Computational Social Sciences (COMPSS)

Courses

Expand all course descriptions [+]Collapse all course descriptions [-]

COMPSS 201 Introduction to Computing 3 Units

Terms offered: Summer 2024 Second 6 Week Session
The Master of Computational Social Science program requires students to be proficient in the basic computing skills required for computational social science — this class aims to bring all entering students up to the required level of proficiency. It covers the process of setting up a computing environment for data science tasks, usage of Python for scientific programming, the ecosystem of common Python packages for data science tasks, accessing data from different types of files, databases, and web scraping, APIs, and computing on remote systems.
Introduction to Computing: Read More [+]

Objectives & Outcomes

Student Learning Outcomes: Design the processing of computing tasks for distributed and remote systems
Determine which Python packages are appropriate for analyzing a given data set in tabular, image, textual, structured, geographic or network format
Recognize the applicability and make use of techniques for extracting, scraping and crawling web data
Set-up a computing environment appropriate for conducting data science analyses using Python and the ecosystem of Python data science packages
Transform data from various sources into a form appropriate for analysis and training machine learning models
Write modular, performance and idiomatic Python code for data science tasks

Hours & Format

Summer: 6 weeks - 6-9 hours of lecture per week

Additional Details

Subject/Course Level: Computational Social Sciences/Graduate

Grading: Letter grade.

Introduction to Computing: Read Less [-]

COMPSS 202 Introduction to Applied Statistics 3 Units

Terms offered: Summer 2024 Second 6 Week Session
Statistical analysis is the backbone of applied scientific thought, and it also features prominently in business and policy, both historically and today. This course aims to help bring all entering MaCSS students up to the required level of proficiency in applied statistics to be successful in their coursework and future careers. Students will develop the statistical intuition and analytical techniques to achieve proficiency in programming in R with Jupyter notebooks and with RStudio, univariate statistics, measurement reliability and validity, sampling and inference, hypothesis testing, and linear regression.
Introduction to Applied Statistics: Read More [+]

Objectives & Outcomes

Student Learning Outcomes: Apply statistical analysis tools to answer the problem
Develop critical thinking skills
Identify relevant statistical information associated with a problem

Summarize quantitative and qualitative data accurately, responsibly, and effectively

Hours & Format

Summer: 6 weeks - 6-9 hours of lecture per week

Additional Details

Subject/Course Level: Computational Social Sciences/Graduate

Grading: Letter grade.

Introduction to Applied Statistics: Read Less [-]

COMPSS 211 Advanced Computing 3 Units

Terms offered: Fall 2024
Predictive models are a core tool for computational social scientists. This class aims to provide students with a practitioner's level of understanding of different models and techniques: which methods exist, how they relate to each other, the shortcomings they may have, and their most relevant applications. The focus is on methods which are used in practice in industry, which tend to be off-the-shelf rather than cutting edge, and are often chosen for reliability and ease of use rather than performance.
Advanced Computing: Read More [+]

Rules & Requirements

Prerequisites: COMPSS 201 or passing the computing waiver exam

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Computational Social Sciences/Graduate

Grading: Letter grade.

Advanced Computing: Read Less [-]

COMPSS 212 Applied Statistics I 3 Units

Terms offered: Fall 2024

As social scientists we study human behavior and its consequences on others and the world around us - both physical (e.g. the environment) and non-physical (e.g. currency markets). In order to test hypotheses of interest, one needs to choose the right tool for the right problem in order to come up with a valid answer to the question(s) one is asking. The goal of this course is to get students to: identify a problem or research question of interest, formulate a testable hypothesis, characterize the data generating process, chose the correct statistic to test their hypothesis, carefully characterize the data to conduct their test, conduct their test using software, correctly interpret test results, and write up or present their findings.

Applied Statistics I: Read More [+]

Rules & Requirements

Prerequisites: COMPSS 201 and COMPSS 202

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Computational Social Sciences/Graduate

Grading: Letter grade.

Applied Statistics I: Read Less [-]

COMPSS 213 Data, Ethics and Society 3 Units

Terms offered: Fall 2024

If knowledge is power, then what is data? In this course, we will examine the power that lies within data and learn to recognize and manage the many ways data shape and are shaped by power relations in organizations and more broadly in society. As someone using data in applied settings, you will play an important role in determining how data are used and how the risks and benefits of analysis are balanced within organizations. We will learn from approaches taken by scholars, data science practitioners, and regulators, and we will devise our own ways to answer these questions.

Data, Ethics and Society: Read More [+]

Objectives & Outcomes

Student Learning Outcomes: Anticipate or identify ethical tensions related to their analyses

Be recognized as data science professionals with high levels of integrity and intellectual rigor

Clearly communicate the ethical tensions present when designing research questions, protocols, and analysis

Make well-reasoned and actionable recommendations about how to make necessary trade-offs, and how to minimize the risks associated with recommendations

Rules & Requirements

Prerequisites: COMPSS 201, COMPSS 202

Hours & Format

Fall and/or spring: 15 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Computational Social Sciences/Graduate

Grading: Letter grade.

Data, Ethics and Society: Read Less [-]

COMPSS 214A Computational Social Science 1A 1.5 Unit

Terms offered: Fall 2024

This course will cover issues that often arise in analyzing data about larger aggregates, primarily regions or countries, companies, and government agencies. How do these different aggregates interact in market and non-market spaces? How do resources (financial, network), culture (norms, values, expectations, symbols), and power and politics (formal authority, informal power) affect such interactions?

Computational Social Science 1A: Read More [+]

Rules & Requirements

Prerequisites: COMPSS 201, COMPSS 202

Hours & Format

Fall and/or spring: 7 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Computational Social Sciences/Graduate

Grading: Letter grade.

Computational Social Science 1A: Read Less [-]

COMPSS 214B Computational Soc Sci 1B 1.5 Unit

Terms offered: Fall 2024

This course will cover concepts and tools needed to understand how individuals, households, and other small groups behave and interact. Specific applications include when and how people vote, what people choose to buy and at what price, and how they interact in various social networks. It will pay special attention to how such behavior varies depending on gender, race, education, and income. And it will introduce students to interpersonal networks: how they arise and evolve, how they are structured, and what their effects are on individual and group behavior.

Computational Soc Sci 1B: Read More [+]

Rules & Requirements

Prerequisites: COMPSS 201, COMPSS 202

Hours & Format

Fall and/or spring: 7 weeks - 3 hours of lecture per week

Additional Details

Subject/Course Level: Computational Social Sciences/Graduate

Grading: Letter grade.

Computational Soc Sci 1B: Read Less [-]

COMPSS 215 Career Development I 2 Units

Terms offered: Fall 2024

This course is designed to provide students with the tools to strategically plan their careers at the crossroads of data science and social science. Through a blend of self-discovery, career exploration, and targeted skill enhancement, students will emerge with a clear, strategic plan for their professional future. This course will involve a blend of self-discovery, career exploration, and skill development. The course is structured to help students understand their interests, values, and skills, and how these align with various career paths.

Career Development I: Read More [+]

Rules & Requirements

Prerequisites: COMPSS 201, COMPSS 202

Hours & Format

Fall and/or spring: 9 weeks - 2 hours of lecture per week

Additional Details

Subject/Course Level: Computational Social Sciences/Graduate

Grading: Letter grade.

Career Development I: Read Less [-]