Economic, Financial and Investment Decisions for Engineers

Code: MK5BERUM06XX17-EN

ECTS Credit Points: 6

Evaluation: mid-semester grade

Year, Semester: 1st spring semester

Its prerequisite(s): -

Further courses are built on it: Yes/No

Number of teaching hours/week (lecture + practice): 2+4

Topics:

This course is intended to introduce students to the main concepts and theories about economics, financial, investment analysis and business/corporate performance measurement so that students are able to make comparative analysis.

The course focuses on the theory and application of the following:

The time value of money. Calculating future value and present value. Compound interest and present value. Calculating the internal rate of return (IRR). Making investment

decision with the net present value rule. Profitability index. Equivalent annual cost. General economic and social environment, sustainable development, corporate social responsibility. Valuing bonds (duration, bond volatility). The value of common stocks. Investment – externalities. Options, option strategies. Project analysis. Economic and environmental performance indicators.

Literature:

Compulsory:

- Brealey, R. A. - Myers, S. C. – Allen, F (2014): Principles of Corporate Finances. 11th Edition, McGraw-Hill/Irwin, 2014. ISBN-13: 9780077151560.
- T. Kiss Judit (2016): Introduction to Corporate Financial Decisions for Engineers and Engineering Managers. Dupress, University of Debrecen. Accepted – ISBN: 978-963-318-583 4.

Recommended:

- Scott Besley - Eugene F. Brigham (2011): Principles of Finance. Cengage Learning, 2011 (South Western). ISBN: 1111527369, 9781111527365
- Correia, C. – Flynn, D. K. - Besley – Ulian, E. – Wormald, M. (2012): Financial Management. 6th edition. Juta and Company Ltd. ISBN: 0702171573, 9780702171574.
- E.R. Yescombe (2014): Principles of Project Finance second edition Yescombe ConsultingLtd. London 2014.
- Stefano Gatti (2013): Project Finance in Theory and Practice Designing, structuring and financing private and public projects ELSEVIER INC.

Schedule

1st week Registration week	
2nd week:	**3rd week:**
Lecture: Goals and governance of the firm; The investment trade-off, investment and financing decision. Shareholders, Stakeholders, Agency problems. Value chain and comparative analysis.	**Lecture:** Future value and present value calculation (continuous compounding, frequency of payment, annuity (ordinary and annuity due). Valuing Cash Flows in Several Periods.
Practice: Teamwork problems: Compound interest and frequency of payment.	**Practice:** Teamwork problems: Future value calculation I - Future value of annuity, compound interest.
4th week:	**5th week:**
Lecture: The present value of an investment opportunity, Net Present Value. The opportunity cost of capital. Multiple cash flows (expenditures – costs – revenues). Profitability index.	**Lecture:** Valuing annuities (Future and present value of an annuity). Types of annuities. The payback rule; The discounted payback rule. Shortcomings of payback period.

Practice: Teamwork problems: Future value calculation II – Expenditures and revenues. Present value of cash flows.	**Practice:** Teamwork problems: The relationship between future and present value of an annuity. Discounted payback period.
6th week: **Lecture:** Internal rate of return (IRR). IRR rule, shortcomings of internal rate of return. Comparative analysis of technical investments, case studies. Sensitivity analysis (inflation rate, technological change). **Practice:** Teamwork problems/computer related problems: IRR rule, shortcomings of internal rate of return.	**7th week:** **Lecture:** Choosing between short- and long-lived equipment. Investment with identical life-times and investments with different life-times. Equivalent annual cost and equivalent annual benefit. Inflation and the opportunity cost. Equivalent annual cash-flow and technological change. **Practice:** Teamwork problems: Equivalent annual cost and equivalent annual benefit. Inflation, technological change.
8th week: 1st drawing week	
9th week: **Lecture:** Mutually exclusive projects. Investment timing. Project analysis, case studies. **Practice:** Mid-term test I.	**10th week:** **Lecture:** Making investment decisions. Project Analysis. Corporate strategies and performance measurement. The role of human capital, and innovation. **Practice:** Teamwork problems: Mutually exclusive projects. Project Analysis.
11th week: **Lecture:** General economic and social environment, sustainable development, corporate social responsibility. Private, social and global costs. **Practice:** Teamwork problems: Case study analysis.	**12th week:** **Lecture:** Valuing Bonds. Types of Bonds. Perpetuities, growing perpetuities. Duration, bond volatility. Bond's yield to maturity. The relationship between coupon rate and interest rate. **Practice:** Teamwork problems: The theoretical value of bonds. Perpetuity and growing perpetuity.
13th week: **Lecture:** The value of Common Stocks. The determinants of stock prices. Return on equity - ROE. Net present value of growth opportunities. Expected dividends, dividend yield, price-earnings ratio, ROE, plowback ratio. **Practice:** Teamwork problems: The theoretical value of stock. Expected	**14th week:** **Lecture:** Options (Calls, puts, and Shares). Strike price. Position and profit diagrams. Put-call parity. Determinants of the option values. Buying call option, buying put options, selling call options, selling put options. **Practice:** Teamwork problems and computer related problems: Position and profit diagrams. Option strategies.

dividends, dividend yield, price-earnings ratio, ROE, plowback ratio	

15th week: 2nd drawing week

A, for a signature:

Participation at practice classes is compulsory. Students must attend practice classes and may not miss more than three occasions during the semester. In case a student does so, the subject will not be signed and the student must repeat the course. Students can't take part in any practice class with another group. Attendance at practice classes will be recorded by the practice leader. Being late is equivalent with an absence. In case of further absences, a medical certification needs to be presented. Missed practice classes must be made up for at a later date, being discussed with the tutor.

During the semester there are two tests: the mid-term test on the 7th week and the end-term test on the 15th week. Students must sit for the tests.

B, for a grade:

The course ends in **mid-semester grade** based on the average grade of the two tests.

The minimum requirement for the mid-term and end-term tests is 60%. Based on the score of the tests separately, the grade for the tests is given according to the following:

0-59 % = fail (1); 60-69 % = pass (2); 70-79 % = satisfactory (3); 80-89 % = good (4); 90-100 % = excellent (5)

If the score of any test is below 60, the student once can take a retake test covering the whole semester material.

An offered grade: It may be offered for the students if the average of the mid-term test, end-term tests and the teamwork is at least good (4). The offered grade is the average of them.