

Basics of Finance: Introductory Remarks

The course introduces some basic concepts in finance on a graduate level.

For the master's program in Banking and Finance this lecture together with the lecture *Decisions under Uncertainty* form the introductory phase of the program. It is the introductory course of the minor Banking and Finance within the master's programs in (International) Business Administration and in Business Analytics.

There are some relations between the two courses *Basics of Finance* and *Decisions under Uncertainty*. Therefore, for students who are not familiar with the concept of expected utility and do not take one of the courses, *Decisions under Uncertainty* or *Foundations of Business Decision-Making* (offered within the master's program in Business Analytics), I recommend to take the lecture VO Decision and Game Theory (Entscheidungs- und Spieltheorie) offered within the introductory phase of the master's program in Business Administration.

Finance is an outgrowth of the field of economics. The tools used in financial decision-making, however, draw from many areas outside of economics: financial accounting, mathematics, probability theory, statistical theory, and psychology. According to Peterson Drake and Fabozzi (2010),¹ finance is

- analytical, using statistics, probability, and mathematics to solve problems.
- based on economic principles.
- uses accounting information as inputs to decision-making.
- global in perspective.
- the study of how to raise money and invest it productively.

If you haven't taken any course in finance before you may take a look at introductory notes from a former bachelor's course of mine available in Moodle: [introductory notes.pdf](#).

I also recommend to read a chapter on the time value of money and the net present value rule in a standard finance textbook. An online textbook on a basic level is

I. Welch, Corporate Finance (4th ed), 2017, <https://book.ivo-welch.info/read/>.

A more advanced book which also contains basic principles and which is also used in the courses of Corporate Finance is

J. Berk, P. DeMarzo, Corporate Finance (4th ed), Pearson Education, Boston, 2017.

¹P. Peterson Drake and F. J. Fabozzi, *The Basics of Finance – An Introduction to Financial Markets, Business Finance, and Portfolio Management*, The Frank J. Fabozzi series, John Wiley & Sons, Inc., Hoboken, New Jersey, 2010.

Since many concepts in finance are based on microeconomic approaches, knowledge in microeconomics is an advantage. Recommended reading is

H. R. Varian, Intermediate Microeconomics (9th ed.), W. W. Norton & Company, New York, 2014.

Much of the theory and practice of finance draws on quantitative tools and techniques of mathematics, statistics, and econometrics. Therefore, a sound background in mathematical and statistical tools is advantageous. In particular, we expect students to have a working knowledge of calculus (of functions of one and more variables) and to know the basics of vectors and matrices, probability and statistics.

A book that covers elementary mathematics, linear algebra, calculus, and statistics including finance applications (also spreadsheet applications), as well as mathematics of time value is

J. L. Teall and I. Hasan, Quantitative methods for finance and investments, Blackwell Publishing, 2002.

There exist many books on mathematics for economics and quantitative methods in finance and many websites giving an introduction to mathematical concepts. I recommend the following literature:

T. J. Watsham and K. Parramore, *Quantitative Methods in Finance*, International Thompson Business Press, 1997.

On basic concepts and linear algebra (vectors and matrices):

J. Leydold, *Bridging Course Mathematics (MSc Economics), Handouts*, Institute for Statistics and Mathematics, WU Wien, 2018.

http://statmath.wu.ac.at/courses/MEC_bridgingmath/download/handouts/

J. Leydold, *Mathematics 1 for Economics: Linear Spaces and Metric Concepts*, Institute for Statistics and Mathematics, WU Wien, 2018.

http://statmath.wu.ac.at/courses/mvw_math1/download/Mathematics_1_oneside.pdf

On differential calculus:

J. Leydold, *Mathematics 2 for Economics: Analysis and Dynamic Optimization*, Institute for Statistics and Mathematics, WU Wien, 2018.

http://statmath.wu.ac.at/courses/mvw_math2/download/Mathematics_2_oneside.pdf

K. Binmore and J. Davies, *Calculus – Concepts and Methods*, Cambridge University Press, 2001.

A. C. Chiang and K. Wainwright, *Fundamental Methods of Mathematical Economics* (4th ed), McGraw Hill, 2005.

A good review on optimization problems is

D. Léonard and N. Van Long, *Optimal control theory and static optimization in economics*, Cambridge University Press, 1992, ch. 1 “Static optimization”.

On probability:

D. Ruppert, *Statistics and Finance - An Introduction*, Springer, New York, 2004, ch. 2.

J. R. Buchanan, *An Undergraduate Introduction to Financial Mathematics* (3rd ed), World Scientific Publishing Company, 2012.