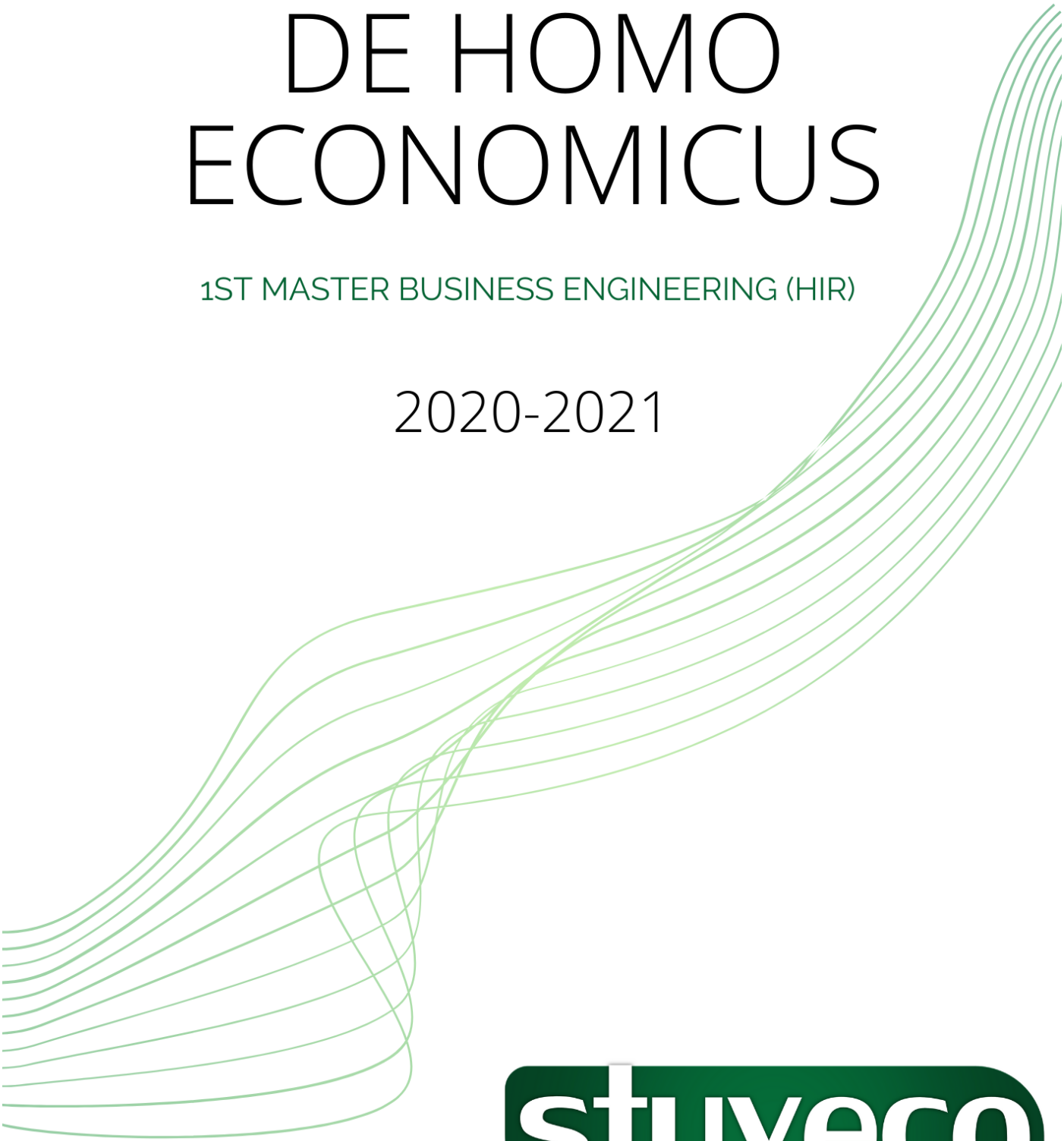
STUDENTENRAAD STUVECO PRESENTS

DE HOMO ECONOMICUS

1ST MASTER BUSINESS ENGINEERING (HIR)

