
NCERC WORKFORCE TRAINING & EDUCATION REPORT

Academic Year 2022-2023



NCERC at SIUE
Advancing Biorenewables Research

Letter from the Director

April 3, 2023

Through our second Annual Workforce Training & Education Report, I'm excited to showcase the progress NCERC has made over the past year in connecting with new audiences through our ever-evolving set of workforce training programs. Not only have we hosted a new set of ambitious students and recent college graduates, we've onboarded a new workforce training program that helps us to attract an entirely new generation of students to the Center as well as the industries we serve.



As a three-term member of a public-school Board of Education, I'm acutely aware of the challenges and opportunities that high school students face when considering higher educational programs and career paths. The options seem infinite, and oftentimes, the best options for careers might be overlooked. That is what inspired the "Careers in Biotechnology" Job Shadow program. With a legacy like NCERC's, we've supported countless people on the way to their career paths through projects that focused on ethanol. Now, as we continue to expand our research portfolio, it's important to me that we continue to serve in this role as we always have with a focus on helping the bioeconomy fill the jobs of today and tomorrow. In order to be successful, we will need smart and ambitious people to lead us there. I believe today's youth can do that if we train them.

As we continue to navigate this post-COVID employment landscape, we've been creative in meeting the needs of our clients and our own self-initiated research, especially when it comes to staffing. While we primarily focus our full-time staff's efforts on client projects, we also utilize the support of students and fellows as we pursue research that helps to expand NCERC's research portfolio and shepherd in a new generation of cutting-edge technologies. Much of this work couldn't be done without student support, and I'm extremely grateful that we attract such high caliber students who take their roles seriously and have a tremendous pride in their work here.

In last year's report, I said, "Regardless of where a student is at on their education pathway, there is an opportunity for them at NCERC." That message is more true now than ever and I'm proud to share with you the contents of this report. Thank you for your time and interest in NCERC. Together, we will continue to turn visions of opportunity into reality!

Many thanks,
John Caupert

A handwritten signature in black ink that reads "John Caupert". The signature is written in a cursive, flowing style.

NCERC Workforce Training & Education

Since opening our doors 20 years ago, NCERC has hosted hundreds of students on their ways to exciting careers. With an incredible success rate, countless NCERC “alumni” are now serving companies in the private sector, academia, and in government laboratories.

NCERC is fortunate to attract students from SIUE, nearby community colleges, and universities from across the country who come to NCERC to gain hands-on experience by working on projects in high-priority areas of research. They work on a diverse set of projects, primarily focusing on grant-funded or NCERC's self-initiated research projects.

In addition to employment for students, NCERC's workforce training program includes unique opportunities for high school students through the job shadow program and recent graduates with degrees in STEAM (Science, Technology, Engineering, Agriculture, Math) through the Visiting Research Fellowship program and the Postdoctoral Research Fellow program.

During the 2022-2023 Academic Year, NCERC hosted 4 Interns, 4 Graduate Assistants, 5 Visiting Research Fellows, and 1 Postdoctoral Research Fellow.

Internships

Whether a student is pursuing a Certificate of Completion in Process Technology or an undergraduate degree in STEAM, they find their way to NCERC to gain hands-on experience in their field. Students are able to learn and earn while going to school full-time due to NCERC's flexible work schedules and incredible research staff who serve in advisory roles to each and every student employee.

"Working in the lab at NCERC has awarded me the opportunity to learn so many new analytical techniques through different research projects. I am grateful that the people I work with are such great mentors who have been so supportive of my science career journey. I will graduate in May of 2025 with my Bachelor's of Science in Chemistry, and I cannot wait to utilize all of the skills I have acquired here at NCERC."

- Violet Swanson, Lab Intern, Fall 2022 & Spring 2023



Not only do NCERC's laboratories pose incredible learning opportunities for students, but working with our top-notch administrative staff also create great learning environments for students pursuing careers in business, marketing, public relations, and related fields.



"Becoming a part of NCERC and being the Business Development/Market Research Intern has been a great experience and has been so important in my career development. I have always had high interest towards marketing and market research, so earning this position and being given a chance to exercise my skills has been an amazing opportunity. The people at NCERC as well as their mission towards sustainability have been incredibly educational and inspiring. It has been a joy to utilize what I have learned in class and to even apply the ideas from my role at NCERC back to the classroom. I'm looking forward to graduating in May 2024 with my Bachelor's in Marketing and a minor in Communications, using the experience gained at NCERC to guide my career."

