MASTER OF SCIENCE IN THE FIELD OF BIOINFORMATICS AND MOLECULAR BIOCHEMISTRY

The science program in bioinformatics and molecular biochemistry is a unique program that integrates bioinformatics to research applications in genomics, biochemistry, and molecular medicine. The program is one of the first in the United States devoted exclusively to teaching important genome-wide approaches to medicine and biology.

Students in the program take a novel and focused approach to learning innovative bioinformatics technologies for analyzing high-throughput data from genomics and proteomics in a backdrop of biochemistry. Advanced biochemistry and molecular medicine courses provide strong foundational knowledge in biochemistry and biochemical genetics and medicine that paves the way for understanding the role of bioinformatics and utilizing bioinformatics-based approaches to research and clinical applications.

The course topics include leveraging genomic and other -omic data for biomedical knowledge discovery in the era of personalized medicine through large-scale data analysis, and the development of relevant algorithms and software.

Students gain real-world experience through numerous hands-on projects that solidify learning. Further, the program offers the option of preparing a thesis by completing a research project at George Washington University or other participating facilities at NIH, FDA, or Children’s National Medical Center. Alternatively, the non-thesis option requires a hands-on practicum at participating institutions.

Upon graduation, students are prepared for careers in fields such as advanced biomedical research, genomics, bioinformatics, medicine, public health to law, and policy.

Visit the School of Medicine and Health Sciences website for more information regarding the Bioinformatics and Molecular Biochemistry (https://biochemistry.smhs.gwu.edu/ms-bioinformatics-and-molecular-biochemistry/) program.

This is a STEM-designated program.

ADMISSIONS

Admission deadlines:
- Fall - April 1
- Spring - October 1
Supporting documents not submitted online should be mailed to:

Columbian College of Arts and Sciences, Office of Graduate Studies
The George Washington University
801 22nd Street NW, Phillips Hall 107
Washington DC 20052

For additional information about the admissions process visit the Columbian College of Arts and Sciences Frequently Asked Questions (https://columbian.gwu.edu/graduate-admissions-faq/) page.

Contact:
askccas@gwu.edu
202-994-6210 (phone)

Hours: 9:00 am to 5:00 pm, Monday through Friday

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (http://bulletin.gwu.edu/arts-sciences/#degreeregulationstext).

30 credits. For non-thesis option – 11 credits in required courses, 6 credits in required track, and 13 credits of electives. For thesis option – 11 credits in required courses, 6 credits in required track, 6 credits in Thesis and 7 credits of electives.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td><strong>Required</strong></td>
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<tr>
<td>BIOC 6221</td>
<td>Proteins, Pathways, and Human Health</td>
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<td>BIOC 6222</td>
<td>Biochemical Genetics and Medicine</td>
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<td>BIOC 6223</td>
<td>Bioinformatics</td>
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<tr>
<td>BIOC 6227</td>
<td>Biochemistry Seminar (taken twice for a total of 2 credits)</td>
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<td><strong>Required for bioinformatics track</strong></td>
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<tr>
<td>BIOC 6236</td>
<td>Medical Genomics</td>
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<tr>
<td>BIOC 6237</td>
<td>Proteomics and Biomarkers</td>
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<td>BIOC 6240</td>
<td>Next Generation Sequencing</td>
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<td><strong>Required for biochemistry track</strong></td>
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<tr>
<td>BIOC 6224</td>
<td>Molecular Biology and Protein Methods</td>
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<tr>
<td>BIOC 6260</td>
<td>Analytic Methods for Lipids and Carbohydrates</td>
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**Thesis option**

Required for students selecting the thesis option:

BIOC 6999 Thesis Research (repeated for total of 6 credits)

**Electives**

Non-thesis option: 13 credits in elective courses.

Thesis option: 7 credits in elective courses.

**Comprehensive examination**

All students must pass, or be exempted from, a comprehensive examination.

Students who wish to pursue the thesis option should contact the department for details.