



Spring 2022 Work Tasks

Design Analysis Cycle: 3

Period of Performance: 2/1/2022 – 4/30/2022

Revision 1.0

Publish Date: 2/1/2022

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CHANGE LOG

Group	Revision No.	Change No.	Description	Effective Date
Mgmt.	1.0	0	Initial document draft	1/25/2022

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1. Semester Goals and Critical Events

The work tasks for this semester are to focus on the planning products, onboarding process, educational documentation, analysis tools, and hardware demonstrations.

- Document team management practices for onboarding.
- Document analysis and design methods with focus on repeatability and education of incoming students.
- Low-cost hardware demonstrations.
- Continued development of analysis tools.
- Detailed project work planning around the proposal timeline.
- Integration planning.

Semester reviews will be conducted on progress this semester with SMEs on a team basis. These reviews do not correspond to a milestone review and are just updates with feedback.

Note: No WBS IDs will be used this DAC. Expect updates in the future on these tasks as the semester progresses.

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2. Work Tasks

The following section outlines the work tasks to be completed during the Period of Performance (POP) of this semester and DAC.

2.1. Management Team

The management team will focus on preparing a more detailed schedule for the project. The deliverable is the WBS which will define the work task planning organization for the teams.

Task Name	Work Description	Deliverables	Due Date
Organizational Breakdown Structure (OBS)	Update the OBS and include current graduate students.	OBS excel with contact information.	2/4
Work Breakdown Structure (WBS)	Update the WBS and integrate into the MAF and MPF	Excel list.	3/16
Integrated Master Schedule	Integrate the schedules from each team into a master schedule.	Gantt chart.	4/25

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2.2. System Engineering Team

The system engineering will focus on establishing the core model-based approaches that ABEX will use in preparation for project start in the Fall. The initial deliverables are on the MAF and MPF to integrate into the WBS for work task planning, rest of the work is to be completed end of the semester.

Task Name	Work Description	Deliverables	Due Date
ABEX Mission Architecture Framework (MAF)	Formally establish a working draft of the ABEX MAF and capture the foundational elements needed for the project planning. General concepts will be rolled up into the ontology.	<ul style="list-style-type: none"> Establish the views and viewpoints of the project and how they map to stakeholders. Establish list of products we want to utilize. Provide short descriptions of their purpose and link to view and viewpoints. Build the stakeholders list. 	3/16
ABEX Mission Process Framework (MPF)	Formally establish a working draft of the ABEX MPF and capture the foundational elements needed for the project planning. Concepts used will be rolled up into the ontology.	<ul style="list-style-type: none"> Establish milestone reviews, project phases and their relationships and goals. Establish the maturation descriptions we want to apply. Build processes flows for the management and system engineering elements as activity diagrams. 	3/16
Ontology	Establish the core concepts/elements that need to be documented along with major domains and relationships to capture. This should roll up elements of the MAF and MPF for initial usage (to be expandable later).	<ul style="list-style-type: none"> Usage cases for the ontology and desired interactivity. Contain the major views and viewpoint and view products and relations between each. Contain classes of processes, reviews, and phases. Classify the major concepts of PM/SE. 	4/25
System Integration and Testing Documentation Approach	Establish how do we record and integrate testing and analysis within the qualification plans or other documents.	<ul style="list-style-type: none"> Specify where and how teams should document the integration and hardware test planning. Specify how tests and data should be reported, with its ISM interaction for V&V. 	4/25
Integrated Systems Model	Establishment of the ISM.	<ul style="list-style-type: none"> Establish the modeling goals of the ISM with clear usage cases and interactions with ABEX team. Capture the requirements in the ISM. Include requirement links to the ABEX models in V&V. Include stakeholder definition and goals. Build the PBS into the ISM and link with requirements. 	4/25

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Task Name	Work Description	Deliverables	Due Date
Technical Review Package	Present an update on the ISM, MAF, MPF, and ontology process.	<ul style="list-style-type: none"> PowerPoint slide deck on progress made during the semester. 	4/25

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2.3. Science Team

No tasks this DAC.

