Data Science in Society Concentration Courses

Students are required to take the common core course:

Introduction to Data Science	CAP 5768

Take two additional core courses:

Quantitative Methods	POS 6934
Introduction to Business Analytics and Big Data	ISM 6404 **or**
Data Mining and Machine Learning	CAP 6673 **or**
Biomedical Data and Informatics	BSC 6459

In addition, students need to take four concentration courses from the following:

Research Design in Political Science	POS 6736
Seminar in Political Behavior	POS 6208
Advanced Anthropological Research 2	ANG 6092
Quantitative Reasoning in Anthropological Research	ANG 6486
Quantitative Communication Research	COM 6316
Seminar in Advanced Research Methods	SYA 6305
Social Media and Web Analytics	ISM 6555
Social Networks and Big Data Analytics	CAP 6315

Lastly, students need to take three elective courses from the Table 1. Thesis option requires only one elective course and 6 thesis credits.

Table 1 (Elective courses)

Statistics and Data Applications

Biomedical Data and Informatics	BSC 6459
Applied Computational Topology	MTG 6328
Biostatistics	STA 5195
Statistical Computing	STA 6106

Survival Analysis	STA 6177
Biostatistics -Longitudinal Data Analysis	STA 6197
Applied Statistical Methods	STA 6207
Regression Analysis	STA 6208
Mathematical Statistics	STA 6326
Applied Time Series Analysis	STA 6857

Data Mining and Machine Learning

Introduction to Neural Networks	CAP 5615
Social Networks and Big Data Analytics	CAP 6315
Data Mining for Bioinformatics	CAP 6546
Machine Learning for Computer Vision	CAP 6618
Deep Learning	CAP 6619
Data Mining and Machine Learning	CAP 6673
Advanced Data Mining and Machine Learning	CAP 6778
Big Data Analytics with Hadoop	CAP 6780
Computational Advertising & Real Time Data Analytics	CAP 6807
Data Mining for Bioinformatics	CAP 6546
Information Retrieval	CAP 6776
Web Mining	CAP 6777
Computer Performance Modeling	CEN 6405
Data Mining and Predictive Analytics	ISM 6136

Data Security and Privacy

Computer Data Security	CIS 6370
Cyber Security: Measurement and Data Analysis	CTS 6319
Management of Information Assurance and Security	ISM 6328
Introduction to Cryptology and Information Security	MAD 5474
Cryptanalysis	MAD 6478
Quantum Mechanics/Computing 2	PHY 6646

Database and Cloud Computing

Multiprocessor Architecture	CDA 6132
New Directions in Database Systems	COP 6726
Theory and implementation of Database Systems	COP 6731
Cloud Computing	CEN 5086
Database Management Systems	ISM 6217

Social Data Science from Arts and Letters

Quantitative Methods	POS 6934
Research Design in Political Science	POS 6736
Advanced Anthropological Research 1	ANG 6090
Advanced Anthropological Research 2	ANG 6092
Quantitative Reasoning in Anthropological Research	ANG 6486
Quantitative Communication Research	COM 6316
Seminar in Advanced Research Methods	SYA 6305
Social Networks and Big Data Analytics	CAP 6315
Business Analytics	
Data Mining and Predictive Analytics	ISM 6136
Database Management Systems	ISM 6217
Introduction to Business Analytics and Big Data	ISM 6404
Advanced Business Analytics	ISM 6405
Social Media and Web Analytics	ISM 6555
Data Management and Analysis with Excel	ISM 6562
Data Analysis for Managers	QMB 6603
Scientific Applications and Modeling	
Astro-statistics and Machine Learning	AST 6765
Spatial Data Analysis	GIS 6306
Geospatial Databases	GIS 6112C
Web GIS	GIS 6061C
Hyperspectral Remote Sensing	GIS 6127
Photogrammetry and Aerial Photography Interpretation	GIS 6028C
LiDAR Remote Sensing and Applications	GIS 6032C
Quantum Information Processing	PHY 6938
Deep Learning and Data Analysis	PHY 6936
Computational Physics	PHZ 5156
Numerical Relativity	PHZ 7609