NETS 7341. Network Economics. 4 Hours.
Covers seminal works in the economics of information and networks, including Akerlof, Arrow, Spence, Stiglitz, and von Hayek. Proceeds through concepts of information, its value, and measurement; search and choice under uncertainty; signaling, screening, and how rational actors use information for private advantage; strategy-given network effects; two-sided (or multisided) network effects, organizational information processing, learning, and social networks; and other micro- and macroeconomic effects such as matching markets. Although primarily a theory course, it may be of interest to any student applying information economics and network economics in academic, commercial, or government policy contexts. Expects students to produce a major paper suitable for publication or inclusion in a thesis. Requires prior completion of graduate coursework in microeconomics and mathematics at the level of introductory calculus and statistics.

NETS 7345. The Practice of Interdisciplinary Scholarship. 4 Hours.
Seeks to improve students’ written, oral, and visual communication skills, with a special focus on the unique challenges of communicating across disciplinary boundaries. Focuses on all stages of the academic writing process, including preparing a manuscript, selecting an appropriate publication outlet, and navigating the peer-review process. Students practice other forms of scientific communication, including conference talks, posters, and presentations for lay audiences. Assignments are designed to cultivate the skills, wisdom, and expertise necessary to communicate independent, high-quality scholarship for a number of different audiences. Through a combination of regular writing, speaking, peer-review, and instructor feedback, offers students an opportunity to learn to be outstanding interdisciplinary scientific communicators. Designed for second-year doctoral students.

NETS 7350. Bayesian and Network Statistics. 4 Hours.
Introduces advanced quantitative methods including maximum likelihood, hierarchical models, sampling, and network modeling. Offers students an opportunity to learn to estimate and develop models from the probabilistic and Bayesian perspective and pursue their own research project, focusing on the methodological challenges. Reviews probability and examines maximum likelihood methods for estimating regression models with continuous and categorical dependent variables. Examines a variety of procedures for sampling from posterior distributions, including grid, quadratic, Gibbs, and Metropolis sampling. Applies these methods to hierarchical modeling and other simple probabilistic models, then takes a closer look at the statistical modeling of networks as it has been developed in the social sciences, beginning with the exponential random graph model (ERGM) and finishing with the temporal SIENA model.

NETS 7976. Directed Study. 1-4 Hours.
Offers independent work under the direction of a member of the program on a chosen topic. Course content depends on instructor. May be repeated without limit.

NETS 7983. Topics. 4 Hours.
Covers various topics in network science. May be repeated up to two times for up to 12 total credits.

NETS 8941. Network Science Literature Review Seminar. 2 Hours.
Critically evaluates recent articles in the academic literature surrounding topics and applied research in network science. May be repeated up to three times.

NETS 8984. Research. 1-4 Hours.
Offers advanced students an opportunity to work with an individual instructor on a topic related to current research. Instructor and student negotiate a written agreement as to what topic(s) are covered and what written or laboratory work forms the basis for the grade. Viewed as a lead-in to dissertation research. May be repeated without limit.

NETS 9990. Dissertation. 0 Hours.
Offers experimental and theoretical work for PhD candidates. Requires written dissertation and final oral exam. May be repeated once.

NETS 9996. Dissertation Continuation. 0 Hours.
Offers experimental and theoretical work for PhD candidates. Requires written dissertation and final oral exam. May be repeated without limit.