



Econometrie en Operationele Research (BSc)

VU University Amsterdam - School of Business and Economics - B Econometrics and Operations Research - 2017-2018

De Bacheloropleiding Econometrie en Operationele Research heeft tot doel om breed georiënteerde econometristen op te leiden die met succes kunnen instromen in kwantitatieve vervolgoopleidingen of kunnen toetreden tot de arbeidsmarkt. Doel van de opleiding is het analytisch denken van de studenten aan te scherpen door het combineren van wiskundige theorievorming met aspecten als abstractie en generalisatie, met aandacht voor modelleren en toetsen van economische problemen en theorieën in wiskundige en statistische termen. Met name in de eerste twee jaar is de opleiding breed en wordt de student vertrouwd gemaakt met theorieën en methoden uit de wiskunde en statistiek, de toegepaste informatica en de economie.

De studie Econometrie en Operationele Research is opgezet volgens het Bachelor-Masterstelsel. Dit stelsel is ingevoerd om de universitaire opleidingen in Europa beter op elkaar af te stemmen en onderling vergelijkbaar te maken. Dit houdt in dat er een driejarige Bacheloropleiding Econometrie en Operationele Research wordt aangeboden, gevolgd door een éénjarige Masteropleiding. Je krijgt in de Bachelor een gedegen theoretische opleiding, maar tegelijkertijd wordt er aandacht besteed aan het toepassen van deze theorie op concrete problemen. In het derde studiejaar is er ruimte voor een minor. Afhankelijk van de gekozen minor biedt dit de mogelijkheid om 12 EC stage in de studie te integreren.

De BSc Econometrie en Operationele Research is een driejarige voltijdse opleiding en omvat 180 EC.

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- [Opleidingsschema](#)
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 - [Overgangsregeling B2](#)
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- Verder studeren na de bachelor
 - Wil je na je bachelor doorstromen tot een van de masteropleidingen van SBE? [Kijk dan hier voor de ingangseisen.](#)
 - Kijk op <http://masters.vu.nl> voor meer informatie en eventuele aanvullende toelatingseisen voor de masteropleiding van jouw interesse.

-[VUnet > serviceplein](#)

Specialization Econometrics and Data Science

The BSc Econometrie en Operationele Research has the three year during specialization Econometrics and Data Science, which is taught in English. The first year of this specialization starts in 2017-2018. This specialization comprises 180 EC.

- [General information](#)
- [Course schedule specialization Econometrics and Data Science](#)
- [Honours Programme](#)
- Road map (document will be published soon)
- Academic and Examination Regulations (OER) SBE Bachelor's degree programmes (document will be published soon)
- Regulations and Guidelines (document will be published soon)
- [Academic year calendar](#)
- After your bachelor:
 - Would you like to start a SBE master's programme after your bachelor's degree? [Then check the entry requirements here.](#)
 - See <http://masters.vu.nl> for more information and if applicable extra admission criteria about the master's degree programme of your interest.

-VUnet > services

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B Econometrie en Operationele Research

Programme components:

- [Year 1 Econometrics and Operations Research](#)
- [Year 2 Econometrics and Operations Research](#)
- [Year 3 Econometrics and Operations Research](#)

Year 1 Econometrics and Operations Research

Het eerste studiejaar bestaat uit verplichte vakken (totaal 60 EC).
Daarnaast is een Taaltoets verplicht.

Tijdens het eerste jaar staat een mentor tot je beschikking, die je kan helpen de weg te vinden binnen de universiteit, en die je zo nodig ook in contact kan brengen met ouderejaars, studie-adviseurs of andere begeleiders om je te helpen met het verwerven van studievaardigheden. Ook wordt parallel aan perioden 1, 2, 4 en 5 een Colloquium gehouden, waarin aandacht wordt besteed aan praktische zaken rondom de studie.

- Het eindcijfer voor het vak Introduction to Econometrics, Operations Research and Mathematical Economics wordt pas toegekend als aan de voorwaarden van het vak Colloquium I en de Taaltoets is voldaan.
- Het eindcijfer voor het vak Academic Skills: Probability and Inference wordt pas toegekend als aan de voorwaarden van het vak Colloquium II is voldaan.

In het eerste jaar geldt een bindend studieadvies (BSA). Dit betekent dat je aan het eind van het jaar ten minste 42 studiepunten moet hebben behaald om verder te mogen in je opleiding. Kijk op VUnet voor meer informatie.

Courses:

Name	Period	Credits	Code
Academic Skills: Probability and Inference	Period 6	6.0	E_EOR1_ACSK
Analysis I	Period 1+2	6.0	X_400641
Analysis II	Period 4+5	6.0	X_400642
Colloquium 1	Period 1+2	0.0	E_EOR1_COL1
Colloquium 2	Period 4+5	0.0	E_EOR1_COL2
Finance I	Period 5	6.0	E_EBE1_FIN1
Introduction to Econometrics, Operations Research and Mathematical Economics	Period 3	6.0	E_EOR1_IEOMF
Introduction to Programming (Java)	Period 1+2	6.0	X_400634
Lineair Algebra 1	Period 1+2	6.0	X_400638
Macroeconomics I	Period 4	6.0	E_EBE1_MACEC

Probability Theory	Period 1+2	6.0	E_EOR1_PT
Statistics	Period 4+5	6.0	E_EOR1_STAT
Taaltoets	Period 1	0.0	E_BACH_TAALT

Year 2 Econometrics and Operations Research

In het tweede studiejaar zijn (bijna) alle vakken verplicht.

In plaats van één van de vakken Econometrics II, Mathematical Economics II en Operations Research II, mag een ander vak gevold worden. Hiervoor is wel vooraf toestemming nodig van de Opleidingsdirecteur.

Let op:

- Om een BSc scriptie traject in jaar 3 te mogen starten en een begeleider toegekend te krijgen dien je minimaal 120 ects behaald te hebben, inclusief deel II van de cursus in periode 4+5 (Econometrics II, Mathematical Economics II, of Operations Research II). Hier worden geen uitzonderingen op gemaakt. Zonder een afgeronde BSc scriptie kan je de MSc opleiding niet starten.

- Houd bij je keuzemogelijkheden binnen je bacheloropleiding rekening met de toelatingseisen voor de masteropleiding, die je wellicht na je bachelor wilt volgen. Kijk daarom in deze studiegids, onder Algemene Informatie > Verder studeren, voor de toelatingseisen voor iedere masteropleiding van SBE.