- Nadia Graber, Business Development/Market Research Intern, Spring 2023

Graduate Assistantships

NCERC's unique business model provides valuable learning opportunities for graduate students who want to specialize in their field or expand their research portfolios. SIUE students work directly with NCERC's research team to validate and scale-up projects in novel research areas, providing them with the experience they need to pursue exciting careers in research.



As a graduate student in environmental science, resource conservation and biofuels were the most influencing factors for me to join NCERC's team. Being an agriculturist and working on farms, I have always been inspired to think about ways I can contribute to protect the environment and coming to NCERC was the best step I could have taken to do that. My background and research focus were on natural sciences, but working with this amazing team at NCERC as a graduate research assistant offered me a lot of insight into how I can learn more about environmental sustainability and biofuels while improving my research abilities. With such enthusiastic support from staff, I decided to pursue my thesis with NCERC. With this great opportunity, I'll try to make the best use of this knowledge, which will not only hone my research, analytical, and presenting skills, but also will allow me to implement that and put it out in the field after I graduate."

-Rutvik N Sureja, Graduate Assistant, Fall 2022 & Spring 2023

"My development as an engineer has been substantially improved by my experience working at NCERC. The dynamic and fast-paced work atmosphere has given me the chance to hone my technical talents and use them on actual projects. The Pilot Plant facility has given me the chance to learn more about cutting-edge technology as well as develop new skills and work with experts to solve challenging problems while spurring creativity through innovative approaches. Together, these experiences have given me a well-rounded viewpoint and a solid career basis. I feel privileged and thrilled to have these possibilities at NCERC and I believe it will be instrumental in using this knowledge in accelerating my career path once I graduate."

- Uche Joachim Opara, Engineering Graduate Assistant, Fall 2022 & Spring 2023



NCERC Offers Full-Time Employment Opportunities for Recent Graduates

Visiting Research Fellowships

The Visiting Research Fellowship and Postdoctoral Research Fellowship programs are an unrivaled learning opportunity for recent graduates of a bachelor's, master's, or PhD program who are interested in pursuing a career in research. Fellows work under the guidance of two supervisors who provide them with the technical expertise needed to thrive in their research environments and the leadership skills they need to ramp up the trajectory of their careers. This joint supervisory model ensures the connection of theory to practice and builds upon the Fellow's academic degree through applied, hands-on learning in an industrial setting.

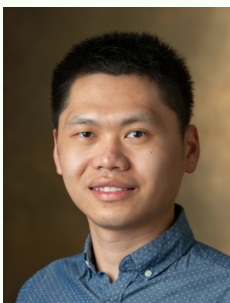


"Thanks to my experience as a fellow, I can look back and truly appreciate all that NCERC has done for me, both before and after graduation. I began working for the facility in 2019 as a student worker and when I graduated this past Spring. I was honored to be offered a fellowship here in the lab. Not only has this experience been enjoyable, it has been educational and extremely beneficial for my career. I have so much to be grateful for, especially for the staff at NCERC, now and as I progress in my field. The things I've learned, the connections I've formed, and the experiences I've had are invaluable to me.

- **Philip Kukielski, Visiting Research Fellow, 2022-2023**

"My role as a Visiting Research Engineering Fellow has allowed me the opportunity to gain experience in a variety of hands-on functions here at NCERC while also expanding my knowledge of the biochemical industry. I am continually fascinated by the research we do at NCERC and it gives me great pride to be able to attach my name to the exciting work being done here."

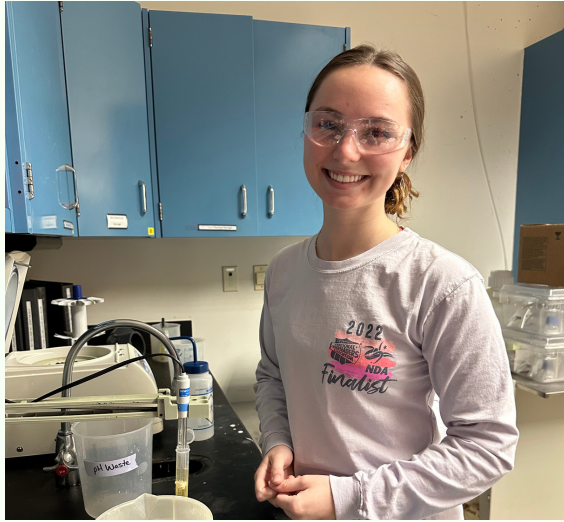
- **Colin Buck, Visiting Research Fellow, 2022-2023**



"Working at NCERC as an industrial research postdoc has been greatly helpful for me as I pursue my career to become a professional engineer in the biorenewable industry. NCERC has provided a great platform for me to learn and explore cutting-edge technologies in the biorenewable industry. Here at NCERC, working with the top talent in the biorenewable field and applying my previous research experiences helped me move closer to my career goal. I'm excited to have joined NCERC after receiving my Ph.D. degree from Iowa State University and appreciate the opportunities and platform NCERC provides."

