

Esteban Campos

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Education

Purdue University, West Lafayette, IN

May 2024

Bachelor of Science in Aeronautical & Astronautical Engineering

GPA: 3.14/4.0

Experience

Interfacial Multi-Physics Lab

West Lafayette, IN

Student Researcher

May 2023 - Present

- Conducted experimental testing to analyze ablation rates of Thermal Protective Systems (TPS) in extreme hypersonic environments, reaching temperatures up to 1500°C, providing critical insights to advance aerospace technology.
- Employed cohesive finite element method (CFEM / FEA) within microsecond scale simulations to characterize damage in energetic materials under loading.

Interfacial Multi-Physics Lab

West Lafayette, IN

Research Internship

Mar 2023 - May 2023

- Assisting in tests applying laser-induced projectile impact testing and data science in shock research.
- Spearheaded the collection and preparation of 3000+ crystalline samples, ensuring accuracy and quality control standards were met.
- Generated signal processing code using Matlab for Photonic Doppler Velocimetry (PDV) data.
- Produced CAD drawings using SolidWorks for components requiring zero-tolerance machining.

Purdue Space Program: A SEDS Chapter

West Lafayette, IN

Propulsion Engineer

Jan 2023 - Mar 2023

- Integrated into the propulsion sub-team whose goal is to design, build, and test the liquid bi-propellant rocket engine aimed at launching the rocket to a target altitude of 65,000ft.
- Implemented proper PPE during multiple successful ablative combustion chamber layups using silica phenolic overwrap.

Air Force ROTC Detachment 220, Purdue University

West Lafayette, IN

Flight Commander

Aug 2019 - Dec 2021

- Commanded and led a flight of 10-15 cadets per semester, ensuring mission and academic readiness for all members.
- Demonstrated Air Force regulations and composure as the prime example for new and current cadets.
- Organized and hosted weekly study and practice meetings within the flight resulting in over 93% point averages among the flight on weekly quizzes and inspections.

Projects

Jan 2024 - May 2024

NASA Funded Zero Gravity Flight Experiment under Professor S. Collicott: Examining bubble formation phenomenon in cryogenic fluids testing lab.

- Hands-on work integrating cryogenic rated plumbing hardware and optical components into experiment.
- Performed window stack-up compression testing to verify appropriate gasket sealing in cryogenic bath viewports at pressures up to 3 bar.

Senior Design: Spacecraft mission aimed at reaching Saturn's moon, Enceladus, in search of life signatures.

- Applied propulsion system design knowledge to size orbiter propulsion system to provide the required delta V of 2000 m/s which will propel our spacecraft through multiple deep space maneuvers and moon tours.

Affiliations and Contributions

- University Consortium for Applied Hypersonics (UCAH)
- Contributor to 3rd place awarded presentation at APS Shock Compression of Condensed Matter (SCCM23) Conference.

Skills

- SolidWorks - CFEM - FEA - Python - Matlab - AutoCAD - Microsoft Office Suite - Data Science