

Marcos Esparza

432-661-7620 | esparza_m58311@utpb.edu | linkedin.com/in/marcos-esparza | U.S. Citizen

Objective

Mechanical Engineering student with hands-on experience in aerospace systems and high-power rocketry, seeking a role where I can contribute to testing and analysis while deepening my technical skills through real engineering work.

Education

Bachelor of Science: Mechanical Engineering

Aug 2022 - December 2026

University of Texas Permian Basin

Odessa, TX

Coursework: Thermodynamics II, Fluid Mechanics II, Mechanics of Materials, Thermo-Fluids Lab, Eng. Design

Organizations and Activities: Falcon Aeronautics and Space Team, ASME, SPE, AIAA, SFA

Skills

Software: SOLIDWORKS, MATLAB, OpenRocket, LabVIEW, Excel

Engineering Skills: Aerodynamic/Structural Design, Systems Integration, Mechanical Assembly, Technical Writing

Certifications: Tripoli/NAR Level 1 Certified; Level 2 In Progress

Experience

Logistics Associate | Academy Sports + Outdoors | Jul 2024 – Present

- Process and stage customer orders for accurate and on-time pickup and delivery
- Performed daily cycle counts and resolves stock discrepancies to maintain inventory accuracy

Overnight Deli Production | H-E-B | Oct 2022 – Jan 2024

- Trained new employees and improved shift consistency by standardizing common tasks
- Managed backroom organization and rotated inventory to reduce waste

Team Member | Whataburger | Oct 2020 – Mar 2022

- Assisted front counter and kitchen operations during peak hours while maintaining accuracy and cleanliness

Technical Projects

Falcon Aeronautics & Space Team – Aerodynamic Design Lead and Assembly

- Lead fin design, structural integration, and assembly coordination for a 10,000-ft COTS competition rocket
- Developed aerodynamic models, stability analyses, and manufacturing plans that improved design confidence and component integration

Independent High-Power Rocket Certifications (L1 Completed, L2 In Progress)

- Designed, simulated, and built a high-power rocket for Tripoli/NAR Level 1 certification; currently designing and manufacturing a dual-deploy Level 2 rocket
- Conducted thrust, stability, and recovery-system analysis to achieve a successful 2,148-ft L1 flight (2.4% error from prediction)

Gas Turbine Power System Lab Project

- Analyzed SR-30 mini turbine performance and related experimental data to Brayton cycle theory
- Evaluated fuel-to-power conversion and efficiency trends as part of a collaborative lab team

Fluid Friction Experiment (H408)

- Measured pressure losses in pipe systems and compared results with Moody chart predictions
- Calculated friction factors and validated flow-regime behavior experimentally

Carbon Fiber in Aerospace Presentation

- Researched structural benefits of carbon-fiber composites vs. aluminum for aircraft applications
- Presented findings on weight reduction, stiffness, and fuel-efficiency improvements