OLIVIA DRAUGHN

Linkedin - Olivia Draughn

QUALIFICATION/OBJECTIVE SUMMARY

Driven Mechanical Engineering PhD student specializing in computational solid mechanics and materials science research, with an emphasis in metal additive manufacturing (AM). Proficient in SolidWorks, Abaqus, Python, and Coreform Cubit.

EDUCATION

University of Utah, Salt Lake City, UT **August 2025 – Present**

- Doctor of Philosophy in Mechanical Engineering

Mississippi State University, Starkville, MS **May 2025**

- Bachelor of Science in Mechanical Engineering
  - Collegium Honorum, Summa Cum Laude

SCHOLARSHIPS/ AWARDS

University of Utah, Salt Lake City, UT

- Research Fellowship

National Merit Scholarship Corporation, Evanston, IL

- National Merit Scholar

Mississippi State University, Starkville, MS

- Provost Scholar National Merit Finalist Scholarship
- Bagley College of Engineering Excellence Scholarship
- Stewart Bridgforth Honors Scholarship

EXPERIENCE

Computational Mechanics and Materials Laboratory, Starkville, MS **August 2023 – May 2025**

Undergraduate Researcher

The Numerical Modeling and Development of a Post-Lumbar Interbody Fusion Cage using Laser Powder Bed Fusion

- Used finite element methods (FEM) to refine lattice structure models for spinal implant application
- Performed uniaxial compression tests to assess material strength, aiding in the development of material models for AM 316L stainless steel

Presentations

- Olivia Draughn, David Failla, Matthew W. Priddy. "Using Finite Element Modeling to Characterize the Scaling Effects of Lattice Structures Leveraging Multiple Material Models." Summer 2024 Undergraduate Research Symposium, Mississippi State University. August 2, 2024.
- Olivia Draughn, David Failla, Matthew W. Priddy. "Design and Optimization of Lattice-Integrated PLIF Cages Using Additive Manufacturing and Finite Element Modeling." Spring 2025 Undergraduate Research Symposium, Mississippi State University. April 9, 2025.

Honors Thesis, Shackouls Honors College, Starkville, MS **April 2025**

- Olivia Draughn. "Design and Optimization of Lattice-Integrated PLIF Cages Using Additive Manufacturing and Finite Element Modeling" (2025). Honors Theses. 154. https://scholarsjunction.msstate.edu/honorstheses/154

RELEVANT ACADEMIC EXPERIENCE

Mississippi State University, Starkville, MS

- **Fundamentals of Finite Element Analysis**

  Using FEM to Characterize the Scaling Effects of Lattice Structures
  - Utilized FEM to characterize the effects of AM unit cellular lattice scaling for biomedical implants
  - Demonstrated how lattice scaling enables lightweighting, topological optimizations, and reduces stiffness mismatch, increasing implant-bone interface longevity

- **Fundamentals of Additive Manufacturing**
  Assessing the Correlation Between AM Lattice-Integrated Spinal Implants and Representative Models
    - Compared mechanical properties of three AM models with increasing complexity: unit cell, repeated cell, and fully integrated spinal implant model through uniaxial compression testing

LEADERSHIP/ INVOLVEMENT

Bagley College of Engineering, Starkville, MS

- **Bagley Ambassador** **October 2022 – May 2025**
    - Lead tours and events for over 100 prospective engineering students, fostering a welcoming and informative environment
- **International Experience Ambassador** **September 2023 – May 2025**
    - Hosted events to ease the transition for foreign exchange students, improving engagement and integration within the engineering community
- **Tau Beta Pi the Engineering Honor Society** **March 2024 – Present**