**Curriculum - Master of Science in Urban Analytics**

**Total: 36 credits**

**Required Core Courses**

* URP 6223 - Introduction to Urban Analytics or URP 6931 - Artificial Intelligence in the Built Environment (3 credits, required)
* URP 6224 - Intermediate Urban Analytics (3 credits, required)
* URP 6007 - Survey in Urban and Regional Planning (3 credits) (required for the students without the urban planning background).
* Thesis/Capstone (at least 3 credits are required)

**Group 1. Urban and Regional Planning Theory Courses (at least 3 credits)**

* URP 6042 – Urban Economy
* URP 6100 – Planning Theory and History
* URP 6131 – Land Use and Planning Law
* URP 6421 – Environmental Land-Use Planning and Management
* URP 6445 – Planning for Climate Change
* URP 6541 – Economic Development Planning
* URP 6716 – Transportation Policy and Planning
* URP 6711 – Transportation and Land Use Coordination
* URP 6745 – Housing, Public Policy and Planning

**Group 2. Urban and Regional Planning Methods Courses (at least 6 credits)**

* URP 6270 – Introduction to Planning Information Systems
* URP 6271 – Automation for Geospatial Modeling and Analysis
* URP 6272 – Urban Spatial Analysis
* URP 6276 – Internet Geographic Information Systems
* URP 6821 – Transportation and Land Use Modeling

**Group 3. Data and Computer Science Courses (at least 9 credits)**

* COP 3502 - Programming Fundamentals 1
* EEL 3850 - Data Science for ECE
* STA 4210 - Regression Analysis
* CAP 4770 - Introduction to Data Science.
* EEL 4930 - Applied Machine Learning Systems
* EEE 4773 (or EEL 5840) - Fundamentals of ML
* COT 5615 – Mathematics for Intelligent Systems (prerequisite of CAP 6610)
* CAP 6610 – Machine Learning
* CAP 6615 - Neural Networks
* EEL 6935 – Big Data Ecosystems
* EEL 5840 – Elements of Machine Intelligence
* EEL 6814 – Neural Networks and Deep Learning
* EEL 6953 – Machine Learning for Natural Language Processing
* EEE 6512 – Image Processing and Computer Vision
* EEL 6825 – Pattern Recognition and Intelligent Systems
* EEL 6841 – Machine Intelligence and Synthesis
* GEO 6166 – Advanced Quantitative Methods for Spatial Analysis

**Important Notes:**

1. Master students can take up to **two** 3000/4000 courses from other departments (not URP) for graduate credits.
2. Students can balance their credits between Group 1 and Group 3 depending on their backgrounds.
3. Students can choose to complete the 36 credits within 12, 18, or 24 months.
4. Further flexibility in curriculum is allowed with the advisor’s approval.