



College of Engineering
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October 5, 2019

Cathy H. Wu, Ph.D.
Unidel Edward G. Jefferson Chair in Engineering and Computer Science
Director, Data Science Institute
Director, Center for Bioinformatics and Computational Biology
Delaware Biotechnology Institute University of Delaware
15 Innovation Way, Suite 205
Newark, DE 19711

Dear Dr. Wu,

The College of Engineering fully supports the Center for Bioinformatics and Computational Biology (CBCB) efforts for a new Online Graduate Certificate in Biomedical Informatics and Data Science.

The certificate program leverages research strengths, education resources, and bioinformatics infrastructure from fifteen participating departments across the Colleges of Arts & Sciences, Engineering, Agriculture & Natural Resources, Health Sciences, and Earth, Ocean & Environment, as well as the Delaware Biotechnology Institute.

Graduates of the certificate program will gain basic biomedical informatics and data science core competencies to compute, analyze, and interpret large scale data sets to have a substantial impact on improving human health. Biomedical Informatics and Data Science are fields of study with applications ranging from genomics to pharmaceutical, health informatics, and biomedical research; having the potential to impact all areas of scientific research.

I look forward to the certificate as an additional tool that will provide the Bioinformatics Graduate Program continued success.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Levi T. Thompson'.

Levi T. Thompson, Dean
Elizabeth Inez Kelley Professor of Chemical
Engineering



College of Engineering

DEPARTMENT OF COMPUTER
& INFORMATION SCIENCES

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October 5, 2019

Cathy H. Wu, Ph.D.
Unidel Edward G. Jefferson Chair in Engineering and Computer Science
Director, Data Science Institute
Director, Center for Bioinformatics and Computational Biology
Delaware Biotechnology Institute University of Delaware
15 Innovation Way, Suite 205
Newark, DE 19711

Dear Dr. Wu,

The Department of Computer & Information Sciences in the College of Engineering fully supports your efforts to seek academic approval of the following program:

- Online Graduate Certificate in Biomedical Informatics and Data Science

The program leverages the research strength, education resources and bioinformatics infrastructure from participating Departments across the Colleges.

Graduates of the program will gain basic biomedical informatics and data science core competencies to compute, analyze, and interpret large scale data sets to have a substantial impact on improving human health. Biomedical Informatics and Data Science are fields of study with applications ranging from genomics to pharmaceutical, health informatics, and biomedical research; having the potential to impact all areas of scientific research.

I look forward to the certificate as an additional tool that will provide the Bioinformatics Graduate Program continued success.

Sincerely,

Kathleen F. McCoy, Ph.D.
Professor and Chair
Department of Computer & Information Sciences
101J Smith Hall
University of Delaware
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Phone: 302-831-2711




Vice Provost for Libraries and Museums
and May Morris University Librarian

181 South College Avenue
Newark, DE 19717-5267
Phone: 302-831-2231
Fax: 302-831-1046

October 9, 2019

Memorandum

To: Cathy H. Wu, Ph.D.
Unidel Edward G. Jefferson Chair in Engineering and Computer Science
Director, Data Science Institute
Director, Center for Bioinformatics and Computational Biology

From: Trevor A. Dawes 
Vice Provost for Libraries and Museums
and May Morris University Librarian

I am responding to your request to supply information about the capability of the University of Delaware Library, Museums and Press to support the proposed Online Graduate Certificate in Biomedical Informatics and Data Science (BIDS-CERT).

The University of Delaware Library with its strong science, social sciences, interdisciplinary, and electronic collections is well able to support this program. However, no additional funding is available for new resources. Enclosed is a description of library collections, resources and services available for this purpose.

I would be pleased to respond to any questions.

/nb

Enclosure

c: University of Delaware Library, Museums and Press
Susan Davi, Associate Librarian and Head, Collections and Electronic
Resources Management Department
M. Dina Giambi, Associate University Librarian for Resource Management
Sarah Katz, Associate Librarian and Health Science Librarian
Sabine Lanteri, Senior Assistant Librarian and Science Liaison Librarian
Tom Melvin, Librarian, Reference and Instructional Services Department
Carol Rudisell, Librarian and Head, Reference and Instructional Services Department
William Simpson, Associate Librarian and Institutional Repository Librarian

LIBRARY, MUSEUMS AND PRESS

library.udel.edu



October 9, 2019

Report on Library Services and Collections in Support of the
Online Graduate Certificate in Biomedical Informatics and Data Science

General Description

The University of Delaware Library includes the Hugh M. Morris Library, where the main collection is housed; two branch libraries located on the Newark campus, the Chemistry Library and the Physics Library; and a third branch library, the Marine Studies Library, located in Lewes, Delaware. The Library collections parallel the University's academic interests and support all disciplines. The graduate programs in bioinformatics and data science are interdisciplinary and are directly supported by the Library's strong collections in computer & information sciences, health sciences, all aspects of engineering, mathematics, biology, chemistry, public policy, and other interdisciplinary areas.

