

**stuveco**



**DEN  
HOMO  
ECONOMICUS**

**2<sup>nd</sup> Master Business  
Engineering**

**Academic Year 2018-2019**



Dear Masters,

It's almost time again; the exams are coming.

That is why Stuveco, the council that brings together all student representatives from the Faculty of Economics and Business Administration, has made the 'Homo economicus'. This useful bundle will help you students to prepare for the exams in a more comfortable, efficient way.

In this bundle you will find some general info and tips for the exams, as well as exam questions from previous years. We try as much as we can to keep all questions in this bundle as up-to-date as possible. However, due to frequent changes of evaluation formulas and/or professors, we cannot guarantee that there won't be any dated or incomplete questions/information in here. Nevertheless your professor is obliged to inform you as a student in the beginning as well as somewhere at the end of the semester about his/her evaluation formula.



For Stuveco, this is a way to inform you and help you better prepare for the examination. This is only a tool to give you some extra information in the learning process, nothing more, nothing less.

In order to keep the 'Homo Economicus' up-to-date we need your help as well. Have you just gotten an exam? Please send us your questions by mail through **examenvragen@stuveco.be**. That makes you help future generation of students in studying for their exams. By the way, the students who send the most (quantitative) and best (qualitative) questions, will be rewarded with a gift voucher.

Good luck!

In the name of Stuveco,

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Florian Baetens  
Max Thomas  
Ewoud Cools  
Wannes Van Overstraeten  
Pieter Delie  
Mattias Van Look

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Ewoud Cools	Treasurer	penning.stuveco@ugent.be
Pieter Delie	Education	onderwijs.stuveco@ugent.be
Wannes Van Overstraeten	Communicatiion/secretary	communicatie.stuveco@ugent.be
Mattias Van Look	ICT	ict.stuveco@ugent.be

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HW:

EW/TEW/HIR: Maajke Biljet

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## SOMETHING'S MISSING?

When courses are missing, this is because either we did not receive any questions of that course so far or the Professor has recently changed and the questions are no longer representative.

But you can make a change!

Take some time after your exam to send in your questions via e-mail to [examenvragen@stuveco.be](mailto:examenvragen@stuveco.be). You can win a **gift voucher** of 15 euro. You can send in questions from first and second attempt, the most qualitative sendings per programme are rewarded.

## STUDELEN, WHAT'S THAT?



It's nearly that time of the year again, December. Yet, a lot of textbooks and syllabi are probably still untouched at your desk. But no panic: you are definitely not alone. But ... what now? How can you manage to summarise all those textbooks before exams start? Well, this is where Stuveco comes in.

No stress, because Stuveco has made the website <http://studelen.be/>. Based on the principle of **"sharing is caring"** you can share summaries and exam tips with your fellow students. So, please don't hesitate to upload those already made summaries and who knows, you might find a summary of a course you haven't got time to make one yet.

What is in for you? We'll be honest, not much, but eternal gratitude of your fellow students. Isn't that enough? "Teamwork makes the dreamwork", so please help yourself and others by making **studelen.be** a vast platform with qualitative summaries. This will help you in gaining some time and it could dramatically decrease workload!

Practically, how does it work? There are different folders for each study orientation as well as for each year of it. There you can find all uploaded summaries relevant for that specific year and study orientation. Uploading is very easy as well, simply click on the upload-link (just above all folders and beneath the Stuveco logo), you then add your file, enter your name, UGent e-mail address, filename and then you choose the correct folder to add it to. A few seconds later, you'll get an e-mail with a link in to activate the uploaded file.

Difficult?! Not at all. Do not hesitate any longer, start uploading!

We wish everyone the best of luck,

The Stuveco-team.

**1)** You receive horizontal and vertical constraints of the company OR-AS. You have to create a mathematical model for the strategic level (staffing) and tactical level (scheduling). A second question: the draw up of a strategic and tactical level often doesn't happen simultaneously. We strive for improvement. How could you improve this and draw up a new model. Explain.

**2)** You receive a theoretical explanation about a single machine scheduling (with processing time, due dates, release dates and no setup times) and the maximum tardiness objective. No calculations are needed.

a) Which priority rule can you use best? Give an example.

b) How can you improve this?

c) Most heuristics exist of intensification and diversification. Explain with three heuristics where trade-off between intensification and diversification is.

