

# Matthew V. Lewton

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## Education

### Purdue University | West Lafayette, IN

Bachelor of Science in Mechanical Engineering, Mathematics Minor.

Expected Graduation: May 2025

GPA: 4.0

## Experience

### Purdue Space Program Liquid Rockets Team

*Vehicle Structures Lead*

West Lafayette, IN

August 2021–Present

- Leading team of 20 students in system and component design and manufacturing of vehicle structures for an Ethanol-LOX rocket launching to 65,000 ft.
- Responsible Engineer for structural design of fin can and fins. Developed and led component designing of lower airframe, fin structure, fin attachment/alignment method, and plumbing access.
- Forming design-manufacture-test campaign for carbon fiber airframe, nosecone, and fins to validate simulations and develop composites manufacturing processes.
- Created Matlab script to calculate aerodynamic loading on structural components due to thrust and wind loads.

### Bechtel Innovation and Design Center

*Manufacturing Peer Mentor*

West Lafayette, IN

April 2022–Present

- Conduct CAD/CAM consultations with students seeking to design and manufacture parts for projects in research, automotive racing, rocketry etc.
- Advise students on part manufacturability, tooling and work holding of their machining operations.
- Teach students to set up and operate CNC mills and lathes, waterjet, etc.

### Montgomery College NASA MINDS Team

*Lead Engineer*

Rockville, MD

October 2020–October 2021

- Designed a lunar surface simulation testing rig with vacuum chamber and controlled heat flow which uses waste heat and the natural temperature gradient of lunar regolith to generate electricity,
- Received NASA and university funding to construct and test experimental thermoelectric system.
- Co-Authored research paper, presented at IEEE MIT URTC conference 2021, published in IEEE Xplore.
- Team placed 4th overall in NASA MINDS competition, 1st place Technical Paper.

## Technical Skills

**Software:** Siemens NX, Ansys, Solidworks, Inventor, Fusion 360, Excel

**Strengths:** CFRP Composites, Structural Design, CNC Machining, Mechanical and Thermal Simulation.

**Programming Languages:** Python, C, MATLAB, HTML/CSS, some SQL

## Personal Projects

### High Power Rocket and Composites

- Designed and built high power rocket for Level 1 NAR certification.
- Manufactured fiberglass airframe and fins with a wet layup and interior molding method.
- Destructively tested compressive strength of overlapped seam to verify simulations.

### Desktop CNC Mill Design

- Designed desktop 3 axis CNC mill to machine small aluminum parts at the size and cost of a 3d printer.
- Optimized structural frame, linear motion, and actuation systems for mechanical rigidity.
- Synthesized electrical system with stepper driven axis, VFD spindle control, limit switch probing, and an E-stop.

### Portfolio Website: mattlewton.me

- Designed custom HTML templates for Jekyll.
- Article content written in Markdown templates for easy maintenance.
- Styled in CSS without any libraries.