2020-2021



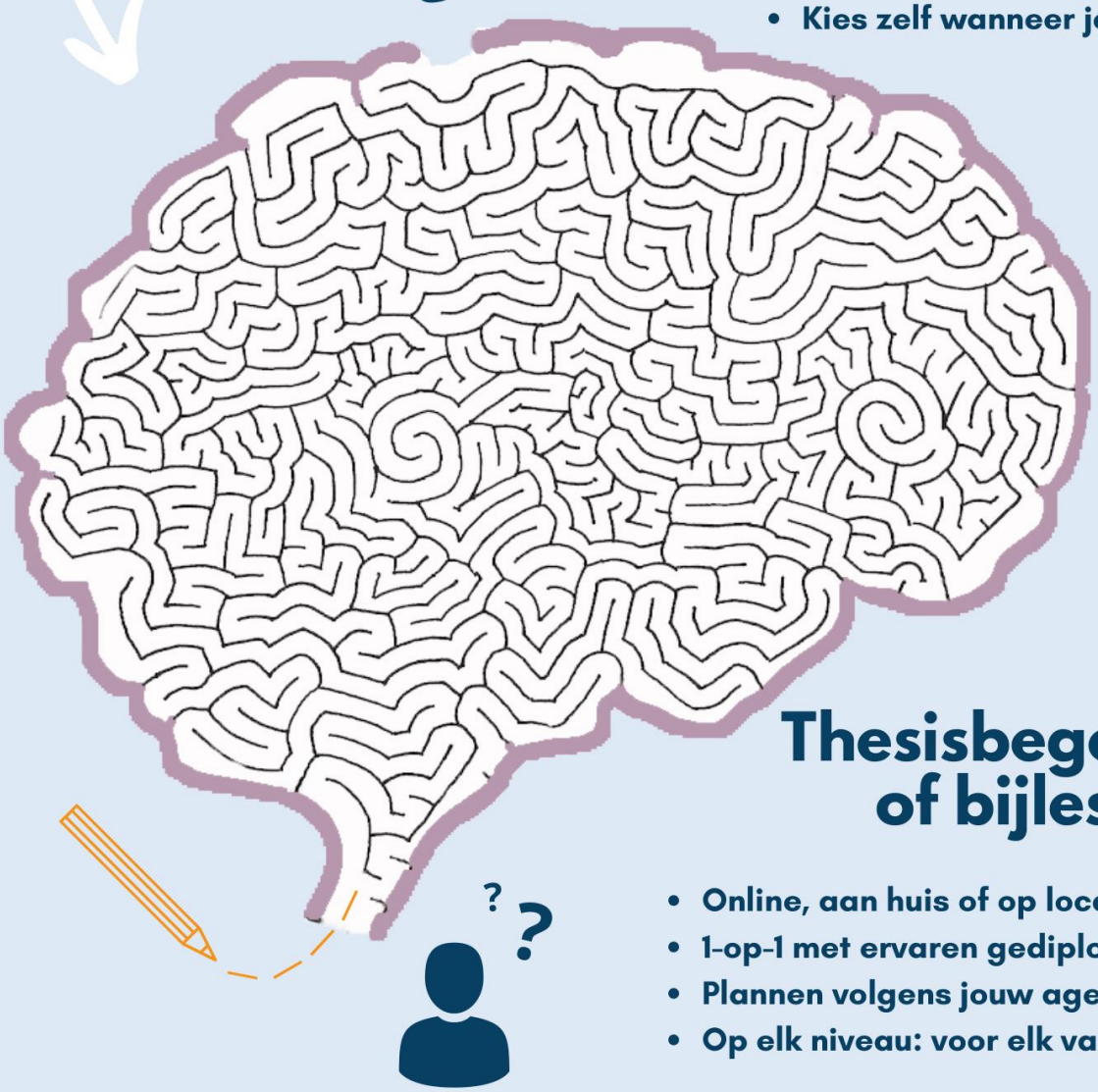
stuveco

STUDENTENRAAD FACULTEIT ECONOMIE EN BEDRIJFSKUNDE

Raak je nog door je leerstof?

BijlesHuis maakt je wegwijs!

Doe de test!



Bijles geven

- Middelbare scholieren helpen met economie of andere vakken
- Op locatie of coronaproof online
- Waardevolle aanvulling voor je CV
- Kies zelf wanneer je bijles geeft!

Thesisbegeleiding of bijles krijgen

- Online, aan huis of op locatie
- 1-op-1 met ervaren gediplomeerde docent
- Plannen volgens jouw agenda
- Op elk niveau: voor elk vak of je thesis

BijlesHuis

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CONTENT

INTRODUCTION

Dear 1st Master

To prepare you as good as possible for the exams, Stuveco, the student council of the Faculty of Economics and Business Administration, provides for you in this bundle exam questions from the past years. Together with this, we also provide general information about the course and tips to study.

We update the courses yearly to give you the correct information. However, we did not receive questions of all the courses which means that several courses may still include dated information about the course and exam questions. We will clearly mention this for every course. Nevertheless, the 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 method. You can also find information on the study guide of each course.

For every course, you can find the score distribution on oasis.ugent.be under this school year -> my courses ('mijn cursussen'). You can then click on a course and can select above 'score distribution' to see the average types of scores students get calculated over 5 years or less.

You can help to keep the Homo Economicus up-to-date by filling in the Google Document posted in your year group on Facebook after every exam. This way, you can help the students that come after you and in return, you get up-to-date exam questions for next year (and/or august) from preceding students. Fair deal, right?

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

If there are courses missing or if we give wrong information, please send an email to onderwijs.stuveco@UGent.be and we will gladly get back at you.

We wish everyone the best of luck with their exams!

In the name of Stuveco, your student council.

THE BOARD

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WHAT IS STUVECO

Stuveco is the student council of the Faculty of Economics and Business Administration of Ghent University. We provide the communication between the students and the faculty. Our main task is to represent the interests of the students. Our student representatives are members of different commissions and boards in which they, together with the professors and assistants, manage our faculty.

We manage the site www.stuveco.be in which we provide information about our Public Meetings and 'Studelen'.

PUBLIC MEETINGS

Every year, we organize 4 to 5 Public Meetings during which we discuss several topics with our members. We provide information about decisions made in boards and commissions as well as discussions about topics preceding these boards and commissions to make sure that everyone's voice is heard. After every meeting, a report is posted on Ufora and on our site.

Every student listed to the Faculty of Economics and Business Administration can attend these Public Meetings. These students can become members of several commissions in which they will present the voice of all students of our Faculty.

In May, we elect our new board for the next year. To vote, you have to attend at least 2 Public Meetings during the school year to be sure you know what the functions uphold.

STUDELEN

Studelen is an important part of our website. Here, we let students share summaries they made. Every student can upload and download these summaries FOR FREE. **The University of Ghent forbids trading summaries for money. Doing this can have severe consequences, it may even lead to suspension. Studelen is thus the only and best way to share and receive summaries.**

To upload or download summaries, you only have to make a free account on our website. When downloading summaries, do not forget to rate these so following students know which summaries are the best to learn courses.

SOCIAL MEDIA

Studentenraad Stuveco

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GENERAL COURSES (31 SP)

For the most recent information on the evaluation terms of the exam and on syllabi/books, click the link below, choose your specialization under 'Master's programmes' and click on a course to download the study sheet:
https://studiegids.ugent.be/2020/EN/FACULTY/F/

MANAGING SERVICE ORGANISATIONS 1ST SEM

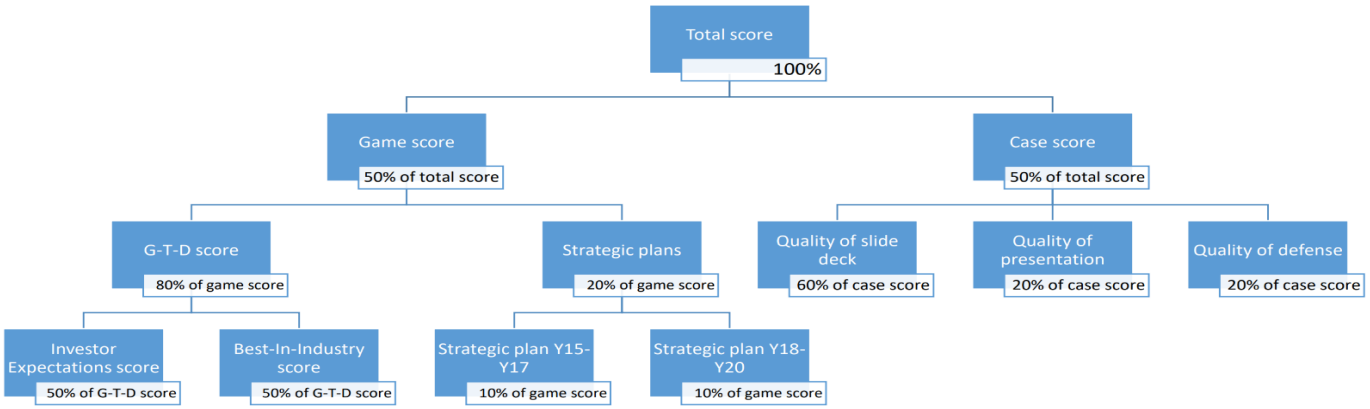
Professor Paul Gemmel – paul.gemmel@UGent.be
Assistant: kaat.depourcq@UGent.be