**3)** A linearization problem. You receive data and have to distract the constraints, objective function, decision variables and create a mathematical model and explain it as a consultant:

a) You receive data about the staffing of a company,

a. Employees work 4 of the 7 days in a week, they work consecutive and do constantly the same shift (choice between 3).

b. There are 60 employees.

b) You receive data about the scheduling of the company,

c. cost per shift/per skill type for week/weekend are given

d. number of employees of each type are given

e. units per week per type are given together with how much minimal has to be created

**4)** A question about a single machine model (with processing time, due dates, release dates, no setup times).

f. Which representation do you use and explain

g. Which priority rule do you use to minimize the maximum lateness

h. How can you improve this even further?

i. About what do you have to think when you want to evolve to a meta-heuristic?

**5)** Make it linear.

-  $y_1 \leq \min(x_1, x_2)$

-  $y_2 \geq \min(x_1, x_2)$

- minimize  $\text{abs}(x_1 - x_2)$



**1)**

- A.** Explain the bullwhip effect. How can you measure this effect with formulas? Give any necessary graphs to explain this effect.
- B.** Consider the case of centralized and decentralized information. What's the influence on the bullwhip effect in both cases? Illustrate with graphs/formulas if needed.
- C.** Flexibility is a SC strategy, how can firms implement flexibility (hint: chain)

**2)**

- A.** An exercise on complete aggregation. Calculate the total inventory costs of this policy.
- B.** Consider this same exercise, but with tailored aggregation. what are the total costs of this policy? Is there a difference with the previous policy? If so, how do you explain this (significant) difference in costs?

**3)**

- A.** Exercise on optimal capacity an airplane should reserve for the high-end segment.
- B.** The demand function of 2 market segments is given. Calculate the final price if the price is the same for both markets. What are the total profits for the company? Calculate the price if it's different for both market segments. What are the total profits now?
- C.** Formulate a model on how to find the optimal price with the given demand functions. The capacity is not fixed anymore and is a variable in this model. How do you implement this?

**4)**

- A.** Formulate a model with an objective function and given constraints.

# INNOVATION MANAGEMENT

Katrien Verleye (Katrien.Verleye@UGent.be)

IMPORTANT NOTE: This course has another professor in comparison of the time these questions are from. It is not yet known how the course will look like under this new professor. Some questions may not be relevant anymore. Please send us your exam questions via [examenvragen@stuveco.be](mailto:examenvragen@stuveco.be).

The exam exists out of 7 questions of which you can choose 5. Each question is 4 marks worth.

## 1) Guestspeaker Muscore

- A. Explain bootstrapping
- B. Thomas uses an "open source model". What is it and in what situations is it appropriate to use this kind of business model?

## 2) Guestspeaker Sasadoc

- A. What is the business model that Jonathan uses?
- B. What was the main challenge in his idea?
- C. What is the segment zero strategy and explain how this fits in this context.

## 3) Guestspeaker Bugs Labs

- A. How did their focus on the long tail impact their decision making process.
- B. Give an advantage and a disadvantage of using qualitative screening questions.
- C. How are bugs labs' project selecting choices influenced by its strategy of focusing on the long tail?

## 4) Question on chapter 10 : Organising for innovation

- A. A multinational company is active in different markets which are highly differentiated. What is the best strategy that this company can implement? Explain this strategy.

## 5) Question on chapter 3 : Types and Patterns of innovation

- A. What are the different types of innovations? Explain them and give an example of each innovation.

## 6) Question on explanation given in last sessions about innovation deployment

- A. A company that produces desks with a built in lift system (they can go up and down), would like to implement this concept into kitchen tables.

- => What kind of innovation is this and why :
  - Organic innovation
  - Radical innovation
  - Leverage innovation
  - Architectural innovation

- => Would this company make profits in the long run? Why (not)?

## 7) Question on Case Chapter 5: Timing of Entry - SixDegrees.com – Facebook

- A. How did MySpace improve upon Friendster and SixDegrees.com?
- B. Why was Facebook able to overtake MySpace?

8) If you want to target different local markets with their own differentiated needs, what strategy would you go for?

9) Linak is a producer of lift systems, which is active in the hospital bed and desk market. It wants to enter the kitchen market.

