GEOSPATIAL INTELLIGENCE, MASTER OF SCIENCE

MS in Geospatial Intelligence

advanced.jhu.edu/geospatialintelligence/ (https://advanced.jhu.edu/academics/graduate/ms-geospatial-intelligence/)

Geospatial intelligence informs and influences policy, military, diplomatic, environmental and disaster relief and recovery decisions, and operations by governments at every level. Increasingly, in non-governmental sectors, it is informing and influencing public health, business, infrastructure, energy, regulatory, and advocacy decisions.

The Geospatial Intelligence Program unites three fields of study: the history of geospatial intelligence; the science and mathematics of digital geography and its related databases; and the art of converting geospatial data into written, spoken, and visual intelligence. Students analyze historical intelligence examples to understand the development of the concepts and practices behind collection, analysis, reporting, and technology. They also will focus on current challenges in the profession, among them the analytics and technology needed for the volume of current and future collection, the challenges of new sensors, and the development of new non-governmental geospatial communities.

Admissions Criteria for all Advanced Academic Programs (https://e-catalogue.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 Geospatial Intelligence requires:

A four-year degree in a related discipline, such as Geography, GIS, Social Sciences (Political Science, International Relations, Area Studies). For those holding degrees in other disciplines, attention will be given to overall GPA and demonstrated writing ability. The program requires proficiency in mathematical statistics and probability.

A sample of geospatial intelligence

Please compare and contrast the 1860 photograph to a modern Google earth image of the same geography.

Both images show the north end of Boston, Massachusetts. A common reference point is the Old South Church, now called Old South Meeting House which is very near the left hand side at the center of the 1860 balloon view of Boston.

Description and analysis:

Examine the map and the Google earth image to identify and analyze what visibly remains on the Google earth image from the 1860 image. From the two images, point out what you think are the most significant changes and why you think they are significant.

Write up your findings in 2 to 3 pages. Please indicate how you decided what was significant about the changes and similarities you have noted. In the last paragraph, please indicate the next steps you would take if you wanted to learn more about these two images.

Record two measurements, either as you are working or after you are done. Submit the two measurements with your analysis.

How long did you spend examining the images (looking and thinking)

How long did you spend writing up the results (writing and thinking)

The measurements will not be used for any individual performance measurement, only to illustrate an enduring challenge for all geospatial analysis that will be covered throughout the introductory course and the entire program.

PROGRAM REQUIREMENTS

Students complete 12 courses to earn their degree:

- Eight required core courses
- One customizable core course
- Three elective courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS.472.600</td>
<td>Introduction to Geospatial Intelligence</td>
<td>3</td>
</tr>
<tr>
<td>AS.430.601</td>
<td>Geographic Information Systems (GIS)</td>
<td>4</td>
</tr>
<tr>
<td>AS.430.603</td>
<td>Geospatial Statistics</td>
<td>4</td>
</tr>
<tr>
<td>AS.430.604</td>
<td>Spatial Analytics</td>
<td>4</td>
</tr>
<tr>
<td>AS.470.748</td>
<td>The Art &amp; Practice of Intelligence</td>
<td>3</td>
</tr>
<tr>
<td>AS.430.612</td>
<td>Cartographic Design and Visualization</td>
<td>4</td>
</tr>
<tr>
<td>AS.472.613</td>
<td>Geospatial Law and Ethics</td>
<td>3</td>
</tr>
<tr>
<td>AS.472.800</td>
<td>Capstone in Geospatial Intelligence</td>
<td>3-4</td>
</tr>
</tbody>
</table>

Core Courses - Customizable: 3-4

Select one of the following:

- AS.473.644 Technical Collection of Intelligence
- AS.430.602 Remote Sensing: Systems and Applications

Electives 9-12

Select three of the following:

- AS.430.600 Web GIS
- AS.430.606 Programming in GIS
- AS.430.608 GIS and Spatial Decision Support Systems
- AS.430.609 Spatial Data Management: Quality and Control
- AS.430.611 Geospatial Ontologies and Semantics
- AS.430.613 Advanced Topics in Remote Sensing
- AS.430.615 Big Data Analytics: Tools and Techniques
- AS.430.618 Advanced Python Scripting for GIS
- AS.430.619 Web Application Development
- AS.430.621 GIS for Emergency Management
- AS.470.601 Climate Change and National Security
- AS.470.752 Intelligence Analysis
- AS.470.697 Intelligence and Counterterrorism
- AS.470.792 Social Science in National Security and Intelligence
- AS.472.611 Analyzing Social Media and Geospatial Information
- AS.472.612 Geospatial Analysis: Communicating with Multiple Audiences
Learning Outcomes
The MS in Geospatial Intelligence weaves the history, science, mathematics, and art of geospatial analysis into a program that will enable its graduates to lead and shape this rapidly-growing intelligence discipline. The program combines recognized faculty with extensive geospatial experience and publications, an interactive and online curriculum, and the research resources, tools, and opportunities for its students to:

- Understand the history and evolution of geospatial intelligence and its enduring challenges.
- Develop the habits of mind and the conceptual framework to thrive as analysts, researchers, program leaders, and managers in the geospatial communities.
- Employ the appropriate mathematical models and scientific sensor knowledge necessary to design advanced commercial geospatial collection management for big data and small data problems, and to design geospatial databases for complex issues,
- Develop analytic processes and products as well as demonstrate the ability to communicate geospatial information and analysis accurately and persuasively in writing and briefing.
- Produce original research on the history and methodologies of geospatial intelligence.