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2.4. Design Teams

2.4.1. Payload

The Payload team will have an incoming second semester student team focusing on the PIU system along with a new team which will continue development of the XRD, GRD, and system level documentation. Emphasis will be put on documenting process with building the QP and a team management plan¹. Hardware demonstration for the PIU FPGA will be done. Incoming students will focus on thermal and structural analysis along with systems modeling. Almost all products have a delivery at the end of the semester but can be completed around the team's pace if completed earlier. The integration plan is due sooner to integrate into the project WBS for work planning.

Task Name	Work Description	Deliverables	Due Date
Team Management Plan	Establish a document that outlines the specific Payload teamwork process, leadership, and general methods used for work delivery (as not applicable in the QP).	<ul style="list-style-type: none"> Draft document of main sections. Establish a format approach and desired content sections. 	4/25
Qualification Plan (QP)	Creation of a qualification plan for the subsystem. Domain Knowledge Maps (DKMs) should be constructed to document the analysis of TPMs.	<ul style="list-style-type: none"> List of TPMs with descriptions in the QP. DKMs for the TPMs. 	4/25
Subsystem Development & Integration Plan	The development and integration plan describes the steps, sequence, test, and hardware elements which are required to deliver on the final flight unit. This should include test articles required as well. Capture this in two aspects: <ul style="list-style-type: none"> Description of intermediate forms. Sequence of events to deliver on flight ready parts. 	<ul style="list-style-type: none"> Integration sequence of parts sourcing, and intermediate forms. Include test articles and maturation. Provide this as a flow diagram. Description of hardware and tests, provide this as a word document. 	3/16
Project Work Package Planning	Need a detailed work planning based around the proposal timeline. This will be built within the project WBS.	<ul style="list-style-type: none"> Gantt chart organized around the WBS products. 	4/25
PIU Hardware Demonstration	Build a working demonstration of the FPGA to learn about data interfacing.	<ul style="list-style-type: none"> Test plan. Test report. Hardware demonstrator. 	4/25

¹ This is a trial document to see effectiveness for onboarding students in the leadership and organization as it pertains to the team level.

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Task Name	Work Description	Deliverables	Due Date
Structural Analysis	<p>Want to develop the analysis methods and selection of tools to qualify the detectors. The payload team will need to consider detailed analysis of the detector within the context of the environment as dictated by the launch vehicle and mounting locations in the spacecraft. Want to determine implications on design. Of particular focus is ensuring the design will survive and not damage sensitive elements of the detectors.</p> <p>This work will also build from the structural qualification plan developed by the ABEX structures team.</p>	<ul style="list-style-type: none"> Learn the analysis tools and document that within the qualification plan. Establish the relevant TPMs. Establish the input environment. Run an example test case. 	4/25
Thermal Analysis	<p>Build upon prior code base and improve capability to qualify the detectors. The payload team will need to consider detailed analysis of the detector within the context of the environment as dictated by the space environment, launch vehicle, and mounting locations in the spacecraft. Of particular focus is ensuring the design will provide thermal control of the sensitive elements of the detectors.</p>	<ul style="list-style-type: none"> Learn the analysis tools and document that within the qualification plan. Establish the relevant TPMs. Establish the input environment. Run an example test case. 	4/25
CAD Updates	<p>Updates to the CAD assemblies will be done as needed based on interfacing with the Auburn Structures team and from any structural analysis completed.</p>	<ul style="list-style-type: none"> Update CAD assembly. 	Final changes by 4/25 or as needed
System Modeling	<p>We want to record the design of the system within a SysML or UML model. The initial work will establish a working model using the concept design.</p>	<ul style="list-style-type: none"> Activity diagrams of the systems functions. Use case diagrams for the detectors. BDD/IBDs² of the system architecture. Integration of power and mass analysis within the model. 	4/25
Technical Review Package	<p>End of semester progress and technical review.</p>	<ul style="list-style-type: none"> PowerPoint slide deck on progress made during the semester. 	4/25

² This will depend on UML vs SysML tools available.

