. Questions will follow. The following points should be summarised:
   - What is the payload and its sub-components, mounting and supporting infrastructure.
   - What does the payload do?
   - How was the payload designed and constructed?
   - What is the impact of the payload?

2. **Design Restrictions** – the restrictions in the "2025 AURC Rocket Specifications" document pertaining to the payload will be checked for compliance.
   - Removal of the payload would still allow the rocket to function.
   - Payloads are student researched and developed (not entirely – but clearly involved student input).
   - The payload is separable from the rocket within 10 minutes. It will be at the judges discretion whether this needs to be physically timed or not.
   - Mass is greater than 500 g or 2 kg for either the 5000 ft or 10,000/30,000 ft altitude categories, respectively.
   - Dimensions are within ±5%linear tolerance of specification.

3. **Purpose** - Payloads are judged based on their purpose (experiment, measurement or observation) and the extent to which this is deemed to be impactful. Payloads whose purpose has a high degree of real-world usefulness, or a clear need and application, will be looked upon favourably.

Appendix A: Progress Report 1 Marking Rubric

Item	Excellent *High-quality industry level work.*	Good *High-quality undergraduate work.*	Satisfactory *Good-quality undergraduate work.*	Developing *Ordinary undergraduate work*	Insufficient *Inadequate work*	Score
Executive Summary (5%) A clear, concise, and informative overview of the rocket and competition category, the project's objectives and goals	2.5 pts Executive summary is comprehensive, succinct and informative. It introduces the project background, problem addressed, and approach taken. Discussion of the key findings throughout the process, along with the overall recommendations. Structure, cohesion, and language used enhance communicability.	2 pts Executive summary explains the background, problem addressed and approach, as well as covering the key outcomes. May be a minor issue with the content, or with structure, cohesion, or language.	1.5 pts Executive summary explains the background, problem addressed and approach, as well as covering the key outcomes. May be several minor issues with the content, or with structure, cohesion, or language.	1 pts Executive summary explains the background, problem addressed and approach, as well as covering the key outcomes. May have significant issues with the content, or with structure, cohesion or language.	<1 pts Either no executive summary provided, or executive summary does not explain the background or problem addressed. Significant issues with the content, or with structure, cohesion, or language.	/2.5
Introduction and Conclusion **(5%)** Should provide an overview of the project. Includes the project aim in the context of the technical background. Conclusion should summarise the report in terms of its goals and projected milestones.	2.5 pts Clearly summarises the background of the project and outlines the purpose of the report. Presents a clear overview of the team and its goals and projected milestones.	2 pts Summarises the background of the project and outlines the purpose of the report. Presents an overview of the team and its goals and projected milestones. May be a minor issue with the content, or with structure, cohesion, or language.	1.5 pts Fails to concisely summarise the project background or outline the purpose of the report. Too long or too brief to accurately capture the contents of the report.	1 pts Fails to concisely summarise the project background or outline the purpose of the report. Too long or too brief to accurately capture the contents of the report. May be significant issues with the content, or with structure, cohesion or language.	<1 pts Either no introduction and/or conclusion provided or introduction and/or conclusion is to a very poor quality. Does not summarise the project background or the purpose of the report. Significant issues with the content, or with structure, cohesion or language.	/2.5

Design Overview **(20%)** A conceptual design, Brief overview of the rocket, its planned subsystems, and functions	13-15 pts Matured rocket design that captures the critical elements of a rocket and provides sufficient detail for the selection of a suitable rocket motor. Satisfactory motor selection. Appropriate recovery method selection with safe proposed descent rates. Brief but informative overview of your payload and its intended purpose. Concise but informative overview of your current avionics' details provided. System complies with TRA and CASA regulations and competition requirements.	11-12 pts Adequate rocket design that captures most elements of a rocket and provides enough detail for the selection of a suitable motor. Will need extra work to achieve a model suitable for detailed design. Satisfactory motor selection. Adequate recovery method selection which may be lacking in the required detail or could result in inappropriate descent rates. Brief overview of your payload. Overview of avionics details provided. System complies with TRA and CASA regulations and competition requirements.	8-11 pts Rocket design is incomplete or is not flight worthy. Model needs significant work before deemed suitable. Unsatisfactory motor selection criteria and selected motor. Little to no payload overview. Little to no overview of avionics provided. Aspects of the design fails to comply with the TRA and CASA regulations and competition requirements.	6-10 pts Insufficient to no detail of rocket systems for their intended functions provided. System does not comply with TRA and CASA regulations or competition requirements.	<5 pts Little to no overview provided. Provided overview does not capture any rocket systems or the intended functions. System clearly violates TRA and CASA regulations and competition requirements.	/15

Systems Engineering and Design Methodology **(30%)** Systems engineering process, which includes problem definition and system requirements.	8-10 pts Rules and Regulations used as the starting point, then definition is clearly explained, including stakeholders. Clear evidence of the "so what" derived from this analysis. System requirements are identified that convincingly capture the distillation of the problem, providing a set that can be designed to, and can guide the verification of a successful system solution.	6-7 pts Rules and Regulations used as the starting point, then definition is clearly explained, including stakeholders. Clear evidence of the "so what" derived from this analysis. System requirements are identified that substantially capture the distillation of the problem. These requirements are well expressed. Scope for a minor issue or two.	4-5 pts Rules and Regulations used as the starting point, then definition is explained. Evidence of the "so what" derived from this analysis. System requirements are identified that mostly capture the distillation of the problem. These requirements are capably expressed. Scope for several minor issues.	3 pts Rules and Regulations used as the starting point, then definition is poorly explained. Some evidence of the "so what" derived from this analysis. System requirements are identified that partially capture the distillation of the problem. These requirements are passably expressed. Scope for several significant issues.	<3 pts Missing multiple system requirements or major issues such as clearly incorrect or unjustified requirements, or major, repeated expression issues.	/10
Overview of design methodology and process to discuss how your team will tackle the engineering project.	8-10 pts Details clearly and concisely the design process of how the design problems and challenges are addressed and validated. Details clearly how the team approaches the problem and processes / procedures to implement design decisions and changes.	6-7- pts Details the design process of how the design problems and challenges are addressed and validated. Details how the team approaches the problem and processes / procedures to implement design decisions and changes.	4-5 pts Details some of the design process of how the design problems and challenges are addressed and validated. Some details on how the team approaches the problem and processes / procedures to implement design decisions and changes.	3 pts Some outline of procedures and processes to address design challenges. Team demonstrates inconsistent or ineffective decisions-making procedures and processes to implement changes.	<3 pts No overview of design methodology and process provided. Design methodology provided would not assist with addressing any design challenges. No to very little justification on the decision-making procedures of implementing changes.	/10

