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MEng Report Outline

Project: SSDS Alpha Cubesat

Advisor: Dr. Mason Peck

While the purpose of the MEng Report is to satisfy a graduation requirement, the report also has the pragmatic purpose of serving as documentation for future members of the Alpha team. This is especially the case for tasks that were undertaken later in the semester such as autocoding, which took weeks to accomplish. Ideally after reading this report, the SSDS can accomplish the same tasks in less than a day.

* Introduction and Background
* Simulink Model
  + Translational Kinematics-Restricted 2 body problem
  + Rotational Kinematics-Euler’s Equation
  + Magnetic Field Model-Dipole
  + Control System
  + Linear Quadratic Regulator
* Launch Application
* Autocoding
  + Motivation
  + General Debugging and Formatting Recommendations
  + Autocoding Dynamics
  + Autocoding Attitude Control System
    - Integration with flight code
* Software-Hardware integration
* Software-in the Loop Simulation
  + Design
    - Hardware Layout
  + Results
* Hardware-in the Loop Simulation
  + Design
    - Harware Layout and Selection
  + Sensor/Actuator hardware integration
    - Changes to Hardware Layout
    - FlatSat
  + Results
* Conclusion and Recommendations