Approved by the Board of Trustees

July 11, 2024

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Board Meeting

July 11, 2024

ESTABLISH THE BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING + DATA SCIENCE, COLLEGE OF LIBERAL ARTS AND SCIENCES, URBANA

**Action:** Establish the Bachelor of Science in Chemical Engineering + Data Science, College of Liberal Arts and Sciences

**Funding:** No new funding required

The chancellor, University of Illinois Urbana-Champaign, and vice president, University of Illinois System, with the advice of the University of Illinois Urbana-Champaign Senate, recommends approval of a proposal from the College of Liberal Arts and Sciences to establish the Bachelor of Science in Chemical Engineering + Data Science.

The proposal to establish the BS in Chemical Engineering + DS is part of the University of Illinois Urbana-Champaign’s “X + DS Degree” initiative. The initiative’s first programs (Bachelor of Science degrees in Accountancy + Data Science, Astronomy + Data Science, Finance + Data Science, and Information Science + Data Science) were approved by the Board of Trustees on July 22, 2021. An additional program, Business + Data Science, was approved by the Board of Trustees on July 21, 2022.

In 2017, the College of Liberal Arts and Sciences, The Grainger College of Engineering, School of Information Sciences, and Gies College of Business formed a collaborative task force to explore opportunities for an undergraduate data science education at the University of Illinois Urbana-Champaign. In 2019, based on recommendations from this task force, the deans of these four academic units agreed to support a shared framework for these “X + DS” programs. The framework includes a set of core competencies with a reference standard set of courses and activities that fulfill the data science portion of these programs. A Data Science Education Committee was formed to review how proposed majors provide the expected competencies and features of X + DS programs in a manner that is appropriate for their students. This committee will also keep track of offerings related to data science to facilitate collaboration and reduce redundancy, connect undergraduate data science education resources across the university, advise colleges on matters related to undergraduate data science education, and review X + DS degree proposals to provide comment on how they meet expectations for and engage collaboratively and strategically with the university’s resources in data science education.

In the proposed Chemical Engineering + DS program, students will enhance their understanding of traditional chemical engineering concepts with training on state-of-the-art data science tools and data curation practices necessary to understand more sophisticated techniques that large, multidimensional data sets require. The BS in Chemical Engineering + DS includes a traditional core sequence in chemical engineering classes with additional data science coursework and a data science practicum.

Graduates with this balanced education in both chemical engineering and data science will be uniquely poised to harness the data science revolution for applications in chemical engineering and the chemical sciences. They will enter the workforce with the technical skills to construct models; to analyze, interpret, and visualize data; and to make data-driven decisions considering technology, economic, and safety/ethics considerations. These skills will give graduates of the proposed program a unique edge in the chemical industry.

Based on enrollment projections, the courses required for the chemical engineering + DS program have capacity or can be expanded by using differential tuition revenue. No new or additional facilities, significant improvements to existing facilities, or additional resources from the University Library are needed. No increase in faculty within is required, as the college currently has the capacity to accommodate the expected minor increases in enrollments resulting from this program. Students will utilize existing career and advising services.

The Board action recommended in this item complies in all material respects with applicable State and federal laws, University of Illinois *Statutes*, *The General Rules Concerning University Organization and Procedure*, and Board of Trustees policies and directives.

The executive vice president and vice president for academic affairs concurs with this recommendation. The University Senates Conference has indicated that no further Senate jurisdiction is involved.

The president of the University of Illinois System recommends approval. This action is subject to further review by the Illinois Board of Higher Education.