Approved by the Board of Trustees

July 11, 2024

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Board Meeting

July 11, 2024

# ESTABLISH THE BACHELOR OF SCIENCE IN LIBERAL ARTS AND SCIENCES IN MOLECULAR AND CELLULAR BIOLOGY + DATA SCIENCE, COLLEGE OF LIBERAL ARTS AND SCIENCES, URBANA

**Action:** Establish the Bachelor of Science in Liberal Arts and Sciences in Molecular and Cellular Biology + 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 Liberal Arts and Sciences in Molecular and Cellular Biology + Data Science (BSLAS in MCB + DS).

The proposal to establish the BSLAS in MCB + 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.

Ubiquitous digital technology and the generation of massive amounts of data, including biological and environmental data that impact biological systems, are rapidly transforming society and multiple fields of inquiry. Indeed, data science is ushering in a new era of modern medicine, where algorithms, artificial intelligence, machine learning, high-throughput genomics, and other data-driven technologies are revolutionizing how decision-makers like physicians and other healthcare providers are being informed about how to identify, treat, and manage health and disease. The new digital technologies of the early 21st century have great potential to transform society. The University of Illinois Urbana-Champaign has a high calling to prepare students to lead society’s digital transformation. The School of Molecular and Cellular Biology, which is home to the largest group of pre-health undergraduate majors on campus, is poised to embrace this challenge by offering the BSLAS in MCB + DS, a major that is at the interface of molecular and cellular biology and data science.

Graduates of the molecular and cellular biology + DS program will be equipped with the knowledge, tools, and skills to manage and analyze very large and diverse datasets across various biological systems, including healthcare systems, pharmaceutical industries, biologically and environmentally relevant government agencies, and data-intensive biological research areas.

Based on enrollment projections, the courses required for the molecular and cellular biology + DS program have capacity or can be expanded 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.