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2.4.2. Guidance, Navigation, & Control

The GN&C team will be continuing documentation and onboarding efforts while planning for the project work effort around the proposal timeline. The integration plan will also be worked on for the system and integration of work around the project proposal timeline.

Task Name	Work Description	Deliverables	Due Date
Qualification Plan (QP)	Update the QP as need with the addition of Domain Knowledge Maps (DKMs) to document the analysis of TPMs.	<ul style="list-style-type: none"> DKMs for the TPMs. 	4/25
Project Work Package Planning	Need a detailed work planning based around the proposal timeline. This will be built within the project WBS.	<ul style="list-style-type: none"> Gantt chart organized around the WBS products. 	4/25
Subsystem Development & Integration Plan	<p>The development and integration plan describes the steps, sequence, test, and hardware elements which are required to deliver on the final flight unit. This should include test articles required as well. Capture this in two aspects:</p> <ul style="list-style-type: none"> Description of intermediate forms. Sequence of events to deliver on flight ready parts. 	<ul style="list-style-type: none"> Integration sequence of parts sourcing, and intermediate forms. Include test articles and maturation. Provide this as a flow diagram. Description of hardware and tests, provide this as a word document. 	3/16

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2.4.3. *Electrical Power System*

The EPS team will focus on the onboarding process and planning for the integration and work tasks around the proposal timeline. In addition, analysis of options will be done to find methods to reduce cost and development time of the EPS system. Further effort will be taken to define the interfaces with the spacecraft. When possible, hardware demonstration will be done within the budget limits. Almost all products have a delivery at the end of the semester but can be completed around the team's pace if done earlier. The integration plan is due sooner to help link up with the project WBS for work planning. The QP, integration planning, and hardware demonstration are of high priority with other tasks

Task Name	Work Description	Deliverables	Due Date
Qualification Plan (QP)	Creation of a QP and addition of Domain Knowledge Maps (DKMs) to document the analysis of TPMs.	<ul style="list-style-type: none"> Draft QP DKMs for the TPMs 	4/25
Subsystem Development & Integration Plan	<p>The development and integration plan describes the steps, sequence, test, and hardware elements which are required to deliver on the final flight unit. This should include test articles required as well. Capture this in two aspects:</p> <ul style="list-style-type: none"> Description of intermediate forms. Sequence of events to deliver on flight ready parts. 	<ul style="list-style-type: none"> Integration sequence of parts sourcing, and intermediate forms. Include test articles and maturation. Provide this as a flow diagram. Description of hardware and tests, provide this as a word document. 	3/16
Project Work Package Planning	Need a detailed work planning based around the proposal timeline. This will be built within the project WBS.	<ul style="list-style-type: none"> Gantt chart organized around the WBS products. 	4/25
Analysis of Options	Evaluate options for the EPS system which can either reduce the cost or provide more options for parts to mitigate risk of supply shortages. Alternative approaches can be taken with the power architecture. The integration of this with other systems will be evaluated at a later DAC depending on the outcome of this study.	<ul style="list-style-type: none"> Concept designs or suggested modifications to the current EPS architecture. 	4/25
Hardware Demonstration	Develop a BMS hardware demonstration.	<ul style="list-style-type: none"> Test plan. Test report. Hardware demonstrator. 	4/25
Technical Review Package	End of semester progress and technical review.	<ul style="list-style-type: none"> PowerPoint slide deck on progress made during the semester. 	4/25

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2.4.4. Telemetry, Tracking & Command

The TT&C will focus on onboarding documentation and the integration and work task plans for preparation for the Fall. Almost all products have a delivery at the end of the semester but can be completed around the team's pace if done earlier. The integration plan is due sooner to help link up with the project WBS for work planning. The data specification and activity diagrams should be done around the other tasks, which are a higher priority.