GENERAL

The evaluation of the course is based on permanent evaluation (50%), and a final evaluation (50%). The permanent evaluation is based on the performance of the group in the Servicesim integrating case (peer assessment!) (30%) and on the individual performance in analyzing case studies in the classroom (10%) and online (10%). The final exam is a written exam. In academic year 2019-2020, there were no multiple choice questions on the exam. Only applications on cases and a new case-study.

The open questions on the exam will be based on the application of the theory to case studies and the service integrating case. One open question will be related to one of the cases discussed in the classroom. A second open question will be related to a new short case study. It is allowed to bring the case studies to the written exam under the condition that you did not write on the cases. Highlighting and underlining on the cases is allowed. The exam is closed book!

POINT DISTRIBUTION (2018-2019)



EXAM

2018-2019 exam questions:

THEORY

Multiple choice including a higher cut-off line. (You will need to get more than 50% of the questions right to pass) A lot of multiple choice questions include a small story. Do not think further than necessary, the answer is easier than you think.

- ✔ www.stuveco.be/nl/studelen : here you can find 'Meerkeuzevragen' (2017-2018), all these questions are up-to-date and give a good representation of what to expect for the MC questions

EXERCISES

This includes two open questions. One questions related to one of the case studies discussed in class (you can bring these cases) and one question related to a short case study which has not been discussed in the classroom. All questions will be linked to the theory.

- ✔ Disneyland Paris is very well aware that the servicescape plays an important role in the creation of magical experiences. **Use the servicescape model to explain how this servicescape can have an impact on the final feelings of approach (or avoidance) of the Disney guests?**

2019-2020 exam questions:

There were no multiple choice questions on the exam this year.

- ✔ Case about United Airlines where a passenger was dragged of the airplane:
  - Explain the service problem (0,5pt).
  - Explain how you could have a better service recovery system (2 pt).
  - Explain how to perform the root cause analysis in this problem (1 pt).
- ✔ Laddering excercise of one of the segment markets of WeWork:
  - Give 2 examples of the influence of WeWork's servicescape on the amount of contact.
  - Explain the concept of servitization with examples of the Komatsu case.
  - What are the challenges for Komatsu regarding Bapcock?

Challenges for Komatsu regarding Babcock

STRATEGIC MANAGEMENT 1ST SEM

Professor: Johan Verrue – johan.verrue@UGent.be

GENERAL

This course consists of a Business Case and a Business Game, no syllabus or exam in January.

BUSINESS GAME

You get a player's guide. Read this very good! It is important for your strategy and they tell you what you have to/ can do.

You have to make strategic long-term decisions for your company. On the business game site, you can watch some clips to get better knowledge of what strategies to apply. Take a good look at this!
Year after year you can look at the strategies your competition followed so a tip: take a good look at this and try to focus on one thing if you can see that the others do not take this into account. Another tip: do not focus on low-cost strategies but more on quality, expansion, etc.

The Business Game also includes 2 Quizzes. These are open-book MC questions about the Business Game. You can choose to make these with your team or alone. These quizzes are not included in the total grade.

BUSINESS CASE

You have to choose one company and convince them of your way of how they should proceed/ expand their company to other countries/ industries. This includes background research, strong build recommendations and at last a presentation.

SYSTEM DYNAMICS 1ST SEM

Professor: Mia Loccufier – mia.loccufier@UGent.be

GENERAL

The syllabus consists of 6 chapters. You do not have to know all of these chapters completely. At the end of the semester she will upload a document on what to know for the exam. Next to the syllabus you also get slides and 'dynamicstrack'. This last one is to visually see how the graph/ model changes as you change different parameters (It is important that you can visualize this for the exam!).

EXAM

The exam consists of two parts: oral and written. Last year students got both the oral and the written part immediately. It is thus best to first prepare the oral part and then the written part. You can choose when you want to make the oral exam, it is not alphabetically, so you can prepare as long as you want.

2018-2019 exam questions:

ORAL

- ✔ Write First Order model and calculate Free and Forced response.
- ✔ Work out a Fluid system and an Electrical system and connect this with the First Order model.
- ✔ Explain the influence of poles on transient behavior.
- ✔ Work out an Electrical system and discuss parameters with respect to Free response.
- ✔ Extra small questions: what happens when you change this parameter (could be any parameter). Important that you visualize the graphs very well!

WRITTEN

- ✔ Walras Supply Demand: graph of SD, Step response graph and another graph of SD with different slopes than the first SD graph. Question: How does the Step Response graph change for the second SD graph?
- ✔ 2nd Order Fluid system, give transfer functions G(s). What happens with the graph if you double R2 and half A2?
- ✔ National income: impact on transient behavior of proportional control Kc. One time with $1/(\frac{1}{(ßs+1)})$ and one time without.
- ✔ Problem same as 3.5.8. in syllabus but with filling in parameters + small extra question
- ✔ 2 graphs of Step Response, one with PI-controller and one with P-controller. Prove with calculations which Step Response graph belongs to the PI-controller.
  Can you use a Transfer function as a First Order System?
- ✔ Same as 3.7.5. in syllabus but with filling in parameters. Questions: amplitude + how can you diminish the phase for 10 degrees by adjusting just one parameter? + poles of the system

- ✔ 2 fluid tanks with equal input Qin. A1 = A2 and R2 = ½ R1. On the first test, they empty tank 1 with starting values h1(0)=h0 and no input. At time t1, h1(t1)=0,37h0. For the second test, both tanks are empty and both inputs are Qin=Q0.
  Q1: when does the tank reach 2,95% of its steady state?
  Q2: For the second test, are the water levels at a certain moment in time equal?

