BRANDON HARGIS

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Engineer-in-Training (EIT) Certified | License #9944 | Passed FE Exam

PROFESSIONAL SUMMARY

Detail-oriented Mechanical Engineering graduate with hands-on experience in product design, prototyping, and validation testing. EIT certified with proven success in CAD modeling, structural analysis, and developing in-house testing procedures across competition aerospace and lab environments.

EDUCATION

B.S. Mechanical Engineering — Aerospace Concentration — *May 2025*
University of Arkansas, Fayetteville, AR

Relevant Coursework: *Fluid Mechanics, Thermodynamics & Heat Transfer, Mechanics of Materials, Material Science, Systems & Controls*

TECHNICAL SKILLS

Design & CAD:	AutoDesk Inventor (proficient in transferable parametric CAD), SolidWorks, AutoCAD, Civil 3D — 3D modeling, assemblies, technical drawings
Analysis:	MATLAB, FEA (ANSYS), Excel Data Analysis, XFLR5, OpenVSP
Manufacturing:	3D Printing (FDM/ABS/ASA-CF), CNC Machining, Laser Cutting, Composite Layup, Design for Manufacturability
Testing:	Prototype Testing, Structural Load Testing, Static G-load Testing, Thrust Stand Testing, Data Collection & Analysis
Documentation:	Technical Reports, Engineering Change Requests (ECRs), Bills of Materials (BOMs), Design Reviews
Soft Skills:	Communication, Cross-functional Collaboration, Problem Solving, Detail-Oriented, Time Management

RELEVANT EXPERIENCE

Mechanical Designer & Test Engineer — Design Build Fly Team — *Aug 2024 – May 2025*
University of Arkansas

- Designed, prototyped, and tested mechanical components for a competition UAV through the full product development life cycle — from concept and CAD modeling through manufacturing and validation testing.
- Developed and executed in-house testing procedures using custom-fabricated rigs, including static G-load, tip-to-tip wing, and dynamic drop tests — directly contributing to product improvements that increased payload capacity by 80%.
- Collected and analyzed test data to validate design performance and recommend product enhancements; worked collaboratively with cross-functional sub-teams to simplify manufacturing and improve durability.
- Contributed to formal design reviews and prepared detailed technical documentation throughout the design and prototyping process.
- Created detailed technical drawings, exploded assemblies, and BOMs documenting over 50 unique mechanical components; performed FEA on critical structural components using ANSYS to validate designs under 2G load conditions.

ENGINEERING PROJECTS

Pump & Heat Exchanger Performance Study — University of Arkansas — Thermal & Fluid Systems Lab — *Apr – May 2025*

- Developed and executed in-house testing procedures for a centrifugal pump and brazed plate heat exchanger system, applying pump affinity laws to generate pump and system curves at four operating speeds.
- Collected and analyzed performance data using MATLAB and Excel, achieving 2–4% error vs. theoretical predictions and identifying optimal operating configurations through systematic experimentation.
- Authored a complete technical report documenting test methodology, data analysis, error sources, and engineering conclusions — practicing the same documentation skills required in product development environments.