# NAU RASC-AL GANTT CHART

| PROJECT DESCRIPTION | NAU RASC Lunar Habitat | | Team Name | NASA-RASC-03 |
|---|---|---|---|---|
| PROJECT DELEGATOR | Keerthi S. Gopi-Nagaruri | | DATE | 1/15/21 |
| TEAM MEMBERS | Salar Golshan, Keerthi S. Gopi-Nagaruri, Ryan Navarette, Aiden O'Brian, | | | |

| WBS NUMBER | TASK TITLE | TASK OWNER | START DATE | DUE DATE | DURATION | PCT OF TASK COMPLETE |
|---|---|---|---|---|---|---|
| **1** | **Project Conception and Planning** | | | | | |
| 1.1 | Project Description Review | All Team | 1/15/21 | 1/18/21 | 3 | 100 |
| 1.1.1 | Project Goals and Guidelines | All Team | 1/15/21 | 1/18/21 | 3 | 100 |
| 1.2 | Product Selection | All Team | 1/15/21 | 1/18/21 | 3 | 100 |
| 1.3 | CR/ER/HoQ | All Team | 1/18/21 | 1/29/21 | 11 | 100 |
| 1.4 | Project Budget Plan | Jelani Peay | 1/22/21 | 1/29/21 | 7 | 100 |
| 1.5 | Project Updates, Status and Tracking | Keerthi | 1/28/21 | 1/31/21 | 3 | 100 |
| 1.6 | Project Initiation | All Team | 1/18/21 | 1/29/21 | 11 | 100 |
| **2** | **Project research and Initiation** | | | | | |
| 2.1 | Team Composition and Task Delegation | All Team | 2/1/21 | 2/3/21 | 4 | 100 |
| 2.2 | Team Meetings and Scheduling | Keerthi | 2/3/21 | 2/5/21 | 3 | 100 |
| 2.3 | Bibliography Research | All Team | 2/3/21 | 2/26/21 | 7 | 100 |
| 2.4.1 | System Level Benchmarking | Jelani Peay and Aiden | 2/8/21 | 2/12/21 | 2 | 100 |
| 2.4.2 | Sub-System Level Benchmarking | Jelani Peay and Aiden | 2/12/21 | 1/22/21 | 10 | 100 |
| 2.3.1 | Rough System Concepts | All Team | 1/15/21 | 1/22/21 | 8 | 100 |
| 2.3.2 | Rough Sub-System Concepts | Keerthi | 1/15/21 | 1/22/21 | 8 | 100 |
| | Decision Matrix and Design Selection | Keerthi | 1/22/21 | 1/24/21 | 3 | 100 |
| 2.5 | Project Updates, Status and Tracking & Gantt Chart Updates | Keerthi | 2/24/21 | 2/26/21 | 3 | 100 |
| 2.6 | Proposal review and Writeup | All Team | 2/24/21 | 2/26/21 | 3 | 100 |
| **3** | **Priliminary Proposal** | | | | | |
| 3.1 | Design Research | All Team | 2/28/21 | 3/5/21 | 7 | 100 |
| 3.1 | Hypothesized Black Box | Aiden | 3/5/21 | 3/12/21 | 7 | 100 |
| | Full System Concepts | All Team | 3/5/21 | 3/12/21 | 7 | 100 |
| | Sub-System Concepts | Salar and Keerthi | 3/5/21 | 3/12/21 | 7 | 100 |
| 3.2 | Concept Generation | All team | 3/5/21 | 3/12/21 | 7 | 100 |
| 3.2.1 | Decision Matrix | Keerthi | 3/12/21 | 3/15/21 | 3 | 100 |
| 3.2.2 | Bll of Materials | Jelani | 3/12/21 | 3/15/21 | 3 | 100 |
| 3.3 | Project Updates | Keerthi | 3/16/21 | 3/17/21 | 1 | 100 |
| 3.3.1 | Gantt Chart Updates | Keerthi | 3/16/21 | 3/17/21 | 1 | 100 |
| **4** | **Final Proposal** | | | | | |
| 4.1.1 | Final Concept Requirements | Keerthi | 3/17/21 | 3/18/21 | 1 | 100 |
| 4.1.2 | Preliminary Floor Plan and Subsystem Placeholders. | Salar and Keerthi | 3/17/21 | 1/25/21 | 0 | 75 |
| 4.2.1 | Final Proposal CAD Model | Ryan | 3/17/21 | 1/25/21 | 0 | 75 |
| 4.3.1 | Radiation Shield Design | Aiden | 3/17/21 | 1/25/21 | 0 | 75 |
| 4.3.2 | Heat Transfer Analysis Plan | Aiden and Jelani | 3/17/21 | 1/25/21 | 0 | 30 |
| 4.3.3 | Structural Analysis | Keerthi | 3/17/21 | 1/25/21 | 0 | 30 |
| 4.4 | FMEA | Salar | 3/19/21 | 3/25/21 | 0 | 30 |
| 4.5 | Design Validation | All Team | 3/19/21 | 3/25/21 | 0 | 100 |
| 4.6.1 | Risk Analysis | Salar | 3/19/21 | 3/25/21 | 0 | 100 |
| 4.6.1 | BOM and Cost Tracking | Keerthi and Jelani | 3/19/21 | 3/25/21 | 0 | 100 |
| 4.6.2 | Standard Codes and Regulations | Aiden and Ryan | 3/19/21 | 3/25/21 | 0 | 30 |
| 4.7 | Prototype | Ryan, Aiden and Salar | 3/19/21 | 3/25/21 | 0 | 80 |
| 4.7 | Presentation Powerpoint | All Team | 3/19/21 | 3/25/21 | 0 | 80 |
| 7.8.1 | Radiation Testing Plan | All Team | 3/22/21 | 3/30/21 | 0 | 50 |
| 4.8.2 | Vibration Testing Plan | Keerthi | 3/22/21 | 3/30/21 | 0 | 50 |
| 4.9 | Report Writeup | All Team | 3/25/21 | 3/30/21 | 0 | 10 |
| 4.1 | Project Performance and Evaluation | All Team | 3/30/21 | 3/30/21 | 0 | 0 |
| **5** | **Final Planning for Fall** | | | | | |
| 5.1 | Technical Risk Management | | 30/30/21 | 4/15/21 | 0 | 0 |
| 5.2.1 | Radiation Testing Plan | All Team | 4/15/21 | 4/25/21 | 0 | 0 |
| 5.2.2 | Vibration Testing Plan | Keerthi | 4/15/21 | 4/25/21 | 0 | 0 |

