STATISTICS AND COMPUTATIONAL SOCIAL SCIENCE (PHD)

Applied Statistics, Social Science, and Humanities Department (https://steinhardt.nyu.edu/departments/applied-statistics-social-science-and-humanities/)

NYSED: 43165 **HEGIS:** 1702.00 **CIP:** 27.0601

Program Description

This interdisciplinary doctoral program combines statistical, computational, and social science theory and practice to address problems of social importance in public health, education, criminal justice, and other domains. Graduates are prepared for academic careers, as well as research positions in nonprofit organizations, government agencies, and industry.

Students complete coursework in the broad areas of statistics, computational methods, and disciplines such as sociology, economics, psychology, and education and work closely with their faculty advisor to develop their own research agenda, while learning from and collaborating with researchers in applied statistics and others across the university.

Students complete a dissertation of original research that unites technical methodology with substantive knowledge to further an understanding of important social science questions.

Admissions

Admission to graduate programs in the Steinhardt School of Culture, Education, and Human Development requires the following minimum components:

- Résumé/CV
- Statement of Purpose
- Letters of Recommendation
- Transcripts
- Proficiency in English

See NYU Steinhardt's Graduate Admissions website (https://steinhardt.nyu.edu/admissions/how-apply/graduate-students/) for additional information on school-wide admission. Some programs may require additional components for admissions.

See How to Apply (https://steinhardt.nyu.edu/degree/phd-statistics-and-computational-social-science/how-apply/) for admissions requirements and instructions specific to this program.

Program Requirements

To satisfy the requirements of the doctoral degree in Statistics and Computational Social Science, students will complete 36-48 credits of coursework, pass comprehensive exams, engage in research activities, and write and defend a dissertation. If a students enters the doctoral program with a graduate degree, they may be eligible for advanced standing and can waive up to 12 credits of coursework.

Quantitative research addressing societal issues increasingly relies on a combination of innovative statistical modeling, typically involving sophisticated computational methods, along with a deep understanding of social science, broadly conceived. To complete the requirements of the doctoral degree in Statistics and Computational Social Science, students will take two foundational courses, along with courses in statistics, computational methods, and the social sciences.

Course	Title	Credits
Required Courses		
Foundations		
APSTA-GE 2331	Data Science for Social Impact	3
APSTA-GE 2062	Ethics of Data Science	3
Statistics		
Select 15 credits, by advisement		15
Computational Methods		
Select 15 credits, by advisement		15
Social Sciences		
Select 12 credits, by advisement		12
Total Credits		**48**

Additional Program Requirements

Comprehensive Exams

You will take two written comprehensive examinations covering core areas of knowledge that underpin the application of statistics to research in the social sciences; it is expected that students pass both exams by the end of their second year in the program. The first exam will be a standard timed exam assessing knowledge of statistics (with specific topics including, e.g., causal inference, machine learning, probability, and inference) and computational methods (with specific topics including, e.g., optimization and analysis of algorithms). The second exam will take place over the course of a week, and will involve writing a hypothetical grant proposal outlining a research question, proposed data collection strategies, research design and analysis choices, and dissemination plans.

Qualifying Paper

To demonstrate depth of knowledge outside statistical and computational methodology, you will write a qualifying paper describing current knowledge and specific questions relevant to your "cognate discipline," that is, a sub-area within a social science or related field, and pertaining to the planned dissertation topic. This paper will be evaluated by at least one professor outside the core SCSS faculty who is an expert in the cognate discipline, and must be completed before the dissertation proposal stage.

Research Activities

In addition to formal coursework, you will also engage in a variety of research-related activities each semester, beginning with the first semester on campus:

- Regular meetings with a faculty advisor to discuss ongoing research projects. Doctoral students are also welcome to work with faculty outside of the department with the approval of their advisor.
- Implementing a research plan to contribute to ongoing research projects
- Regular attendance in research seminars hosted by NYU's PRIISM Center.
- Presentations of relevant literature, questions of interest, and ongoing research findings in research seminars to program faculty.

- Participation in a consulting project, such as a research-practice partnership, under the guidance of a faculty mentor.
- Preparation for comprehensive exams and qualifying paper.

Dissertation

The activities of research, coursework, seminars, comprehensive exams and the qualifying review paper will have exposed you to a wide range of faculty and their interests. By the third year in the program, you will have developed an independent research agenda that you can pursue with support from your advisor, and which will result in the completion of a dissertation.

The dissertation format for the Ph.D. in Statistics and Computational Social Science will follow a three-paper model, common in many social science disciplines, that codifies the interdisciplinary philosophy of this doctoral degree program. Each paper will address a different aspect of the same research topic — for example, one could be a review paper intended for the "cognate" discipline's audience, the second could be a methods paper, incorporating both statistical and computational elements, and intended for a more technical audience, and the third could be an applied paper that demonstrates the utility of the method to practitioners. Together, the three papers should change the way in which we understand the world in a manner that was unattainable without the mixture of disciplines and related techniques.

Committee

After completing comprehensive exams and the qualifying paper, you will choose three faculty members to serve on your dissertation committee, with one designated as committee chair. Given the interdisciplinary nature of the degree, at least one faculty member should represent the "cognate" discipline. Committee members will provide regular feedback on dissertations and dissertation proposals.

Dissertation Proposal

You will prepare, submit, and orally defend a manuscript research proposal, similar to a dissertation proposal.

Dissertation Defense

The manuscripts, taken together, must reflect a coherent and cohesive research line of inquiry and will be defended in a final oral defense for completion of the PhD. The presentation portion of the dissertation defense will be open to the public. By the date of the defense, at least one first-authored manuscript must be under review at a peer-reviewed journal.

Sample Plan of Study

Course	Title	Credits
1st Semester/Term		
APSTA-GE 2331	Data Science for Social Impact	3
APSTA-GE 2062	Ethics of Data Science	3
Applied Statistics Elective		3
	Credits	**9**
2nd Semester/Term		
Applied Statistics Elective		3
Computational Methods Elective		3
Social Science Elective		3
	Credits	**9**
3rd Semester/Term		
Applied Statistics Elective		3
Computational Methods Elective		3
Social Science Elective		3
	Credits	**9**
4th Semester/Term		
Applied Statistics Elective		3
Computational Methods Elective		3
Social Science Elective		3
	Credits	**9**
5th Semester/Term		
Computational Methods Electives		6
Applied Statistics Elective		3
	Credits	**9**
6th Semester/Term		
Social Science Elective		3
	Credits	**3**
	Total Credits	**48**

Learning Outcomes

Upon successful completion of the program, students will achieve the following:

1. **Mastery:** Demonstrate mastery in critical areas of statistics, computer science, and social science (student's "cognate" field).
2. **Integration:** Demonstrate expertise in the integration of methods, visualization, and substantive theory.
3. **Application:** Demonstrate the ability to design studies, collect data, and disseminate results in socially responsible ways.
4. **Modeling:** Use statistical modeling and machine learning techniques to inform applied research in the social sciences.
5. **Communication:** Communicate clearly and effectively in writing and orally to scholarly and lay audiences.

Policies

Steinhardt Academic Policies

Additional academic policies can be found the Steinhardt academic policies page (https://bulletins.nyu.edu/graduate/culture-education-human-development/academic-policies/).

NYU Policies

University-wide policies can be found on the New York University Policy pages (https://bulletins.nyu.edu/nyu/policies/).