A. Hope Elmer

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Education & Relevant Course Work

B.S in Aerospace Engineering Aug 2020 – Dec 2023

Embry-Riddle Aeronautical University – Prescott, AZ

- ES 202: Solid Mechanics
- AE 318: Aerospace Structures 1
- ES 320: Engineering Materials Science & Lab
- AE 324: Experimental Space Systems Engineering & Lab
- EP 394: Spaces Systems Engineering
- AE 409: Aircraft Composite Structures
- AE 426: Spacecraft Preliminary Design
- AE 445: Spacecraft Detail Design

Certificate in Composite Manufacturing Jul 2019 – Mar 2020

Ogden-Weber Technical College – Ogden, UT

- COMP 1015: Composites Basics
- COMP 1110: Vacuum Bag Fabrication
- COMP 1130: Composite Repair I
- COMP 1220: Composite Tool Making
- COMP 1280: Composite Autoclave Operation
- NDIT 1010: NDI Methods for Composites

Research Experience

Undergraduate Researcher Jan 2022 – Dec 2023

Department of Aerospace Engineering, Embry-Riddle Aeronautical University

Mentor: Dr. David Lanning

- Researched the effects that stress inducing geometry has on the mechanical properties of Fused Deposition Manufactured parts.
- Designed and manufactured test specimens.
- Conduct mechanical tests, analyze data, and write results to be published in a technical conference paper.
- Write grant proposals, manage associated budget, and complete deliverables regarding outreach events, presentations, and progress reports.

Undergraduate Research Assistant May 2022 – May 2023

Department of Aerospace Engineering, Embry-Riddle Aeronautical University

Mentor: Dr. Kaela Martin

- Assisted in managing, maintaining, and developing a MOOC, Designing the Moonshot, to introduce participants to multi-body gravitational dynamics.
- Statistically analyzed data gathered from the course to determine learning gains, utilizing Wilcoxon Ranked Sum test, and retention in knowledge, via Chi-Squared analysis.

Publications

Martin, K. M., Elmer, A. H., deVera, L. P., Busato, J., Landon, P., Guzzetti, D., and Miskioğlu, E. E., "Massive Open Online Courses as a Tool for Developing High-Level Engineering Expertise," Advances in Engineering Education (Accepted)

Conferences

Elmer, A. H., Lasalarie, A., and Lanning, D., "Investigation of Stress Concentrations in Parts Manufactured with Fused Deposition Modeling," Presentation at AIAA 2024 SciTech Forum, Orlando, FL, 2024. DOI: 10.2514/6.2024-0559.

Elmer, A. H., "Investigation of Stress Concentrations in Parts Manufactured with Fused Deposition Modeling," Oral presentation at the Arizona NASA Space Grant Consortium Statewide Student Research Symposium, Tempe, AZ, April 2023

Scholarships, Grants, & Awards

ERAU Ignite Research Grant Oct 2023 – May 2024
Embry-Riddle Aeronautical University Undergraduate Research Institute
$2,000 for student wages and equipment related to rapid prototyping research.

Barry Goldwater Scholarship March 2023
The Barry Goldwater Scholarship and Excellence in Education Foundation

Space Grant Intern Oct 2022 – May 2023
Arizona/NASA Space Grant Consortium
$2,000 for student wages related to rapid prototyping research.

ERAU Ignite Research Grant Oct 2022 – May 2023
Embry-Riddle Aeronautical University Undergraduate Research Institute
$1,530 for student wages and equipment related to rapid prototyping research.

Presidential Scholarship 2020 – 2023
Embry-Riddle Aeronautical University

Women in Excellence Scholarship 2020 – 2023
Embry-Riddle Aeronautical University

Cum Laude Dec 2023
Embry-Riddle Aeronautical University

Deans's List Spring 2023, Fall 2022, Spring 2021
Embry-Riddle Aeronautical University

Honor Roll Spring 2022, Fall 2020
Embry-Riddle Aeronautical University

Teaching Experience

AE313 Space Mechanics TA Fall 2022

- Graded and provided feedback on Homework.
- Answer student questions regarding course content

Industry Experience

Associate Manufacturing Engineer Jan 2024 - Current
Northrop Grumman – Aeronautics Sector Clearfield, UT

- Write electronic work instructions, standard work instructions, and general processing instructions to align with best manufacturing practices.
- Conducted studies to determine contraction rate of the material such that pre-cure dimensions result in nominal geometry post-cure.
- Participate in Material Review Board (MRB) and Root Cause and Corrective Action (RCCA) activities to resolve and prevent manufacturing defects.
- Active secrete security clearance with Special Access Program (SAP) and Controlled Unclassified Information (CUI) training.

Manufacturing Engineer Intern Summer 2022 & 2023
Northrop Grumman – Aeronautics Sector Clearfield, UT

- Conducted model interrogations to determine the material quantity needed for the bill of materials and obtain ply drop data for the human-machine interface used during manufacturing.
- Provided engineering support for advanced composite manufacturing to reduce down-time during manufacturing.
- Researched and tested process improvements for mold preparation to reduce process time and environmental impact.

Manufacturing Intern Summer 2021
Janicki Industries Layton, UT

- Completed mill operations to machine aerospace parts in a timely manner to meet weekly shipping goals.
- Trained as a metrologist to conduct laser inspections of machined parts to ensure tight tolerances were met.
- Performed FOD walks and daily/weekly preventative maintenance to ensure proper and safe working conditions.

Skills

Engineering Software: SolidWorks, Inventor, Catia, ANSYS Workbench

Programming: MATLAB, Simulink, GMAT, C, Arduino, HTML, R, LabView

Technical: 3D Printing, Mill operations, Metrology, Nondestructive Inspection methods (ultrasonic testing, penetrant inspection), Hand layup of wet and prepreg Carbon fiber and fiberglass, Vacuum infusion, Composite tool making and design, Composite repair.