



The aim of the course is to give students a basic proficiency in production economic thinking, argumentation and analysis. Upon completing the course, the student masters the basic concepts and key dynamics of production as an economic activity, and is through these able to understand and evaluate business-opportunities, design and evaluate business-processes, and analyze the financial state of a business. Further, throughout the course, the student learns basic skills of engineering work, such as project planning, organizing and management.

TU-A1300

Introduction to Industrial Engineering and Management

Recap and preparation for midterm exam II
Tero Haahtela

Why do we have principles for accounting?

- **We need to know how the business performs**
 - Why – The long-term prospects of the company are interesting
 - How - Assumption of continuity and periodicity, accrual basis
 - Income statement
 - **We need to know who owns the business's assets**
 - Why – The capital structure of the company is interesting
 - How – Sincerity and prudence, continuity
 - Balance sheet
 - **We need to know how resilient the business is**
 - Why – The short-term prospects of the company are interesting
 - How – Cash basis
 - Cashflow statement
- ... and we want to compare businesses to each other and over time
- **Following standards like IFRS and GAAP ensure completeness, continuity and consistency**
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Accounting example

The Good company has the following opening balance sheet. During the accounting period, the good company produces 48 000 products, and sells 50 000 products, for a total of 3 500 000,00€. Good company buys materials for 1 800 000,00€, and pays 1 000 000,00€ in other expenses. The material cost amounts to 50% of the sales price. The company does not make any investments, and fixed assets depreciate according to plan by 5%. The company pays 5% interest on its loans. The company repays due loans and takes new (long-term) loans for 300 000,00€ at the end of the accounting period. The good company pays dividends to its shareholders for a total of 200 000,00€. At the end of the year there are accounts receivable worth 25 000,00€, accounts payable worth 55 000,00€, and there are due amortizations of 300 000,00€ in the following accounting period. Corporate tax is at 20%, and payments are excluding VAT.

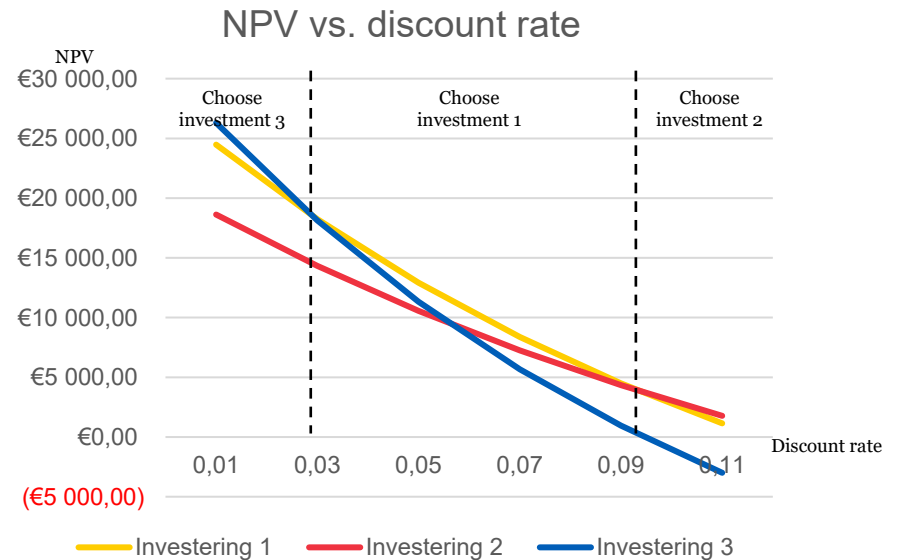
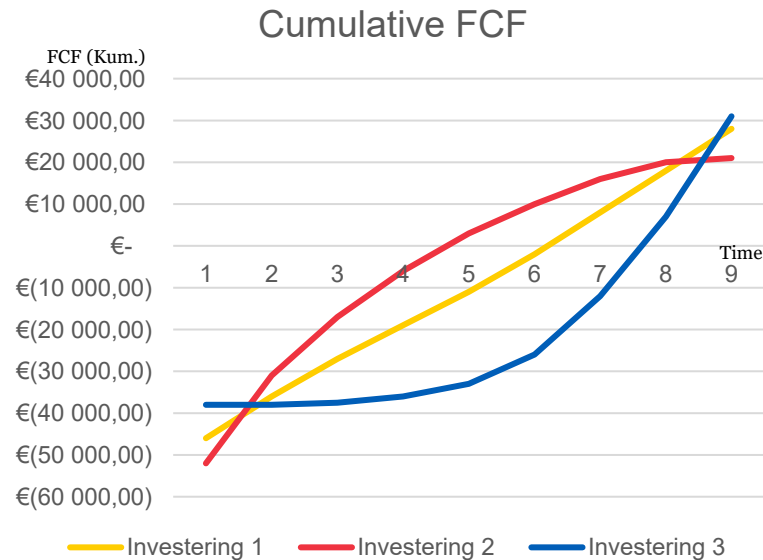
- What is the net result of the financial year?
- What is the net cashflow of the financial year?
- What is the change in working capital during the financial year?