- **Dr. Mingjun Ma, Postdoctoral Research Fellow, 2022-2023**

Student Spotlights

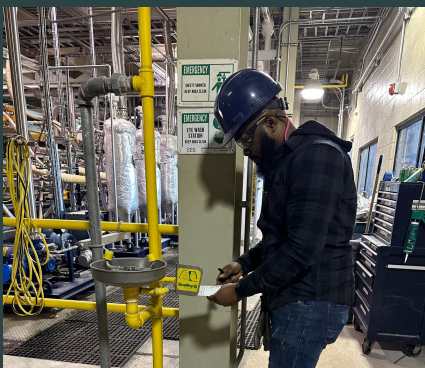


As a laboratory intern at NCERC, Violet's role is to assist in the overall operations of the NCERC Analytical and Fermentation Laboratories. A day in the lab for her starts with calibrating the equipment being used that day for testing. It is important to calibrate things like the pH probe and densitometer to get accurate readings for samples.

She also attends the daily lab team meeting where they discuss projects and the itinerary for the day and then spends the rest of her day in the lab running tests on samples for current projects and helping keep up with lab maintenance.



As an engineering graduate assistant, Uche's activities involve a variety of safety and maintenance tasks that keep the Pilot Plant running safely and efficiently. This includes performing safety inspections to OSHA industrial standards and preventive maintenance, troubleshooting and fixing equipment failure, maintaining departmental inventory, working on facility updates through installation of parts and equipment by following a design blueprint, and also adhering to Good Manufacturing Practices.



NEW! "Careers in Biotechnology" Job Shadow Program

In 2022, NCERC launched its "Careers in Biotechnology" Job Shadow Program that facilitates on-site learning opportunities for high school students. Career opportunities in biotechnology continue to grow as the industry diversifies and expands, creating incredible long-term career options for students looking at higher education programs.

NCERC's job shadow program is a one-day experience for high school students interested in learning about biotechnology and how it intersects with various fields, such as chemistry, biological sciences, business and more.

Prior to, an NCERC staff member will visit briefly with the student to learn about their interests and then set up the agenda with various members of NCERC's staff that work in roles relevant to the student's interests. Students are encouraged to choose from three tracks that are designed to allow them gain insight on the career path they might be interested in:

- Business & Communication
- Laboratory Sciences
- Engineering & Operations

The new job shadowing program allows junior- or senior-level high school students to get exposure to these careers by job shadowing full-time NCERC staff who work in our facility on research projects.



Continued Education & Workforce Development

Through funding provided by BioMADE, the University of Hawai'i at Hilo (UH Hilo) and the National Corn-to-Ethanol Research Center (NCERC) at Southern Illinois University Edwardsville (SIUE) have partnered to form "ALAKA'I", Applied Life-Science Academy: Knowledge Advancing Industry, a project that establishes a bioeconomy academy to accelerate climate change solutions by developing industry-relevant training for delivery in Hawaii and across the United States.

2023 sessions on the Big Island of Hawai'i:

- July 12-14 | 2023 Mālama Honua: Indigenous Perspectives in Sustainability - Indigenous Pacific peoples have lived for centuries in concert with nature on remote island environments, developing values and approaches to sustainable lifestyles that provide critical insights to better inform contemporary climate change solutions. Those seeking to implement transformative, sustainable economies will benefit immensely from this opportunity to think expansively about what it means to be "sustainable." Located on the east side of the Big Island in Hilo, HI.
- July 17-19 | 2023 Sustainable Circular Economies: Putting the Pieces Together - An overview of the multiple disciplinary bioeconomy "pieces" required to implement transformational and sustainable climate change solutions. We will touch on technical, business, regulatory, and social issues for moving away from fossil fuels towards a bioeconomy that sustainably maintains well-being through bio-based solutions. Leading industry mentors will discuss agricultural technology, soil carbon, biomass processing and fermentation, regulatory issues, sustainability from both Pacific and Native American perspectives, community acceptance, and economic and environmental analyses of new approaches for renewable, circular economies. Located on the west side of the Big Island in Waikoloa, HI.

To learn more, visit www.Hilo.Hawaii.edu/ALAKAI.

A Special Thanks to the Illinois Corn Growers!

NCERC is fortunate to receive continuous support from the Illinois Corn Marketing Board. Because of their generosity, we're able to support a healthy workforce training program and nurture the careers of ambitious students and future leaders of the bioeconomy.



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Advancing Biorenewables Research

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