

LANCE P. NICHOLLS

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EDUCATION

Johns Hopkins University

Master of Science in Mechanical Engineering

Baltimore, MD

Expected May 2027

- Concentration: Biomechanical Engineering.

Johns Hopkins University

Bachelor of Science in Mechanical Engineering (3.66 GPA)

Baltimore, MD

August 2022 – May 2026

- Minors: Applied Math and Statistics (AMS) and Psychology.
- Honors: Dean's List Spring 2023, Fall 2023, Spring 2024, Spring 2025, Fall 2025, Spring 2026.
- Relevant Coursework: Multidisciplinary Engineering Design, Locomotion Mechanics, Materials Selection, Additive Manufacturing, Bio-solid Mechanics, Statics, Mechanics of Materials, Thermodynamics, Dynamics, Mechanics-Based Design, Electronics & Instrumentation, Fluid Mechanics, Heat Transfer, Digital Analysis of Dynamical Systems.
- Activities: Varsity Cross Country, Indoor and Outdoor Track and Field Athlete, Athletics Captains Cohort.

TECHNICAL SKILLS

Technology: CAD - SolidWorks, PTC Creo, Fusion 360 | Matlab, Python, Jupyter Lab | Microsoft Office Suite | JIRA, Confluence
Manufacturing: 3D Print | Laser Cut | Drill Press | Bandsaw | Lathe | Mill | Mig Weld | Design for Manufacturing (DFM)
Social: Leadership | Teamwork | Sports Science | Public Speaking | Lab Research | Spanish - Bilingual Proficiency

TECHNICAL EXPERIENCE

Biomechanical Pressure Sensing Study, JHU Musculoskeletal Tissue Engineering Lab

February 2025 – June 2026

- Created a mechanical testing apparatus to assess patellofemoral contact pressures in 8 unique cadaveric knee models.
- Conducted biomechanical experiments using pressure sensor technology to evaluate the impact of ACL reconstruction surgical site closure on joint loading and cartilage health, demonstrating over 10 percent higher joint pressures with closure.

Under Armour Recovery Footwear, JHU Multidisciplinary Engineering Design Course

August 2025 – May 2026

- Led cross-functional project management and design for innovative recovery footwear from ideation to prototype testing.

Precision Machined Stirling Engine, JHU Manufacturing Engineering and Design

August 2024 - December 2024

- Machined and manufactured an engine with 20+ precision components using hands-on milling, turning, and sand casting.

PROFESSIONAL EXPERIENCE

Graduate R&D Mechanical Engineering Co-Op

Acton, MA

Insulet Corporation

July 2026 – December 2026

- Supporting the development of a body-worn, continuous drug delivery system.
- Contributing to ergonomic design, CAD development, rapid prototyping, and mechanical validation of wearable hardware integrated with the human body under dynamic movement conditions.

Project Engineer Intern

Audubon, PA

Globus Medical, Excelsius Deformity Solutions

June 2025 - August 2025

- Modeled and optimized spinal implants and tools in Creo Parametric for treating complex deformities.
- Designed a spring-loaded spine model system enabling 200+ customizable point loads from 0.5-25 lb. for product validation.
- Redesigned pedicle screw removal tool to fit 10+ screw types; added welded handles to improve usability.
- Developed screw loading module for pre-op verification, accommodating 20 pedicle screws and reducing surgical error.
- Partnered with cross-functional teams in 3 departments (engineering, manufacturing, regulatory) to enhance designs.

Mechanical Engineering Intern

Pittsburgh, PA

University of Pittsburgh McGowan Institute, RiMed Lab

May 2024 - August 2024

- Led mechanical uniaxial/biaxial tension, bending, and pressure-volume tests on 60+ tissue-engineered valve samples.
- Developed MATLAB scripts to analyze 2,700 histology images, decreasing processing by 75% and streamlining analysis.
- Formulated and fabricated a four-jaw chuck in SolidWorks for validating a biaxial tension testing device.

PUBLICATIONS

- Badin D, Nicholls L et al. (Nicholls L as 2/7 authors) (2026) Quadriceps Harvest Site Closure is Associated with Increased Patellofemoral Contact Pressures: A Biomechanical Analysis. Manuscript pending approval
- Barbuto M, et al. (Nicholls L as 11/18 authors) (2026) Bioinspired Structural Heterogeneity Directs Host Remodeling and Limits Intimal Hyperplasia in Small-Diameter Vascular Grafts. SSRN, at ssrn.com/sol3/papers.cfm?abstract_id=6903679