Courses:

Name	Period	Credits	Code
Advanced Practical	Period 6	6.0	E_EOR2_ADVP
Econometrics I	Period 1+2	6.0	E_EOR2_TR1
Econometrics II	Period 4+5	6.0	E_EOR2_TR2
Ethics	Period 4+5	6.0	E_EOR2_ETH
Integrative Practical	Period 3	6.0	E_EOR2_INTP
Mathematical Economics I	Period 1+2	6.0	E_EOR2_ME1
Mathematical Economics II	Period 4+5	6.0	E_EOR2_ME2
Numerical Methods	Period 1+2	6.0	E_EOR2_NUME
Operations Research I	Period 1+2	6.0	E_EOR2_OR1
Operations Research II	Period 4+5	6.0	E_EOR2_OR2

Year 3 Econometrics and Operations Research

Het derde jaar is enerzijds gericht op afronding van je opleiding en verdere integratie en verdieping van de kennis die je in de eerste twee jaar hebt verworven. Anderzijds is het een voorbereiding op het volgen van een masteropleiding, hetzij aan deze School, hetzij elders.

In het eerste semester kun je een minor (30 EC) kiezen (of een andere invulling van de vrije keuzeruimte). In het tweede semester kun je je verder specialiseren in een van de richtingen binnen de opleiding en kun je keuzevakken volgen.

Houd bij je keuzemogelijkheden binnen je bacheloropleiding rekening met de toelatingseisen voor de masteropleiding, die je wellicht na je bachelor wilt volgen. Kijk daarom in deze studiegids, onder Algemene Informatie > Verder studeren, voor de toelatingseisen voor iedere masteropleiding van SBE.

Voor studenten die in september 2013 of eerder zijn gestart met de opleiding Bedrijfskunde en die nog vakken van het derde jaar moeten afronden geldt een overgangsregeling.

Programme components:

- [Derde jaar Econometrie en Operationele Research - Ect/OR/ME III](#)
- [Derde jaar Econometrie en Operationele Research - Keuzevakken](#)
- [Derde jaar Bachelor Econometrie en Operationele Research – Minor](#)
- [Derde jaar Econometrie en Operationele Research – These](#)

Derde jaar Econometrie en Operationele Research - Ect/OR/ME III

Kies 1 uit 3 vakken.

Courses:

Name	Period	Credits	Code
Econometrics III	Period 4	6.0	E_EOR3_TR3
Mathematical Economics III	Period 4	6.0	E_EOR3_ME3
Operations Research III	Period 4	6.0	E_EOR3_OR3

Derde jaar Econometrie en Operationele Research - Keuzevakken

Choose 2 courses from the list

Courses:

Name	Period	Credits	Code
Accounting Information Systems	Period 4	6.0	E_EBE3_ACIS
Advanced Programming	Period 1	6.0	X_400561
Applied Analysis: Financial Mathematics	Period 1+2	6.0	X_400076
Auditing	Period 5	6.0	E_EBE3_AUD
Automata and Complexity	Period 4	6.0	X_401049
Bayesian Statistics	Period 4+5	6.0	XBU_400468
Biomedical Mathematics	Period 4+5	6.0	X_401056
Business Intelligence and Analytics	Period 4	6.0	E_IBK3_BIA
Business Modeling and Requirements Engineering	Period 1	6.0	X_401005
Collective Intelligence	Period 2	6.0	X_401047
Complex Analyse	Period 4+5	6.0	X_400386

Computational Econometrics	Period 1	6.0	E_EOR3_CE
Concurrency & Multithreading	Period 2	6.0	X_401031
Consumer Behavior	Period 4	6.0	E_EBE3_CBEH
Contemporary Perspectives on HRM Theory	Period 5	6.0	E_IBK3_CPHRM
Contemporary Perspectives on OB: Leading Change	Period 4	6.0	E_IBK3_CPOB
Corporate Governance and Accountability	Period 2	6.0	E_EBE3_CGA
Data Analytics	Period 2	6.0	E_EOR3_DA
Data Structures and Algorithms	Period 1	6.0	X_400614
Debates in Consulting Research	Period 5	6.0	E_IBK3_DCR
Designing Interventions in Business and Society	Period 3	6.0	E_BK3_DIBS
Differential Geometry	Period 1+2	6.0	X_400631
Digital Marketing and Metrics	Period 5	6.0	E_EBE3_DMM
Econometrics III	Period 4	6.0	E_EOR3_TR3
Economic Assessment of Health Care	Period 2	6.0	E_EBE3_EAHC
Empirical Economics	Period 2	6.0	E_EOR3_EEC
Empirical Finance	Period 2	6.0	E_EOR3_EFIN
Empirical Marketing	Period 2	6.0	E_EOR3_EMKT
Enterprising Behavior	Period 2	6.0	E_BK3_ENTBEH
Equational Programming	Period 2	6.0	X_401011
Filming Entrepreneurship	Period 2	6.0	E_BK3_FE
Financial Econometrics	Period 5	6.0	E_EOR3_FTR
Financial Engineering	Period 5	6.0	E_EOR3_FENG
Financial Management in Health Care Organizations	Period 2	6.0	E_EBE3_FMHCO
Financial Markets and Institutions	Period 4	6.0	E_EBE3_FMI
Financial Modelling and Derivatives	Period 4	6.0	E_IBK3_FMD
Foundations and Forms of Entrepreneurship	Period 1	6.0	E_BK3_FFE
Foundations of Strategic Management	Period 4	6.0	E_IBK3_FSM
Functional Analysis	Period 4+5	6.0	XBU_417013
Galois Theory	Period 4+5	6.0	XBU_417008
Health Care Management	Period 3	6.0	E_EBE3_HCM
Health Economics	Period 1	6.0	E_EBE3_HEC
Heuristics	Period 3	6.0	X_401012
Human Capital Across the Life Cycle	Period 5	6.0	E_EBE3_HCALC

