Mathematical Economics

Goal
After successful completion of the course, the PhD student is expected to (i) be able to use a wide range of mathematical techniques and have a set of necessary analytical skills in order to solve typical economic problems, (ii) have an initial understanding of how to formalize and frame economic ideas into mathematical models, and (iii) be able to read, understand and assimilate mathematical literature in economics.

Content
This course provides an introduction to the mathematical methods and models frequently used in economics research. It provides rigorous treatment of the concepts and techniques required to follow the standard first-year theory sequence in microeconomics and macroeconomics in the economics PhD program. The topics covered include analysis in metric spaces, differential calculus, comparative statics, convexity, static optimization, dynamic systems, and dynamic optimization. Mathematical concepts studied in this course will be illustrated with applications in economics.

Prerequisites
Students enrolled in an economics PhD program. Other students may follow this course if they can demonstrate adequate proficiencies in economics and mathematics.

Target group
First year PhD students in economics.

Organization
Part-time course involving lectures, exercise sessions, and self-studies.

Literature
See separate list of literature.

Examination
Assignments or a written exam, or both.

Credits
7.5 credits.

Other information
This course is a part of the Swedish Graduate Program in Economics (SWEGPEC).