Team Management and Organisation **(30%)** Overview of team management structure and responsibilities	9-10 pts Concise and clear overview of team management structure, roles and their responsibilities for the project. Demonstrates fair task allocation or justifies tasks allocation for various roles.	7-8 pts Good overview of team management structure, roles and their responsibilities for the project. Somewhat demonstrates fair task allocation or justifies tasks allocation for various roles.	5-6 pts A decent overview of team management structure, roles and their responsibilities for the project. Does not demonstrate fair task allocation or justifies tasks allocation for various roles.	3 – 4 pts An overview of team management structure. Lacks detail on the responsibilities of various roles within the team. Demonstrates an uneven task allocation or inability to adequately to distribute tasks.	< 2 pts Little to no overview of the team management structure or responsibilities. Management structure provided is poor and demonstrates an uneven task allocation.	/10
Overview of communication management Overview of project budget Overview of project timeline, milestones and launch schedule.	9-10 pts Concise and clear overview of communication processes and procedures utilised to ensure efficient communication within the team. Identifies and demonstrates appropriate communication with various project stakeholders.	7-8 pts Sound overview of team communication strategies, with mention of specific processes and procedures. Identifies various project stakeholders with moderate information regarding strategies of engagement.	5-6 pts Some information detailing team communication strategies. Identifies few project stakeholders and little information regarding strategies of engagement.	3 – 4 pts Little detail regarding team communication strategies. Fails to identify key stakeholders in the project and strategies of engagement.	< 2 pts Little to no communication management overview provided. Communication strategies provided would not be suitable for the competition. No stakeholders identified	/10

Team Management and Organisation **(30% Continued)** Overview of team management structure and responsibilities Overview of communication management Overview of project budget Overview of project timeline, milestones and launch schedule.	2.5 pts Budget is discerning in its set out and is representative of all costs relevant to the project. Contingencies are strongly justified.	2 pts Budget is considerate of largely considerate of the relevant costs – omitting only few items. Contingencies are justified with minimal inconsistencies and errors.	1.5 pts Budget set out has moderate errors pertaining to quantities. Budget is largely self-consistent with little to no errors. Contingencies are not well-justified	1 pts A minimal budget is set out. Clear issues and concerns are identifiable. Budget is not self-consistent. Contingencies are not considered.	<1 pts No to very little information of the budget is set out. Budget is not self-consistent. Contingencies are not considered.	/2.5
	4- 5 pts All major competition milestones identified with a clear and well thought out plan of how and when they will be met. Reasonable project technical and management milestones are disclosed.		2-3 pts Unreasonable timeline and milestones are disclosed. Competition milestones do not align with project timeline. Lack of detail regarding launch opportunities and system preparation		< 2 pts An unreasonable timeline is set out. Timeline is inconsistent with the competition milestones. Timeline does not consider contingencies.	/5
Language **(5%)** Formal, objective, neutral academic language Spelling and grammar Precision, rather than ambiguity Linking language	2.5 pts Professional, formal language used throughout, Spelling and grammar are of a high standard. Precision is evident, avoiding ambiguity. Effective use of linking language enhances overall coherence. .	2 pts Mainly formal, objective, and neutral academic language. Spelling and grammar are correct. Communicates with precision, with rare ambiguity. Consistent use of linking language enhances coherence.	1.5 pts Language is generally formal, objective, and neutral. Spelling and grammar have minimal errors that do not impede understanding. Attempts precision, with occasional ambiguity. Attempts to use linking language, with room for improvement in coherence.	1 pts Language is formal, objective, and neutral with no errors. Spelling and grammar are correct with no errors. Communicates with precision, with rare ambiguity. Consistent use of linking language enhances coherence.	<1 pt Language lacks formality, objectivity, and neutrality. Spelling and grammar errors significantly impede understanding. Lacks precision, resulting in significant ambiguity. Linking language is absent or ineffective, leading to a lack of coherence.	/2.5

Report Format and Presentation (5%) Professional presentation. Frontal matter (title page, executive summary, disclaimer, table of contents, lists figures and tables, glossary). Logical structure for body of report Consistent heading, table and list formatting. Clear images and diagrams. Correct captioning.	5 pts Report is well formatted and professionally presented. Frontal matter is present, and formatting is high standard. The structure is logical and formatting for figures, tables, heading, text is high standard throughout Images and diagrams are clear and easy to read.	4 pts Report is professionally presented, but some minor errors in formatting (e.g. tables, lists, figures, images etc.).	3 pts Report is acceptably formatted and structured. A medium to high number of formatting errors are present.	2.5 pts Report structure is clearly inadequate. A high number of formatting errors are present.	<2.5 pts Very poorly presented report	/5
/75						

Appendix B: Progress Report 2 Marking Rubric

Item	Excellent *High-quality industry level work.*	Good *High-quality undergraduate work.*	Satisfactory *Good-quality undergraduate work.*	Developing *Ordinary undergraduate work*	Insufficient *Inadequate work*	Score
Executive Summary (5%) A comprehensive and complete summary of the project and report which can be understood in isolation to rest of the document.	5 pts Executive summary exemplifies industry-leading standards with its comprehensive, succinct and a highly informative presentation. A compelling overview of the project that invites further reading.	4 pts Executive summary is comprehensive, succinct, and informative. Provides a solid overview of the project that encourages further exploration.	3 pts Executive summary is somewhat comprehensive and provides a basic overview. Provides essential information about the project but lacks depth.	2 pts Executive summary is self-contained with some detail but could be improved for a more cohesive overview.	1pts Executive summary is unclear, incomplete, or significantly lacking in substance. It does not effectively outline the key points of the project.	/5
Introduction and Conclusion (5%) The introduction provides an overview of the project's progress thus far. The conclusion summarises the report in terms of project to date and projected plans.	5 pts The introduction provides a comprehensive but concise overview of the project's progress and effectively sets the stage for the report, creating interest and clarity. The conclusion summarises the report thoroughly, highlighting current progress and projected plans. Clear thought has been put into potential roadblocks which could become an issue, and the precautions in place to mitigate them.	4 pts The introduction offers a mostly comprehensive overview of the project's progress and establishes a solid foundation for the report, generating interest. The conclusion offers a mostly comprehensive summary of the report and highlights current progress and projected plans effectively. Some thought has gone into potential roadblocks which could become an issue.	3 pts The introduction provides a solid, albeit basic, overview of the project's progress and conveys essential information in a competent manner, with room for deeper exploration. The conclusion offers a competent summary of the report and touches on current progress and projected plans adequately, with potential for more depth.	2 pts The introduction introduces the project's progress with some detail. It may benefit from improved emphasis and cohesion for a more engaging introduction. The conclusion summarises the report with some detail but could benefit from improved cohesion. It may need more emphasis on current progress and projected plans.	1 pts The introduction is unclear, incomplete, or significantly lacking in substance. It does not effectively provide a sufficient overview of the project's progress. The conclusion is unclear, incomplete, or significantly lacking in substance. It does not effectively summarise the report's progress and projected plans.	/5

