

# DATA ANALYTICS AND POLICY, MASTER OF SCIENCE

## MS in Data Analytics and Policy

[advanced.jhu.edu/govanalytics](http://advanced.jhu.edu/govanalytics) (<http://www.advanced.jhu.edu/govanalytics/>)

The Master of Science in Data Analytics and Policy prepares students to use analytics to tackle policy challenges in the public and private sectors. Students graduate with expertise in cutting-edge analytical methods relied upon by government agencies, research institutes, private companies, and non-profit organizations. The program emphasizes the application of analytics to substantive issues to develop students into data-driven leaders.

The schedule for completing this 12-course degree program is flexible. Many students work full-time while attending the program on a part-time basis and complete their degree in two years. Full-time students can complete the degree in one year. The MS in Data Analytics and Policy is offered primarily online, though some electives are offered at the Johns Hopkins Washington, DC Center each term.

Students may choose to focus within one of the following specialized areas: political behavior and policy analysis, geospatial analysis, statistical analysis, or public management. The electives cover a wide range of analytical methods, including machine learning, predictive analysis, text analysis, database management systems, computational modeling, civic technology, economic analysis, survey methodology, risk analysis, and data privacy.

**Admissions Criteria for all Advanced Academic Programs** (<http://e-catalog.jhu.edu/arts-sciences/advanced-academic-programs/enrollment-services/admission/>)

### PROGRAM SPECIFIC REQUIREMENTS

In addition to the materials and credentials required for all programs, the Master of Science in Data Analytics and Policy requires:

- Statement of purpose (two pages double-spaced): Explain your reasons for seeking admission and how you will use the degree to advance your career. Your statement should also address your ability or potential to perform quantitative analyses.
- Writing sample (5-7 pages double-spaced). The writing sample should demonstrate your ability to make and support an argument. It does not need to be quantitative.

## Program Requirements

Code	Title	Credits
<b>Core Courses</b>		
AS.470.681	Probability and Statistics	3
AS.470.768	Programming and Data Management	3
AS.470.673	Data Visualization	3
AS.470.709	Quantitative Methods	3
AS.470.862	Capstone for Data Analytics and Policy	3
<b>Electives</b> <sup>1</sup>		
Select seven of the following:		21-23
AS.470.667	Machine Learning and Neural Networks	

AS.470.763	Database Management Systems
AS.470.699	Applied Performance Analytics
AS.470.779	Computational Modeling for Policy and Security Analysis
AS.470.835	DC Lab: Politics, Policy, and Analytics
AS.470.660	Program Evaluation
AS.470.731	Privacy in a Data-driven Society
AS.470.772	Practical Applications of Artificial Intelligence
AS.470.764	Survey Methodology
AS.470.703	Urban Data Analytics
AS.470.769	Data Science for Public Policy
AS.470.736	Methods of Policy Analytics
AS.470.738	Civic Technology and Smart Cities
AS.470.743	Data Mining and Predictive Analytics
AS.470.758	Data-Driven Campaigns and Elections
AS.470.624	Healthcare Analytics and Policy
AS.470.700	Cloud Computing in the Public Sector
AS.470.694	Big Data Management Systems
AS.470.671	Risk Management in the Public Sector
AS.470.608	Public Policy Evaluation & the Policy Process
AS.470.605	Global Political Economy
AS.470.631	Economics for Public Decision-Making
AS.470.636	Cognitive and Behavioral Foundations for Artificial Intelligence
AS.470.627	Financial Management & Analysis in the Public Sector
AS.470.798	Financial Management and Analysis in Nonprofits
AS.470.745	Terrorist Financing Analysis and Counterterrorist Finance Techniques
AS.472.611	Analyzing Social Media and Geospatial Information
AS.470.643	Text as Data
AS.470.645	The Budgetary Process
AS.470.708	Unleashing Open Data with Python
AS.470.752	Intelligence Analysis
AS.472.612	Geospatial Analysis: Communicating with Multiple Audiences
AS.430.600	Web GIS
AS.430.601	Geographic Information Systems (GIS)
AS.430.603	Geospatial Statistics
AS.430.604	Spatial Analytics
AS.430.606	Programming in GIS
AS.430.602	Remote Sensing: Systems and Applications
AS.430.605	Development and Management of GIS Projects
AS.430.607	Spatial Databases and Data Interoperability
AS.430.608	GIS and Spatial Decision Support Systems
AS.430.609	Spatial Data Management: Quality and Control
AS.430.610	GIS for Infrastructure Management
AS.430.611	Geospatial Ontologies and Semantics
AS.430.612	Cartographic Design and Visualization
AS.430.613	Advanced Topics in Remote Sensing
AS.430.617	Census Data Mining: Visualization and Analytics
AS.430.618	Advanced Python Scripting for GIS

AS.430.619	Web Application Development
AS.430.621	GIS for Emergency Management
AS.430.623	Geo Apps
AS.430.625	System Architecture for Enterprise GIS
AS.430.627	Artificial Intelligence and Machine Learning in Geospatial Technology
AS.430.629	Drones in Geospatial Decision Making
AS.430.615	Big Data Analytics: Tools and Techniques
AS.430.631	Spatial Algorithms and Data Structures
AS.430.633	Advanced Spatio-Temporal Statistics

<sup>1</sup> With approval of the program director, students may also choose electives from selected degree programs within Advanced Academic Programs, including Government, Global Security Studies, Applied Economics, Communication and Energy Policy and Climate.

## Sequence of Study

It is recommended that students begin the program by taking AS.470.681 Probability and Statistics along with one elective. In the following term, it is recommended that students take AS.470.768 Programming and Data Management along with one elective. Students should then work through the additional core and elective requirements (generally taking one core course and one elective course per term). The final core course, AS.470.862 Capstone for Data Analytics and Policy, should be completed during the student's final term (or penultimate term with permission from the student's adviser).

## Concentrations

There are four concentrations offered through the MS in Data Analytics and Policy. The concentration in Statistical Analysis focuses on the use of advanced quantitative methods to make data-driven decisions. The concentration in Geospatial Analysis focuses on the applied use of spatially-distributed data. The concentration in Political Behavior and Policy Analysis prepares students to evaluate campaigns, elections, political institutions, and government programs using quantitative methods. Finally, the concentration in Public Management provides students with the tools and skills needed to solve management issues related to policy, finance, and administration. Pursuing a concentration is optional. To earn a concentration, four of the student's electives must be in the concentration area.

## Honors

Students in the MS in Data Analytics and Policy are eligible for program honors. Students who earn a grade of "A-" or better in all their coursework and the capstone seminar will graduate with the distinction of *cum laude*. Students who earn a grade of "A-" or better in all their coursework and earn an "A" or better in the capstone seminar will graduate with the distinction of *magna cum laude*. Students who earn the grade of "A" or better in all their coursework and an "A" or better in the capstone seminar will graduate with the distinction of *summa cum laude*. These honors are program-based and recognized by the Center for Advanced Governmental Studies only.