2019-2020 exam questions:

ORAL

- ✔ Second order model is given:
  - Give the poles.
  - How do the parameters influence these poles?
- ✔ What is the bullwhip effect? Give the formula for the inventory.
- ✔ A graph is given. Why, for all values of T, are the graphs equal to each other for t<τ

2019-2020 august:

- ✔ Question 1: Supply and Demand:
  - Given: two graphs, one with the demand and supply curves with a q- and p-axis. The second graph is the step response of the model.
  - Adapt the demand curve, so that from Δ(p) to 0,37Δ(p0) happens twice as fast. The intersection needs to stay the same, and the supply curve will not change.
  - Adapt the demand (D = a + bp) quality so that the model becomes unstable. The equilibrium and the supply curve stay the same. Show your calculations.
- ✔ Question 2: Human interaction system:
  - This is a question about a mass-spring-damper system. A system is given: a human in a crowd. You have parameters given, and the relation with the crowd:
    $$m_c = n * m_i$$
    $$k_c = n * k_i$$
    $$c_c = \frac{n}{2} * c_i$$
    Where n represents the amount of people in the crowd. Also given is the bode plot for the amplitude and the phase, to the frequency. The frequency f(t) = $f_0$sin(wt).
  - Make the general model for one person.
  - Make careful adjustments in the bode plot (phase and amplitude), to the amount of people in the crowd. Show your calculations.
- ✔ Question 3: Feedback control:
  - Two step response graphs and the block scheme are given.
  - You need to indicate the correct one for a given P-controller. The other one is for a PD-controller.
- ✔ Question 4: Poles:
  - Two graphs are given. The x-axis is the imaginary part and the y-axis is the real part. The first graph has three poles, which all have a negative imaginary part: one above the x-axis, one on the x-axis and one under the x-axis. The second graph also has three poles, of which two have a negative imaginary part. The other has a zero value for the x-axis.
  - What is the transient behaviour of both systems?
- ✔ Question 5: Tank system:
  - Make the input-output model with q_{in}= input and h_2= output.
  - Calculate the vales for R1, R2, A1 and A2.

BUSINESS-TO-BUSINESS MARKETING 1ST SEM

Professor: Steve Muylle – steve.muylle@UGent.be
Assistant: Nils Van den Steen – nils.vandensteen@UGent.be

GENERAL

This course consists of a Group work (course project) and an exam in January. You get different assignments during the year and you have to prepare cases discussed in class. All this is with the same team as for your group work. It is thus important to go to this course to support your team and think about your peer assessment!

GROUP WORK

The objective of the course project is to document and assess the use of digital technologies in a supply-chain transaction between a buyer and a supplier (in a buyer-supplier dyad). For this project, your team will have to do this for 3 buyer-supplier dyads. You have to complete 4 surverys and 4 interviews per dyad and write a report per dyad. It is important that you begin with this on time! It may seem like a silly group work but you spend a lot of time to look for companies in this industry who want to cooperate.

EVALUATION

Your final mark will consist of 50% of your mark for the written exam in January, and 50% of your mark for permanent evaluation (15% case studies and 35% course project).

EXAM

The exam is open book. The first powerpoint, the main powerpoint, is the most important one to bring to the exam. It is also a good idea to look at the different modules belonging to the cases of the semester, even though you do not need to know these by heart. It is more meant as extra information.

The exam consists of a completely new case, so it is not utterly useful that you bring the cases discussed during the semester. You will get several questions about the case, some harder than others. It is possible that you will have to make assumptions. The most important thing is that you think logically and strongly build your arguments. If you do so, it is quite impossible to fail this course. The exam is generally not considered very difficult.

2019-2020 exam questions:

Case Showpad:

- ✔ Question 1: What are the points of parity, points of contention and points of difference, if the alternative or incumbent option is the one with no sales enablement. (3)
- ✔ Question 2: Give the word equation. (9)
    - Give the average annual value based on below characteristics
    - Calculate the incentive-to-buy, when this company takes the premium model

- ✔ Question 3: Freemium model (customers can use a free application, and pay for it when they want extra features): should they applicate this model or not (yes/no and motivate) (4)
- ✔ Question 4: What is the key issue with the sales funnel and what is the cause? How would you fix it? (4)

HUMAN RESOURCE MANAGEMENT 2ND SEM

Professor Dirk Buyens – dirk.buyens@UGent.be

GENERAL

The course consists of lectures, supervisions and tutorials.

There are two supervisions: one obligatory supervision 'Presentation Techniques' and one supervision on 'Job Application Skills' for which you can choose between 3 topics: 'how to apply for a job', 'job interview' and 'job application skills'.

The tutorial is more like a group work. With a group of 8 students, randomly assigned, you build an HRM company. You build arguments on why you choose this HRM topic and you build a whole business plan with your team. At last, you present your business idea in front of the class (3-4 other groups) and they decide if they would like to invest in your company. (Do not forget the share for your investors! Otherwise no one will want to invest)

EXAM

The exam consists of **open questions** about the theory seen in class and **one case** from the course book. This case can come from any chapter in the course book (in green). You are given the case and questions on the exam so you do not have to know the case and questions by heart.

For the open questions, the most important thing is that you write a lot, the more you write (not rubbish, it has to be well structured), the more points you get.

Question 1: 12 concepts of which you need to fill in 10 (each 6 lines)

- ✔ Hovering
- ✔ Dominant coalition
- ✔ Paradox of work
- ✔ Paradox navigator
- ✔ 3 Coordination mechanism
- ✔ Michigan HR Cycle
- ✔ Neuroplasticity
- ✔ Type II error
- ✔ Raplex environment
- ✔ Effortless Performance
- ✔ Learning-on-the-go
- ✔ employer branding
- ✔ harvard analytical framework
- ✔ unlearning
- ✔ performance management
- ✔ total cost of ownership
- ✔ credible activist
- ✔ mcdonaldization

- ✔ paradox of productivity
- ✔ organizational culture
- ✔ 70:20:10 learning model
- ✔ matrixculture
- ✔ realistic job preview
- ✔ the happy few syndrome

Other questions:

- ✔ Describe the dynamic link between OB, OD and HRM and give the golden rules of organisational structuring (2 pages)
- ✔ Make a recruitment and selection plan for a new professor for corparate finance at the university of Ghent (2 pages)
- ✔ How can HR add value to a company (2 pages)
- ✔ 7 awareness questions - sense making process Ulrich & Ulrich (applied to yourself) (2pages)
- ✔ As expert in Assessment centres, you are asked to set up an Assessment Centre for ICT employees in the telecom industry. What exercise would you ask him to do?