Task Name	Work Description	Deliverables	Due Date
Qualification Plan (QP)	Creation of the QP and Domain Knowledge Maps (DKMs) to document the analysis of TPMs.	<ul style="list-style-type: none"> Draft of the QP DKMs for the TPMs 	4/25
Subsystem Development & Integration Plan	<p>The development and integration plan describes the steps, sequence, test, and hardware elements which are required to deliver on the final flight unit. This should include test articles required as well. Capture this in two aspects:</p> <ul style="list-style-type: none"> Description of intermediate forms. Sequence of events to deliver on flight ready parts. 	<ul style="list-style-type: none"> Integration sequence of parts sourcing, and intermediate forms. Include test articles and maturation. Provide this as a flow diagram. Description of hardware and tests, provide this as a word document. 	3/16
Project Work Package Planning	Need a detailed work planning based around the proposal timeline. This will be built within the project WBS.	<ul style="list-style-type: none"> Gantt chart organized around the WBS products. 	4/25
Data Activity Diagrams	Provide descriptions of how we interact with the NSN for communication uplink and downlink, including the ground data flow and interactions.	<ul style="list-style-type: none"> UML activity diagram. 	4/25
Data Specification	Describe the data formatting we use with the NSN.	<ul style="list-style-type: none"> Word description of formatting. 	4/25
Hardware Demonstration	Get a working demonstration of an antenna.	<ul style="list-style-type: none"> Test plan. Test report. Hardware demonstrator. 	4/25
Technical Review Package	End of semester progress and technical review.	<ul style="list-style-type: none"> PowerPoint slide deck on progress made during the semester. 	4/25

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2.4.5. **Command & Data Handling**

The C&DH team will focus on the onboarding process and planning the integration and work tasks around the proposal timeline. In addition, hardware demonstration will be done within the budget limits. Almost all products have a delivery at the end of the semester but can be completed around the team's pace if done earlier. The integration plan is due sooner to help link up with the project WBS for work planning. The activity diagram work is an optional task that should be done after others are accomplished based on labor.

Task Name	Work Description	Deliverables	Due Date
Qualification Plan (QP)	Creation of a qualification plan for the subsystem. Domain Knowledge Maps (DKMs) should be constructed to document the analysis of TPMs.	<ul style="list-style-type: none"> List of TPMs with descriptions in the QP DKMs for the TPMs 	4/25
Subsystem Development & Integration Plan	<p>The development and integration plan describes the steps, sequence, test, and hardware elements which are required to deliver on the final flight unit. This should include test articles required as well. Capture this in two aspects:</p> <ul style="list-style-type: none"> Description of intermediate forms. Sequence of events to deliver on flight ready parts. 	<ul style="list-style-type: none"> Integration sequence of parts sourcing, and intermediate forms. Include test articles and maturation. Provide this as a flow diagram. Description of hardware and tests, provide this as a word document. 	3/16
Project Work Package Planning	Need a detailed work planning based around the proposal timeline. This will be built within the project WBS.	<ul style="list-style-type: none"> Gantt chart organized around the WBS products. 	4/25
Hardware Demonstration	Get a working demonstration of the SDR elements together.	<ul style="list-style-type: none"> Test plan. Test report. Hardware demonstrator. 	4/25
System Modeling	We want to record the function of the system within a UML model using Modelio.	<ul style="list-style-type: none"> Activity diagrams of the systems functions . 	4/25
Technical Review Package	End of semester progress and technical review.	<ul style="list-style-type: none"> PowerPoint slide deck on progress made during the semester. 	4/25

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2.4.6. *Flight Software*

The FSW team will research F” while improving documentation of the process. The F’ work will be captured as a state machine and working C++. All delivery is for end of the semester, but earlier deliver is at the team’s pace. Almost all products have a delivery at the end of the semester but can be completed around the team’s pace if done earlier.

