BIOINFORMATICS, MASTER OF SCIENCE

MS in Bioinformatics (https://advanced.jhu.edu/academics/graduate/ms-bioinformatics/)

Joint Offering with the Whiting School of Engineering

Johns Hopkins University offers an innovative graduate program that prepares professionals for success in bioinformatics. Drawing from the strengths of the Krieger School of Arts and Sciences and the Whiting School of Engineering, this program fully integrates the computer science, bioscience, and bioinformatics skills and knowledge needed to pursue a career in this dynamic field.

The 11-course degree program is thesis-optional and can be completed part-time or full-time and onsite, online, or through a combination of onsite and online courses.

Admissions Criteria for All Advanced Academic Programs (https://ecatalogue.jhu.edu/arts-sciences/advanced-academic-programs/Admission/#admissionrequirementstext)

PROGRAM-SPECIFIC REQUIREMENTS

In addition to the materials and credentials required for all programs, the Master of Science in Bioinformatics requires an undergraduate degree in the biological sciences or engineering with at least a 3.0 on a 4.0 scale.

- Resume
- Statement of purpose: Please provide a statement, up to one page in length, describing your personal background and/or a part of your life experience that has shaped you or your goals. Feel free to elaborate on personal challenges and opportunities that have influenced your decision to pursue a graduate degree at Johns Hopkins.
- Program-specific prerequisite courses:
  - Two semesters of organic chemistry
  - One semester of biochemistry
  - One semester of an introduction to programming using Java, C++, C, or Python
  - One semester of data structures
  - One semester of probability/statistics
  - One semester of calculus

Program Requirements

Students in the MS in Bioinformatics program must complete 11 courses:

- Two required core courses
- Seven customizable core courses
- One elective from bioscience
- One elective from computer science

After completing the above courses, students may choose an independent study project (optional).
MS in Bioinformatics with Thesis Option

Students interested in pursuing the MS in Bioinformatics with the thesis are required to take 12 courses. The thesis requires a two-semester research project. Students complete AS.410.800 Independent Research in Biotechnology first and AS.410.801 Biotechnology Thesis the following semester. Students interested in this option should consult with the program director or their academic adviser.

Learning Outcomes

Students in this program will:

- Critique current and classic research in molecular biology
- Search public databases in order to analyze data in a biological context
- Implement sequence alignment tools to elucidate the deeper context of biological data
- Develop bioinformatics tools to address biological problems
- Write computer programs to build databases within a biological context in multiple computer languages
- Design deployable computer algorithms
- Develop skills to meet individual career goals in computational biology and related fields.