The College of Agricultural, Consumer and Environmental Sciences (ACES) at the University of Illinois Urbana-Champaign has a rich history of making transformational discoveries that improve the world’s ability to produce a safe, abundant food supply. We also train hundreds of top-tier scientists, who enter the workforce to create cutting-edge technologies that improve food production while promoting environmental sustainability. The need for talented people to improve food production in the future is expected to grow as the United Nations predicts the need to feed 9.7 billion people by 2050. There will be over 55,000 job openings in agriculture and allied industries annually through 2020, but only 35,000 graduates available each year to fill these positions. Approximately 27% of these jobs will be in STEM applications for advancing agriculture. Clearly, a shortage of talented graduates to fill these positions puts our ability to feed a growing world in jeopardy.

Our intention is to create a training center for talent development that, in partnership with industry, prepares a nimble workforce pipeline that meets the needs of the rapidly evolving food, agriculture, and allied industries. This Center of Excellence for Talent Development (CETD) will be created in the College of ACES at Illinois to train students for technology-based careers emphasizing mathematics, data analytics, computer science, and design thinking to advance agricultural and biological sciences. Interdisciplinary teams with broad expertise are needed to train these students. Therefore, the CETD will involve faculty from ACES and other units at Illinois, along with industry leaders. The CETD will be a collaborative initiative co-funded by industry and the university.
WHY ILLINOIS?

For more than a century, the College of ACES has been a leader in transformational discoveries in the agricultural and food industry. Globally respected in topics ranging from plant biotechnology to sustainable food and fuel production, and economics to soil science, the University of Illinois offers a rich community of accomplished scholars. Top-ranked engineering and computer science programs complement the vast expertise in agricultural sciences to provide multidisciplinary research teams and educational experiences not available at other institutions.

Scientific discoveries are most impactful when applied to real-world challenges. With the Research Park serving as the translation zone, we are fully prepared to combine efforts across one of the premiere land-grant institutions in the country and with industry leaders across the food and agricultural system to holistically train individuals to have disciplinary expertise, interdisciplinary awareness, and the interpersonal communication skills required to achieve excellence. The unique industry collaboration built into the CETD combines the best of academia with the best of industry to create a training opportunity that will make our graduates context-rich and content-ready to solve the world’s greatest challenges in food production and environmental sustainability.

STUDENT OPPORTUNITIES

The program will include immersion-based learning opportunities for undergraduate and graduate students to work on teams completing projects defined through university-industry collaborations, or designed to address needs identified by industry partners. The goal is to allow people to activate their innovative spirits by developing an appreciation for diverse perspectives and through team problem-solving experiences using a design thinking platform. Student team members will be selected from a diverse array of disciplines needed to address the issue.
This project-based learning approach will allow students to practice integrating interdisciplinary components with people from diverse disciplines and ethnic backgrounds to address real-world research problems as part of their academic training. The opportunity for industry exposure, including the use of real data, site visits, and regular interactions with mentoring professionals, will serve as a keystone of this pioneer training program. Science communication literacy will also be integrated into the courses, research, and internship learning opportunities. Training in management and team-building programs will equip students with the intangibles needed to be successful.

**INITIAL THEME**

The first talent gap theme to be addressed through the CETD will be Agricultural Data Science. Massive data sets are present throughout the agricultural and biological sciences industry. In recent years, the agricultural industry has experienced tremendous expansion in precision agriculture, agriculture IT, bioinformatics, computational biology, and web programming for agricultural companies. As technology advances, career opportunities in these areas will continue to expand. In particular, there is a demand for people with skills integrating computer science, agriculture, and data analysis.

The CETD will provide fellowships and scholarships at the undergraduate, masters, and doctoral levels to recruit the best student talent in computer science, statistics, informatics, and computer engineering into the agricultural sciences. We will build a core interdisciplinary faculty to provide leading-edge technology training in combination with the latest advances in biotechnology and agriculture. The cooperative program of CETD will provide unique opportunities for students to acquire the skills required to manage, analyze, and interpret data efficiently. Mentors will ensure that students at all levels are combining quantitative, engineering, and mathematics focused disciplines with crop sciences, agriculture, and biotechnology.
RESOURCES REQUIRED

To initiate CETD activities, the College of ACES requires investment and engagement from partners.

The returns on this investment for industry partners include:

- Access to a pool of exceptionally well-trained individuals to fill emerging talent gaps in agriculture and allied industries.
- Access to intellectual property developed at the university or through industry-university partnerships.
- Improved outreach by proactively working with Illinois to support student training and job placement.
- Improved public image by having access to well-trained communicators who will serve as the voices and faces of the future of agriculture and food systems.

Investments will be directed towards:

- Fellowship support for six graduate students in agricultural data science
- Support for recruiting top-caliber students into the agricultural data science theme
- Support for professional development beyond technical fundamentals
- Support for undergraduate internships in the company’s facility at the Research Park

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