Timeline columns: WEEK 1 – WEEK 12 (M T W R F per week)

| | | | | Start | End | | | |
|---|---|---|---|---|---|---|---|---|
| 5.3.1 | Design Optimization | | | 4/15/21 | 4/25/21 | | | |
| 5.3.2 | Manufacturing Plan and Vendor research | | | 4/15/21 | 4/25/21 | | | |
| 5.4 | Project Performance | | | 4/15/21 | 4/25/21 | 0 | 0 | |
| 5.6 | Project Performance and Final Evaluation | | | 4/25/21 | 4/25/21 | 0 | 0 | |
| **6** | **Fall Schedule** | | | | | | | |
| 6.1.1 | Update CAD Model | | | | | 1 | 100 | |
| 6.1.2 | Post Mortom | | | | | 0 | 75 | |
| 6.1.3 | Website Check | | | | | 0 | 75 | |
| 6.2.1 | Testing for Design and Failure | | | | | 0 | 75 | |
| 6.2.2 | Fabrication Plan for the final Prototype | | | | | 0 | 30 | |
| 6.2.3 | Individual Research Topics II | | | | | 0 | 30 | |
| 6.2.4 | Midpoint Presentation | | | | | 0 | 30 | |
| 6.3.1 | Technical Risk Management | | | | | 0 | 100 | |
| 6.4.1 | Prototype Build | | | | | 0 | 0 | |
| 6.4.2 | Prototype Test | | | | | 0 | 0 | |
| 6.5.1 | Redesign for Weight | | | | | 0 | 0 | |
| 6.5.2 | Redesign for Optimal Budget | | | | | | | |
| 6.6.1 | Final CAD Model for Concept | | | | | | | |
| 6.6.2 | Manufacturing Plan and Vendor research | | | | | | | |
| 6.6.3 | Project Performance | | | | | 0 | 0 | |
| 6.6.4 | Project Performance and Final Evaluation | | | | | 0 | 0 | |
| 6.7 | Final Presentation | | | | | | | |
| 6.7.1 | Final Product Operation/Assembly Manuel | | | | | | | |
| 6.7.2 | Final Report and Poster | | | 4/15/21 | 4/25/21 | | | |
| 6.7.3 | Final CAD Package Delivery to Vendor | | | 4/15/21 | 4/25/21 | | | |

| | Individual Research Topics | | |
|---|---|---|---|
| | Exact dimensions | Rocket chamber size | |
| | | Floor Plan | |
| | | | |
| | Update CAD MODEL | with circular tubing welds to get a moe weight approximation. | |
| | | HVAC system design. | |
| | | Bill of materials | |
| | Manufacturing | Parts Manufacturing Cost | |
| | | Company list and billing information. | |
| | | DFMA and FMEA | |
| | Systems dimensions and Area | Types of systems area allocation | |
| | | Individual systems area allocation | |
| | Regolith Design | Heat Transfer | |
| | | Packaging method | |
| | | Thickness of the layer | |
| | | Heat Transfer from radiation through regolith | |

| | | | | Notes/Details | | Assigned |
|---|---|---|---|---|---|---|
| | Heat Transfer | In and out of the habitat. | | | | |
| | Build a prototype | Prototype parts list | Potentially 3D Print it. | | | |
| | Testing Model | Vibration Analysis | | | | |
| | | Structural Analysis | | | | |
| | | | | | | |
| | | Website Check | | | | |
| | Capstone Deliverables | Individual Analysis | | | Salar | |
| | | Presentation 3 due in 3/6 | Full CAD Package | | | |
| | | | Prototype | 5 copies | | |
| | | | Project description | High quality image of Design with subsystems labeled. | | |
| | | | | Design functions and implementation Details | | |
| | | | Design Requirements | CR's and how th edesign meets them | | |
| | | | | Computational Proof that Design meets CR's and ER's | | |
| | | | | Analytical analysis | everyone | |
| | | | Design Validation | DFMA | Salar | |
| | | | | Critical Potential Failures | FMEA | Salar + Keith + Ryan + Jelani |
| | | | | Risk Trade-Off Abalysis | | Salar + Keith + Ryan + Jelani |
| | | | Testing Procedures | All lab equipment, procedures, variables and space required. | Keith + Aidan | |
| | | | Gantt chart for next semester | Requires more deadlines that provided. | Keith + Ryan | |
| | | | Budget | total dollars available | Jelani + Keith + Ryan | |
| | | | | anticipated expenses | | |
| | | | | expenses to date | | |
| | | | | resulting balance | | |
| | | | | Standard codes and regulations | Ryan + Aidan | |