

LANCE P. NICHOLLS

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EDUCATION

Johns Hopkins University

Master of Science, Mechanical Engineering

Baltimore, MD
Expected May 2027

- Cumulative GPA: 4.00/4.00 | Concentration: Biomechanics.

Johns Hopkins University

Bachelor of Science, Mechanical Engineering

Baltimore, MD
May 2026

- Cumulative GPA: 3.66/4.00 | 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, JupyterLab | Microsoft Office Suite | JIRA | FEA, Ansys
Manufacturing: 3D Print | Laser Cut | Drill Press | Bandsaw | Lathe | Mill | Weld | Design for Manufacturing | GD&T
Social: Leadership | Teamwork | Sports Science | Public Speaking | Lab Research | Spanish - Bilingual Proficiency

WORK EXPERIENCE

Graduate R&D Mechanical Engineering Co-Op

Insulet Corporation

Acton, MA
June 2026 - December 2026

- Drove prototyping of a body-worn, continuous drug delivery system across 3+ R&D workstreams to improve performance.
- Implemented 6+ adhesive and material test methods to study mechanical strength and wear, leading tests per 3+ standards.
- Advanced ergonomic CAD development of wearable hardware under dynamic movement conditions at 5+ insertion sites.

Project Engineer Intern

Globus Medical

Audubon, PA
June 2025 - August 2025

- Engineered and designed 3 spinal implants and 4 surgical tool concepts in Creo Parametric for treating complex deformities.
- Developed a spring-loaded spine model system enabling 200+ customizable loads from 0.5-25 lb. for product validation.
- Refined and optimized pedicle screw removal tool to fit 10+ screw types; proposed welded handles to improve usability.
- Constructed a screw loading module for pre-op verification, accommodating 20 pedicle screws and reducing surgical error.
- Organized cross-functional engineering across 3 teams (engineering, manufacturing, regulatory) to enhance development.

Mechanical Engineering Intern

University of Pittsburgh McGowan Institute

Pittsburgh, PA
May 2024 - August 2024

- Initiated mechanical uniaxial/biaxial tension, bending, and pressure-volume tests on 60+ tissue-engineered valve samples.
- Automated and ran MATLAB analysis of 2,700 histology images, decreasing processing time by 75% to streamline analysis.
- Created a 4-jaw chuck with 2-axis control in SolidWorks to validate a biaxial tension testing device to ± 0.005 -in tolerance.

RESEARCH & COURSE PROJECTS

Biomechanics Pressure Sensing Study, JHU Musculoskeletal Tissue Engineering Lab

February 2025 - June 2026

- Directed the assembly of a testing apparatus to assess patellofemoral contact pressures in 8 unique cadaveric knee models.
- Launched team-based biomechanical experiments using pressure sensing to evaluate the impact of ACL reconstruction surgical site closure on joint loading and tissue health, demonstrating over 10 percent higher joint pressures with closure.

Under Armour Recovery Footwear, JHU Multidisciplinary Engineering Design Course

August 2025 - May 2026

- Led a 4-member cross-functional team, driving mechanical design from ideation through testing and consulting users.

Precision Machined Stirling Engine, JHU Manufacturing Engineering Course

August 2024 - December 2024

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

PUBLICATIONS

- Badin D, Nicholls L et al. 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 Preprint.