Design Overview (20%) A conceptual design, overview of the rocket, its planned subsystems, and functions. The design choices are explained. Changes to the design from the previous report are highlighted.	19-20 pts Exceptional depth and detail in presenting design choices. Comprehensive development of subsystems with precise explanations. Demonstrates an advanced understanding of rocket operation design choices. Rigorous testing procedures are outlined with detailed results. The section reflects a highly matured and well-considered design.	16-18 pts Clear and detailed presentation of design choices. Subsystems are well-developed with adequate explanations. Demonstrates a good understanding of rocket operation design choices. Testing procedures are outlined with satisfactory results. The section reflects a well-developed and considered design.	11-15 pts Adequate presentation of design choices. Subsystems are presented with some detail and explanation. Demonstrates an acceptable understanding of rocket operation design choices. Testing procedures are outlined with basic results. The section reflects an adequately developed design.	6-10 pts Basic presentation of design choices. Subsystems are presented with limited detail and explanation. Demonstrates a basic understanding of rocket operation design choices. Testing procedures are outlined with minimal results. The section reflects a rudimentary design.	<5 pts Inadequate or missing presentation of design choices. Subsystems are inadequately presented or entirely missing. Demonstrates a lack of understanding of rocket operation design choices. Testing procedures are missing or insufficient. The section lacks evidence of a coherent design.	/20
Payload (10%) A concise summary of the payload system, its intended purpose and benefits to stakeholders and/or project. It should detail the design choices made to enhance the system reliability and convincingly showcase scientific or technical viability and applicability.	10 pts Exceptionally concise and detailed summary of the payload system. Clearly outlines the intended purpose and benefits to stakeholders or the project. Demonstrates advanced design choices that enhance system reliability. Convincingly showcases the scientific or technical viability and applicability. The section reflects a highly sophisticated and well-justified payload design.	8-9 pts Clear and concise summary of the payload system. Outlines the intended purpose and benefits to stakeholders or the project. Demonstrates good design choices contributing to system reliability. Presents a convincing case for the scientific or technical viability and applicability. The section reflects a well-considered and justified payload design.	6-7 pts Adequate summary of the payload system. Describes the intended purpose and benefits to stakeholders or the project. Demonstrates acceptable design choices for system reliability. Presents a reasonable case for the scientific or technical viability and applicability. The section reflects an adequately developed payload design.	4-5 pts Basic summary of the payload system. Provides limited information on the intended purpose and benefits. Design choices for system reliability are basic. Presents a limited case for the scientific or technical viability and applicability. The section reflects a rudimentary payload design.	<3 pts Inadequate or missing summary of the payload system. Fails to describe the intended purpose and benefits convincingly. Design choices for system reliability are missing or insufficient. Fails to present a case for the scientific or technical viability and applicability. The section lacks evidence of a coherent payload design.	/10

Systems Engineering (30%) What design choices have you made to enhance your system's reliability and safety? In this section updated system requirements are expected. How are you planning to verify your design against these system requirements?	10 pts Exceptionally detailed and updated system requirements are presented. Demonstrates a comprehensive plan for verifying the design against system requirements. Design choices to enhance system reliability and safety are advanced and well-justified. Comprehensive and robust discussion of hazard identification and hazard log. Demonstrates advanced implementation of safety approach. Clear evidence of supporting documentation from Appendices.	8-9 pts Clear and detailed presentation of updated system requirements. Presents a good plan for verifying the design against system requirements. Design choices to enhance system reliability and safety are well-justified. Robust discussion of hazard identification and hazard log. Demonstrates a well-implemented safety approach. Adequate evidence of supporting documentation from Appendices.	6-7 pts Adequate presentation of updated system requirements. Describes an acceptable plan for verifying the design against system requirements. Design choices to enhance system reliability and safety are reasonable. Provides an acceptable discussion of hazard identification and hazard log. Demonstrates an adequately implemented safety approach. Some evidence of supporting documentation from Appendices.	4-5 pts Basic presentation of updated system requirements. Provides a basic plan for verifying the design against system requirements. Design choices for enhancing system reliability and safety are basic. Offers a basic discussion of hazard identification and hazard log. Demonstrates a basic implementation of safety approach. Limited evidence of supporting documentation from Appendices.	<3 pts Inadequate or missing presentation of updated system requirements. Fails to provide a plan for verifying the design against system requirements convincingly. Design choices for enhancing system reliability and safety are missing or insufficient. Fails to provide a convincing discussion of hazard identification and hazard log. Demonstrates a lack of implementation of safety approach. Insufficient evidence of supporting documentation from Appendices.	/30
Simulations and flight profile (5%) A methodology for simulating the rocket flight is outlined and the results are presented. The simulation is done correctly and could be relied on.	5 pts A robust simulation has been completed with methodology clearly outlined and justified. There is a clear attention to detail. Provided table is completed with valid information and meets safety requirements in AURC documentation.	4 pts A robust simulation has been completed with methodology outlined and justified. Provided table is completed with valid information and meets safety requirements in AURC documentation.	3pts A simulation has been completed with methodology outlined but not justified. Provided table is completed with valid information and meets safety requirements in AURC documentation.	2pts A simulation has been completed and is briefly summarised. Provided table is completed with valid information and meets safety requirements in AURC documentation.	< 2 pts An inadequate or no simulation of the rocket is provided. Provided table is incomplete or does not meet safety requirements in AURC documentation.	/5

