

Catherine Knox

Engineering Portfolio: catherineknox.github.io

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EDUCATION

Vanderbilt University

Bachelor of Engineering in Mechanical Engineering

Minors in Digital Fabrication, Chemistry

GPA: 3.65/4.0 | Dean's List 2022-2023

Add'l Coursework: Nuclear Eng., Aerodynamics, Machining, Rapid Prototyping, Advanced Manufacturing, Organic Chemistry

Nashville, Tennessee

May 2026

PROFESSIONAL EXPERIENCE

Recovery Engineering Intern

SpaceX

Starbase, Texas

May 2025 – August 2025

- Designed, and built the mechanical enclosure and HVAC system for a marine high power and IT room.
- Designed, and executed all lifts for “starstool,” a ship support on the launch mount (LM) that allowed S37 to be static fired.
- Build engineer that led structures, large fluid, and small fluid modifications to build “starstool” and modify the LM.

Machining Lab Teachers Assistant

Vanderbilt Machining Lab

Nashville, Tennessee

August 2024 – May 2025

- Train students in operating a milling machine, lathe, bandsaw and other equipment to manufacture a mechanic's hammer.

Radioisotope Power Systems Supply Chain Engineering Intern

Zeno Power

Washington, DC

June 2024 – August 2024

- Conducted a 40+ page feasibility study and a proposed process for entering a new market and producing a new isotope
- Developed a database to monitor the radioactivity of 50+ Sr-90 RTGS around the world, interfacing with national entities.

Nuclear Environmental Engineering Research Group

Paid Research Assistant under Dr. Steven Krahn

Nashville, Tennessee

October 2023 – August 2024

- Author publication in “Consent-Based Siting and Management of Spent Nuclear Fuel in the United States: Body of Knowledge (BoK) for Practitioners” on the CRESP Consortium.

Cat's Tutoring

Founder and Tutor

Nashville, Tennessee

August 2021 – May 2024

- Enhanced 30+ clients' academic performance in math, science, English and special education with custom lesson plans.

Eco Swell

Renewable Energy Engineer

Lobitos, Peru

June 2023 - August 2023

- Supervised installation of a 10-kW solar power system in an impoverished hospital servicing 54,000 Peruvians.
- Built a low-cost solar distiller to convert seawater to freshwater for coastal communities to address water scarcity.

Southwest Research Institute

Engineering Intern

San Antonio, Texas

June 2021 – August 2021

- Trained in Python, SolidWorks, and Form Labs 3D printing to aid in 3 projects ranging multiple engineering disciplines.

LEADERSHIP AND INVOLVEMENT

The Vanderbilt Fusion Project (VFP):

Chief Executive Officer (January 2024 – December 2025), Chief People Officer (August 2023 – December 2023)

Nashville, Tennessee

August 2023 – Present

- Under-grad led team to build and operate a desktop nuclear fusion reactor (currently energizing to plasma)
- Implemented high vacuum and high voltage engineering, rad safety analysis, ion propulsion applications, neutronics
- Organize events including ORNL visits, nuclear energy pitches and conference presentations regarding nuclear energy.

Advanced Concept System Team Lead

August 2023 – December 2024

- Launched an 8-person engineering team focused on enhancing VFP's nuclear fusion reactor and spearheading research.
- Managed the design, and assembly of an anode ion source to optimize the reactor system and mini fusors.

Formula SAE

General Member

Nashville, Tennessee

March 2024 – December 2024

- Utilized machining skills to fabricate and alter car components such as bell cranks, reamed bushings, and suspension plates.
- Redesigned bell cranks for suspension system, conducting FEA to ensure strength under static & dynamic condition

Vanderbilt Brazilian Jiu Jitsu Team

Publicity Chair

Nashville, Tennessee

January 2023 - December 2023

- Managed Instagram for a 30+ member Brazilian Jiu-Jitsu team, facilitated practice setups, and organized the team structure.

SKILLS AND INTERESTS

Skills: Autodesk 360, SolidWorks (certified), MATLAB, Ansys, 3D Filament and Resin Printing, LabVIEW, OpenMC

Interests: Hostel life in esoteric countries, Bikepacking, Religious Studies, Nuclear Systems, Running, Henna Tattooing