Milken Institute School of Public Health THE GEORGE WASHINGTON UNIVERSITY	**BS HDS/MS HDS Dual Degree Program 2025-2026** Note: All curriculum revisions will be updated immediately on the website http://www.publichealth.gwu.edu

BS HDS Program Director	**MS HDS Program Director**
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BACKGROUND

The George Washington University Milken Institute School of Public Health (GWSPH) offers a unique opportunity to students interested in public health and biomedical data science. To further effectively train a workforce in public health and related fields with strong data science and data analytics skills, we have developed a dual degree program for students to earn both a BS and MS degree in Health Data Science (HDS). This dual degree program focuses on GW undergraduates already in the GWSPH BS HDS Program with an interest in adding more health data science expertise to their existing skillsets. This program would result in the earning of a BS degree and MS degree in Health Data Science (BS HDS/MS HDS program). The program is designed for George Washington University residential undergraduates.

BS HDS/MS HDS PROGRAM

The Milken Institute SPH will accept outstanding students each year to the BS in Health Data Science /MS Health Data Science program (BS HDS/MS HDS). As incentives to move beyond the traditional undergraduate curriculum, SPH offers participants admission to the MS HDS program without having to sit for the Graduate Record Examination (GRE), as well as the opportunity to complete both the BS and MS degrees more efficiently than if the degrees been completed separately. The BS HDS/MS HDS program is a multi-level, dual-degree program, meaning that students are concurrently enrolled in one undergraduate program and one graduate program, and that degrees will be awarded in different semesters with some undergraduate work counting towards the graduate degree.

MISSION

The mission of this program is to train the next generation of leaders and practitioners in public health, medicine, and data analytics. Students in the program develop practical skills for innovative data analysis and will be trained in becoming excellent communicators of scientific findings in public health and biomedical research. The program takes advantage of the rich bioinformatics and biostatistical resources at GWU and in the Nation's Capital and is designed to prepare students to be independent practitioners and collaborators in interdisciplinary research.

PREREQUISITES

All applicants to the dual BS HDS/MS HDS program must have completed the following prerequisites with a minimum overall grade-point average of 3.5 to be considered for admission:

- Introductory Biostatistics (PUBH 2142 or equivalent)
- Introductory Biology (BISC 1111, BISC 1112, or PUBH 2110 or equivalent)

- Programming (CSCI 1011, 1012, or PUBH 4201 or equivalent)

ADMISSION REQUIREMENTS

Students must be admitted to the BS HDS program before applying to the BS HDS/MS HDS program. Students are encouraged to apply online to the BS HDS/MS HDS program any time after their sophomore year.

The application requires the following:

- A personal statement
- Complete the BS/MS Faculty Recommendation Form
- Your CV/resume
- Your unofficial transcript from BanWeb
- GREs are not required, but scores will be accepted.

Admission to the program is made on a selective and space available basis. Applications are reviewed holistically, looking at an applicant's academic strengths, commitment to public health, leadership qualities, and other attributes.

COMPETENCIES

Upon completion of the dual BS HDS/MS HDS program students will possess the following competencies.

1. **Programming:** Develop skills in programming, data structures, algorithms, machine learning, high-performance computing and apply these skills to create approaches that facilitate biological data analysis.
2. **Biology:** Develop a basis of knowledge in biology and evaluate biological data generation technologies.
3. **Statistics:** Apply statistical research methods in the context of molecular biology, genomics, medical, and population genetics research.
4. **Foundational Knowledge:** Interpret and synthesize the various foundational concepts of bioinformatics, including genomics, algorithms, and other key tools used in bioinformatics.
5. **Conceptual Integration:** Integrate concepts and data across fields of computer science, statistics, data science, biology, and health sciences through bioinformatics.