Databases, full-text electronic journals and electronic books, books, periodicals, microforms, government publications, maps, manuscripts and media provide a major academic resource for the University of Delaware, the surrounding community, the state of Delaware and the nation. Library staff members provide a wide range of services.

The University of Delaware Library is a U.S. depository library and a U.S. patent depository library and contains the complete file of every patent issued by the U.S. Patent and Trademark Office (USPTO).

The Library collections contain over 2,700,000 print volumes, and provide access to more than 700,000 eBooks, 110,000 eJournals, and 400 databases. The collections are broadly based and comprehensive.

Specific Support for Biomedical Informatics & Data Science

From the program policy statement (dated 9/15/2019):

"Biomedical Informatics and Data Science is an emerging and rapidly expanding field where biomedical research is used to compute, analyze, and interpret large scale data sets to have a substantial impact on improving human health."

"The Online Graduate Certificate program in Biomedical Informatics and Data Science (BIDS-CERT) is administered through its academic home, the Department of Computer & Information Sciences, and is coordinated by The Center for Bioinformatics and Computational Biology (CBCB)."

The Library's collections are strong and are well able to support the Certificate in Biomedical Informatics & Data Science. For many years, the Library has supported related graduate and undergraduate programs in biotechnology, biology, health sciences, chemistry, chemical engineering, mathematics, computer science, and public policy. The collections in these areas are excellent and continue to grow.

The Library has 4 experienced science librarians who are available to work with the faculty and students in this program. They are:

- Sarah Katz (sekatz@udel.edu) – Health Sciences
- Sabine Lanteri (slanteri@udel.edu) – Biological Sciences, Biomedical Engineering, Chemistry & Biochemistry, Chemical & Biomolecular Engineering, Agriculture & Natural Resources
- Tom Melvin (tmel@udel.edu) – Earth, Ocean, & Environment, Civil & Environmental Engineering, Electrical & Computer Engineering, Materials Science & Engineering, Mechanical Engineering
- William Simpson (wsimpson@udel.edu) – Computer & Information Sciences, Mathematical Sciences, Physics & Astronomy

These librarians can work with you to:

- Further develop Library collections, both print and electronic to support the teaching, learning and research needs of the program
- Provide research support for faculty and students in a consultation setting
- Provide instruction in a classroom setting
- Serve as a resource for the information needs of the faculty and students as they relate to the Library, Scholarly Communication, Open Access and other topics

More than 200 research guides <guides.lib.udel.edu/> in all subject areas have been developed and are maintained by librarian liaisons. These research guides describe library resources and assist students in the research process. These guides introduce students to a wide array of useful resources including databases, eJournals, eBooks, reference materials, visual material and more. The librarians mentioned above are also available to work with faculty to develop research guides for specific courses within this program.

The Library subscribes to more than 400 online databases <library.udel.edu/databases/> which support research in all areas. Among the most important databases for study and research in bioinformatics, biomedical informatics, and data sciences are: *Cochrane Library*, *PubMed*, *Scopus*, *Web of Science*, *Springer Nature Experiments* (formerly *Springer Protocols*), *SpringerMaterials*, *BIOSIS Citation Index*, *Data Citation Index*, *SciFinder Scholar*, *Compendex*, *TOXNET*, *National Center for Biotechnology Information (NCBI)*. *PolicyMap* (a data and mapping platform) may also be useful to students in this program.

In addition to its extensive print-based collections, the Library provides access to more than 110,000 electronic journals <library.udel.edu/ejournals/> and more than 700,000 electronic books <library.udel.edu/ebooks/>. Within the Library's eJournal collection, the sciences are particularly strong, including almost all the journals published by Elsevier, Springer, and Wiley as well as smaller publishers such as Association for Computing Machinery (ACM), American Medical Association (AMA), IEEE and IET, BioMed Central, BioOne Complete, Public Library of Science, Nature Publishing Group, Oxford University Press, and Annual Reviews. *JoVE* (*Journal of Visualized Experiments*) may also be useful to students in this program.

Within the eBook collection, online access to almost all ebooks published by Springer from 2005-present is of particular importance. The conference proceedings of the ACM and IEEE are available online via the *ACM Digital Library* and *IEEE Xplore*. *Knovel* provides sci-tech reference data and ebooks on technology and related topics. Other ebooks related to this program are available from *NCBI Bookshelf* and the *Methods in Enzymology* book series.

The Library also subscribes to *RefWorks*, a web-based citation management tool that can be used with most databases. Access to *EndNote Online* via the Library's *Web of Science* subscription is also available.

In addition, the Library maintains an Institutional Repository (<udspace.udel.edu/>), which archives research reports, documents, and other resources produced by University of Delaware faculty and students.



Trevor A. Dawes
Vice Provost for Libraries and Museums
and May Morris University Librarian