Task Name	Work Description	Deliverables	Due Date
Software Management Plan	Update of the software management plan for the subsystem. Domain Knowledge Maps (DKMs) should be constructed to document the analysis of TPMs and development framework.	<ul style="list-style-type: none"> List of TPMs with descriptions in the QP Description of the development flow and process. 	4/25
Software Ontology	Construct DKMs for the software implementation and workflow. Should include: <ul style="list-style-type: none"> F Prime architectural concepts (Topologies/Components/Ports/Serializables) Tool relationship (SysML and FPP) Build products Ground system 	<ul style="list-style-type: none"> Updated diagrams. 	2/25
Project Work Package Planning	Need a detailed work planning based around the proposal timeline. This will be built within the project WBS.	<ul style="list-style-type: none"> Gantt chart organized around the WBS products. 	3/16, 4/25
F” Research	Learn the architecture of F” and recreate the current software architecture in this new framework.	<ul style="list-style-type: none"> Documentation of lessons learned and implementation recommendations. 	2/25
Technical Review Package	End of semester progress and technical review.	<ul style="list-style-type: none"> PowerPoint slide deck on progress made during the semester. 	4/25

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2.4.7. Structures & Mechanisms

The Structures team will continue in documenting their work and onboarding new students with the recurring team. The CAD assembly will be updated. In addition, the integration flow and the work planning will also be provided to prepare for selection in the Fall. Almost all products have a delivery at the end of the semester but can be completed around the team's pace if done earlier. The integration plan is due sooner to help link up with the project WBS for work planning.

Task Name	Work Description	Deliverables	Due Date
Qualification Plan (QP)	Update the qualification plan for the subsystem and the Domain Knowledge Maps (DKMs).	<ul style="list-style-type: none"> List of TPMs with descriptions in the QP DKMs for the TPMs 	2/25, 3/16, 4/25
Subsystem Development & Integration Plan	<p>The development and integration plan describes the steps, sequence, test, and hardware elements which are required to deliver on the final flight unit. This should include test articles required as well. Capture this in two aspects:</p> <ul style="list-style-type: none"> Description of intermediate forms. Sequence of events to deliver on flight ready parts. 	<ul style="list-style-type: none"> Integration sequence of parts sourcing, and intermediate forms. Include test articles and maturation. Provide this as a flow diagram. Description of hardware and tests, provide this as a word document. 	3/16, 4/25
Project Work Package Planning	Need a detailed work planning based around the proposal timeline. This will be built within the project WBS.	<ul style="list-style-type: none"> Gantt chart organized around the WBS products. 	4/25
Structural Analysis	Evaluate the structural elements during the iteration process of the CAD using the QP process.	<ul style="list-style-type: none"> Design inputs to the CAD assembly. Document lessons learned. 	2/25, 4/25
CAD Updates	Continued development of the CAD assembly and work on improving issues identified last DAC. Build from the proposal concept and mature the mounting strategy of the instruments and cabling approach.	<ul style="list-style-type: none"> Updated CAD assembly. 	Cont.
Technical Review Package	End of semester progress and technical review.	<ul style="list-style-type: none"> PowerPoint slide deck on progress made during the semester. 	4/25

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2.4.8. Thermal & Radiation

The thermal team will continue documenting the analysis process and development of analysis tools as they onboard a new team with the recurring one. In addition, research will be conducted to reduce cost for the thermal system strategy from last DAC. All products have a delivery at the end of the semester but can be completed around the team's pace if done earlier.

Task Name	Work Description	Deliverables	Due Date
Qualification Plan (QP)	Creation of a qualification plan for the subsystem. Domain Knowledge Maps (DKMs) should be constructed to document the analysis of TPMs.	<ul style="list-style-type: none"> List of TPMs with descriptions in the QP DKMs for the TPMs 	2/25, 3/16, 4/25
Thermal Design Approach	Reevaluate thermal mitigation strategies for reduction of costs through alternative solutions and vendors.	<ul style="list-style-type: none"> Problem definition Analysis of options with impacts to TPMs³ 	2/25, 3/16, 4/25
Particle Radiation Analysis	Evaluate the particle radiation interactions between the Spacecraft and its operational environment.	<ul style="list-style-type: none"> Dose Depth Curve Electron transient integral flux Proton transient integral flux Surface charging rates and values Charged particle heating 	3/16, 4/25
Thermal Model Development	Continued development of the MATLAB and Simulink model. Gain experience in Thermal Desktop and its implementation into the thermal analysis. Establish the approach for simplification of CAD models for Thermal Desktop.	<ul style="list-style-type: none"> Add in orientation dependent flux into the MATLAB isothermal model Get a functional architecture into the Simulink thermal circuit model Run Thermal Desktop analysis cases and document lessons learned in a word document and integration process into the QP. 	4/25
Full-Model Assessment of TPMs	Full-model assessment of expected heater wattage and radiator area. This is dependent on the heat load provided to the radiator and the radiator thermal conductivity.	<ul style="list-style-type: none"> Heater Wattage and Radiator Area operational envelope verified in Simulink and Thermal Desktop. 	3/16, 4/25

³ Should consider at minimum cost, mass, volume, and power.

