Project Minerva

ERØRA

Abstract

- Project Minerva is an education-focused project within the Embry-Riddle Orbital Research Association (ERORA)
- Members of Project Minerva go through the entire engineering process
- Project Minerva aims to develop better engineers by allowing members to gain experience in multiple disciplines of engineering
- Project Minerva will be a High-Altitude Balloon with a payload resembling a 2U CubeSat
- The payload will feature an assortment of sensors measuring atmospheric properties as the balloon rises
- Experiment findings will be turned into final design and experiment reports to be submitted to the *Beyond: Undergraduate Research Journal*

Our Team

- Majority Freshmen and Sophomores
  - Freshmen and Sophomores get hands-on experience early in their education
- Project Minerva will apply for funding from the Office of Undergraduate Research's SPARK grant
- The SPARK grant is a maximum of $1000 award

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ERORA Executive Officers

President: Jackson Lamb | **Vice President**: JT Lozano

Project Minerva Lead: Grayson Hayes

Club Advisor: Professor Sean Crouse

Fig. 1: Minerva Chassis Assembly

Education Focus

- A considerable number of undergraduate students come into Embry-Riddle with no project experience
- Project Minerva aims to act as an easy way to gain project experience outside of the classroom
- Members of Project Minerva gain technical skills that they may not get during their education
- Skills such as simulation, Computer-Aided Design, Iterative Design, Documentation, Licensing, and more are learned
- The project is structured similarly to the Preliminary and Critical Design classes that Engineering majors will take in their senior year
- Older students act as guides through the engineering process while allowing project members to make mistakes

Payload

- Project Minerva will test the presence of Ozone in the atmosphere as the balloon rises
- This will be measured by using UV sensors
- UV rays will increase as the balloon rises correlating to a decrease in Ozone in the atmosphere
- The payload will also have solar panels designed and manufactured in-house
- Additional sensors on board are as follows:
  1. Temperature
  2. Pressure
  3. Acceleration
  4. Magnetometer
  5. GPS

Launch Details

- Project Minerva will have a projected launch date of April 2023
- The launch location will be based out of Palm Coast, FL
- The total time for the launch will be an estimated 2 to 3 hours
- The payload itself will have a parachute that will deploy itself to safely land
- The team will have to update the FAA every hour about its location