Inclusive Growth and Sustainability	Period 5	6.0	E_EBE3_IGS
Industrial Organization	Period 4	6.0	E_EBE3_IO
Information Retrieval	Period 2	6.0	X_400435
Integrative Modelling	Period 1	6.0	X_401001
International Financial Management	Period 5	6.0	E_IBK3_IFM
Introduction to Time Series	Period 1	6.0	E_EOR3_ITS
Investments	Period 5	6.0	E_EBE3_INVES
Judgment and Decision Making	Period 1	6.0	E_BK3_JDM
Knowledge and Data	Period 1	6.0	X_400083
Knowledge Management	Period 5	6.0	E_IBK3_KM
Leadership: Mobilizing People	Period 1	6.0	E_BK3_LMP
Logic and Modelling	Period 5	6.0	X_401015
Machine Learning	Period 4	6.0	X_400154
Managing and Improving Quality	Period 5	6.0	E_IBK3_MIQ
Managing Negotiations: Getting to Yes	Period 2	6.0	E_BK3_MNGY
Markov Chains	Period 1+2	6.0	XBU_418085
Mathematical Economics III	Period 4	6.0	E_EOR3_ME3
Measure Theory	Period 1+2	6.0	X_401028
New Venture Creation	Period 3	6.0	E_BK3_NVC
Nudge: Influencing Behavior	Period 2	6.0	E_BK3_NIB
Number Theory	Period 1+2	6.0	X_400632
Operations Analysis	Period 1	6.0	E_EOR3_OA
Operations Research III	Period 4	6.0	E_EOR3_OR3
Organizational Behavior and Decision Making	Period 1	6.0	E_EBE3_OBDM
Partial Differential Equations	Period 4+5	6.0	X_400163
Philosophy of Science	Period 4	3.0	X_428002
Principles of Bioinformatics	Period 1	6.0	X_401094
Procurement and Supply Management	Period 4	6.0	E_IBK3_PSM
Representation Theory	Period 1+2	6.0	XBU_417004
Secure programming	Period 1	6.0	XB_40005
Service Science	Period 1	6.0	X_401077
Small Business Development	Period 5	6.0	E_IBK3_SBD
Statistical Data Analysis	Period 4+5	6.0	X_401029
Strategic Management from a Practice Perspective: A Day in the Life of a CEO	Period 5	6.0	E_IBK3_SMPP
Systems Programming	Period 1	6.0	X_400377
Workshop Mathematical Modelling	Period 3	6.0	X_401062

Derde jaar Bachelor Econometrie en Operationele Research – Minor

Het eerste semester is vrije keuzeruimte. Hierin kun je een minor kiezen. Iedere minor bestaat uit vijf vakken van ieder 6 EC. Je hebt de keuze tussen een Faculteitsminor of een Universiteitsminor. Daarnaast heb je de keuze om een eigen vakkenpakket samen te stellen. Dit vakkenpakket dient echter wel vooraf goedgekeurd te zijn door de examencommissie.

Let op: Onderstaande universiteitsminor mag **niet** gevolgd worden door studenten van de bacheloropleiding Econometrie en Operationele Research:

- Economics

In plaats van een minor kun je er ook voor kiezen om het eerste semester in het buitenland te gaan studeren. Kijk voor meer informatie op VUnet > Serviceplein > Studeren in het buitenland (Uitwisseling).

Programme components:

- [Faculteitsminoren SBE](#)
- [Universiteitsminoren](#)

Faculteitsminoren SBE

Underneath the minors that have been developed by the School.

Programme components:

- [Minor Entrepreneurship](#)
- [Minor Understanding and Influencing Decisions in Business and Society](#)
- [Minor Accounting, Organizations and Society](#)
- [Minor Health Care Management](#)
- [Minor Real Estate Economics and Finance](#)
- [Minor Risk Management for Financial Institutions \(Deloitte\)](#)
- [Minor Applied Econometrics: A Big Data Experience for All](#)
- [Minor Operations Analytics](#)
- [Minor E-Business and Online Commerce](#)
- [Minor Sustainability: Management and Innovation](#)

Minor Entrepreneurship

In SBE's minor in entrepreneurship, students not only study entrepreneurs but also become entrepreneurs. This minor is an exciting set of carefully selected courses that are designed to offer students fundamental knowledge about entrepreneurship in different contexts and enhance their entrepreneurial skill sets. The knowledge students gain from this minor is extremely valuable in today's labor markets, because career success increasingly depends on students' capacity to be proactive, promote change, and pursue new entrepreneurial initiatives that create economic and/or social value. Specifically, completing the minor will allow students to better appreciate the different forms of entrepreneurship across various contexts, understand the distinct challenges faced by entrepreneurs, and find creative solutions for overcoming these challenges. Indeed, both startup and corporate entrepreneurs often struggle to launch and grow new business ventures

such that knowledge about how to successfully develop new entrepreneurial initiatives is essential to any student. So if you are thinking about becoming an entrepreneur, this is definitely the minor for you. But also if you do not have plans to go in that direction, this minor is worthwhile because knowledge of entrepreneurship is critical to anyone who interacts in significant ways with entrepreneurs including managers in large established firms, consultants, bankers, and government policy makers.

This minor contains 5 compulsory courses. Instead of the courses Filming Entrepreneurship and New Venture Creation you may choose to do an internship. Note that the internship has to be approved by the minor coordinator in advance.

Courses:

Name	Period	Credits	Code
Enterprising Behavior	Period 2	6.0	E_BK3_ENTBEH
Filming Entrepreneurship	Period 2	6.0	E_BK3_FE
Foundations and Forms of Entrepreneurship	Period 1	6.0	E_BK3_FFE
Internship Minor Entrepreneurship	Period 2+3	12.0	E_BK3_IMENT
New Venture Creation	Period 3	6.0	E_BK3_NVC
Strategic Management of Technology and Innovation	Period 1	6.0	E_BK3_SMTI

Minor Understanding and Influencing Decisions in Business and Society

The Department of Marketing offers this SBE minor in collaboration with the department of Management and Organization Studies in the fall semester (September-January) starting in the academic year 2016-2017.

The 30 EC programme is entirely taught in English and will allow students to understand and influence human decision making and behavior in the context of organizations (employees, managers, teams) and their interactions with the world outside (markets and consumers, but also business partners and competitors). To achieve this goal, we rely on recent insights from behavioral economics and psychology.

Upon completion of this minor, students will be able to:

- Understand how decisions and behavior are influenced by the physical and social environments and the decision making strategies that are used.
- Based on this knowledge, develop strategies to influence (e.g., through "nudging") the behavior of others in order to achieve business and societal goals, such as increasing sales or reducing environmental pollution.
- Analyze the behavior of others (e.g., employees) in order to improve cooperation and output of teams and organizations
- Formulate negotiation strategies to achieve optimal results in terms of outcomes (distributive negotiations) and relationships among parties involved (integrative negotiations).
- Reflect on the ethical aspects of such influence strategies

The minor is relevant to:

- All students in Business Administration and Economics
- All students from other bachelor programmes that are interested in decision making and influencing other people's behavior (e.g. health science, communication science, psychology, social sciences).