TECHNOLOGY FOR A CIRCULAR ECONOMY 2ND SEM

Professor: Tom Van de Wiele – tom.vandewiele@UGent.be
Ramon Ganigué – ramon.ganigue@UGent.be

GENERAL

The course consists of lectures and exercise sessions. This course also has a group work consisting of applying the theory seen in class and the exercises. The most important things for the group work are the calculations. The more correct calculations you implement, the more points you will get. The Professor will give an example in class of how the group work should look like.

EXAM

Last years the exam consisted of two parts. Part one is about theory questions and is entirely closed book. Part two is exercises and is open book. The time for filling in the exams was 1h45 and 2h respectively, with a 15 minute break in between the two parts.

THEORY

You get several guest lectures in class. It is very important that you know these lectures very well! On the exam, there is a question about every guest lecture. You do not have to learn details or the company itself in the powerpoint, only the things that resemble with the theory.

- ✔ Water treatment, reuse and drinking water
  1) What are the three steps of water treatment? Explain each step. What can you do with the recycled water.
  2) Which techniques are used to remove the following: a. protozoa b. bacteria c. viruses
  3) Why must groundwater poor of oxygen first be aerated before fast sand filtration?
- ✔ Anaerobic Digestion
  1) Anaerobic digestion is also a producing reaction. Valorization of biogas. Give 3 examples of the use of biogas.
  2) Small exercise
     What is the Bv of a UASB reactor?
     Given one wastewater stream with 5 kg bCOD/m^3d and another one with 20 kg bCOD/m^3 water. What is the maximum flowrate [m^3/d] of the second wastestream to fully use the volume of the reactor? (simple calculation, just set the units right)
- ✔ Life Cycle Assessment (ppt)
  1) Give the 4 steps of LCA
  2) Give the technique to calculate the impact assessment
- ✔ Urban mining (ppt)
  1) What are the different scarcities of REE?
  2) Give the challenges of recycling
- ✔ CCU (ppt)
  1) What is the name of the EU system for CO^2 reduction? (give the name)
  2) How does this system work?
  3) What are the advantages of your competitors in China and the US?
  4) Give 2 more techniques with an advantage and disadvantage
- ✔ Solid waste

1) Which is the best process to use? Composting or Digestion? For a city of 2000 I.E. when space is not an issue
2) What is the most important property of the waste for incineration?

✔ Soil remediation
1) Which elements do you have to take into account if you want to use bioremediation or in situ chemical oxidant? (what is the best)
2) What are brownfields?

EXERCISES

There were 2 exercises, one big one and one small one. Sometimes you have to make assumptions if things are not given, clearly mention this! This part is open book, you can bring everything you want (except internet ofcourse). All of the calculations you have to make will be found in the course notes.

EX 1.
A lot of information is given about the MBBR and UASB reactor. You will have to calculate the sludge, bnCOD, load for MBBR,.. Calculate as much as possible with the given information!

1) Calculate the volume reactor and construction costs of the MBBR reactor and UASB reactor (including heating and power)
2) Calculate the operation costs for the MBBR and UASB
3) Give an economic balance for the MBBR and UASB and compare
4) Calculate the footprint of both reactors

EX 2.
Given a solid waste of 3100 kg. The company wants to compost, landfill or incinerate the solid waste. Which is cheaper? Calculate the transportation costs (22 ton per truck) and the costs/benefits of the method. Give an economic balance and circle the cheapest method. The company only cared about the cost of the method.

Given:
Compost: 80 km, €70/ton for composting, after composting 30% weightloss of the solid waste and the company sells this for €10/ton to farmers
Landfill: 67 km
Incineration: 12 km, €75/ton for method

DATA ANALYTICS

ANALYTICAL CUSTOMER RELATIONSHIP MANAGEMENT 1ST SEM

Professor: Dirk Van den Poel dirk.vandenpoel@UGent.be

GENERAL

For the past years, the course was given in the SAS programming language. Since this language is quite outdated, from academic year of 2019-2020 on, this course is taught in Python.

The course consists of theoretical lessons and exercise lessons. The theoretical lessons are given by the Professor while the exercise lessons are given by the Assistant.

There is also a quite large group work for this course. Do not underestimate this! At the end of the semester, you will have to give a managerial powerpoint with your conclusions and recommendations for the subject.

EXAM

Since the programming language has changed, the exam changed a bit as well. The theory, however, will remain more or less the same.

A tip: clearly categorize or mend the exercise lessons so you have a clear overview. This way, you will lose less time with searching for the code instead of making your exam.

Another tip: Ctrl +c & ctrl + v!

PRICING AND REVENUE MANAGEMENT 1ST SEM

Professor: Dries Benoit dries.benoit@UGent.be

GENERAL

This course consists of theory lectures together with exercise lectures in the programming language R (studio). Both lectures are given by the Professor.

Next to these lectures, you will have to make a group work. This group work consists of making a survey in Qualtrics and programming to come to conclusions about your subject. Everything you need to know to make the group work will be clearly explained in class.

EXAM

The exam is written. You will get several questions about the theory (powerpoints) and insights in the programming language. There will also be some small questions about your group work (your findings, your code…) it is thus important to also take a look at your group work before you make the exam. The points for this course are distributed as follows: 50% on the written exam, and 50% on the cases.

In 2019-2020, the written exam was structured as follows:

1. 10 Multiple choice questions, each on 0.5 points.
2. Two open questions on 1.5 points and one open question on two points.