BS HDS/MS HDS GRADUATION REQUIREMENTS

1. **Total Credit Requirement**. 120 credits are required for the BS HDS degree, which includes up to 9 crossover credits from the MS HDS program. An additional 27 graduate credits are required for the MS degree.
2. **Course Requirements**. Successful completion of the undergraduate BS HDS program and completion of the MS HDS program is required for the dual BS HDS/MS HDS degree.
3. **Master's Thesis or Research Report**: Successful defense of a Master's Thesis or presentation of a Research Report.
4. **Grade point average**: A minimum program grade-point average of B (3.0) for the MS HDS.
5. **Time Limit Requirement**: The degree must be completed within 10 years.
6. **Ethics/Professional Skills Requirement:** Participate in department-led ethical and professional skills training.
7. **Professional Enhancement requirement**: Students must participate in 16 hours (8 hours per degree program) of advisor pre-approved Public Health-related lectures, seminars, symposia and/or conferences related to the appropriate field of study specifically focused on research and research ethics. Students must submit documentation of Professional Enhancement activities to the SPH Office of Student Records. Instructions can be found here: https://publichealth.gwu.edu/academics/forms.

8. **CITI Training requirement**: All students are required to complete training regarding human subject protection regulation and the Health Insurance Portability and Accountability Act of 1996 (HIPAA). To fulfill this requirement, you must complete the Collaborative IRB Training Initiative (CITI) Course in The Protection of Human Research Subjects.
9. **Integrity Quiz & Plagiarism Requirement**: All students are required to review the George Washington University Code of Academic Integrity and take the quiz within their first semester of study. The Code of Integrity and step-by-step instructions can be found here: http://publichealth.gwu.edu/integrity

BS HDS / MS HDS Credit Distribution Chart	
Category	**Credits**
BS General Education – No Concentration BS General Education – Pre-medical Professional Concentration	24 *24*
BS Health Data Science Core – No Concentration BS Health Data Science Core – Pre-medical Professional Concentration	37 *37*
BS Health Data Science Electives – No Concentration (pre-approved or approved by advisor) BS Health Data Science Electives – Pre-medical Professional Concentration (pre-approved or approved by advisor)	18 *6*
BS General Electives – No Concentration (to be chosen with advisor) BS General Electives – Pre-medical Professional Concentration (pre-approved or approved by advisor)	41 *19*
BS Pre-medical Professional Concentration	*34*
BS Total Credits for each concentration (includes up to 9 crossover credits from the MS HDS)	120 *120*
MS HDS Additional Credits	*27*
BS HDS/MS HDS Total Credits (120 BS HDS credits + 27 MS HDS credits = 147 total credits	**147**

Undergraduate courses for the BS HDS (120 credits)
Follow requirements as indicated in the BS HDS program except for the substitution of crossover credits

Graduate courses for the MS HDS – (36 total graduate credits)		
PUBH 6850	1	Introduction to SAS for Public Health Research
PUBH 6851	1	Introduction to R for Public Health Research
PUBH 6852	1	Introduction to Python for Public Health Research
PUBH 6860	3	Principles of Bioinformatics
PUBH 6868	3	Quantitative Methods
PUBH 6886	3	Statistical and Machine Learning for Public Health Research
PUBH 68xx	8-13	Electives – see MS HDS program
PUBH 6897	1-4	Research in Biostatistics and Bioinformatics

PUBH 6898	1-3	Master of Science Thesis
PUBH 6080	0	Pathways to Public Health
		27 total graduate credits

Graduate Substitutions/Crossover courses in the MS HDS (up to 9 crossover credits)		
Students take the MS course listed instead of the BS Course		
MS HDS Course	**Credits**	**BS HDS Course Title/Explanation for Substitution**
PUBH 6854 Applied Computing in Health Data Science	3	Replaces PUBH 4201: Practical Computing* OR CSCI 1011: Introduction to Programming with Java OR CSCI 1012 Introduction to Programming with Python
PUBH 6884 Bioinformatics Algorithms and Data Structures	3	Replaces PUBH 4202: Bioinformatics Algorithms and Data Structures OR CSCI 1112: Algorithms and Data Structures
PUBH 6860: Principles of Bioinformatics	3	Replaces PUBH 3201: Introduction to Bioinformatics
PUBH 6867: Health Data Visualization	3	Replaces PUBH 3242: Health Data Visualization
		9 total graduate crossover credits

* If you have already taken PUBH 4201, PUBH 6854 will be waived and replaced with PUBH 6859: High Performance and Cloud Computing.