This minor contains 5 compulsory courses. Instead of the courses Designing Interventions in Business and Society and Managing Negotiations: Getting to Yes you may choose to do an internship. Note that the internship has to be approved by the minor coordinator in advance.

Courses:

Name	Period	Credits	Code
Designing Interventions in Business and Society	Period 3	6.0	E_BK3_DIBS
Internship Minor Understanding and Influencing Decisions in Business and Society	Period 2+3	12.0	E_BK3_IMUID
Judgment and Decision Making	Period 1	6.0	E_BK3_JDM
Leadership: Mobilizing People	Period 1	6.0	E_BK3_LMP
Managing Negotiations: Getting to Yes	Period 2	6.0	E_BK3_MNGY
Nudge: Influencing Behavior	Period 2	6.0	E_BK3_NIB

Minor Accounting, Organizations and Society

Financial information systems are part of a company's infrastructure. A thorough understanding of the context in which companies operate is required to be able to design effective information systems. Completing this minor will allow students to understand the effects of integrating traditional bookkeeping with modern IT systems, the legal and societal role of good Corporate Governance as well as the importance of organizational behavior and decision making.

The minor contains 5 compulsory courses.

Courses:

Name	Period	Credits	Code
Accounting and IT Systems I	Period 1	6.0	E_EBE3_AIT1
Accounting and IT Systems II	Period 2	6.0	E_EBE3_AIT2
Corporate Governance and Accountability	Period 2	6.0	E_EBE3_CGA

Organizational Behavior and Decision Making	Period 1	6.0	E_EBE3_OBDM
Tax and Organizations	Period 3	6.0	E_EBE3_TO

Minor Health Care Management

The minor Health Care Management is a joint programme offered by the School of Business and Economics (SBE) and the Faculty of Earth and Life Sciences (FALW). It is open to all bachelor students from the VU, from other Dutch universities and from universities abroad.

This minor discusses health care policy from an economic perspective and deals with management of health care organizations, using economic, organization, accounting and finance theories and methods. It offers students in economics and business sciences the opportunity to use economic and organizational theories which enables them to gain in-depth knowledge about the cure and care sector. The minor is also useful for students from other faculties who have studied health care issues from another perspective, like medicine, social sciences, life sciences and behavioral and movement sciences. The minor may be especially helpful for those students who consider working in policy development or managerial positions within the health care sector. The minor relates to two major VU themes: Human & Life Sciences en Professional Services.

The minor focuses on the following themes:

- The economic effects of health, illness, demographic developments and aging.
- The role of government intervention in the health care market, positive and negative economic implications of regulation.
- Structure and functioning of care and cure markets, and the way health care supply meets health care demand.
- The role of health insurance arrangements in influencing health care supply.
- Policy issues around health care regulation, accessibility of care, cost control and health care quality.
- Financial management of health care organizations in their pursuit of health care productivity, cost effectiveness and quality.
- Management of health care organizations, the role of management in steering and controlling professionals, leadership, and communication.

The minor enables students to analyze the effectiveness of health care policies, to analyse complex issues related to financing and controlling health care institutions, and to improve internal management issues within health care organizations.

The minor contains 5 compulsory courses.

Courses:

Name	Period	Credits	Code
Economic Assessment of Health Care	Period 2	6.0	E_EBE3_EAHC
Economics of the Dutch Health Care System	Period 1	6.0	E_EBE3_EDHCS

Financial Management in Health Care Organizations	Period 2	6.0	E_EBE3_FMHCO
Health Care Management	Period 3	6.0	E_EBE3_HCM
Health Economics	Period 1	6.0	E_EBE3_HEC

Minor Real Estate Economics and Finance

Why does economic activity concentrate in specific locations? How do real estate developers react to the strong demand for space at these focal points? What are the implications for the surrounding urban areas? Should the government provide guidance through land use policy? These questions illustrate a number of important topics that will be dealt with in the Minor Real Estate Economics and Finance. You will learn what economic analysis contributes to our understanding of how cities evolve and what role policy can play. You gain insight into the functioning of real estate markets, including their volatility and apparent lack of efficiency.

The minor contains 5 compulsory courses.

Courses:

Name	Period	Credits	Code
Behavioral Finance and Real Estate	Period 2	6.0	E_EBE3_BFRE
Real Estate Economics and Finance Research Project	Period 3	6.0	E_EBE3_REEFR
Real Estate Finance and Urban Development	Period 1	6.0	E_EBE3_REFUD
Real Estate Investment	Period 1	6.0	E_EBE3_REI
Urban Economics and Real Estate	Period 2	6.0	E_EBE3_UERE

Minor Risk Management for Financial Institutions (Deloitte)

The minor highlights risk issues from different perspectives, such as human behaviour, methods and techniques, financial markets and supervision, and technological innovation. You will gain insights how financial institutions work and analyse their business models and risk issues. The minor emphasises the importance of a holistic view including behavioral finance. Finally, the risks of new developments will be discussed. What is the impact of new financial technologies (FinTech's and Big Data) and how can you mitigate cybercrime.

The minor contains 5 compulsory courses.

Courses:

Name	Period	Credits	Code
A Big Risk Experience	Period 3	6.0	E_EBE3_BRE

Behavioral Finance and Real Estate	Period 2	6.0	E_EBE3_BFRE
New Developments in Risk Management	Period 2	6.0	E_EBE3_NDRM
Risk Management for Financial Institutions	Period 1	6.0	E_EBE3_RMFI
Risk Management in Banking	Period 1	6.0	E_EBE3_RMB

Minor Applied Econometrics: A Big Data Experience for All

An in-depth introduction to Econometrics. The Minor Applied Econometrics provides a thorough introduction to econometric methods and techniques with an emphasis on how to implement and carry out the methods in empirical studies and how to interpret the results. The key steps of model formulation, parameter estimation, diagnostic checking, hypothesis testing, model selection and empirical analysis are given extensive attention throughout the different courses. Apart from the fundamentals of econometrics, much emphasis is given to how econometric methods are carried out in different empirical settings and studies. Particular attention will be given to issues related to "big data" in the context of different disciplines in economics and business.

All students with a liking of mathematics, statistics and/or computing are welcome. We aim to attract a heterogeneous group of Bachelor students from VU and outside with good knowledge of mathematics and statistics courses (ideally with grades greater than or equal to 7, but we do not set requirements), and for those who want to distinct themselves. Bachelor Econometrics students are especially welcome. For Bachelor Econometrics students, there is the highly recommendable option in the first period to take the course "Computational Econometrics", as a substitute for the course "Introduction to Econometrics". In this way we make this Minor also of interest to Econometrics students. Furthermore, students can opt for research internships within the Department: to get an experience in working within a research environment and to get a first training in teaching mathematics, statistics and econometrics.

