BIOINFORMATICS: INFORMATION SCIENCES, MS

for the degree of Master of Science in Bioinformatics, Information Sciences Concentration

dean: Eunice Santos
overview of MS in Bioinformatics requirements: https://ischool.illinois.edu/degrees-programs/ms-bioinformatics/apply
overview of grad college admissions & requirements: https://grad.illinois.edu/admissions/apply
school website: School of Information Sciences (https://ischool.illinois.edu/)
school faculty: https://ischool.illinois.edu/people/faculty
graduate office: 501 East Daniel Street, Champaign, IL 61820-6211
program contact: Moises Orozco Villicana
phone: (217) 333-7197, (800) 982-0914 (within the US)
email: ischool-apply@illinois.edu

A typical student will take 6 required courses (24 hours) 1 Biology, 1 Computer Science, 1 Fundamental Bioinformatics, and 3 Information Sciences.

Graduate Degree Programs in the School of Information Science
Bioinformatics: Information Sciences, MS (p. 1) (on campus & online)
Library & Information Science, MS (http://catalog.illinois.edu/graduate/is/library-information-science-ms/) (on campus & online)
Library & Information Science, CAS (http://catalog.illinois.edu/graduate/is/library-information-science-cas/) (on campus & online)
Library & Information Science, PhD (http://catalog.illinois.edu/graduate/is/information-science-phd/)

Joint Degree Programs:
Library & Information Science, MS and African Studies, MA (http://catalog.illinois.edu/graduate/is_las/joint-degree/african-studies-library-information-science-ms/)
Library & Information Science, MS and History, MA (http://catalog.illinois.edu/graduate/is_las/history-ma-library-information-science-ms/)
Library & Information Science, MS and Russian, East European, & Eurasian Studies, MA (http://catalog.illinois.edu/graduate/is_las/joint-degree/african-studies-ma-library-information-science-ms/)

School Librarian Licensure: available in conjunction with both the MS in LIS and CAS in LIS

The School of Information Sciences (iSchool) offers programs of study leading to the Master of Science (M.S.), the Certificate of Advanced Study (C.A.S.), and the Doctor of Philosophy (Ph.D.) degrees. The M.S. in Library and Information Science (L.I.S.) prepares students for professional careers in all types of information organizations, including libraries. The M.S. in Information Management (I.M.) will prepare the students for information-intensive professional roles in a broad range of sectors. The Information Sciences concentration of the campus-wide M.S. in bioinformatics program emphasizes multidisciplinary skills that are required for a career developing and managing information systems for the biological sciences community. The C.A.S. program provides the opportunity

1. to study an aspect of information sciences in greater depth than is possible in the M.S. program,
2. to refresh and upgrade one's professional training several years after completing a M.S. program, or
3. to redirect one's career into a different area of library and information science.

School Librarian Licensure is available in conjunction with both the M.S. in L.I.S. and C.A.S. The Ph.D. is a research degree program.

Admission
The general admission requirements of the Graduate College apply. Consideration is also given to language study and computer skills, relevant work experience, letters of reference, and evidence of leadership. International students must score at least 620 on the paper-based Test of English as a Foreign Language (TOEFL) (260 on the computer-based test; 104 on the iBT version); or 7 on each section of the IELTS. The M.S. in bioinformatics requires a strong background in information science including undergraduate-level computing and mathematics. The C.A.S. requires a master's degree in library and information science and a grade point average of at least 3.0 (A = 4.0) in the master's program.

Information listed in this catalog is current as of 04/2022
School Librarian Licensure
Candidates interested in the School Librarian Licensure program must first be admitted and enrolled as a degree-seeking student within the School of Information Sciences before their application to the School Librarian Licensure program is reviewed. Accepted students must successfully pass two Illinois State Board of Education testing requirements prior to registration for the final fieldwork experience.

Graduate Teaching Experience
Although teaching is not a general Graduate College requirement, experience in teaching is considered an important part of the graduate experience in the Ph.D. program for those interested in faculty careers.

Facilities and Resources
Among the major areas of faculty research are:

- community informatics
- data analytics
- data curation
- digital humanities
- digital libraries
- history of information
- information retrieval
- organization of knowledge and information
- privacy, security, and trust
- ethics and values for information
- youth literature, culture, and services

The iSchool's Center for Informatics Research in Science and Scholarship (CIRSS) conducts research on information problems that impact scientific and scholarly inquiry. The Center for Children's Books (CCB) provides a review and research collection of the newest literature for children and young adults. The Communications Office produces two high-quality publications, Library Trends and The Bulletin of the Center for Children's Books. The staff of each of these units is available to students and faculty for consultation and guidance. A computer network with Internet connectivity is integral to teaching and learning activities. The University Library provides a vast reservoir of resources for all types of study and research in library and information science.

The School maintains an ongoing commitment to continuing education through conferences, institutes, workshops, and course offerings.