Manufacturing Processes & Plans (10%) This section should include an overview of manufacturing methods and materials. It should also cover your manufacturing progress to date.	10 pts Exceptionally detailed overview of manufacturing methods and materials. Comprehensive coverage of manufacturing progress to date with substantial evidence. Demonstrates advanced planning and implementation of manufacturing processes; the timeline is well thought out	8-9 pts Clear and detailed overview of manufacturing methods and materials. Good coverage of manufacturing progress to date with clear evidence. Demonstrates well-planned and implemented manufacturing processes; the timeline is thought out.	6-7 pts Adequate overview of manufacturing methods and materials. Provides an acceptable coverage of manufacturing progress to date with some evidence. Demonstrates adequately planned and implemented manufacturing processes.	4-5 pts Basic overview of manufacturing methods and materials. Offers a basic coverage of manufacturing progress to date with limited evidence. Demonstrates basic planning and implementation of manufacturing processes.	<3 pts Inadequate or missing overview of manufacturing methods and materials. Fails to provide convincing coverage of manufacturing progress to date. Demonstrates a lack of planning and implementation of manufacturing processes.	/10
Flyer of record documentation (5%)	5 pts Flyer of record documentation table is filled out correctly with valid information				0 pts Flyer of record documentation is not provided, complete with invalid information or filled out incorrectly.	/5
Language **(5%)** Formal, objective, neutral academic language Spelling and grammar Precision, rather than ambiguity Linking language	5 pts Professional, formal language used throughout, Spelling and grammar are of a high standard. Precision is evident, avoiding ambiguity. Effective use of linking language enhances overall coherence.	4 pts Mainly formal, objective, and neutral academic language. Spelling and grammar are correct. Communicates with precision, with rare ambiguity. Consistent use of linking language enhances coherence.	3 pts Language is generally formal, objective, and neutral. Spelling and grammar have minimal errors that do not impede understanding. Attempts precision, with occasional ambiguity. Attempts to use linking language, with room for improvement in coherence.	2 pts Language is formal, objective, and neutral with no errors. Spelling and grammar are correct with no errors. Communicates with precision, with rare ambiguity. Consistent use of linking language enhances coherence.	1 pt Language lacks formality, objectivity, and neutrality. Spelling and grammar errors significantly impede understanding. Lacks precision, resulting in significant ambiguity. Linking language is absent or ineffective, leading to a lack of coherence.	/5

Report Format and Presentation (5%) Professional presentation. Frontal matter (title page, executive summary, disclaimer, table of contents, lists figures and tables, glossary). Logical structure for body of report Consistent heading, table and list formatting. Clear images and diagrams. Correct captioning.	5 pts Report is well formatted and professionally presented. Frontal matter is present, and formatting is high standard. The structure is logical and formatting for figures, tables, heading, text is high standard throughout Images and diagrams are clear and easy to read.	4 pts Report is professionally presented, but some minor errors in formatting (e.g. tables, lists, figures, images etc.).	3 pts Report is acceptably formatted and structured. A medium to high number of formatting errors are present.	2.5 pts Report structure is clearly inadequate. A high number of formatting errors are present.	<2.5 pts Very poorly presented report	/5

/100

Appendix C: Technical Report Marking Rubric

Item	Excellent *High-quality industry level work.*	Good *High-quality undergraduate work.*	Satisfactory *Good-quality undergraduate work.*	Developing *Ordinary undergraduate work*	Insufficient *Inadequate work*	Score
Abstract (2%) A single paragraph summary of the focus, purpose, results and contents of the technical report.	4 pts The abstract is exceptionally clear, concise, and effectively summarises the focus, purpose, results, and contents of the technical report in a single paragraph. It provides a comprehensive, relevant, and well-structured overview of the report, communicating its significance effectively.	3 pts The abstract is clear and concise, effectively summarising the focus, purpose, results, and contents of the technical report in a single paragraph. It provides a relevant summary with minor areas that could be improved for depth or clarity.	2 pts The abstract is clear and provides a basic to moderate summary of the technical report's focus, purpose, results, and contents. Relevant details are present, but there may be some lack of depth or clarity.	1 pts The abstract is somewhat clear but lacks conciseness. It provides a basic to limited overview of the technical report, with some relevant information but may lack detail or depth.	<1 pts The abstract is unclear, lacks conciseness, or fails to effectively summarise the focus, purpose, results, and contents of the technical report. There may be a lack of relevant information or depth in the summary.	/4
Introduction (3%) Should provide an overview of the project. Includes a brief description of your team, project aim and a short description of the activities undertaken this year.	8-10 pts The introduction is exceptionally clear, concise, and provides a comprehensive, relevant, and well-structured overview of the project. It includes a brief, detailed, and well-articulated description of the team, project aim, and activities undertaken this year.	6-7 pts The introduction is clear, concise, and provides a relevant and well-structured overview of the project. The description of the team, project aim, and activities is well-articulated with minor areas for improvement.	3-5 pts The introduction is clear and provides a basic to moderate overview of the project. The description of the team, project aim, and activities is present, but some aspects may lack depth or relevance.	1-2 pts The introduction is somewhat clear but may lack conciseness. Provides a basic overview of the project with a description of the team, project aim, and activities, but may lack detail or clarity.	<1 pts The introduction is unclear, lacks conciseness, or fails to effectively provide an overview of the project. Description of the team, project aim, and activities may be insufficient or unclear.	/10

