Stanford Sociology students are positioned to be lifelong contributors to and users of advanced methods and to make immediate contributions to contemporary social science. Stanford methods training pursues two goals: to build a strong foundation in the logic of quantitative and qualitative analysis, and to introduce students to the most important cutting-edge methods and statistics.

Our faculty, many of whom are at the forefront of recent methodological developments, deliver cutting-edge classroom training and to collaborate with graduate students in methodologically innovative projects. Our faculty are developing new approaches to causal inference; analyzing and building innovative types of administrative and “big data”; carrying out path breaking field, survey, and laboratory experiments; analyzing new types of social media; and conducting qualitative analyses that creatively break the usual conventions.

BUILDING THE FOUNDATION

The first year of graduate study builds the foundation for later training primarily through a required three-course sequence that includes an introduction to the logic of statistical analysis (SOCIOLOGY 381), the logic of general linear models (SOCIOLOGY 382), and the logic of discrete-outcome and event history models (SOCIOLOGY 383). This sequence provides a deep foundation that allows students to (a) to understand the logic behind the latest approaches; (b) to build a deeper understanding of data analysis that enables them to exploit new methodological developments throughout their careers; and (c) to develop the instincts and capacity to advance new methodological approaches of their own.

INTRODUCTION TO THE CUTTING-EDGE DEVELOPMENTS

The second part of our methods and statistics training is to introduce students to the profusion of new methodological approaches and to position them to exploit and advance them. We introduce students to new statistical and methodological developments in five key areas via an intensive summer course (SOCIOLOGY 384) taken after the first year of graduate work. The content of SOCIOLOGY 384, which is offered every other year, will change over time as new models, methods, and statistical approaches emerge. Additionally, there are a range of courses throughout the University through which students can build methodological expertise:

Statistical Methods Toolkit - Classes that may be useful in acquainting students with additional tools or software. Sample classes:
* HIST 401A, GIS and Spatial History
* EDUC 401C, Data analysis using R
* CS 106A, Intro to Java
**Causal Modeling** - One of the key statistical revolutions of our time is the development of new statistical methods that, under certain conditions, can authentically mimic randomized controls and thus deliver estimates that are credibly interpreted as causal. Sample classes:

- SOC 351, Counterfactuals and Causal Inference in the Social Sciences
- EDUC 255, Experimental Design
- EDUC 255B, Causal Inference
- EDUC 255C, Causal Inference
- STATS 209, Statistical Methods for Causal Inference

**Big Data, Administrative Data, and Computational Social Science** - Just as causal models are becoming ever more powerful, so too are descriptive computational approaches (e.g., machine learning, data mining) that tease out the deep structure in administrative data, internet data, and other types of big data. Sample classes:

- SOC 329/MS&E 331, Computation Social Science
- POLISCI 452, Text as data

**Network Analysis** - With the emergence of social media, far richer types of network data have become available, which in turn has generated much more powerful analytic tools (e.g., simulations). Sample classes:

- SOC 369/Ed 316, Social Network Analysis
- ECON 291, Social and Economic Networks
- ANTHRO 360, Social Structure and Social Networks
- CS 224W, Network Analysis

**Experimental Approaches** - Whereas experiments were once seen as exclusively a laboratory method, social scientists are increasingly exploiting natural experiments, survey experiments, and field experiments. Sample classes:

- SOC 304, Experimental Methods in the Social Sciences
- SOC 372, Theoretical Analysis and Design
- POLISCI 423, Surveys and Survey Experiments
- COMM 339, Cognitive Perspectives on Questionnaire Design

**New Developments in Qualitative Analysis and Mixed Methods** - The new qualitative analysis, which is grounded in efforts to understand social phenomena in situ, is increasingly a hybrid form that is combined with quantitative content analysis, representative samples, standardized protocols, and other methods. Sample classes:

- SOC 380, Qualitative Methods
- EDUC 327C, Qualitative Methods

It is impossible for any single course to become fully proficient in the models and methods within each of these new streams. Thus, the objective is to familiarize students with the range of methods, allowing them (a) to read the journals with enough facility to understand and evaluate research that uses these methods and statistics, (b) to make informed decisions about how their own research agendas might best be designed and pursued, and (c) to know enough about particular methods and statistics to decide whether a more intensive course would serve them well.
Strengthening skills

Although our sequence is distinctive in its commitment to building a strong foundation, we also strongly encourage our students to go beyond this required training to both deepen and broaden their skills. This can be achieved by taking courses in some of social science’s most important specialized modeling approaches.

*Key specialized modeling approaches:* The Department and University offers a host of courses that provide a deeper understanding of such key methods as the analysis of count data, econometric models, life tables, spatial analysis, and longitudinal, panel, and event history analysis. Sample classes:

* SOC 308, Social Demography  
* SOC 388, loglinear models  
* STATS 222, Longitudinal Data Analysis  
* OB 601, Organizational Ecology  
* ECON 270, 271, 272, Econometrics  
* MGTECON 603, 604

The Department’s methods sequence is designed for entering students with a wide range of backgrounds, but those who enter the program with strong documented expertise through coursework in linear algebra, probability theory, multivariate calculus, and real analysis, are allowed, with the approval of the Methods Committee, to substitute the three foundation courses (SOC 381, 382, 383) for a more math-intensive sequence in econometrics (such as MGTECON 603, 604).