Matthew V. Lewton

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Education

Purdue University | West Lafayette, IN **Expected Graduation: May 2025**
Bachelor of Science in Mechanical Engineering, Mathematics Minor. **GPA: 4.0**

Experience

Purdue Space Program Liquid Rockets Team **West Lafayette, IN August 2021–Present**
Vehicle Structures Lead

- 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.
- Created design-manufacture-test campaign for carbon fiber airframe, nosecone, and fins to validate simulations and develop composites manufacturing processes.
- Developed and led component design of lower airframe, fin structure, fin attachment/alignment, and plumbing access.
- Created Matlab script to calculate aerodynamic loading on structural components due to thrust and wind loads.

Bechtel Innovation and Design Center **West Lafayette, IN April 2022–Present**
Manufacturing Peer Mentor

- 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 Haas 3 &5 axis CNC mills, live tooling lathes, waterjet, etc.

Montgomery College NASA MINDS Team **Rockville, MD October 2020–October 2021**
Lead Engineer

- 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.
- Constructed and tested experimental thermoelectric system with NASA and university funding.
- Authored research paper documenting project and results
- Presented at IEEE MIT URTC conference 2021, published in IEEE Xplore.
- Team placed 4th overall in NASA MINDS competition, 1st place Technical Paper.

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

- Created custom HTML templates for Jeckyll to generate articles, images, links etc.
- Article content written in Markdown to simplify site maintenance.
- Styled in CSS without libraries.

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