This minor consists of compulsory and elective courses.

- The compulsory courses are Case Study: A Modelling Competition, Introduction to Time Series and, depending on the programme you follow, either Computational Econometrics (for econometric students), or Introduction to Econometrics (for non-econometric students).
- In addition you may choose 2 out of 3 elective courses.
- On top of the programme, described above, you may opt for an internship of 12 EC. In that case, the internship replaces the obligatory course Case Study: A Modelling Competition as well as one of the elective courses (so you choose 1 in stead of 2 elective courses). Note that the internship has to be approved by the minor coordinator in advance.

Students in this Minor will reach for the entrance requirements for Master (honour) programmes such as Quantitative Economics, Quantitative Risk Management, Financial Econometrics, but also other Masters such as Quantitative Marketing, Econometric Theory, Applied Econometrics, etcetera.

Courses:

Name	Period	Credits	Code
Case Study: A Modelling Competition	Period 3	6.0	E_EOR3_CSMC
Computational Econometrics	Period 1	6.0	E_EOR3_CE
Empirical Economics	Period 2	6.0	E_EOR3_EEC
Empirical Finance	Period 2	6.0	E_EOR3_EFIN
Empirical Marketing	Period 2	6.0	E_EOR3_EMKT
Internship Minor Applied Econometrics: A Big Data Experience for All	Period 2+3	12.0	E_EOR3_IMAE
Introduction to Econometrics	Period 1	6.0	E_EOR3_IE
Introduction to Time Series	Period 1	6.0	E_EOR3_ITS

Minor Operations Analytics

By an exciting set of carefully selected courses and business cases, in this minor you will explore the spectrum of analytics skills required for becoming successful in decision making in business. These skills range from identify problems requiring managerial action and translating managerial decisions into mathematical models, to applying, designing and programming algorithms for solving the resulting mathematical problems, to eventually drawing managerial conclusions taking into account behavioral aspects. After finishing your minor, you will be ready for better decision making in business with your quantitative talent as a firm basis.

The students.

The minor is aimed at a mixture of students from Econometrics and Operations Research and students from Business Administration with a strong quantitative interest. However, any student in the Netherlands and abroad with an interest in applying mathematics in a business environment should be interested in this minor. Specifically, students from all over the world in Applied Mathematics, and Industrial Engineering are more than welcome to join.

If you want to acquire experience outside of the university, to apply the theory you studied in real-life, then this minor offers you the opportunity to do an internship. The internship is 12 EC and will replace the case oriented courses (Supply Chain Dynamics and Integrative Practice Lab). In general it will be at a company and will be concluded with a written report. A few talented students may be offered the option to do a research and teaching internship within the participating departments. The internship always has to be approved by the coordinator of the minor.

This minor contains 5 compulsory courses. The 30 EC programme is entirely taught in English. Instead of the courses Supply Chain Dynamics and Integrative Practice Lab you may choose to do an internship. Note that the internship has to be approved by the minor coordinator in advance.

Courses:

Name	Period	Credits	Code
Data Analytics	Period 2	6.0	E_EOR3_DA
Integrative Practice Lab	Period 3	6.0	E_EOR3_IPL
Internship Minor Operations Analytics	Period 2+3	12.0	E_EOR3_IMOA
Operations Analysis	Period 1	6.0	E_EOR3_OA
Supply Chain Dynamics	Period 2	6.0	E_EOR3_SCD
Transport and Distribution Planning	Period 1	6.0	E_EOR3_TDP

Minor E-Business and Online Commerce

Business-related interactions are increasingly facilitated by various Information & Communication Technologies - from websites and social media to Enterprise Systems, from mobile devices to EDI. In the minor E-business and online commerce, this development is viewed from different disciplines, yet with an integrative perspective. With a focus on Business-to-Consumer online commerce (although taking into account Business-to-Business and Consumer-to-Consumer interaction as well), we address the Marketing, Logistics and Information Systems-related aspects of E-Business. This minor provides students with an in-depth knowledge of the full range of business aspects related to E-business - from consumer interaction to fulfillment, and from marketing strategy to data, analytics and information systems. This knowledge will be applied in answering both academic and practical questions. Also, students will be stimulated to critically reflect on the business and ethical issues related to E-business and online commerce.

For who?

This minor is relevant to students from both the business administration (BK/IBA) and the economics and business economics (EBE) programme. For EBE students, this minor is relevant since commerce is a crucial factor from both a macro-economic and a business economics perspective. As interactions between business and customers increasingly move to the online world, this has far reaching economic implications at several levels.

This minor contains 5 compulsory courses. Instead of the courses Emerging Technologies for E-Business and Online Commerce and Information Systems in E-Business and Online Commerce you may choose to do an internship. Note that the internship has to be approved by the minor coordinator in advance.

Courses:

Name	Period	Credits	Code
Consumer Science for Online Commerce	Period 1	6.0	E_IBA3_CSOC
E-Commerce Supply Chain Management	Period 2	6.0	E_IBA3_ESCM

Emerging Technologies for E-Business and Online Commerce	Period 3	6.0	E_IBA3_ETEOC
Information Systems in E-Business and Online Commerce	Period 2	6.0	E_IBA3_ISEOOC
Internship Minor E-business and Online Commerce	Period 2+3	12.0	E_IBA3_IMEOC
Introduction to E-Business and Online Commerce	Period 1	6.0	E_IBA3_IEOC

Minor Sustainability: Management and Innovation

Sustainable development is one of the key challenges for the 21st century. The minor on Sustainability and Innovation offers students a programme rooted in business and economics to explore how innovation can contribute to sustainable development. Sustainability builds on the understanding that actions 'here and now' have effects in other places, for other people, at other moments in time. This leads to grand challenges such as problems with global warming, water, energy, and poverty. Yet, addressing such grand challenges offers opportunities for business as well, and many leading companies and new start-ups are reaping such opportunities. Through sustainable innovations like renewable energy solutions, micro loans, circular business models, and 'sharing economy' platforms, to name just a few, these emerging businesses tap into growth markets. Characteristic of these opportunities is that they create shared value: they do not only create profit, but also create value for planet and people. In this minor students will learn to understand global and local sustainability issues, and learn how to apply this knowledge to design strategies, value chains, and innovations. With its academically and practically challenging programme, this minor aims to inspire students that wish to take on an entrepreneurial role in society by joining an established firm, a government agency, or by starting a firm themselves.