Assets (k€)	
Fixed assets	6 000
Raw material inventory	56
Finished goods inventory	105
Accounts receivable	36
Cash and equities	58

Equity & liabilities (k€)	
Share capital	3185
Retained earnings	0
Profit/loss of the financial year	0
Long-term debt	2500
Short-term debt	500
Accounts payable	70

Investments are about time...

Let's look at three different investments...



Investment example

The Good company considers investing in a new production line, for “product2”. The initial investment is 2 500 000,00€ and the lifetime of the production line is 7 years. Product2 is expected to sell at 95€/piece, and its material costs are calculated at 55€/piece. Initial sales at year 1 are expected to be at 15000 pieces, after which they will grow by 20% each year the following 3 years. The final year, the sales will drop by 50% due to the planned introduction of a substituting product. The production line will generate additional expenses that have been calculated at 120 000,00€/year. The weighted average cost of capital in the Good company is 10%. Corporate tax is at 20%, and prices are excluding VAT.



- Calculate the NPV of the investment
- Which year will the investment have paid itself back?
- What is the internal rate of return of the investment?

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Mideterm exam II

When: Monday 5.12.2022, klo. 13:00-15:00
Where: MyCourses

(Exam: 14.12.2022, 13:00-18:00)

Midterm exam

- **The exam will be done in MyCourses 5.12.2022**
 - It opens at 13:00 and closes at 15:00.
- **You can use all the course materials, and any additional information sources that you feel are appropriate**
 - We have formulated the exam questions based on the assumption that you have all the information in the world at your fingertips.
- **The exam consists of two calculation questions**
 - One accounting question and one investment question, each with several sub-questions.
 - You will enter your answers (without calculations) directly in MyCourses.
 - You will do your calculations in an Excel template, provided in MyCourses.
 - The calculation-template is submitted to MyCourses, before the exam closes.
 - Reserve time for making the submission.
- **If you are entitled to additional time, contact Toni:**
 - toni.lauren@aalto.fi

Excel-template

- **An Excel template will be provided for the exam, in which you will fill in the values given in the task, and where you will do your calculations.**
 - In the Excel template, enter the information provided in the task in yellow cells.
 - Enter ONLY formulas and references to other cells in the blue cells.
 - Do not write any pure numeric values in any of the blue cells. Also, do not move or modify cells, or write outside the marked cells.
 - Write your answers in the green cells, using formulas, and referring to the other cells in the table.
- **In order to prevent plagiarism, the Excel has a built-in macro that asks you to enter your student number when you open it.**
 - The template stores the student number and remembers it the next time the same template is opened.
 - Allow Excel macros to run when prompted for the first time. Only Excel templates that have successfully saved a student number, will be evaluated without suspected plagiarism.
 - The macros will not install a virus on your machine or steal your identity, even if Excel warns you of this.
 - In case of technical problems, please contact course staff ASAP.

Excel-template

- **In addition to your answers, the filled Excel sheet (.xlsm) must also be returned in order to prevent plagiarism, and in order to be able to award you points for partially correct answers.**
 - You are given 5 extra minutes to return the sheet after the exercises have been closed.
 - You must save the sheet as Midterm2_studentnumber.xlsm, for example Midterm2_123456.xlsm.
 - In case you have been granted extra time, you have one extra hour to return the Excel sheet after the deadline.
- **In the assignment you are always told how the final answer should be rounded.**
 - Give the answers always without units.
 - If the answer is negative, submit it with the minus sign.
- **Recap**
 - **Yellow** calls are for the numbers given to you in the task
 - **Blue** cells are for calculations, only enter formulae and references
 - **Green** cells are for answers, only enter formulae and references

How should you prepare for the exam?

- **Good news! You should be quite well prepared.**
 - The exam questions are similar to the calculation exercises – if you’ve done the calculation exercises yourself, you should not need extensive preparation.
- **So, what kind of exam can I expect?**
 - The challenge in the questions will not be to find the right formulas to solve a problem that you have very limited information of, but rather to identify (and use) the relevant information in a situation where information is abundant.
 - Again, the main constraint is time. You will not have time to learn what you need to know during the exam. Also, practice makes you faster.
- **I still want tips on how I could prepare...**
 - Make sure that you understand the underlying principles of accounting, as this will make it easier to spot mistakes when something seems to be off in your calculations.
 - Also, again, mapping good additional sources of information beforehand is not a bad idea

How should you act during the exam?

- **Maximize your performance**
 - Be on time, submit on time
 - Be prepared.
- **Any problems and questions during the exam can be addressed to the exam supervisor(s) via email: tu-a1300@aalto.fi**
 - Any exam-related announcements and notifications will be delivered via email..
 - If sh*t hits the fan -> expect instructions via email.
- **This is not the first time we have this type of exam**
 - We try to prepare for all problems that we can realistically think of
 - If there are problems during the exam, be patient, we are on it...

Good luck with the midterm exam!

Perfection is achieved, not when there is nothing more to add, but when there is nothing left to take away.

Antoine de Saint-Exupéry

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