System Architecture Overview – Structures (4%) Design overview of the structures subsystems	8-10 pts Exceptional design description and overview of the subsystem components aided by employment of high-quality diagrams or images. Outlines the influence of the system requirements on the design, especially section 3 and 4 of the AURC rocket specifications. Exceptional engineering.	7 pts Good design description and overview of the subsystem components aided by employment of diagrams or images. Outlines the influence of the system requirements on the design, especially section 3 and 4 of the AURC rocket specifications. Design shows good engineering.	5-6 pts Adequate design description and overview of the subsystem components aided by employment of some diagrams or images. Gives thought to the influence of the system requirements on the design, especially section 3 and 4 of the AURC rocket specifications, with some noticeable gaps.	3-4 pts Minimal design description and overview of the subsystem components. Unclear how the deign fulfils section 3 and 4 of the AURC rocket specifications.	<3 pts Incomplete or unclear design description and overview of the subsystem components. No indication if the deign fulfils section 3 and 4 of the AURC rocket specifications.	/10
System Architecture Overview – Recovery (4%) Design overview of the recovery subsystems	8-10 pts Exceptional design description and overview of the subsystem components aided by employment of high-quality diagrams or images. Outlines the influence of the system requirements on the design, especially section 5 and 6 of the AURC rocket specifications. Exceptional engineering.	7 pts Good design description and overview of the subsystem components aided by employment of diagrams or images. Outlines the influence of the system requirements on the design, especially section 5 and 6 of the AURC rocket specifications. Design shows good engineering.	5-6 pts Adequate design description and overview of the subsystem components aided by employment of some diagrams or images. Gives thought to the influence of the system requirements on the design, especially section 5 and 6 of the AURC rocket specifications, with some noticeable gaps.	3-4 pts Minimal design description and overview of the subsystem components. Unclear how the deign fulfils section 5 and 6 of the AURC rocket specifications.	<3 pts Incomplete or unclear design description and overview of the subsystem components. No indication if the deign fulfils section 5 and 6 of the AURC rocket specifications.	/10
System Architecture Overview – Avionics (4%) Design overview of the avionics subsystems	8-10 pts Exceptional design description and overview of the subsystem components aided by employment of high-quality diagrams or images. Outlines the influence of the system requirements on the design, especially section 6 and 7 of the AURC rocket specifications. Exceptional engineering.	7 pts Good design description and overview of the subsystem components aided by employment of diagrams or images. Outlines the influence of the system requirements on the design, especially section 6 and 7 of the AURC rocket specifications. Design shows good engineering.	5-6 pts Adequate design description and overview of the subsystem components aided by employment of some diagrams or images. Gives thought to the influence of the system requirements on the design, especially section 6 and 7 of the AURC rocket specifications, with some noticeable gaps.	3-4 pts Minimal design description and overview of the subsystem components. Unclear how the deign fulfils section 6 and 7 of the AURC rocket specifications.	<3 pts Incomplete or unclear design description and overview of the subsystem components. No indication if the deign fulfils section 6 and 7 of the AURC rocket specifications.	/10

Payload (8%) Details payload function and design.	16-20 pts Clearly articulates the payload's role in the overall mission. Exceptional design description of the payload, covering both structure and electronic systems. Detailed justification for design decisions, considering payload specifications from Section 8 of Rocket Specifications. Exceptional explanation of payload functionality, demonstrating a thorough understanding of the payload's purpose and role.	13-15 pts Articulates the payload's role in the overall mission with some minor areas for improvement. Clear and detailed design description of the payload, encompassing both structure and electronic systems. Good justification for design decisions, referencing payload specifications from Section 8 of Rocket Specifications. Clear and detailed explanation of payload functionality, showcasing a good understanding of its purpose and role.	9-12 pts Presents the payload's role in the overall mission with room for improvement. Adequate design description of the payload, covering either structure or electronic systems with reasonable detail. Some justification for design decisions, referencing payload specifications from Section 8 of Rocket Specifications. Adequate explanation of payload functionality, providing a basic understanding of its purpose and role.	6-8 pts Presents the payload's role in the overall mission with notable gaps. Basic design description of the payload, with limited coverage of either structure or electronic systems. Limited justification for design decisions, with some reference to payload specifications from Section 8 of Rocket Specifications. Basic explanation of payload functionality, with limited detail and understanding of its purpose and role.	<6 pts Minimal or no articulation of the payload's role in the overall mission. Basic design description of the payload, with limited coverage of either structure or electronic systems. Limited justification for design decisions, with some reference to payload specifications from Section 8 of Rocket Specifications. Incomplete or unclear explanation of payload functionality, lacking a clear understanding of its purpose and role.	/20
Verification – Simulations (8%) Flight simulations are required to verify the trajectory of your rocket. This section should justify the selection of the flight simulation software and procedure to simulate and the outline the results themselves.	18-20 pts Exceptional justification of flight simulation software selection. Provides a comprehensive and well-organised explanation of the chosen flight simulation software and its suitability. Demonstrates a deep understanding of the methods used to verify software results. Simulation results are thoroughly analysed and critically compared to desired performance.	15-17 pts Clear justification of flight simulation software selection. Offers a well-structured explanation of the chosen flight simulation software and its suitability. Demonstrates a satisfactory understanding of the methods used to verify software results. Simulation results are analysed and compared to desired performance.	11-14 pts Adequate justification of flight simulation software selection. Provides a basic explanation of the chosen flight simulation software and its suitability. Demonstrates an acceptable understanding of the methods used to verify software results. Simulation results are presented with some analysis and comparison to desired performance.	6-10 pts Basic justification of flight simulation software selection. Offers limited explanation of the chosen flight simulation software and its suitability. Demonstrates a basic understanding of the methods used to verify software results. Simulation results are presented with minimal analysis or comparison to desired performance.	<6 pts Inadequate or missing justification of flight simulation software selection. Fails to provide an explanation of the chosen flight simulation software and its suitability. Demonstrates a lack of understanding of the methods used to verify software results. Simulation results are missing or not appropriately analysed.	/20