This minor can be followed by all SBE bachelor students. In addition, advanced bachelor students (third year) from other faculties as well as other universities are welcome to join. Particularly those with an interest in Business and Organization Studies, Economics, Social Sciences, Social Psychology, Healthcare, Media and Communication Studies, Engineering, Technology Management, Operations Management and Education. It is especially interesting for:

- Future managers who want to understand how sustainability can be implemented in existing business
- Entrepreneurs / intrapreneurs that want exploit the opportunities sustainability offers
- Future consultants in sustainability, strategic business consultants, of government policy consultants
- Students that want to be active in NGO's or other societal organizations

It is possible to replace two of the courses for an internship that will be supervised by one of the lecturers of the courses. Internships should be aligned with a topics addressed in the minor and should be initiated by students. Proposals for an internship need approval from the minor coordinator.

Coordinator: Philipp Tuertscher Department of Information, Logistics and

This minor contains 5 compulsory courses. The minor programme will be taught in English. Instead of the courses Marketing Sustainable Innovations and Organizing Sustainable Innovation you may choose to do an internship. Note that the internship has to be approved by the minor coordinator in advance.

Courses:

Name	Period	Credits	Code
Grand Challenges for Sustainability	Period 1	6.0	E_IBA3_GCS
Internship Minor Sustainability and Innovation	Period 2+3	12.0	E_IBA3_IMSI
Marketing Sustainable Innovations	Period 3	6.0	E_IBA3_MSI
Organizing Sustainable Innovation	Period 2	6.0	E_IBA3_OSI
Shared Value Creation	Period 1	6.0	E_IBA3_SVC
Sustainable Supply Chain Management	Period 2	6.0	E_IBA3_SSCM

Universiteitsminoren

De universiteitsminoren

- Zijn in principe toegankelijk voor alle bachelorstudenten van alle faculteiten.
- Kennen voor sommige minoren een toegangseis.
- Hebben een vaste omvang van 30 EC.
- Vooraf geen toestemming van je eigen examencommissie nodig om de 30 EC van deze minor mee te laten tellen in het afstudeerpakket van je opleiding.
- Indien een bepaald vak uit de universiteitsminor onderdeel uitmaakt van je reguliere curriculum, kun je deze minor niet (volledig) volgen omdat vakken niet twee keer kunnen meetellen. Vraag in dat geval toestemming van de examencommissie voor de invulling van de profileringsruimte.

Programme components:

- [Minor Brain and Mind](#)
- [Sustainability: Global Challenges, Interdisciplinary Solutions](#)
- [Minor Sport, Movement and Health](#)
- [Minor Business Administration](#)
- [Minor Global Food Security](#)
- [Minor Managing Digital Innovation](#)
- [Minor Economics](#)
- [Minor Islam](#)
- [Minor Digital Humanities and Social Analytics](#)
- [Minor in English](#)
- [Minor Gender and Diversity](#)
- [Minor History](#)

- Minor Literature
- Minor Migration Studies
- Minor Psychology and the Brain
- Minor Law and Global Society
- Minor Technology, Law and Ethics
- Minor Development and Global Challenges
- Minor Political Science
- Minor Philosophy

Minor Brain and Mind

Courses:

Name	Period	Credits	Code
Brain in Trouble	Period 2	6.0	AB_1038
Cognitive Neuroscience	Period 1	6.0	AB_1056
Mind and Machine	Period 3	6.0	AB_1060
Nature versus Nurture	Period 1	6.0	AB_1057
The Developing Brain	Period 2	6.0	AB_1059

Sustainability: Global Challenges, Interdisciplinary Solutions

Courses:

Name	Period	Credits	Code
Designing Solutions for Global Sustainability	Period 3	6.0	AB_1231
Governance of Global Sustainability	Period 1	6.0	AB_1229
Grand Challenges for Sustainability	Period 1	6.0	E_IBA3_GCS
Sustainability and Environmental Change	Period 2	6.0	AB_1230
Sustainable Supply Chain Management	Period 2	6.0	E_IBA3_SSCM

Minor Sport, Movement and Health

Courses:

Name	Period	Credits	Code
Applied Exercise Physiology	Period 2	6.0	B_TIF
Introduction to Exercise Physiology	Period 1	6.0	B_IF

Neuropsychology and Rehabilitation Psychology	Period 3	6.0	B_NEURREVPSY
Rehabilitation	Period 1	6.0	B_REVAL
Sensorimotor Coordination	Period 2	6.0	B_SENSOCOR
Sport Psychology	Period 1	6.0	B_SPORTPSY
Talent and Talent Identification	Period 3	6.0	B_TALIDENT

Minor Business Administration

Why are some companies outperforming their rivals? How is it that companies like Nike and ASML are responsive to changes in customer preferences and are successfully battling their competitors, whereas companies like General Motors and Philips struggle? Why are companies like Airbnb and Uber successful in developing and selling product and service innovations, whereas publishers and record companies lack innovative capacity? How is it possible that long-existing companies are surpassed by new venture start-ups with radical different business approaches, such as Shapeways and Blendle? The answers to these questions show that high-performing companies excel in using new ways of management and organization. Specifically, these companies have business models that work in today's dynamic environment.

In the Minor in Business Administration you will learn to build, assess, and change business models and tackle management and organization issues.

The Minor in Business Administration is a 30 EC programme taught in English. You will become familiar with the foundations of business administration: strategy, marketing, finance, accounting, logistics, technology, and human resource management. Using business model thinking, you will combine and apply the knowledge from these disciplines to study businesses. In addition, midway the programme you are asked to select a specialization theme, which enables you to obtain a deeper understanding about the relationship between your profession and a business discipline. In addition to academic skills, the programme emphasizes professional skills, including creativity, communication, reflexivity, and consultancy. The Minor Business Administration provides you with knowledge and skills to successfully act in dynamic organizations, irrespective of your professional background.

Students in the BSc programmes Economics and (International) Business Administration are excluded from participating in this University Minor.

Courses:

Name	Period	Credits	Code
Business Model Assessment	Period 2	6.0	E_MB_BMA
Business Model Innovation	Period 1	6.0	E_MB_BMI
Business Professionals	Period 2	6.0	E_MB_BPROF
Business Project	Period 3	6.0	E_MB_BPROJ
Foundations of Business Administration	Period 1	6.0	E_MB_FBA

Minor Global Food Security

Global food security is at the core of many of today's societal problems, varying from undernourished children to obese adults and elderly; climate change presents a challenge for future food production; novel technologies raise ethical questions with respect to animal welfare, preservation of biodiversity, and protection of national policy autonomy. These and many other societal issues are part of the content of this course. These insights will be useful to a variety of academic and societal fields, and may help you to choose your master's programme.

