MASTER OF URBAN SPATIAL ANALYTICS (MUSA)

MUSA 500 Spatial Statistics and Data Analysis
This hands-on course will provide an introduction to statistical methods and will serve as a prequel to ESE502. Topics covered will include exploratory univariate analysis, correlation and Chi-square analysis, t-tests and ANOVA. Non-parametric alternatives to the standard tests will be discussed. OLS regression, including assumptions and diagnostics, will be covered in detail. Heavy emphasis will be placed on the application of each method covered. The course will conclude with an introduction to spatial statistical methods and a brief overview of linear algebra and matrix notation for OLS and spatial regression. Students will learn to use JMP-IN, ArcGIS and GeoDa for data analysis.
Taught by: Eugene Brusilovskiy
Course usually offered in fall term
Also Offered As: CPLN 671
Activity: Lecture
1 Course Unit

MUSA 501 Introduction to Applied Statistics
This hands-on course will provide an introduction to statistical methods and will serve as a prequel to ESE502. Topics covered will include exploratory univariate analysis, correlation and Chi-square analysis, t-tests and ANOVA. Non-parametric alternatives to the standard tests will be discussed. OLS regression, including assumptions and diagnostics, will be covered in detail. Heavy emphasis will be placed on the application of each method covered. The course will conclude with an introduction to spatial statistical methods and a brief overview of linear algebra and matrix notation for OLS and spatial regression. Students will learn to use JMP-IN, ArcGIS and GeoDa for data analysis.
Taught by: Eugene Brusilovskiy
Course usually offered in fall term
Also Offered As: CPLN 671
Activity: Lecture
1 Course Unit

MUSA 502 Web Based Gis
Course usually offered in spring term
Activity: Lecture
1 Course Unit

MUSA 503 Modeling Geographical Objects
This course offers a broad and practical introduction to the acquisition, storage, retrieval, maintenance, use, and presentation of digital cartographic data with vector-oriented (i.e. drawing based) geographic information systems (GIS) for a variety of environmental science, planning, and management applications. Previous experience in GIS is not required.
Taught by: Tomlin or Hillier
Course usually offered in fall term
Also Offered As: CPLN 503
Activity: Lecture
1 Course Unit

MUSA 504 Business and Crime Geographics
In this hands-on course, students will learn how to use ESRI Business Analyst software and data to undertake real estate and social service market studies, business location studies, and consumer expenditure profiles. New this year, the course will also explore techniques and software for tracking and forecasting crime; and deploying police resources.
Taught by: Amos
Course usually offered in spring term
Prerequisites: Prior experience with ArcGIS.
Activity: Seminar
1 Course Unit

MUSA 505 Web-based Mapping
This hands-on course will teach students how to develop and implement web-and internet-based mapping tools and applications using ESRI’s ArcGIS Server and ArcGIS Online products as well as the GoogleMaps Applications Programming Interface (API). Students will learn how to use web-based tools to build spatial databases, analyze and display spatial data at multiple scales, mix web-based vector and raster data with image data, conduct spatial analysis and develop urban and environmental planning applications.
Taught by: Landis and Dailey
Course usually offered in spring term
Prerequisite: CPLN 670 / LARP 743
Activity: Laboratory
1 Course Unit

MUSA 506 Business and Crime Geographics
Course usually offered in spring term
Activity: Lecture
1 Course Unit

MUSA 507 Spatial Analysis for Urban and Environmental Planning
This course builds on prior knowledge of GIS and basic statistics to help students to develop GIS and spatial analysis applications for use in urban and environmental planning and management. Each weekly session will focus on a particular analytical approach (e.g., buffering, geo-processing, map algebra, network analysis) as applied to a particular urban or environmental planning tasks (e.g., identification of development opportunities, prioritizing conservation lands, urban growth modeling, housing price modeling). The format of the class includes weekly lectures/in-class demos; and weekly homework assignments. The course will make extensive use of ArcGIS and associate Extensions, especially Spatial Analyst, Network Analyst, and Business Analyst. One-year student versions of ArcGIS and ArcGIS extensions will be available free of charge at the City Planning Office. ArcGIS runs best on Windows machines; those with Macs will need to install a Windows emulator.
Taught by: Steif
Course usually offered in fall term
Also Offered As: CPLN 590
Prerequisite: MUSA 501 or CPLN 503 or equivalent
Activity: Lecture
1 Course Unit
MUSA 610 Javascript Programming for Planning Applications
This course will introduce city planning, MUSA and design graduate students to Java and Javascript. Students will learn the logic and syntax of the Java programming language for use in simple web applications (Weeks 1 to 7); as well as how to program database and map-oriented web and desktop applications using Javascript (Weeks 8 to 14). The "hands-on" uses of Java and Javascript in urban planning applications will be emphasized. Students will hone their programming and applications development skills through a series of bi-weekly assignments.
Taught by: Faculty
Course usually offered in spring term
Also Offered As: CPLN 690
Activity: Laboratory
1 Course Unit

MUSA 800 MUSA Capstone Project
One-term course offered either term
Also Offered As: CPLN 680
Activity: Seminar
1 Course Unit