2019-2020 exam questions:

Open questions:

- ✔ Link the 3 C's with a customer value model. (1.5p)
- ✔ Question about the case (conjoint). In the final step, price is changed from categorical variable to continuous variable. How and why is this done? What are the pitfalls? (1.5p)
- ✔ Draw the profit function that corresponds with a linear price response curve and link it with the willingness-to-pay function. Give for all these functions the formula. Derive the optimal price. (2p)

Multiple choice questions:

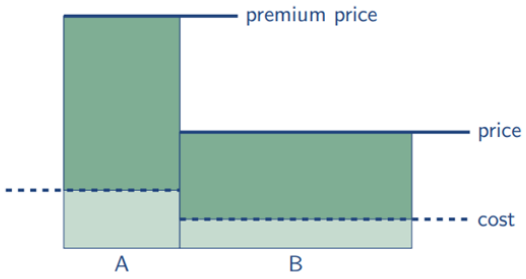
- ✔ A) Market elasticity is in general lower than brand elasticity. B) Elasticity is constant over time.
  - Both are true
  - Only A is true
  - Only B is true
  - Both are false
- ✔ Pricemeter of Van Westendorp: A) Point of indifference is where cheap = expensive. B) Optimal point is where too cheap = too expensive.
  - Both are true
  - Only A is true
  - Only B is true
  - Both are false

- ✔ What isn't a criterion for price metrics?
  - Tracks with differences in value within segments
  - Tracks with differences in cost-to-serve
  - Easy to measure and enforce
  - Facilitates favorable positioning vs competition
- ✔ You can set 1 price fence (so 2 prices), what is the optimal solution for this case?
  Segment 1: size = 40, €15
  Segment 2: size = 70, €20
  Segment 3: size = 10, €40
  Segment 4, size = 30, €30
  - 40 and 20
  - 30 and 20
  - None of these solutions are optimal
  - 40 and 17.5
- ✔ Guest lecture: what is not a statement of X of Crunch Analytics?

Other past exam questions:

Theory

- ✔ Give 4 types of price fences and give an example
- ✔ Price customization: explain + example
- ✔ Derive revenu function and show that with an elasticity of -1, this optimizes revenue
- ✔ Draw the price-response function of the linear, elastic and log function
- ✔ Give 4 trends that accelerated pricing & revenue optimization
- ✔ Explain the analytical pricing cycle
- ✔ Figure about economic value: give an example and name all different variables
- ✔ Short vs long-run sensitivity (does it always hold up?)
  Brand vs market sensitivity
  Exercise: Calculate sensitivity, d=50, p=10 to d=40, p=11
- ✔ Relate following slide to bundling. What is the problem if you charge one single price? How can you charge different prices or what can you do to level the values + give example (not in class)



Statistical R questions (explain):

- ✔ pChisq

- ✔ Sqrt(x)
- ✔ X**y
- ✔ Trunc(x/y)
- ✔ R squared
- ✔ Significance
- ✔ NA and NaN
- ✔ X is 5 and y is 4
  What is the difference between x=y and x==y?
  What is the difference between x=y and x='y'?
  Explain diff(c(x,y)). Explain c(x,y) -> vector
- ✔ Seq(0.1,0.5,0.1)[-2]
- ✔ Conjoint analysis: explain functions in R
  rotation.design(attribute.names=atts,
  nalternatives=2,
  nblocks=1,
  Randomize=TRUE,
  Seed=600)

  Do.call(rbind, replicate(n, ldmat5[5:9], simplify=FALSE))
  pchisq(null.deviance – deviance, df.null – df.residual, lower.tail = FALSE)
  make.design.matrix

- ✔ How do you make a matrix & how do you determine the size?
- ✔ Explain code line by line

Assignment:

He will ask you questions about why you did what you did and thus test if you understand the concept of the assignment. The questions are mostly based on R.

- ✔ Bèta coefficient: if -2.5 is reference value -> what does this mean? (value of attribute levels in relation to reference value)
- ✔ Conjoint analysis – our experimental design linked with:
  Domination choice options, explain utility balance
  Difference between utility balance and minimal overlap

The questions about the assignment are as they were when the exam was still oral. These questions may thus change in the school year of 2019-2020.

SOCIAL MEDIA AND WEB ANANLYSIS 2ND SEM

Professor: Matthias Bogaert Matthias.bogaert@UGent.be

GENERAL

This course changed quite a bit over the past academic years. It consists of theory lectures together with coding lectures and a group work. In the lectures, you will receive small, quite easy, examples of how to do several parts of your group work. At the end of the course, you will have to present the findings of your group work using a powerpoint.

This course, as the name suggests, consists of analyzing the data found on social media with word analysis (clouds), text mining, sentiment analysis, etc.

EXAM

Questions can be about all of the theory seen in class. It is important that you know this by heart and have insights in the theory. Your final mark will be calculated as follows: 40% written exam and 60% group project and presentation, adjusted by peer assessment.

DATA ANALYTICS AND OPERATIONS MANAGEMENT

ROBUST DATA-DRIVEN OPTIMISATION AND SIMULATION — 2ND SEM

Professor Broos Maenhout broos.maenhout@UGent.be

GENERAL

This course combines Operations Research and Statistics and builds further on the Bachelor course 'Operations Research'. The focus of the course is mainly on methodology.

This course consists of theoretical lectures, exercise sessions and a big group work. The lectures will be finished early on in the semester so you can focus on your group work after that. This group work is split up in programming and methodology. You can make the group work in any language you want or you can use a specialized program.

EXAM

Theory: insight in optimization concepts and the relationship between different concepts.
Exercises: model a complex problem, process or system and formulate a mathematical optimization or simulation model under uncertainty.

Differently from previous years, the exam will now be open book. Also the calculation of the finale mark has changed. In previous years, this was always 60% on the exam and 40% permanent evaluation. This year it will be the other way around: 40% on the exam, and 60% on permanent evaluation. It is thus very important to have a good mark on your group work.

The group work is split up into three tasks: 'Monte Carlo estimation', 'Markov chain trajectories' and 'Discrete event simulation', which count respectively for 7.5%, 7.5% and 45% of your final mark.

The exams consists of 4 (or 5) questions, each for 5 (or 4) points. There will always be questions on:

- ✔ Discrete event simulation (structure of a simulation model – events)
- ✔ Optimisation under uncertainty: modelling
- ✔ 2 to 3 other questions on any topic possible

Exam questions school year 2018-2019:

- ✔ Discrete event modeling: state descriptor + flow chart / pseudocode
- ✔ Markov chain: one step probability matrix + is matrix ergodic + steady state probabilities + is regeneration method applicable?
- ✔ Two-stage stochastic model from text + stochastic approximation + how would you compute the added value of stochastic model compare to the deterministic model?
- ✔ Markov integral: apply method 2 + apply variance reduction techniques on the model (antithetic variables & control variables) + can you apply importance modeling?

In 2019-2020 we did not receive any exam questions.

OPERATIONS MANAGEMENT

PROJECT MANAGEMENT 1ST SEM

Professor: Mario Vanhoucke mario.vanhoucke@UGent.be

GENERAL

This course contains lectures, group work, business case and PC-exercises.