Verification – Calculations (8%) Calculations (outside of simulations) that were used to verify the performance of the rocket.	15-17 pts Exceptional presentation of calculations. Provides a comprehensive and well-organized summary of calculations used to verify the rocket's performance. Demonstrates a deep understanding of the application and relevance of the calculations. Calculations are accurate, thorough, and contribute significantly to the verification process.	13-14 pts Clear presentation of calculations. Offers a well-structured summary of calculations used to verify the rocket's performance. Demonstrates a satisfactory understanding of the application and relevance of the calculations. Calculations are accurate and contribute effectively to the verification process.	9-12 pts Adequate presentation of calculations. Provides a basic summary of calculations used to verify the rocket's performance. Demonstrates an acceptable understanding of the application and relevance of the calculations. Calculations are generally accurate and contribute to the verification process.	6-8 pts Basic presentation of calculations. Offers limited summary of calculations used to verify the rocket's performance. Demonstrates a basic understanding of the application and relevance of the calculations. Calculations are somewhat accurate and contribute minimally to the verification process	<6 pts Inadequate or missing presentation of calculations. Fails to provide a summary of calculations used to verify the rocket's performance. Demonstrates a lack of understanding of the application and relevance of calculations. Calculations are inaccurate or entirely absent, hindering the verification process.	/17
Validation – Test Procedures and Results (8%) Tests done to verify the performance of the rocket on meeting or exceeding simulation results or desired behaviour.	15-17 pts Exceptional detailing of test procedures. Provides a comprehensive and well-organized explanation of procedures to verify the rocket's performance. Exceptional presentation of test results. Offers detailed and insightful analysis of the results, clearly comparing them to simulation or desired behaviour. Demonstrates a profound understanding of the implications of test outcomes.	13-14 pts Clear detailing of test procedures. Offers a well-structured explanation of procedures to verify the rocket's performance. Clear presentation of test results. Provides a well-organized analysis of the results, comparing them to simulation or desired behaviour. Demonstrates a solid understanding of the implications of test outcomes.	9-12 pts Adequate detailing of test procedures. Provides a basic explanation of procedures to verify the rocket's performance. Adequate presentation of test results. Provides a basic analysis of the results, with some comparison to simulation or desired behaviour. Demonstrates an acceptable understanding of the implications of test outcomes.	6-8 pts Basic detailing of test procedures. Offers limited explanation of procedures to verify the rocket's performance. Basic presentation of test results. Offers limited analysis of the results, with minimal comparison to simulation or desired behaviour. Demonstrates a basic understanding of the implications of test outcomes.	<6 pts Inadequate or missing detailing of test procedures. Fails to provide an explanation of procedures to verify the rocket's performance. Inadequate or missing presentation of test results.	/17

Verification – System Requirements Compliance (8%) An overview on whether the system has successfully met the System Requirements including AURC specified rstricions. Requirements not met are noted and a mitigation plan provided.	15-17 pts Comprehensive overview of system requirements compliance that projects confidence in the functionality of the design. Clearly identifies and analyses whether all system requirements were met and explains how. Requirements include AURC specified restrictions as well as team specific ones. Unmet requirements are outlined and either justified or a coherent mitigation plan is outlined.	13-14 pts Good overview of system requirements compliance that shows satisfactory functionality of the design. Identifies and analyses whether all system requirements were met and explains how. Requirements include AURC specified restrictions as well as team specific ones. Unmet requirements are outlined and either justified or a coherent mitigation plan is outlined.	9-12 pts Identifies and analyses whether some system requirements were met. Requirements may omit some of either AURC specified restrictions or team specific ones. Some unmet requirements are outlined.	6-8 pts Identifies and analyses whether some system requirements were met but it is ambiguous whether or not the design can wholly fulfil its function. Requirements are missing key AURC restrictions or minimal team specific requirements are outlined/	<6 pts Inadequate or missing verification of system requirements. There is no evidence to suggest that the design is compliant with AURC specified restrictions.	/17
Mission Concept of Operations (6%) A plan of how the team is planning to follow safe launch and recovery procedures.	18-20 pts Exceptional description of rocket ConOps and subsystem operation during entire flight profile including , liftoff, ascent and descent phases. Checklists describe all activities surrounding operation of the rocket spanning from pre-launch to recovery. Procedures are exhaustive and extend to off-nominal scenarios. Demonstrates a thorough understanding of safety protocols.	15-17 pts Good description of rocket ConOps and subsystem operation during entire flight profile including , liftoff, ascent and descent phases. Checklists describe essential activities surrounding operation of the rocket spanning from pre-launch to recovery. Procedures extend to most off-nominal scenarios. Demonstrates a consideration of safety protocols.	12-14 pts Adequate description of rocket ConOps and subsystem operation during entire flight profile. Checklists describe most activities surrounding operation of the rocket spanning from pre-launch to recovery. Procedures extend to some off-nominal scenarios. Is safe.	7-11 pts Minimal description of rocket ConOps and subsystem operation during entire flight profile. Checklists describe some activities surrounding operation of the rocket, but others are unclear. Procedures consider no off-nominal scenarios.	<6 pts Inadequate or missing description of ConOps. The rocket operation is not discernible. Checklists are missing or inadequate to use the rocket. Operation of the rocket with existing information would be unsafe.	/20

Budget (6%) Summarises the finances of the project. Includes all costs incurred during the project.	12-15 pts Exceptional summary of the financial aspects of the project with a detailed breakdown of materials, manufacturing and service costs with comprehensive justification for each expenditure. Highlights goods or services that were discounted or free through affiliations or partnerships. Demonstrates a meticulous and efficient use of the budget.	9-12 pts Good summary of the financial aspects of the project with a clear breakdown of materials, manufacturing and service costs with adequate justification for most expenditures. Highlights goods or services that were discounted or free through affiliations or partnerships. Demonstrates a satisfactory and efficient use of the budget.	6-8 pts Adequate summary of the financial aspects of the project with a basic breakdown of materials, manufacturing and service costs with general justification for some expenditures. Highlights some goods or services that were discounted or free through affiliations or partnerships. Congratulations you have found an AURC easter egg! Message organisers to redeem bonus points. Demonstrates an acceptable use of the budget.	4-5 pts Basic summary of the financial aspects of the project with a limited breakdown of materiasl, manufacturing and service costs with minimal justification for expenditures. Poorly highlights goods or services that were discounted or free through affiliations or partnerships. Demonstrates a basic use of the budget.	<4 pts Inadequate or missing summary of the financial aspects of the project. Lacks a breakdown of materials, manufacturing and service costs or justification for expenditures. Does not highlight goods or services that were discounted or free through affiliations or partnerships. Demonstrates a lack of control or understanding of budget utilisation.	/15
Conclusion (3%) Summarises the report in terms of its technical specifications and lessons learned throughout the project.	7-10 pts Exceptional summary of technical specifications. Clear and comprehensive overview of the rocket and project technical aspects. Shows an exceptional understanding of the project's technical components. Exceptional, in-depth reflection on lessons learned. Provides insightful and detailed analysis of the project's challenges and successes.	5-7 pts Good summary of technical specifications. Clear overview of the rocket and project technical aspects. Shows a solid understanding of the project's technical components. Good reflection on lessons learned. Clear analysis of the project's challenges and successes.	3-4 pts Adequate summary of technical specifications. Covers the essential technical aspects of the rocket. Shows a satisfactory understanding of the project's technical elements. Adequate reflection on lessons learned. Identifies key aspects of the project's challenges and successes.	1-2 pts Basic summary of technical specifications. Covers some of the technical aspects of the rocket. Demonstrates a limited understanding of the project's technical components. Basic reflection on lessons learned. Covers some aspects of the project's challenges and successes.	<1 pts Inadequate or missing summary of technical specifications. Fails to cover essential technical aspects of the rocket. Demonstrates a lack of understanding of the project's technical elements. Inadequate or missing reflection on lessons learned. Fails to cover essential aspects of the project's challenges and successes.	/10

