Graduate Programs in Public Policy and Political Economy

Master of Science in Social Data Analytics and Research/Data Science Dual Degree

36 semester credit hours minimum

Faculty

FACG> epps-social-data-analytics-and-research-ms

Professors: Kurt J. Beron, Patrick T. Brandt, Euel W. Elliott, Daniel A. Griffith, Dohyeong Kim, Dong Li, Robert C. Lowry, Fang Qiu, Meghna Sabharwal, Donggyu Sul

Associate Professors: Simon M. Fass, Seth Giertz, Evgenia Gorina, Tomislav Kovandzic, Michael Tiefelsdorf

Associate Professor of Instruction: Karl K. Ho

Associate Professor of Practice: Timothy M. Bray

Mission

The Master of Science in Social Data Analytics and Research/Data Science Dual Degree is a joint international program between the University of Texas at Dallas and the National Chung Hsing University (NCHU) in Taiwan. The mission of the Master of Science (MS) in Social Data Analytics and Research (SDAR) is to equip individuals with rigorous multi-disciplinary proficiency in methods of social data production, collection, investigation and visualization using the big data approach for which there is a strong and increasing demand in the public, nonprofit, and private sectors, as well as in doctoral programs and other advanced research organizations.

The MS in SDAR degree program builds on faculty expertise in criminology, economics, geospatial information sciences, political science, public and nonprofit management, public policy, political economy and sociology to equip students with advanced data science training that is widely applicable in a variety of fields using big data and social data.

The MS in Social Data Analytics and Research endows students with a clear understanding of algorithmic modeling and collection of social big data using modern methods such as API and search-based web scrapping. It encourages reflection not only on core methods, theories and philosophical dimensions of social science practice, but also emerging data analytic methods such

as social media data collection, social network analysis, machine learning, spatiotemporal mapping, data mining and visualization, and big data management. It also fosters an appreciation of the role of social data analytic methods in helping to shaping public policy and action through participation in the evaluation of policies and programs in place as well as through the formulation of new ones based on the outcomes of data analysis.

Objectives

Taught by internationally recognized faculty at the University of Texas at Dallas, graduates of the Social Data Analytics and Research program develop advanced expertise in:

- big data analytic skills and capabilities in practice to sustain public, nonprofit, and private sector organizations as they address pressing societal issues on both local and global scales;
- Quantitative and qualitative data discovery, analysis and visualization;
- Data science and social science methodologies, theories as well as the ethics of data science practice in the areas of public policy and services.

Responding to an ever-increasing need across public and private sectors for social data analytics and research, the program equips students with rigorous and versatile multidisciplinary proficiencies in data collection, management and investigation. Students completing the degree will justify the importance of social big data analytics and research in helping to shape public policy and action and successfully build career paths in fields of employing social data.

Facilities

Students have full access to four state-of-the-art computer laboratories housed in the School of Economic, Political and Policy Sciences. Open for extended hours including evenings and weekends, each laboratory is equipped with full multimedia systems and contains 24 to 30 computers. All computers are network linked and hold full suites of leading survey, qualitative, spatial and statistical analysis software, including R, Python, JAVA, Qualtrics, NVivo, ArcGIS, ENVI, EViews, STATA, and SAS. The University's computer labs also provide desktop computers and UNIX workstations for student use throughout the campus. These include computing facilities in the Erik Jonsson School of Engineering and Computer Science and in the NASA Center for Excellence in Remote Sensing in the Department of Geosciences. Key data sources and reference materials are readily available online through the University library and the School's memberships in various professional organizations.

Admission Requirements

The University's general admission requirements are discussed on the Graduate Admission page.

The MS in Social Data Analytics and Research invites applications from students with a baccalaureate degree from an accredited higher education institution.

Every application receives an all-inclusive review. In general, entering students have all of the following:

- a GPA of 3.00 or higher (on a 4.0 scale)
- English Proficiency (per UTD requirements)
- a Statement of Purpose - a one-page essay outlining the applicant's background, education, and professional objectives
- Two Letters of Recommendation
- all Official Transcripts

Prerequisites

There are no specific prerequisites for admission to the MS in Social Data Analytics and Research. Several required courses, however, demand satisfactory prior completion of undergraduate college algebra and/or calculus.

Grading Policy

In order to qualify for graduation, students must maintain a minimum 3.0 grade point average in their degree program's core courses plus an aggregate grade point average of 3.0 for all graduate courses taken in the student's degree program at UT Dallas.

Degree Requirements

Option I: Students Starting at UT Dallas

First year at UT Dallas

18 semester credit hours

I. Required Core Courses: 15 semester credit hours

EPPS 6302 Methods of Data Collection and Production

PPPE 6310 Research Design I

EPPS 6313 Introduction to Quantitative Methods[1]

or EPPS 7313 Descriptive and Inferential Statistics[2]

EPPS 6316 Applied Regression[1]

or EPPS 7316 Regression and Multivariate Analysis[2]

EPPS 6356 Data Visualization

or GISC 6363 Internet Mapping and Information Processing

In special circumstances, students may substitute alternative equivalent courses in the core with prior approval of the Program Director or the Associate Dean of Graduate Studies.

II. Analytical Electives: 3 semester credit hours

EPPS 6317 (GISC 6317) Python Programming for Social Science

EPPS 6323 Knowledge Mining

EPPS 6326 (GISC 6323) Machine Learning for Socio-Economic and Geo-Referenced Data

EPPS 6346 Qualitative Research Orientation

EPPS 6352 Evaluation Research Methods in the Economic, Political and Policy Sciences

EPPS 6354 Information Management

EPPS 6355 Machine Learning for Social Text Data

EPPS 6356 Data Visualization

EPPS 7304 Cost-Benefit Analysis

EPPS 7318 Structural Equation and Multilevel (Hierarchical) Modeling

EPPS 7344 Categorical and Limited Dependent Variables

EPPS 7370 Time Series Analysis I

EPPS 7371 Time Series Analysis II

EPPS 7386 Survey Research

EPPS 7390 Bayesian Analysis for Social and Behavioral Sciences

EPPS 7V81 Special Topics in Social Science Research Methodology

ECON 6305 Mathematical Economics

ECON 6306 Applied Econometrics

GISC 6301 GIS Data Analysis Fundamentals

GISC 6321 Spatial Data Science

GISC 6363 Internet Mapping and Information Processing

GISC 6381 Geographic Information Systems Fundamentals

GISC 6384 Advanced Geographic Information Systems

GISC 7310 Advanced GIS Data Analysis

GISC 7360 GIS Pattern Analysis

GISC 7361 Spatial Statistics

Other analytical courses proposed by the student and approved by the Program Director or the Associate Dean of Graduate Studies are possible as long as student meets prerequisites or receives program approval.

Second year at National Chung Hsing University (NCHU) in Taiwan

18 semester credit hours

Machine Learning

Mathematic Analysis to Data Science

Big Data Analysis

Deep Learning

Applied Spatial Analysis

Master's Thesis

Option II: Students starting at National Chung Hsing University (NCHU) in Taiwan

First year at NCHU

18 semester credit hours

Machine Learning

Mathematic Analysis to Data Science

Big Data Analysis

Deep Learning

Applied Spatial Analysis

Master's Thesis

Second year at UT Dallas

18 semester credit hours

EPPS 6302 Methods of Data Collection and Production

PPPE 6310 Research Design I

EPPS 6313 Introduction to Quantitative Methods[1]

or EPPS 7313 Descriptive and Inferential Statistics[2]

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1. Prerequisite is College Algebra.

2. Prerequisite is Calculus.

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