UBC MBA Academic Preparation – list of suggested free online resources

Where to begin: Please review each section and complete those areas with which you are not currently comfortable. Most tutorials include quizzes and practice tests, so completing these is a good way to quickly review if you are comfortable with the content.

If you would like to track your learning progress you can sign up for a user account with Khan Academy, but this is not required.

Completion times: We have estimated the times to complete each section based on the length of videos and allocating time for the practice questions. It may take you a longer or shorter time than we have indicated, and after a few sections you will begin to get an idea of your speed compared to our estimates.

Disclaimer: These tutorials have not been vetted in-depth. They have been selected based on the concepts included and tutorial descriptions. Students are encouraged to explore the content and cover concepts with which they are unfamiliar. The aim is to ensure that you have foundational proficiency in these topics, but not all concepts may apply directly to course work.

All resources below are from Khan Academy, unless otherwise indicated.

If you have feedback about these academic prep materials, please send it to askmba@sauder.ubc.ca.

Economics

We will take for granted knowledge of basic algebraic manipulations, including simplifying single equations for the value of a variable in terms of other parameters and solving two equation, two-variable problems. We will also assume students are familiar with moving between algebraic and graphical representations of functions of two variables (most importantly, straight lines). Differential calculus will be used in some optimization problems, and students should be familiar with techniques of differentiation for polynomials and exponential functions, in particular. Parts of our course deal with situations of uncertainty, and for this reason it is helpful for students to be familiar with the basics of probability theory, and the concepts of expected value and variance, in particular.

Economics-specific concepts to know include the following: opportunity cost; marginal cost and marginal revenue; elasticity; demand curve; (industry) supply curve; Nash equilibrium.

Introduction to Economics
• Intro to Economics: Crash Course Econ #1 (13 mins)

Average costs (ATC, MC) and marginal revenue (MR)
- Marginal cost and average total cost (7 mins)
- Marginal revenue and marginal cost (6 mins)
- Marginal revenue below average total cost (6 mins)

Derivative introduction (approx. 3 hours 45 mins total)
- Introduction to differential calculus (35 mins)
- Derivative as slope of tangent line (15 mins)
- Derivative as instantaneous rate of change (20 mins)
- Secant lines (45 mins)
- Derivative as a limit (25 mins)
- Formal definition of derivative (20 mins)
- Differentiability (27 mins)
- Derivative as a function (25 mins)
- Review: Derivative basics (15 mins)

Basic differentiation (approx. 2 hours 15 mins total)
- Basic differentiation rules (40 mins)
- Power rule (23 mins)
- Polynomial functions differentiation (45 mins)
- Review: Basic differentiation (30 mins)

Product, quotient & chain rules (approx. 1 hour 35 mins total)
- Product rule (45 mins)
- Chain rule (50 mins)

Derivative applications (approx. 1 hour 40 mins total) (only section below)
- Optimization (1 hr 40 mins)

Game theory and Nash Equilibrium (approx. 17 mins total)
- Prisoner's dilemma and the Nash equilibrium (10 mins)
- More on Nash equilibrium (7 mins)