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Task Name	Work Description	Deliverables	Due Date
Technical Review Package	End of semester progress and technical review.	<ul style="list-style-type: none"> PowerPoint slide deck on progress made during the semester. 	4/25

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2.4.9. Sun Sensor Team

The UAB sun sensor team will continue working on their concept by delivering on a technology demonstration show casing TRL 3-4 advancement. Testing results and design implications should be documented along with definition of the required interfaces with the spacecraft.

Task Name	Work Description	Deliverables	Due Date
Technology Development	Build a physical demonstration of the sun sensor showing its functional operations and, as much as possible, demonstrate capability.	<ul style="list-style-type: none"> Test plan. Test report. Hardware demonstrator. 	4/25
Interface Definition	Provide a specification of how the sensor will interface with the spacecraft. Specifics can be left TBD, but major elements like the structural mounting approach, power, and data should be defined.	<ul style="list-style-type: none"> Describe electrical, mechanical, and software interfaces. 	3/16, 4/25
Design Documentation	Provide a comprehensive documentation of the design with the results of the analysis work and lessons learned from the hardware demonstrator. This should focus on intended flight design.	<ul style="list-style-type: none"> Record major TPMs. Record specifications, parts lists, diagrams, and analysis conducted. Describe functional interactions. 	4/25

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2.5. Operations Teams

2.5.1. Astrodynamics

The astrodynamics team will be performing detailed orbit analysis around the proposal orbit and document the process and methods. Following proposal orbit, options analysis should be conducted on alternative orbits around launch vehicle options. All products, except for the draft data submission, have a delivery at the end of the semester but can be completed around the team's pace if done earlier. The draft data is an early deliverable for Thermal team to plan for data integration.

Task Name	Work Description	Deliverables	Due Date
Qualification Plan (QP)	Creation of a qualification plan for selecting the target orbit deployment parameter ranges. Domain Knowledge Maps (DKMs) should be constructed to document the analysis of TPMs.	<ul style="list-style-type: none"> List of TPMs with descriptions in the QP. DKMs for the TPMs. Document Instructions for tool usage in a separate word document. 	4/25
Orbital Analysis	Evaluate the orbit with STK for relevant TPMs. Data from this will be output and provided to the Thermal team.	<ul style="list-style-type: none"> Report on the major TPMs⁴ State vectors across the orbit life. 	2/7 (draft data) ⁵ 3/16
Communications Analysis	Evaluate the expectation of communications window duration, link margin, and parameters	<ul style="list-style-type: none"> Run analysis on link margins Run analysis on communication window duration as a function of elevation 	4/25
Attitude Simulation	With guidance from GN&C and SE, simulate and export the spacecraft attitude data with the new orbit.	<ul style="list-style-type: none"> Functional Simulation Excel File. 	2/7, 3/16
Deorbit Analysis	Determine variations in the deorbit profile based on orbital altitude and eccentricity.	<ul style="list-style-type: none"> Three-dimensional deorbit duration map. 	3/16
Orbit Options Analysis	Consider alternative deployment options for ABEX.	<ul style="list-style-type: none"> Research into launch options for a 12U Analysis of options for candidate orbits reporting on TPMs for each. 	4/25

⁴ These TPMs should be established in full but should include the orbit lifetime and eclipse time as percentages of orbit with the maximum duration inside the mission window.

⁵ Submit draft or example data in expected formatting for use by Thermal, does not need to be final data.