For the group work you need to write a concise and to-the-point document about a PM-technique discussed in class with at the end of the semester an oral presentation of about 10 minutes. For this group work, it is important that you can work with the programs as seen in class.

EXAM

For the exam, it is important that you understand/know the exercises and business cases as seen in class. Past years no theoretical questions were asked. The focus lies on exercises and integration of concepts. You do however need to understand the theory (pros/cons, formulas etc), how events have an impact on the solution etc. to make the exercises. It is thus best to focus on exercises rather than on definitions when studying!

The exam is written and closed book. The final grade is based on 50% written exam and 50% group work.

- ✔ Exercise PERT as seen in class
- ✔ Exercise CPM and activity crashing as in business game
- ✔ Explain schedule risk analysis, difference between top-down and bottom-up, criticality index and SSI
- ✔ Resource management with cashflows, fixed work and serial scheduling with priority list of greatest cumulative work content
- ✔ Earned Value Management, calculations as in class all parameters were asked.
  Which formula for EAC(t) and EAC(€) do you apply and why?

ADVANCED PRODUCTION MANAGEMENT 2ND SEM

Professor: Tarik Aouam tarik.aouam@UGent.be

GENERAL

The course consists of three parts: 'Planning and control of production systems', 'Queuing analysis of production systems (factory physics)' and 'Strategy in operations'. Next to the lessons, there is also a group work. This consists of a project for which you will have to make a report and do an oral presentation with your group.

EXAM

The exam is written and consists of a theoretical part and an exercise part.

Last years it consistsed of comprehensive questions (3-4 points) and Problem solving (10-11 points) both of slides and references. The exam and group work determine your final mark for 70% and 30% respectively.

THEORY

- ✔ Which key questions are there for going global? Give the global types
- ✔ Explain 3 examples of the product design
- ✔ Define operations strategy and explain the difference with operations management. Using an example, give three decision elements of operations management and three elements for operations strategy

EXERCISES

- ✔ Draw the ROIC tree. Manager buys a building of €1.6 million. The building is 13.000 square feet. He can rent it out for €3/feet^2/month. The percentage that would be occupied can be calculated as: 2-0,4xRent. The fixed cost of the building is €8000/month. The variable cost depends on the percentage that is occupied and equals €1,25/month/feet^2.
  1) Draw ROIC (annual cost)
  2) What is ROIC?
  3) What is ROIC when he would ask rent of €3,5/feet^2/month?
- ✔ A table is given with 9 periods, demand, setup cost, holding cost and production cost of each period. Items can only be held in inventory for 2 periods. IMPORTANT: since the production costs were not constant in the different period, this also needs to be taken into account in each step!
  1) Give the corresponding Lot Sizing Model with the storage restriction. (ULS-S)
  2) Solve this model to optimality. What is the optimal cost and production plan?
  3) Add backorders to your Lot Sizing Model. (Add safety stocks and risk pooling…)
- ✔ Compare 2 machines X and Y, which one is better? (Compute cycle times and compare)
- ✔ Apply a (Q,r) model to a given problem. It was asked to use the 'type 1 approximation' = backorder model!

QUALITY MANAGEMENT 2ND SEM

Professor: Dries Goossens dries.goossens@UGent.be

GENERAL

This course consists of theory and exercise lessons. Almost all theory is given in the exercise sessions but not all. Some parts are self-study. In previous years, next to the lectures given by the Professor, there was also one guest lecture that was also part of the exam.

There is a group work consisting of three cases in which you have to apply the tools seen in class.

EXAM

The exam is written and closed book. A formula sheet and will be provided on the exam. The focus is more on insight and application rather than on memorisation. The exam consists mostly of exercises but also some theory. Last years there was an example exam available on the digital learning environment (Ufora) at the end of the semester. But be aware: this example exam is much easier than the real exam.

Your final mark is based for 75% on the written exam, and for 25% on the group work.

Exam questions from 2018-2019:

- ✔ Exercise on Double Sampling Plan accompanied by an exercise on Average Sample Number
  Calculate probability of acceptance for 5% defects
  Calculate ASN for 5%defects
- ✔ Exercise on X-S chart:
  Calculate CL, UCL and LCL for both charts & draw on graphs
  Circle on the graphs any violations of the rules
  Are there special causes for this behavior?
  Would you delete several observations + why (not)? Also explain what could have been done differently
- ✔ Exercise on tolerance and process capability
- ✔ True or False question: 4 sentences
  1) if b1=1,45 and b2=-1,8, using pooling of higher order interactions. B1 is significant only if b2 is also significant.
  2) if interaction effect AB is significant, the main effect of A and B cannot both be insignificant.
- ✔ Small text about a salesman talking about his company. Pick out the errors mentioned in his text and adjust. Text is about ISO 9000, Deming prize and TQM.
- ✔ Guest Lecture: Straciatella vs Dame Blanche, explain how this fits with Quality Management + apply this to the Middle Ages till Industrial Revolution time.

In 2019-2020 we did not receive any questions.

FINANCE

MANAGEMENT ACCOUNTING 1ST SEM

Professor: Sophie Hoozée sophie.hoozee@UGent.be

GENERAL

This course consists of theory lessons and exercises. The focus is more on exercises based on theory.

EXAM

The exam is written and closed book. It includes 20 multiple choice questions as well as open questions. Last years, for the MC questions, no standard setting was used. The MC questions part also includes a lot of MC questions for which you get two statements, and you get the options: 'Only statement one is true', 'Only statement two is true', 'Both statements are true' and 'Both statements ae false'.

Exam questions in 2018-2019:

- ✔ Cost pools exist of several cost kinds. What mistake is an
  1) Aggregation mistake
  2) Measure mistake
  3) Specification mistake
- ✔ Calculate Current Assets via FIFO
- ✔ Calculate capacity cost rate. Indirect costs are €10 000, direct costs are €5000, unused capacity is 20%, 10 employees work 2000 hours per year.

Exam questions in 2019-2020:

- ✔ Questions with statements about stock changes.
- ✔ Which cost is not a mixed cost?
  - Raw materials
  - Electricity
  - Water
  - …
- ✔ Which statement is right if there is a stock increase?
  - Full costing has a higher result than direct costing.
  - Full costing has a lower result than direct costing.
  - Full costing has a result equal to direct costing.
  - The result depends on the stock valuation method.
- ✔ Open questions in which each part the case is very thoroughly explained:
  - Standard cost calculation.
  - Break-even analysis.
  - Mass production and special order.