Appendices - Hazard Log and Systems Safety Assessment (FMECA) (10%)	18-20 pts Exceptional presentation of the current hazard log and FMECA. Provides a comprehensive and well-organized overview of risks apparent in the project. Demonstrates a deep understanding of risk mitigation methods, and their relevance to identified risks. The FMECA and hazard tracking is thorough, identifying a wide range of potential risks with detailed and effective mitigation strategies.	15-17 pts Clear presentation of the current hazard log and FMECA. Provides a well-structured overview of risks apparent in the project. Demonstrates a satisfactory understanding of risk mitigation methods, and their relevance to identified risks. The FMECA and hazard tracking is clear, identifying various potential risks with effective mitigation strategies.	11-14 pts Adequate presentation of the current hazard log and FMECA. Provides a basic overview of risks apparent in the project. Demonstrates an acceptable understanding of risk mitigation methods, and their relevance to identified risks. The FMECA and hazard tracking identifies most but not all potential risks with appropriate mitigation strategies.	5-10 pts Basic presentation of the current hazard log and FMECA. Provides a well-structured overview of risks apparent in the project. Demonstrates a basic understanding of risk mitigation methods, and their relevance to identified risks. The FMECA and hazard tracking identifies few potential risks with limited or basic mitigation strategies.	<5 pts Inadequate or missing presentation of the current hazard log and FMECA. Fails to provide an overview of risks apparent in the project. Demonstrates a lack of understanding of risk mitigation methods, and their relevance to identified risks. The FMECA and hazard tracking is missing or inadequately addresses potential risks and mitigation strategies.	/20
Appendices – Engineering Drawings (10%) Mechanical and electrical drawings – the 'blueprints' of the final launch vehicle design.	18-20 pts The rocket is entirely reproducible from these drawings. Clear indication of component dimensions, materials and mass for SRAD components. Assembly, sub-assembly and part drawings are included in a hierarchical manner. Bill of materials goes down to a level at which components can be disassembled to. Exceptional utilization of drawing conventions including tolerancing, title blocks and revisioning. Demonstrates a deep understanding of engineering principles and practices.	15-17 pts The rocket is mostly reproducible from these drawings. Most SRAD components have all dimensions shown and prescribed materials and mass. Assembly, sub-assembly and part drawings are included. Bill of materials generally goes down to a level at which components can be disassembled to. Good utilization of drawing conventions including tolerancing, title blocks and revisioning. Demonstrates an intermediate understanding of engineering principles and practices.	11-14 pts The rocket is not reproducible from these drawings, but assembly drawings show the main sections of the design. Dimensions, materials and mass is only available for key components. Ordering of assembly, sub-assembly and part drawings is confusing. Bill of materials simplifies the complexity of the design. Basic utilization of drawing conventions including tolerancing, title blocks and revisioning. Demonstrates an entry-level understanding of engineering principles and practices.	5-10 pts The design is highly ambiguous and key components or sub-assemblies have been omitted or simplified. Component dimensions, materials and mass is frequently omitted. Hierarchy of the design is not discernible. Poor utilization of drawing conventions including tolerancing, title blocks and revisioning which indicates a lack of understanding.	<5 pts Fails to provide mechanical and electrical drawings or provided drawings are inadequate, for example not created with appropriate software. Minimal or no effort to prescribe component dimensions, and confusing design. Demonstrates a lack of understanding of engineering principles and practices. The drawings are entirely unclear, incomplete, or irrelevant. Fails to provide information for replication.	/20

Language **(5%)** Formal, objective, neutral academic language Spelling and grammar Precision, rather than ambiguity Linking language	12-15 pts Professional, formal language used throughout, with allowance for some minor errors.	9-11 pts Formal language mostly used but spoken / colloquial language still evident. Some errors identified.	7-6 pts Formal language mostly used but spoken / colloquial language still evident. A significant number of errors identified.	3-5 pts Lots of spoken / colloquial language, spelling and grammar errors and lack of precision identified.	<2 pts Very poorly written report	/15
Report Format and Presentation **(5%)** Professional presentation. Frontal matter (title page, executive summary, disclaimer, table of contents, lists figures and tables, glossary). Logical structure for body of report Consistent heading, table and list formatting. Clear images and diagrams. Correct captioning.	12-15pts Report is well formatted and professionally presented. Frontal matter is present, and formatting is high standard. The structure is logical and formatting for figures, tables, heading, text is high standard throughout Images and diagrams are clear and easy to read with clear captions.	9-11 pts Report is professionally presented, but some minor errors in formatting (e.g. tables, lists, figures, images etc.).	7-6 pts Report is acceptably formatted and structured. A medium to high number of formatting errors are present.	3-5 pts Report structure is clearly inadequate. A high number of formatting errors are present.	<2 pts Very poorly presented report	/15
/250						

Appendix D: Payload Marking Rubric

Item	Excellent *High-quality industry level work.*	Good *High-quality undergraduate work.*	Satisfactory *Good-quality undergraduate work.*	Developing *Ordinary undergraduate work*	Insufficient *Inadequate work*	Score
Presentation (~27%) A clear, concise, and informative overview of the rocket's payload followed by questions.	8-10 pts Payload functionality and operation are comprehensively outlined in a professional manner, including explanation of manufacturing techniques. Payload is physically shown in its entirety (venue permitting) and where applicable, functionality is demonstrated. Students demonstrate an exceptional understanding of the payload functionality and design process when questioned.	7 pts Payload functionality and operation are clear, and manufacturing techniques are summarised. Payload is mostly shown (venue permitting) and mostly demonstrated. Students demonstrate a good understanding of the payload functionality and design process when questioned.	5-6 pts Payload functionality and operation are outlined but may be difficult to understand, and manufacturing techniques are summarised. Payload is mostly shown (venue permitting) but some more showcasing would be beneficial. Students demonstrate an ok understanding of the payload functionality and design process when questioned.	3-4 pts Payload is described but in limited detail. It's function is not entirely clear. Some elements of the payload is not present. Students demonstrate limited understanding of the payload functionality and design process when questioned. Decisions are not clear or justified.	<3 pts The payload function is not clear. Significant elements of the payload are not present and it's functionality is questionable. Students are unable to explain details of the design when questioned.	/10
Design Restriction: Removal (~7%)	2 pts Payload design fulfills 2025 AURC Rocket Specifications requirement 9.1.2: "replacement (of the payload) with an equivalent volume of 'dead' (non-functional) weight would not alter the launch vehicle trajectory and recovery".			0 pts Design restriction not fulfilled		/2

