

# Marcos Esparza

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## Objective

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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

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### Bachelor of Science: Mechanical Engineering

*University of Texas Permian Basin*

Aug 2022 - December 2026

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

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**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

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### 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

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### 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