- a. What kind of innovation is this? + Explain why (definition)
  - i. Leveraged innovation
  - ii. Radical innovation
  - iii. Incremental innovation
  - iv. ...
- b. Will Linak be able to make profits in this market?

## FINANCING HIGH TECH ENTREPRENEURIAL COMPANIES

Prof. dr. Sophie Manigart (Sophie.manigart@ugent.be)

1) The valuation of a company with the Discounted Cashflow model often leads to a higher valuation than the one we encounter in actual VC deals, even when a high hurdle rate is applied.

=> Give 2 clear reasons that explain this difference. (theory question, no need to use any calculations)

2) What are the different types of crowdfunding? What are the drivers of the backers? (guestspeaker KBC)

3) The entrepreneurs of a company are really glad that everything is going well. In the A round they got \$1 mio from a Business Angel, which received 1mio shares in return. In the B round the company got \$5mio from a VC fund in exchange for 3mio shares. The entrepreneurs are glad that they could retain their 1mio shares. The company has now a total of 5mio shares.

a. What is the pre-money and the post money valuation in the A and the B round? Is the B round an up- or a down-round?

b. An exit is planned in 5 years. The entrepreneurs feel pretty good about themselves for remaining in control of a respectable portion of the company. However they did not fully realise the effects of the different types of equity. The VC has participating preferred shares and expects a 6% dividend return (accrued, not paid out annually). The BA owns convertible preferred shares and the entrepreneurs common shares.

=> How much return can the entrepreneurs expect? Draw up a pay-off table for different exit values of the company.

4) What other clauses would you negotiate as VC in this start-up? Clearly explain which clause you'd like to negotiate and why. (theory question, no calculations needed)

5) An entrepreneur has raised \$2 mio in an A round. The investor got 20% of the shares for his investment or 2 million shares. However the things didn't go as planned. A second round of investment was needed. In this B-round a new investor requires 30% of the shares for his

\$1 mio investment. Luckily the investor in the A-round negotiated a full anti-dilution ratchet. What is the capitalization table after the B-round?

- 1)** AE says that ICT should keep in mind close contact with mission, vision, strategy. What does this mean? How do they do it? Which are the techniques seen in class that can be used?
- 2)** What is the connection between the design-proces of GSDP and EA?
- 3)** Give some examples of the course about the blackbox-models and the whitebox-models.
- 4)** From the cascade of balanced scorecards could seem that people could directly link business strategy with information technology. Why is this false?
- 5)** What means 'holistic' in the context of COBIT 5?
- 6)** Explain: automation.
- 7)** Why does TOGAF better not model AS-IS models?
- 8)** How do business models help to align business and IT? How can a business model be used to evaluate a strategy?
- 9)** Can SWOT be used in ArchiMate? If yes give an example and what are the drawbacks? If no, explain why.
- 10)** Archimate, explain a slide.
- 11)** Is automation a necessity? Explain by using the perspective of SAM with IT strategy being the enabler.
- 12)** How does business/IT alignment get realised in the COBIT 5 framework?
- 13)** Information technology is seen as a strategic force in the company, but some critics say that IT is not a strategical aspect of business, but a critical one. Explain this contradiction
- 14)** During the presentation of Delaware they proposed a business process decomposition into various levels. Link these levels with various models and schemas seen during the course.
- 15)** Develop a goal model using the concepts of the Business Motivation Model and the constructs and symbols of i\* goal modeling about the example used in the paper 'Impact of Service Orientation at the Business Model' (= Rent a Car). Try to model as much detail as possible. Make assumptions where needed, but make sure they do not contradict the information in the example.
- 16)** How could Archimate support Delaware in their business process decomposition?
- 17)** Strategy can be derived from a SWOT-analysis. Could you represent it with Archimate? If yes, give an original example. If not, explain why and what the limitations are. Additional question: what is the limitation of Archimate.

**18)** How can various business models help to align Business with IT? How would you take care of performance measurement?  
 Additional question: Is it possible with DEMO?

**19)** In a fast changing environment, organizations should focus on operational excellence through automation. Explain this statement based on what Henderson and Venkatraman said: "One cannot and should not simply seek to identify and adopt the best available technology to restructure the organization or streamline the business processes without due consideration to the two alignment perspectives that have IT strategy as driver".

