ECON 500: Quantitative Methods
4 credits (Term Offered: Fall)
A course designed for students in the MAE program. The use of mathematics enables economists to describe and solve complex problems that cannot be tackled effectively in any other way. A modern economist must know how to turn economic problems into mathematical problems, how to solve them, and how to interpret the results. The course will focus on general techniques of solving several important classes of mathematical problems frequently encountered in economics. In the first part of the course, we will learn the language of mathematics: how to manipulate mathematical objects such as sets, functions, graphs, derivatives, equations and matrices. The second part will describe the basic techniques of solving the systems of equations and finding the maxima of functions. The third part will introduce probability theory and elements of statistical inference.

ECON 501: Applied Microeconomic Theory
4 credits (Term Offered: Fall)
A course designed for students in the MAE program. Basic models in the principal areas of microeconomic theory are covered: consumer demand, production and costs, product markets, factor markets, allocative efficiency, and corrections for market failure. Most of the course is spent studying the use of these tools in the analysis of specific microeconomic policy problems. Application of theory to current policy problems is stressed, and a substantial amount of class time is devoted to exercises based on such problems.

ECON 502: Applied Macroeconomic Theory
4 credits (Term Offered: Winter)
A course designed for students in the MAE program. Approximately one third of the course is spent reviewing and elaborating on standard macro theory of the sort covered in an advanced undergraduate course. The remainder of the time is spent on applications of this theory to problems of stabilizing aggregate demand, unemployment and inflation, economic growth, and macroeconomics of open economies. Students will normally do a computer project involving hypothesis testing or model simulation.

ECON 503: Econometrics for Applied Economics I
4 credits (Term Offered: Fall)
Econ 503 is an accelerated introduction to mathematical statistics that requires complete fluency with advanced calculus. Statistics offers a set of tools for the rigorous analysis and interpretation of numerical data obtained through random samples. The purpose of the course is to provide students with a deep theoretical understanding of the foundations of statistical inference. Topics include probability theory, experimental and theoretical derivation of sampling distributions, hypothesis testing, and properties of estimators including maximum likelihood and method of moments.

ECON 504: Econometrics for Applied Economics II
4 credits (Term Offered: Winter)
This course is an introduction to econometric methods and their use in applied economic analysis. Most of the course focuses on multiple regression analysis, beginning with ordinary least squares estimation and then considering the implications and treatment of serial correlation, heteroskedasticity, specification error, and measurement error. The course also provides an introduction to simultaneous equations models and models for binary dependent variables. Prerequisite: ECON 503, Permission of the instructor.