INVESTMENT ANALYSIS 1ST SEM

Professor: Michael Frömmel michael.froemmel@UGent.be

GENERAL

This course consists primarily of theory lectures and exercises and a group work. Throughout the semester, you receive three assignments you have to solve in group. Each assignment is split up into multiple questions than can all be solved independently. So you can divide the questions (mostly six per assignment) between your group members without any problem.

Your final mark is for 25% based on the three case-studies and for 75% on the written exam.

EXAM

The exam is entirely written and consists of a theory part and an exercise part, each on 7.5 of the 15 points. Last year the exam included the following type of questions: true of false questions where you have to explain why, explanations of definitions, exercises in which you have to make calculations based on the given data and certain assumptions…

Exam questions from 2019-2020:

THEORY (7.5 points)

- ✔ True of false? Explain your answer in one sentence. (5 points)
  - The kurtosis of financial returns is generally higher for monthly data than for weekly data.
  - An equity mutual fund outperformed the market index each year since its establishment a decade age. Therefore, the risk-adjusted return (the alpha) of the fund should be considered as positive, or at least non-negative, over the prior years.
  - -Assuming that the correlation between an asset and the market portfolio is 0.6, the standard deviation of the asset is 0.05 and the standard deviation of the market is 0.02, the asset value will decrease on average by 1.5% if the market rises by 1%.
  - The return on equity is 10%, and the required return of the market is 12%. The plowback rate is 100%.
  - Theory of market segmentation states that for the yield curve the interest rates are only increasing.
- ✔ Explain briefly: (2 points)
  - What is the separation principle?
  - In the CAPM model 2 prices of stocks are given. One is located above the security market line and one is located under the security market line. Which mechanism occurs, and what do the market actors do so that these stock will return to the market security line?
- ✔ Explain extensively: (4 points)
  - Explain thoroughly the steps of the investment process (asset allocation). Which techniques require an inefficient market for being successful and which do not?

- Step-up notes à this is a type of bond where the coupon rate is growing every year. One type bond is given with the rates
  Year one: 5% Year two: 5,5% Year 3: 6,06% Year 4: 6,75% Year 5: 7,5%
  Draw the term structure for this bond on the below graph and discuss the theory that agree with this term structure and the ones who criticized them.

EXERCISES (7.5 points, three exercises, each one counts for 2.5 points)

✔ Bond valuation

- Suppose that on 1st January 2014, the following government bonds are available in the market. Assume that there's no default risk and markets are efficient. Yield to maturity and coupon rates are all annual rates and the annual coupon payments occurs at the end of the year. A (bond) mutual fund holds 20 units of the AAA-rated bond and 15 units of the BBB- rated bond.
  A. Calculate the current bond price, duration and convexity for each bond on 1st January 2014.
  B. Calculate the market value, modified duration and convexity for the bond portfolio held by the mutual fund
  C. Suppose there is a sudden parallel shift in the yield curve, which affect the interest rate of the bond portfolio to move by 50 basis points upwards. What will be the change in value for the bond portfolio?
  D. Which bond do we need to increase/decrease in the portfolio so that it is less sensitive for changes in the interest rate?

✔ Portfolio theory

- David and Sarah both combine their master program with part-time working in the university library. At the end of the academic year 2013-2014 they have put together 5,000.00 EUR aside according to their planning. They both decide to invest their savings and base their investment decisions on portfolio theory. Their investment universe consists of four investment vehicles: stocks of BNP Paribas, Siemens and Unilever and a deposit note with a maturity of 12 months. The 12-month-ahead expectations of an investment analyst at the end of the academic year 2013-2014 are given in Table I and II. The expected correlations are given in the following tables. They use these statistics for their investment decision.
  A. Is there any stock that is expected to dominate/ is dominated by the two other stocks? Why (not)?
  B. David and Sarah decide to build a risky portfolio consisting of two stocks. The position in each stock is 50% for these portfolios. Which two stocks will they choose? Use calculations to decide.
  C. Draw the graph illustrating their capital allocation decision with the information they had at the end of the academic year. Make sure that this graph is complete. David is more risk-averse than Sarah and decides to invest partially in the risky portfolio (found under b) and partially in the risk-free deposit note. Sarah borrows money to invest more than her earnings in the risky portfolio. Sarah's

expected return was 8.08% and her expected standard deviation was 48.28%. What was the borrowing rate for her?

D. Sarah has an expected return of 8,8% and an expected standard deviation of …%, what is the borrowing rate?

✔ APT portfolios

- Assume that the investment universe consist of 3 well-diversified portfolios whose returns are determined by a 2-factor model. Determine alpha, F1 and F2.
- Considering the following well-diversified portfolio D. Does the 2-factor model provide evidence for a possible arbitrage opportunity?
- Determine the weights that replicate portfolio D and provide a cash flow table. Show clearly that all necessary conditions are met when applying this strategy.
- Which strategy do you chose the arbitrage strategy, portfolio A,B,C or portfolio D?

✔ Exercise about Markowitz portfolios

ADVANCED INVESTMENT ANALYSIS 1ST SEM

Professor: Michael Frömmel michael.frommel@UGent.be

GENERAL

This course consists of lectures and a group work. The group work consists of exercises made in group with its solution submitted as a report. This course is taught by the same professor as for 'Investment Analysis', an has a very similar structure.

EXAM

Very different from last year is that this course does not have an exam anymore at the end of the semester. Your final mark thus only depends on the continuous assessment.

Since there is no written exam anymore, these exam questions from 2018-2019 are only for illustration:

- ✔ STATEMENTS (right/wrong + justify in one sentence)
  1) One implication of the Grinblatt and Han (2005) model is that the adjustment speed to a new fundamental value is positively related with the turnover ratio and the share of noise traders (of the PT/MA type).
  2) Overconfident insiders may even increase price accuracy on financial markets.
  3) The anomalies 'price reversals' and 'momentum effect' are not in contradiction with each other.
- ✔ SHORT QUESTIONS
  1) Why does the 'separation of brain and capital' prevent managers from correcting mispricings?
  2) Briefly describe the 'dual moving average crossover'.
- ✔ BRIEF DISCUSSIONS (max 1 page)
  1) What are the implications of the seminal model by De Long, Shleifer, Summers and Waldman (1990)? Which effects work in this model?