Design Restriction: SRAD (~7%)	2 pts Payload design fulfills 2025 AURC Rocket Specifications requirement 9.1.3 and is student researched and developed. It is permissible for elements of the payload to be purchased or provided by another organisation, as long as there is notable student contribution.	0 pts Design restriction not fulfilled	/2
Design Restriction: Separable (~7%)	2 pts Payload design fulfills 2025 AURC Rocket Specifications requirement 9.1.4: "Payloads shall be separable from the launch vehicle within 10 minutes once in the launch-ready configuration."	0 pts Design restriction not fulfilled	/2
Design Restriction: Mass (~7%)	2 pts Note that payload mass conditions will be accepted given they exceed 95% of the nominal mass requirement. For teams competing in the 5,000 ft category: Payload design fulfills 2025 AURC Rocket Specifications requirement 9.3.4: "Payloads shall collectively have a mass of at least 400 g". For teams competing in the 10,000 ft category: Payload design fulfills 2025 AURC Rocket Specifications requirement 9.3.4: "Payloads shall collectively have a mass of at least 2 Kg".	0 pts Design restriction not fulfilled	/2
Design Restriction: Dimensions (~7%)	2 pts For teams competing in the 5,000 ft category: Payload design fulfills 2025 AURC Rocket Specifications requirement 9.3.2: "Payloads shall be in the form of a CanSat cylinder with exterior dimensions of 66 mm diameter and 155 mm length." Within a linear tolerance of 5%. For teams competing in the 10,000 ft category: Payload design fulfills 2025 AURC Rocket Specifications requirement 9.4.2: "Payloads shall be in the form of one of the following CubeSat configurations with exterior dimensions according to those specified in Appendix B of the 2022 CubeSat design specification Rev. 14.1". https://www.cubesat.org/cubesatinfo	0 pts Design restriction not fulfilled	/2

Purpose (40%)	16-20 pts The payload has a clearly defined purpose (experiment, measurement or observation) and clear indication of what is required to deem the test successful. The payload outcome will be highly relevant to the scientific field or has significant commercial application. The payload is extremely innovative, novel and creative. The idea is commendable.	11-15 pts The payload has a defined purpose (experiment, measurement or observation) and some indication of what is required to deem the test successful. The payload outcome will be relevant to the scientific field or hold a potential commercial application. The payload is creative.	8-10 pts The payload has a defined purpose (experiment, measurement or observation) but is lacking indication of what is required to deem the test successful. The payload outcome probably won't be relevant to the scientific field or hold a potential commercial application but is still an interesting engineering challenge or experiment. The payload is not necessarily a new idea, rather an implementation of something that has been done before.	5-7 pts The payload purpose may not be considered an experiment, measurement or observation. The payload outcome won't be relevant to the scientific field or hold a potential commercial application The payload is not a new idea.	<5 pts The payload purpose is unsatisfactory to warrant placement in a sounding rocket. .	/20
/50						

Appendix E: Systems Engineering and Design Methodology

This section provides normative guidelines for student teams when undertaking design of their competition rockets and associated systems. The following process is provided as a reference but should be undertaken as a minimum while undertaking the design of the rocket.

1. **Top-level functional requirements**: Teams shall define the operational objectives of their rocket architecture as a whole. Most of this should be heavily borrowed from the requirements outlined in the "2025 AURC Rocket Specifications" document.
   - Examples of requirements: Carry a 2 kg payload, reach 10k feet altitude, dual stage recovery.
2. **System definition:** Teams shall define the systems of their rocket including system boundaries, interactions with other systems and any major subsystems.
   - Examples of systems: recovery, avionics, aerostructures, propulsion and payload.
3. **System functional requirements:** Teams shall define the functional requirements for each of the systems (and subsystems if relevant). These system level requirements must feed into the top-level requirement for the rocket architecture as a whole.
   - Examples for the avionics systems: must trigger a separation event at apogee, must log altitude.
4. **Hazard identification:** Teams shall carry out a top-down hazard identification activity to identify how functional failures in systems and subsystems will produce safety and flightworthiness hazards. This should cover all system functions across all system states. The systems states analysed should cover all phases where the rocket experiences substantial changes in operating conditions.
   - Example of hazard: should the avionics unsuccessfully activate a separation event at apogee, what would the safety and flight worthiness hazards be?
   - Examples of system states: preparation, standby for launch, boost, coast, descent.
5. **Hazard log:** Teams shall document identified hazards in a hazard log which should be updated as the design evolves.
   - A hazard log template will be provided by AURC.
6. **Risk reduction:** Teams shall reduce the risk of hazards occurring by applying measures following the hierarchy of controls (elimination, substitution, isolation, engineering, administrative, PPE). These controls should be documented and linked to hazards in the hazard log.
   - Example of controls: engineering control by utilising dual redundant flight computers, written assembly procedures and the use of PPE for arming rockets.
7. **Safety assessment**: Once the design for the rocket has been finalised a bottom-up safety assessment shall be undertaken such as a Failure modes, effects, and criticality analysis (FMECA). This approach analyses each component individually to identify hazardous failure modes. Note that this is different to the top-down approach during design. This should identify any missed controls and verify that the rocket and its systems have been designed to a suitable standard of safety and flight worthiness.
   - A FMECA template will be provided by AURC.
8. **Updated hazard log:** Teams shall document all the hazards identified throughout the design process and the controls that have been applied to each of them.

This process develops across the scope of multiple deliverables as teams progress their designs and is not addressed in a single deliverable. Progress Report 1 covers items 1-3, Progress Report 2 covers items 3-5 and the Technical Report covers items 6-8.

Note that while an activity may have initially taken place in an earlier deliverable, each sequential item relies on inputs from previous steps. As such, any changes or updates during detailed design that affects the architecture and system level functions must be reassessed through all activities.