This major will prepare students to understand, engage with, and innovatively solve evolving, complex multi-scale challenges such as climate change, transnational political violence, cybersecurity, social polarization, and inequality. This major will draw on and enhance Pitt's strength in both social science theory, broadly construed, as well as computer science, informatics, and networked systems. Students will gain an understanding of modern computational tools and resources, and social, political, and economic concepts from core social science classes. This integrated training will empower students to a) enhance scalable computational tools with useful domain knowledge from the social sciences as well as b) extend existing theories related to social challenges using digital data sources and computation on them. The ultimate goal of the computational social science major is to train students to build, compute, and improve theoretically informed models of social processes, bridging domain and technical expertise.

Required courses for the Computational Social Science major

The Computational Social Science major requires the completion of 52 to 53 credits distributed as follows.

Mathematics course
MATH 0220 Analytic Geometry and Calculus 1

Foundations of Computational Social Science courses

Introduction to Computational Social Science
PS 0702 Introduction to Computational Social Science

Introduction to Social Science
Choose one of the following courses.
PS 0200 American Politics
PS 0300 Comparative Politics
PS 0500 International Relations

Introduction to Computational Approaches and Basic Tools
Choose one of the following courses.
CS 0010 Introduction to Computing for Engineers
CS 0011 Introduction to Computing for Scientists
CS 0012 Introduction to Computing for the Humanities

Intermediate Computational Approaches
CMPINF 0401 Intermediate Programming

Elective in Computational Approaches
Choose one of the following courses.
INFSCI 0410 Human Centered systems
INFSCI 0510 Data Analysis
INFSCI 0610 Networks and Information
INFSCI 1500 Database Management Concepts and Applications

Social Science Research Design course
PS 0700 Methods of Political Research

Modeling Social Interactions and Motivations course
Choose one of the following courses.
PS 1250 Strategy, Games, and Politics
PS 1514 Political Strategy in International Relations
PS 1710 Formal Political Analysis

Ethics, Security, and Privacy courses
Choose two of the following courses.
CMPINF 1205 Comparative Digital Privacies
CS 0590 Social Implications of Computing
INFSCI 1600 Security and Privacy
PS 1693 Political theory and the Future

Intermediate Techniques for Computational Social Science courses

Computational Skills courses
Choose two courses from the following list.
INFSCI 1440 Social Computing
INFSCI 1520 Visualization
INFSCI 1530 Data Mining
INFSCI 1550 Spatial Information
INFSCI 1620 Advanced Security and Privacy

Two Upper-level Social Science courses
Students will delve deeper into their domain specialization with two classes. One class should be within a domain theme (such as international relations), another substantive class can be outside that theme (such as in comparative politics).
American Politics: PS 1200-level
INFSCI 1700 Data Driven Communication
INFSCI 1710 Directed Research

INFSCI 1730 Independent Study
INFSCI 1740 Team-Based Capstone
PS 1782 Application in Computational Social Science

Grade requirements
A grade of C or better is required in each course that is to count toward the major. A minimum GPA of 2.0 in departmental courses is required for graduation.

Satisfactory/No Credit option

No course that counts toward the major can be taken on an S/NC basis without the approval of the advisor.

Writing (W) requirement

Students must complete at least one W-course in the major. CS 0590 meets this requirement when offered as a writing-intensive course.

Advising

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Checklist for the Computational Social Science major

Mathematics course

_____ MATH 0220 Analytic Geometry and Calculus 1

Foundations of Computational Social Science courses

Introduction to Computational Social ScienceIntmmm..0705ayh0.001aa 067 -Tcc28C   0.003 Tc -0.001 Tw 9 -0 0 95 9.96 -0 0 9.96 36 479