This minor takes real world problems as a starting point. Examples, assignments and (guest)lectures will be based on the variety of actual challenges related to food security. Throughout the minor, culminating in an advisory report in the last course, you will conduct an assignment for a real organization active in the field of food security; e.g. the Ministry of Economic Affairs; Oxfam Novib; FrieslandCampina.

Jobs are increasingly about combinations of insights and skills rather than specialized knowledge only. In this minor you will acquire skills and insights from different scientific backgrounds to be able to conduct interdisciplinary research. The fact that this minor is offered by the Amsterdam Centre for World Food Studies, an institute that brings together researchers from different faculties of the VU to conduct inter- and transdisciplinary research on food security, guarantees the richness of skills and methods taught.

Courses:

Name	Period	Credits	Code
Agriculture for Food and Nutrition Security	Period 1	6.0	E_MG_AFNS
Applications in Food and Nutrition Security Analysis	Period 3	6.0	E_MG_AFNSA
Challenges of Food and Nutrition Security	Period 1	6.0	E_MG_CFNS
Economics and Politics for Food and Nutrition Security	Period 2	6.0	E_MG_EPFNS
Food and Quality of Life	Period 2	6.0	E_MG_FQL

Minor Managing Digital Innovation

The opportunities of the digital era are essentially unlimited. Innovative technologies may completely change how business and design processes are set up, while new directions for fruitful start-ups are countless. This calls for new and strategic ways of organising these opportunities to innovate in the digital world. If you are interested in new, exciting ways to organise for digital innovation, if you want to learn how new digital technologies such as big data, 3D printing and robotization change the way of working in your own field of expertise; if you are interested in how to design and organise pervasive digital technologies, if you would like to start your own Spotify, Uber or Airbnb in your own specific discipline and would like to learn how to do

so; if you are interested in new professional, organisational and managerial insights related to digital innovation, this minor is for you.

This minor is a 30 EC programme taught in English. The programme consists of five courses taught during the first semester of the third year of your Bachelor program.

Students in the Bachelor programmes (International) Business Administration are excluded from participating in this university minor.

Courses:

Name	Period	Credits	Code
Business Intelligence and Analytics	Period 2	6.0	E_MM_BIA
Ethics of Algorithms	Period 3	6.0	E_MM_ETHA
Introduction to Digital Innovation	Period 1	6.0	E_MM_IDI
New Ways of Working	Period 2	6.0	E_MM_NWW
Strategic Management of Technology and Innovation	Period 1	6.0	E_BK3_SMTI

Minor Economics

What is the future of employment in the face of technical innovation? Why does the discovery of natural resources make a country sometimes poorer rather than richer? How can we keep the pension and health care system sustainable if there are only half as many working age people? Why do economic crises occur? These questions illustrate how economics touches upon the most pressing problems of today: economic well-being, inequality and sustainability. In the minor in Economics you will learn to tackle economic issues by learning to think like an economist.

The minor in Economics is a 30 EC programme taught in English. You will become familiar with the development of economic thought, including the principles of micro- and macroeconomic theory and key insights from empirical economic analysis. You will gain insight into the role of economic policy, learning to identify when markets fail and when policy interventions may provide solutions. Finally, you learn to take a structured approach to solving practical problems using economic core concepts. Upon completion you will have a proven ability to apply sound economic reasoning to a range of issues on a micro- and macroeconomic level, for example related to health, law, environment, finance, labor, transport, and development.

Students in the BSc programmes Economics and Econometrics are excluded from participating in this university minor.

Courses:

Name	Period	Credits	Code
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Applications in Economic Policy: Policy Analysis, Formulation and Evaluation	Period 3	6.0	E_ME_AEP
Business Cycles and Stabilization Policy	Period 2	6.0	E_ME_BCSP
Development of Macroeconomic Thought	Period 1	6.0	E_ME_DMT
Foundations of Microeconomics	Period 1	6.0	E_ME_FM
Structural Policy	Period 2	6.0	E_ME_SP

Minor Islam

Courses:

Name	Period	Credits	Code
Hadith Studies	Period 2	6.0	G_HADITHW
Introduction to Qu'ran and Sunna	Period 1	6.0	G_INLKOSO
Islam and European Culture	Period 1	6.0	G_ISLEURCUL
Islamic Ethics	Period 3	6.0	G_ISLAMET
Islamic Theology/Kalam	Period 2	6.0	G_ISLMTHKAL

Minor Digital Humanities and Social Analytics

Courses:

Name	Period	Credits	Code
Digital Humanities and Social Analytics in Practice	Period 3	6.0	L_AABAALG048
Digitization: from Life to Data (UvA)	Period 1	6.0	L_AABAUVA008
Introduction to Information and the Digital (UvA)	Period 1	6.0	L_AABAUVA001
Programming for Humanities and Social Sciences	Period 2	6.0	L_AABAALG069
Text Mining for Digital Humanities	Period 2	6.0	L_PABAALG004
Visualizing Humanities and Social Analytics	Period 2	6.0	L_AABAALG066

Minor in English

Courses:

Name	Period	Credits	Code
Global English	Period 1	6.0	L_ETBAETK209
Minor English: English in my own Discipline	Period 3	6.0	L_ETBAALG008
Minor English: Grammar and Writing 1	Period 1	6.0	L_ETBAALG007
Minor English: Pronunciation and Presentation	Period 2	6.0	L_EABAALG006
Minor English: Writing 2	Period 2	6.0	L_ETBAALG005

Minor Gender and Diversity

In this multidisciplinary minor you will learn how to critically perceive contemporary discussions in science and society from the perspective of gender and diversity. You will gain knowledge of the relevant theories on gender, race, ethnicity and sexual orientation in the disciplinary fields of history, philosophy, literature, medicine, sociology and anthropology, and theology. You develop a diverse perspective in discussions with students from other disciplines in the classroom. In assignments you apply the knowledge achieved to your own disciplinary field.