Financial Aid
Financial aid may be available from the iSchool, the University Library, and elsewhere in the University in the form of graduate assistantships, teaching assistantships, research assistantships, and hourly paid work. Area libraries may provide pre-professional or hourly positions. Also, the iSchool offers a limited number of fellowships for which doctoral students tend to be favored over C.A.S. and master's degree students. Students in the joint program that do not hold a FLAS fellowship are eligible for, but not guaranteed, fellowship or assistantship support in the semesters in which they are enrolled in the iSchool. Any assistantship awarded to these students provides a waiver of the base in-state tuition and service fee as well as a stipend. Non-Illinois residents must pay the difference between in- and out-of-state tuition.

For the degree of Master of Science in Bioinformatics, Information Sciences Concentration

For additional details and requirements, refer to the unit's Graduate Programs of Study (https://ischool.illinois.edu/degrees-programs/) and the Graduate College Handbook (https://grad.illinois.edu/gradhandbook/).

Thesis or Non Thesis Option

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>CS 411</td>
<td>Database Systems</td>
<td>4</td>
</tr>
<tr>
<td>CS 466</td>
<td>Introduction to Bioinformatics</td>
<td></td>
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<tr>
<td>CS 473</td>
<td>Algorithms</td>
<td></td>
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<tr>
<td>CPSC 565</td>
<td>Perl &amp; UNIX for Bioinformatics</td>
<td></td>
</tr>
<tr>
<td>IS 455</td>
<td>Database Design and Prototyping</td>
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<tr>
<td>IS 507</td>
<td>Data, Statistical Models and Information</td>
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<tr>
<td>STAT 428</td>
<td>Statistical Computing</td>
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<tr>
<td>STAT 440</td>
<td>Statistical Data Management</td>
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<tr>
<td>STAT 448</td>
<td>Advanced Data Analysis</td>
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<tr>
<td>STAT 480</td>
<td>Data Science Foundations</td>
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<tr>
<td>STAT 525</td>
<td>Computational Statistics</td>
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### Bioinformatics: Information Sciences, MS

#### Fundamental Bioinformatics (choose one)
- ANSC 542: Applied Bioinformatics
- ANSC 545: Statistical Genomics
- CHBE 571: Bioinformatics
- CPSC 567: Bioinformatics & Systems Biol
- CS 466: Introduction to Bioinformatics
- IB 467: Principles of Systematics
- MCB 432: Computing in Molecular Biology

#### Biology (choose one)
- ANSC 441: Human Genetics
- ANSC 444: Applied Animal Genetics
- ANSC 446: Population Genetics
- BIOP 401: Introduction to Biophysics
- BIOP 550: Biomolecular Physics
- CPSC 452: Advanced Plant Genetics
- CPSC 466: Genomics for Plant Improvement
- CPSC 554: Quantitative Genetics and Genomics
- CPSC 563: Chromosomes
- CPSC 566: Plant Gene Regulation
- MCB 400: Cancer Cell Biology
- MCB 450: Introductory Biochemistry
- MCB 501: Advanced Biochemistry
- MCB 502: Advanced Molecular and Cell Biology

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<td>Database Design and Prototyping</td>
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<tr>
<td>IS 515</td>
<td>Information Modeling</td>
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<tr>
<td>IS 537</td>
<td>Theory &amp; Practice of Data Cleaning</td>
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<td>IS 543</td>
<td>Digital Preservation</td>
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<td>IS 547</td>
<td>Foundations of Data Curation</td>
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<td>IS 575</td>
<td>Metadata in Theory &amp; Practice</td>
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<tr>
<td>IS 407</td>
<td>Introduction to Data Science</td>
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<tr>
<td>IS 445</td>
<td>Data Visualization</td>
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<tr>
<td>IS 507</td>
<td>Data, Statistical Models and Information</td>
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<tr>
<td>IS 527</td>
<td>Network Analysis</td>
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<tr>
<td>IS 557</td>
<td>Applied Machine Learning: Team Projects</td>
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<tr>
<td>IS 567</td>
<td>Text Mining</td>
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<tr>
<td>IS 577</td>
<td>Data Mining</td>
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#### Data Stewardship
- IS 419: Entrepreneurial Information Technology Design
- IS 445: Data Visualization
- IS 504: Sociotechnical Information Systems
- IS 584: Advanced Topics in Ethics and Privacy (Privacy in the Internet Age)
- IS 586: Usability Engineering
- IS 594: Advanced Topics in Management and Policy (Information Policy)

#### Data Analytics
- IS 424: Social Computing
- IS 464: Information Assurance
- IS 517: Methods of Data Science
- IS 571: Advanced Topics in Use and Users of Information (Info Services for Diverse Users)

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<tr>
<td>INFO 591</td>
<td>Grad Bioinformatics Seminar</td>
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<td>For Thesis Option up to 8 hours:</td>
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<tr>
<td>IS 599</td>
<td>Thesis Research</td>
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**Total Hours**: 36

**Other Requirements**

Other requirements may overlap

A concentration is required.

Minimum 500-level Hours Required Overall: 12

Minimum GPA: 3.0