About the Program
GW’s Data Science Graduate Program is an interdisciplinary program that prepares students for data-related careers in the physical and social sciences such as astrophysics, geographic information systems, and computational biology. Developed through a collaborative effort among the Departments of Statistics, Physics, Economics, Mathematics, Geography and Political Science, the program teaches students to make sense of data and contribute informed observations that change the way we live, work and communicate.

What is Data Science?
Data Science is an emerging field that aims to extract actionable insights from vast arrays of information. Drawing on techniques and theories from statistics, computer science and mathematics, the program focuses on the effective analysis and use of large data in the natural and social sciences.

The explosion of data in today’s world is rapidly shaping the landscape of our life. This has led to an urgent need to process massive amounts of data and obtain meaningful information. Data scientists are trained to meet such challenges. Through a structured curriculum that provides foundational knowledge as well as application skills, our students learn how to confront some of the most complex problems facing government and private industry.

Why Data Science at GW?
The Data Science Graduate Program offers the combined resources of six departments, in addition to numerous unique benefits, such as:
- Interdisciplinary curriculum across a half-dozen specialties
- Partnerships with major organizations in the Washington, D.C., metropolitan area
- One-on-one mentoring from advisors and program directors
- Practical application of problem solving, communication and teamwork skills
- Capstone projects that provide real-world experience

Degree & Certificate Options
Students may choose from a Master of Science or Graduate Certificate in Data Science.

Curriculum
The curriculum combines courses in:
- **Methods**: Data management and data analytics; develop deep expertise in the programming languages essential for data science
- **Applications**: Elective courses in data science applied to a specific knowledge domain, such as astrophysics, political science and geography (GIS)
- **Skills**: Teamwork, project management and communication skills
- **Technology**: Hands-on exposure to data analysis and visualization tools/software

The **MS in Data Science** requires 30 credit hours (10 courses):
- three data science core courses
- two data science elective courses
- at least two domain/application courses
- one capstone course
- two additional courses in data science or domain/applications

The **Graduate Certificate in Data Science** requires 12 credit hours (4 courses):
- at least two data science core courses
- up to two electives

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Faculty

Dr. Tatiyana V. Apanasovich
Co-Director of the Data Science Program
Associate Professor of Statistics
Research focus: Astrostatistics; spatial and temporal statistics; semi/nonparametric inference; data contamination; functional data analysis; statistical genetics

Dr. Larry Medsker
Co-Director of the Data Science Program
Research Professor of Physics
Research focus: Applied artificial intelligence and neural computing; hybrid intelligent systems

Dr. Kalvir Dhuga
Associate Professor of Physics
Research focus: Astrophysics; experimental nuclear physics

Dr. Eric Lawrence
Associate Professor of Political Science
Research focus: American politics; legislative politics; public policy; data visualization; applied statistical modeling

Dr. Ganhui Lan
Assistant Professor of Physics
Research focus: Computational biomechanics, bacterial cell division, thermodynamics of biological regulator, eukaryotic cell physics

Dr. Michael Mann
Professor of Geography
Associate Dean for Research and Strategic Initiatives
Research focus: GIS; Python and R computing languages; spatial modeling; econometric techniques for the forecasting of human/natural systems interactions; remote sensing; high-performance computing; data visualization; web mapping

Dr. Yongwu Rong
Professor of Mathematics
Co-Director GW's Research Program on Forecasting
Chief Economist of the job listing website Indeed
Research focus: Macroeconomic and labor market modeling and forecasting

Dr. Tara M. Sinclair
Associate Professor of Economics
Research focus: Macroeconomic and labor market modeling and forecasting

Dr. Chen Zeng
Associate Professor of Physics
Research focus: Statistical and computational biophysics; designing proteins of new structure and function; theoretical techniques and computational tools for quantitative analysis and visualization of data for systems biology

Dr. Yanxiang Zhao
Assistant Professor of Mathematics
Research focus: Mathematical modeling and its applications for biophysics and biochemistry; numerical analysis and computational mathematics; quantum transport problems

Admission Requirements

To be admitted to the Data Science Program, applicants must have a bachelor’s degree from an accredited college or university and a solid academic record.

Prospective students must also have completed the following courses at the undergraduate level:

- Multivariable calculus
- One semester of statistics

Computer Programming: There is no formal requirement for a specific programming language; however, candidates are encouraged to demonstrate their skills with programming and software in their application to the Data Science Program.

Interested applicants who may lack specific requirements are encouraged to contact the program at datasci@gwu.edu so we can provide individual advice on alternative ways to meet the requirements.

International Applicants

International applicants are advised to apply before June 1st in order to obtain a visa in time to start their studies in the fall semester.

Want to learn more?

For more information or to apply, go to datasci.columbian.gwu.edu or email datasci@gwu.edu.

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