Urban Informatics, MS (Arlington)

The Master of Science in Urban Informatics (MSUI) degree couples comprehensive data analytics skills with an understanding of the big questions faced by cities in the 21st-century city. This cutting-edge program is built upon a unique cross-college initiative, which offers comprehensive state-of-the-art training in the core skills of data analytics—including quantitative analysis, data mining, machine learning, and data visualization. Urban informatics students supplement training in these foundational skills with a specialized sequence of courses that address how data and technology are being used to tackle key social, infrastructural, and environmental challenges.

By combining a theoretically informed perspective of cities with advanced skills in accessing, managing, analyzing, and communicating insights from large complex, datasets, graduates are a part of the next wave of urban professionals ready to lead in the public, private, and nonprofit sectors. Given the continuous growth in urban data and technology, these professionals are essential to shaping the future of urban areas around the globe.

This program provides a uniquely integrated urban and informatics degree with a substantial experiential education component. The focus throughout is on practical application, and students have multiple opportunities to apply what they are learning.

The master's program offers an optional cooperative education experience (co-op) to eligible students. Co-op education is central to both the Northeastern experience and to the College of Social Sciences and Humanities experiential liberal arts framework. Northeastern's signature co-op ecosystem provides qualified master's students with six-month work experiences in businesses, nonprofits, and government agencies across the United States. Graduate students take their work from campus learning spaces, apply their knowledge outside of the classroom, and then bring knowledge and skills gained in community learning spaces back to our campus learning spaces during the cocurricular experiential integration course.

Please review the tuition and fee (https://catalog.northeastern.edu/graduate/expenses/) page as credit costs differ depending on the college in which the course resides.

CSSH Graduate Programs General Regulations (https://catalog.northeastern.edu/graduate/social-sciences-humanities/general-regulations/)

Academic Standing/Progress

Students in the program are monitored for academic progress. Those students whose grade-point average (GPA) falls below a 3.000 are notified by and meet with the director of academic programs. They are counseled that if their GPA does not rise to a 3.000 or higher, they run the risk of not graduating and are advised on strategies for improvement.

Program Requirements

Complete all courses and requirements listed below unless otherwise indicated.

Core Requirements

Code	Title	Hours
Data Science Courses		
DA 5020	Collecting, Storing, and Retrieving Data	4
or DA 5030	Introduction to Data Mining/Machine Learning	
or PPUA 7237	Advanced Spatial Analysis of Urban Systems	
INSH 5301	Introduction to Computational Statistics	4
INSH 5302	Information Design and Visual Analytics	4
PPUA 5263	Geographic Information Systems for Urban and Regional Policy	4
Methods and Applications		
PPUA 5262	Big Data for Cities	4

Optional Co-op Experience

Code	Title	Hours
Four-month co-ops require registration at 1 SH for one term. Longer co-ops require registration at 1 SH per term for two consecutive terms:		1-2
PPUA 6964 and INSH 6864	Co-op Work Experience and Experiential Integration	

ELECTIVES

Code	Title	Hours
Complete 13 SH from the following:		13
Methods and Applications		
CIVE 7110	Critical Infrastructure Resilience	
CIVE 7380	Performance Models and Simulation of Transportation Networks	

CIVE 7381	Transportation Demand Forecasting and Model Estimation
CIVE 7388	Special Topics in Civil Engineering (with prior approval of advisor)
CIVE 7392	Special Topics in Environmental Engineering (with prior approval of advisor)
IE 7374	Special Topics in Industrial Engineering
INSH 6101	Agent-Based Modeling for Applied and Social Sciences
PPUA 5230	Housing Policy
PPUA 5235	Participatory Community Planning Methods
PPUA 5246	Participatory Modeling for Collaborative Decision Making
PPUA 5268	International Environmental Policy
PPUA 5260	Ecological Economics
PPUA 5264	Energy Democracy and Climate Justice: Technology, Policy, and Social Change
PPUA 5265	Global Urbanization and Planning
PPUA 5266	Urban Theory and Science
PPUA 6101	Environmental Science and Policy Seminar 1
PPUA 6502	Economic Analysis for Policy and Planning
PPUA 6552	The Nonprofit Sector in Civil Society and Public Affairs
PPUA 7346	Resilient Cities
Analysis	
INSH 6302	Qualitative Methods
INSH 6406	Analyzing Complex Digitized Data
POLS 7334	Social Networks
PPUA 5261	Dynamic Modeling for Environmental Decision Making
PPUA 6212	Research Toolkit for Urban and Regional Policy: Project Management
PPUA 6216	Research Toolkit for Urban and Regional Policy: Grant Writing
PPUA 6509	Techniques of Program Evaluation
Practicum or Capstone	
PPUA 6966	Practicum
or PPUA 7673	Capstone in Public Policy and Urban Affairs
Portfolio	
PPUA 6410	Urban Informatics Portfolio

Program Credit/GPA Requirements

33 total semester hours required (34-35 with optional co-op)
Minimum 3.000 GPA required