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Task Name	Work Description	Deliverables	Due Date
Technical Review Package	End of semester progress and technical review.	<ul style="list-style-type: none"> PowerPoint slide deck on progress made during the semester. 	4/25

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2.5.2. Website Team

The website data transfer function and team access plan are an immediate goal. After that the team will explore data interaction for education and formatting. Most products have a deliver at the end of the semester but can be completed around the team's pace if done earlier.

Task Name	Work Description	Deliverables	Due Date
Web Development & Maintenance Plan	Record the processes and required knowledge for website development and maintenance.	<ul style="list-style-type: none"> Update current document. 	Cont. Final update on 4/25
Member Access Plan	Establish a repeatable process for getting students login information input into the website.	<ul style="list-style-type: none"> Document method. 	4/25
Front-end Organization	Improve on the accessibility and style of the website in its layout, bar, buttons, etc.	<ul style="list-style-type: none"> Updated website. 	4/25
Data Transfer System	Working data transfer portal interface.	<ul style="list-style-type: none"> Update data transfer portal. 	2/20
Interactive Learning	Research methods into displaying knowledge of engineering processes and analysis maps in an interactive manner.	<ul style="list-style-type: none"> Options for interactive data display. Usage case for methods. 	4/25
Data Management	<p>Research into data management application of the website for uncontrolled and possible controlled data of spacecraft engineering data (during development).</p> <p>Implementation concept for storage and display of science data.</p>	<ul style="list-style-type: none"> Implementation ideas for engineering data storage and security impacts. Example case of science data interaction and display. 	4/25

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2.5.3. Mission Operations

No tasks this DAC

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2.6. Integration & Testing Teams

2.6.1. Integration, Assembly and Testing

No tasks this DAC

2.6.2. Flight Qualification

No tasks this DAC

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3. Nomenclature

Acronym	Definition
ABEX	Alabama Burst Energetics Explorer
APRA	Astrophysics Research & Analysis
ASGC	Alabama Space Grant Consortium
CAD	Computer-Aided Design
C&DH	Command & Data Handling
CDR	Critical Design Review
CE	Chief Engineer
CLB	Configurable Logic Block
COTS	Commercial Off The Shelf
CS	Chief Scientist
CSLI	CubeSat Launch Initiative
DAC	Design Analysis Cycle
EAR	Export Administration Regulations
EPMs	Educational Performance Measures
EPS	Electrical Power System
FPGA	Field Programmable Gate Array
FSW	Flight Software
GN&C	Guidance, Navigation, & Control
GPS	Global Positioning System
GRB	Gamma-ray Burst
GRD	Gamma-ray Detector
HV	High Voltage

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Acronym	Definition
ICP	Instrument Calibration Plan
IMS	Integrated Master Schedule
IMU	Inertial Measurement Unit
ISM	Integrated Systems Model
ITAR	International Traffic in Arms Regulations
KDP	Key Decision Point
KPPs	Key Performance Parameters
LSE	Lead System Engineer
MBSE	Models Based System Engineering
MCR	Mission Concept Review
NDA	Non-Disclosure Agreement
NIST	National Institute of Standards and Technology
PC	Program Coordinator
PDR	Preliminary Design Review
PIU	Payload Interface Unit
PM	Project Manager
POP	Period of Performance
QPSK	Quadrature Phase Shift Keying
SE	Systems Engineering
SEMP	System Engineering Management Plan
SIS	Software Interface Specification
SME	Subject Matter Expert
SMP	Software Management Plan
SQP	Structural Qualification Plan

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Acronym	Definition
SQR	Structural Qualification Report
SRD	System Requirements Document
SRR	System Requirements Review
STDP	Subsystem Technology Development Plan
STP	Subsystem Testing Plan
TCP	Technology Control Plan
TID	Total Ionizing Dose
TPM	Technical Performance Measure
TQP	Thermal Qualification Plan
TQR	Thermal Qualification Report
TRL	Technology Readiness Level
TT&C	Telemetry, Tracking, & Command
V&V	Verification and Validation
WBS	Work Breakdown Structure
XRD	X-ray Detector