

## Prerequisites for the Master of Economics

### Mathematics:

Differentiation of elementary functions (polynomial, rational, log, exponential) in several variables and chain rule • Integration • Convexity, concavity of functions • Constrained optimization: Lagrangian and Kuhn-Tucker conditions • Matrices: adding, multiplying, inverse, transpose, rank, solving linear systems • Implicit function theorem • Homogeneous functions • Taylor series • Sequences • Limits of sequences and series • Elementary set theory

### Statistics:

Distribution theory (density, mass, distribution functions; joint, marginal, conditional distributions) • Expectation, variance, covariance • Normal, binomial, t, chi<sup>2</sup>, F distributions: linkages, use in testing • Law of Large Numbers • Central Limit Theorem • Bayes Rule • Linear regression: least-squares, standard errors, confidence intervals, hypothesis testing

### Microeconomics:

Introductory game theory: dominant strategies, elimination of dominated strategies, Nash equilibrium