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UWO geology student among 100 out of 30,000 to score NASA research internship

Written by Grace Lim, University of Wisconsin–Oshkosh News Bureau

University of Wisconsin–Oshkosh senior geology major Jonah Habeck has been fascinated by the Earth’s mysteries since he was a dinosaur-obsessed child.

His love for prehistoric life and the natural world set him on a path towards a career in geology, culminating in a significant opportunity: a prestigious summer internship at NASA’s Marshall Space Flight Center in Huntsville, Alabama. For 10 weeks in summer 2024, Habeck was immersed in research and development projects that impacted the safety of rocketry.

At NASA, Habeck of Fond du Lac, worked with EM32, the Engineering Materials Group, focusing on welding and testing materials critical for aerospace construction, including lunar habitation modules and rocket components. The work is pivotal in ensuring the structural integrity of space vehicles and extraterrestrial structures, highlighting the importance of geology in solving practical problems of space engineering.

Habeck lived his dream, working at the heart of cutting-edge aerospace research and contributing to projects that reach for the stars.

In this Q&A, Habeck shares his insights and experiences, showing what it means to be a geology student at UWO and an intern at NASA.

**Tell us about your NASA internship. How did you find this opportunity and what were your main responsibilities?**

I came across this internship through NASA’s website, which advertises one-and-done summer internships under OSTEM (Out in Science, Technology, Engineering, and Mathematics), focusing on student engagement in STEM fields. I looked at all of their available positions and casted a wide net of applications to see if I could get an interview. I was later notified that they had accepted me into OSTEM and that I would be with EM32, the Engineering Materials Group at Marshall Space Flight Center. My primary role was in welding development and testing, but I also ventured into additive manufacturing and had the opportunity to work with lunar minerals. But a majority of my time was split between additive manufacturing and welding development.

**How competitive was this internship and what was it like working in NASA?**

There were approximately 30,000 applicants that had applied for about 100 positions in the Engineering Materials Group. They made this very clear to us on our first day during orientation. The work environment was very controlled, yet interns had a very high degree of independence. Each of us were shown around the facilities around the base and given a full tour of the high bays and engine testing facilities. The internship was structured around each intern choosing their own project to work on. This could vary from test welding with large machinery, to servicing and assembling robots for use in welding applications. Working at NASA fundamentally changed the way that I view technical work and my understanding of what’s achievable in a workplace environment. I had the privilege of working with people at the top of their field, who never hesitated to share or mentor me on a variety of tasks. It was honestly a living dream being able to interact with and work alongside such brilliant minds.

**How does geology tie into the work you did at NASA?**

NASA hires engineers, physicists and geologists for different stages in the manufacturing process. Understanding materials is first and foremost for space exploration. My background in geology, especially the experience I accrued with mineral analysis and description through microscopy, was invaluable. My background in Earth materials and structural processes helped me engage with NASA’s metallography group, examining metal alloys and even lunar rocks. I and EM32, focused on welding development and testing according to ASTM standards. This is an industry standard list of different destructive techniques to ensure that a weld isn’t only of high quality but fails in a predictable manner. Anyone would jump at the chance to take a rocket ride, but no one wants to do that if they know that the rocket was assembled haphazardly with no quality control. I learned numerous welding techniques and got to experiment with parameters to determine what configurations yielded the highest quality welds. Ensuring that welds are strong and predictable is essential for maintaining the safety and reliability of equipment in the field. These quality control techniques directly affect the success of missions into space.

**What drew you to UWO’s geology program?**

I chose UWO because of its excellent geology program, complemented by its proximity to my family in Fond du Lac—a critical factor for me. Dr. Eric Hiatt, my advisor, played a significant role in fostering my passion. But what makes the program so excellent are all of the faculty on campus, and that every single one is enthusiastic to support student success. Their contagious enthusiasm and mentorship created an environment that encouraged me to explore opportunities beyond the university, like my experience with NASA.

**What initially sparked your interest in geology?**

My decision to become a geologist had roots that could be traced to my fascination for prehistoric animals. When I was a kid, I was interested in dinosaurs and the natural world. As for my fascination with space, that came later when I was in high school. During my junior and senior years, I was a part of the rocket club at Fond du Lac High School. Our rocket project won second place overall due to the efficient design and emphasis on air quality collecting data that we installed in the tip. This experience stuck with me because I was able to apply my own knowledge and learn new skills about rockets and aerospace in general. So, when I got into college, I felt like I could finally bring those interests into something professional, that I could build on throughout my life. Becoming a geology major was a natural extension of that interest, allowing me to explore Earth’s history and eventually contribute to projects like my internship with NASA. And I still get to work with dinosaur bones in the lab.

Geology has benefited me more than I could have ever anticipated, and something I want everyone to know is that it’s a highly varied field with innumerable opportunities and potential.

**How did your education at UWO equip you for your internship at NASA?**

The hands-on approach at UWO was crucial. Many of our classes include lab sessions and field trips, where we apply what we’ve learned in real-world settings. This foundation gave me the confidence to handle the technical and scientific challenges at NASA, despite the intimidating environment filled with experts and seasoned professionals. At NASA, I was perhaps the youngest and least experienced professionally, but UWO taught me to be resilient, adapt and persist.

**What do you plan to do with your geology degree after graduation?**

I’m keen on hands-on fieldwork and research in geology. I’ve been actively networking to explore future opportunities, ideally combining both onsite exploration and scientific study. While I plan to eventually pursue graduate studies, my immediate goal is to gain substantial work experience in the field, be it at NASA as a full-time employee, or as a consultant for mining and petroleum exploration.