**20)** What does 'holistic' means in the context of COBIT 5?

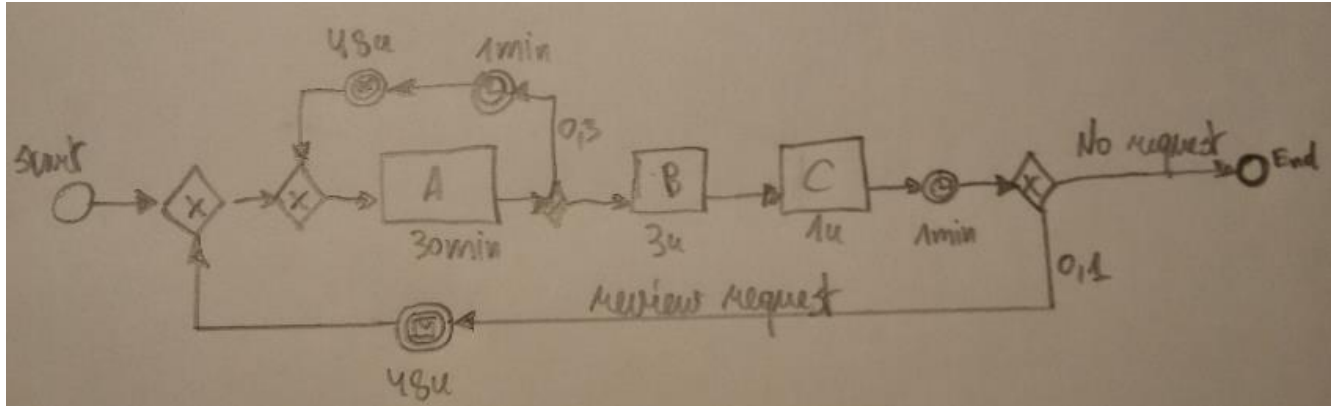
## BUSINESS PROCESS MANAGEMENT

Prof. dr. Frederik Gailly (frederik.gailly@ugent.be)

**1)** Explain process of process mining and use the payroll administration example of AE (guest speaker)

**2)** You receive a BPMN model of a loan application proces. It is expected that this process will be implemented. What kind of additional information do you need? (The professor expects you to explain BPMS and explain this by using the given process)

**3)** The following process model is given:



0.3 and 0.1 are the chances that rework needs to be done.

A: Calculate the CT.

B: The choice of the data-driven XOR-split ('Review request', last XOR gateway) is not a good idea in this case. Why? How would you change the model?

C: The company wants people only to ask the review request for one time. How would you change the model of subquestion B to implement this?

D: Calculate the CT in case the review request of subquestion C only is asked one time.

**4)** Explain process mining visually so the meaning and function of it are clear. Out of this graph people should also be able to see what process mining can be used for.

**5)** Make the footprint matrix for this process based on the given logs and then apply the alpha algorithm.

**6)** Consider the different phases of BPM. What phases were not included in BPR?

**7)**

Given: description of a loan request business process

Part A:

- What are the actors in this process?
- What value is created for the customer?
- What are appropriate performance measures for this process?

Part B: Create a model for this business process.

- 1) Describe three advantages of using BPMS during process execution. Explain using an example.

**9a)** Make a BPMN based on a process description.

**9b)** With which 4 performance measures can you measure this?

**9c)** Give 3 heuristics you would apply and their effect on the 4 measures of 9b.

**10)** Divide business analysis in categories based on the balanced scorecard.

## FINANCIAL RISK MANAGEMENT

Prof. Dr. Frank De Jonghe ([frank.dejonghe@ugent.be](mailto:frank.dejonghe@ugent.be))

**1)** Payoff profile of a combination of options (buy call and sell put) and what is the name of this calculations for interest rate risk management and for currency rate risk management

**2)** Use of an interest rate swap for a deposit, buy/sell, expected financial income expected and ex post of plain vanilla and for in arrears (same as example in class but for deposit instead of funding cost)

**3)** Cross currency rate swap: payers CCRS and you are an euro investor (same as example in class but payers CCRS instead of receivers CCRS and for euro investor instead of dollar investor)

