MASTER OF SCIENCE IN THE FIELD OF BIOINFORMATICS AND MOLECULAR BIOCHEMISTRY (STEM)

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

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 curriculum covers topics such as 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 practical experience through hands-on projects that solidify learning. Students are offered the option of preparing a thesis by completing a research project at GW or other participating facilities at the 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.

Students in the program are admitted to the Columbian College of Arts and Sciences (CCAS), are governed by CCAS graduate policies and regulations, and receive a CCAS degree. However, faculty from GW's School of Medicine and Health Sciences (SMHS) teach the program's exclusively SMHS curriculum. Additional program information is available on the SMHS website (https://biochemistry.smhs.gwu.edu/ms-bioinformatics-and-molecular-biochemistry/).

This is a STEM designated program.

ADMISSIONS

Admission deadlines:	Fall – April 1
	Spring – October 1

English Language Requirements	The Test of English as a Foreign Language (TOEFL), the academic International English Language Testing System (IELTS), or the PTE Academic is required of all applicants except those who hold a bachelor's, master's, or doctoral degree from a college or university in the United States or from an institution located in a country in which English is the official language, provided English was the language of instruction.
	Minimum scores for the program are:
	- Academic IELTS: an overall band score of 6.0 with no individual score below 5.0; or
	- TOEFL: 550 on paper-based or 80 on Internet-based; or
	- PTE Academic: 53
	Applicants to the program who do not meet minimum English language requirements may be eligible for our full-time Applied English Language program.
Recommendations required:	One (1) recommendation
Prerequisite requirements	A bachelor's degree including the following courses, or equivalent: BIOC 3261; BISC 1111, 1112; CHEM 2122, 2151-52, 2153-54; PHYS 1011.
Prior academic records:	Transcripts are required from all colleges and universities attended, whether or not credit was earned, the program was completed, or the credit appears as transfer credit on another transcript. Unofficial transcripts from all colleges and universities attended must be uploaded to your online application. Official transcripts are required only of applicants who are offered admission. If transcripts are in a language other than English, English language translations must be provided. The English translation alone should be uploaded into your application.
Statement of purpose:	In an essay of 250 – 500 words, state your purpose in undertaking graduate study in your chosen field. Include your academic objectives, research interests, and career plans. Also discuss your related qualifications, including collegiate, professional, and community activities, and any other substantial accomplishments not already mentioned on the application. If you are applying for an assistantship or fellowship, you should also describe any teaching experience you have had.
International applicants only:	Please follow this link - https://columbian.gwu.edu/international-graduate-applicants (https://columbian.gwu.edu/international-graduate-applicants/) - to review the International Applicant Information carefully for details on required documents, earlier deadlines for applicants requiring an I-20 or DS-2019 from GW, and English language requirements.

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:

For the thesis option—30 credits, including 15 credits in required courses, 6 credits in thesis, and 9 credits in elective courses. For the non-thesis option—30 credits, including 15 credits in required courses and 15 credits in elective courses.

Code	Title	Credits
Required		
BIOC 6221	Proteins, Pathways, and Human Health	
BIOC 6223	Bioinformatics	
BIOC 6227	Biochemistry Seminar	
BIOC 6228	Research Essentials and Bioscience Careers	
BIOC 6230	New Technologies in Scientific Research	
BIOC 6243	Applied Bioinformatics	
BIOC 6246	Advanced Genomic Data Analysis	
Thesis option only—6 credits in thesis:		
BIOC 6999	Thesis Research (taken for a total of 6 credits)	
Electives		
Thesis option—9 credits in elective courses.		
Non-thesis option—15 credits in elective courses.		

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