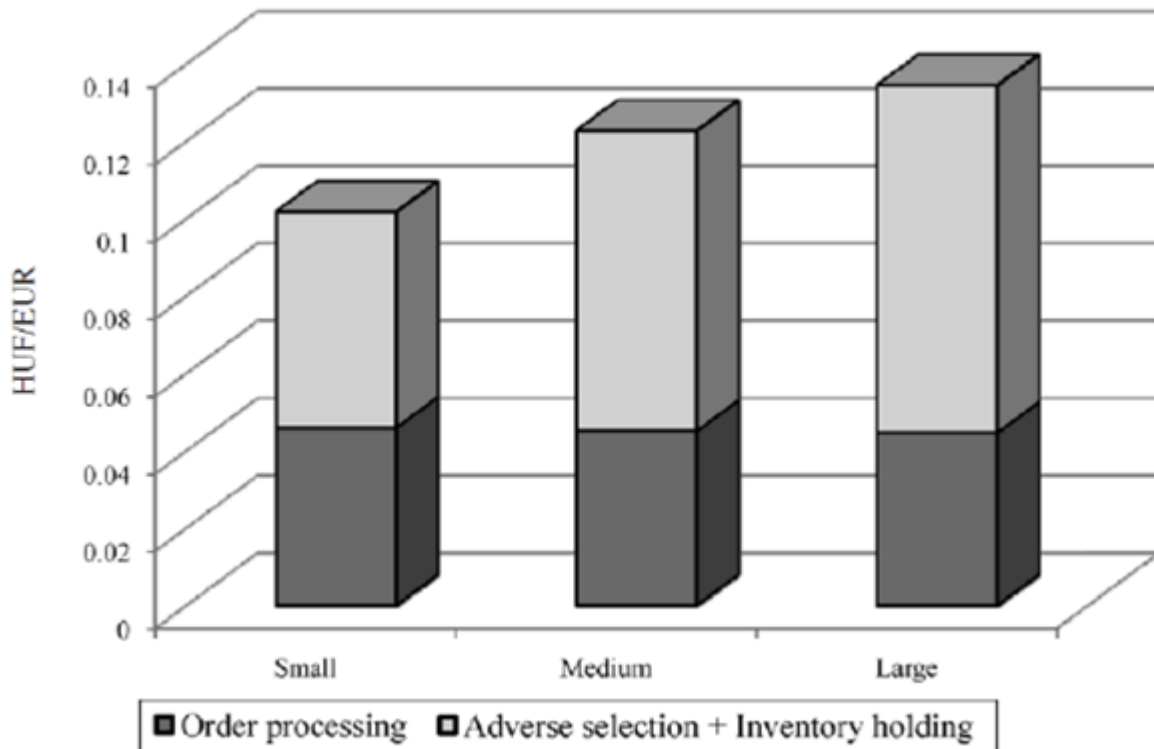
## Elective Courses

# ADVANCED INVESTMENT ANALYSIS

Prof. Dr. Michaël Frömmel (Michael.frommel@ugent.be)

The exam takes about 90 minutes.

- 1) Explain limits to arbitrage, what are the consequences?
- 2) Prospect theory
  - a. What is the prospect theory and what are the consequences?
  - b. What are the consequences of the prospect theory, described in the model by Huang and Stoll.
- 3) Bid-ask spread
  - a. Explain the components of the bid-ask spread.
  - b. In their research, Frömmel and Van Gyseghem investigate the components of the bid-ask spread. Use the explanation in question 3a to explain the findings in their research by using the following figure.



1. asset allocation. You get a table with the strategic asset allocation weights of 2 types of assets and a subsequent table with the long- term and short



- term returns. A.) Would you change the weights in this portfolio according to tactical allocation strategy? B.) what is the difference between strategic and tactical asset allocation?

2. what is prospect theory and its implications? List and explain at least 2 behavioral biases which can be explained by prospect theory.
3. what is the bid ask spread of the numerical example above? What are the components of the bid ask spread and explain them. Which of these components is the most related to the risk of a better informed counterparty?
4. what is a rational bubble? List and explain one method to testing for bubbles.
5. what are the differences between the strategies according to Moskowitz, Ooi and Pederson; and Jegadeesh and Titman? Which of these strategies challenge the efficient market hypothesis (I.e. Random walk hypothesis) the most?