Choose 2 out of 3 courses in period 2: American Film; From Cell to Society; Identity, Diversity and Inclusion

Courses:

Name	Period	Credits	Code
American Film: Cinematic Representations of the "Other"	Period 2	6.0	L_ELBAELK208
Critical Perspectives on Science	Period 1+2+3	6.0	W_CPOS
From Cell to Society	Period 2	6.0	W_FCTS
Identity, Diversity and Inclusion	Period 2	6.0	S_IDI
Religions and Gender	Period 3	6.0	G_RELGEN
The Personal is Political: Biography, Gender and Diversity	Period 1	6.0	L_AABAALG068

Minor History

Courses:

Name	Period	Credits	Code
Decolonizing Europe	Period 2	6.0	L_GCBAALG008

Democracy: A History	Period 2	6.0	L_GABAGES212
General History	Period 1	6.0	L_GABAALG013
Imagining the Dutch: themes Dutch History	Period 1+2	6.0	L_GCBAALG003
Research Tutorial	Period 3	6.0	L_GABAALG014

Minor Literature

Courses:

Name	Period	Credits	Code
Creative Writing	Period 2	6.0	L_NNBAALG001
Masterpieces from World Literature	Period 1+2	12.0	L_AABAALG020
The Book: Print vs Online	Period 1	6.0	L_AABAALG067
Writer at Work	Period 2	6.0	L_NNBAALG002

Minor Migration Studies

Courses:

Name	Period	Credits	Code
Human Rights and Citizenship	Period 2	6.0	R_HumRC
Human Rights and the Border	Period 1	6.0	R_HumRB
Introduction Migration Studies	Period 1	6.0	L_GABAALG011
Migration, Ethnicity and the Economy	Period 1	6.0	L_GWBAALG002
Nation and Migration	Period 2	6.0	S_NM
Research Paper Migration Studies	Period 3	6.0	L_GWBAALG003

Minor Psychology and the Brain

De kennis over de psyche en ons brein groeit snel. Wekelijks verschijnen er artikelen en boeken met baanbrekende inzichten over de werking van onze hersenen en het effect hiervan op ons gedrag. Deze kennis verandert de wereld, met steeds sterk wordende effecten op marketing, rechtspraak, technologie, computers, onze voeding en de economie. Het geeft ons inzichten in waarin en waarom we van elkaar verschillen, en helpt ons bepaalde groepsprocessen in de maatschappij te verklaren. Kennis over de psychologie en ons brein zijn een must voor iedereen die wil begrijpen waarom we doen wat we doen.

Doel

De minor Psychologie en het brein laat studenten kennismaken met de vakgebieden die gedrag en brein onderzoeken. Studenten krijgen in de minor een overzicht van de psychologie en de cognitieve neurowetenschappen, en worden vervolgens geïntroduceerd in de manier van onderzoek doen in deze velden. De doelstellingen hierbij zijn bij de student:

- a. de kennis aan te brengen om met verstand te oordelen over claims die zowel binnen als buiten de wetenschap over psyche en brein worden gemaakt,
- b. de vaardigheden bij te brengen om zelf onderzoek te doen naar psyche en brein.

Doelgroep:

De minor is aantrekkelijk voor studenten met een algemene interesse in psychologie en de hersenen, met voorkennis van statistiek (zoals aangeboden in bachelors in de sociale wetenschappen, economie, exacte en biomedische wetenschappen).

Ingangseisen:

- Minstens 90 EC behaald binnen één bachelorprogramma.
- Minstens 6 EC behaald aan statistische vakken.

Aantal deelnemers:

Er geldt een maximum van vijftig studenten per jaar, die op basis van First come First serve worden gekozen.

Courses:

Name	Period	Credits	Code
Behaviour Genetics	Period 2	6.0	P_BBEHGEN
Biological Psychology (UM)	Period 2	6.0	P_UBIOPSY
Cognitive Neuroscience	Period 1	6.0	P_BCOGNEUS
Introduction Psychology (UM)	Period 1	6.0	P_UINLPSY
Psychophysiological and Cogn. Appl.	Period 3	6.0	P_BPCAPP

Minor Law and Global Society

Globalisation impacts the way we live. We meet different people, learn about diverse cultures, and internet facilitates world-wide communication and information exchange. Law traditionally focuses on nation states, but topics like migration, internet, climate, and terrorism do not stop at the border. Quite the contrary. The objective of this minor is to become aware of the fact that many societal issues ask for a transboundary approach to law.

The minor explores the role of law in defining and resolving social issues concerning the globalisation of societies. Central topics are migration (transnational movement), internet (transnational communications) and climate change (transnational action).

This minor offers students insight in questions, such as:

- Why transnational issues are not suited for unilateral, national actions;
- What states can do within international law (such as European Union)

law);

- The ways in which states are currently responding to these issues;
- The criticism of the current actions and regulations;
- Future perspectives.

After completing this minor, the student has knowledge of the core of the legislation concerning the three topics, has gained insight in the most important critique and analysis of this legislation (from a legal, policy-orientated, sociological, anthropological and/or philosophical perspective), and is capable of critically judging proposed changes. For each of the topics the student knows which actors play a role in making rules and policy, how states work together (or not), the consequences of this (lack of) cooperation and the future perspective for transnational regulations in migrations, climate change and internet. Knowledge of these 'case studies' and the theory involved also enables student to independently reflect on other areas of transnational problems, such as security.

Courses:

Name	Period	Credits	Code
Climate Change Law	Period 2	6.0	R_TL-TP
Current Issues in Migration Law	Period 3	3.0	R_HumRCI
Current Issues in Transnational Law	Period 3	3.0	R_CIsTrL
Human Rights and Citizenship	Period 2	6.0	R_HumRC
Human Rights and the Border	Period 1	6.0	R_HumRB
Internet Governance	Period 1	6.0	R_InternGov

Minor Technology, Law and Ethics

Courses:

Name	Period	Credits	Code
Data Analytics and Privacy	Period 2	6.0	R_DAP
Governance and Regulation of Emerging Technologies	Period 1	6.0	R_GRET
Law and Ethics of Reproductive Technologies	Period 3	6.0	R_LERT
Philosophy and Neuroethics	Period 2	6.0	W_BA_PNEU
Robot Law and Artificial Intelligence	Period 1	6.0	R_RLAI

Minor Development and Global Challenges

Courses:

Name	Period	Credits	Code
Development and Globalization	Period 1	6.0	S_DG
Environment and Development	Period 1	6.0	S_ED
Global Political Economy	Period 2	6.0	S_GPE
Identity, Diversity and Inclusion	Period 2	6.0	S_IDI
Minor's Tutorial in Development and Global Challenges	Period 1+2+3	0.0	S_MWDCG
Urban Studies	Period 1+2+3	6.0	S_UBS

Minor Political Science

Courses:

Name	Period	Credits	Code
Comparative Political Research	Period 1	6.0	S_CPR
EU Governance in an International Context	Period 2	6.0	S_EUGIC
Global Political Economy	Period 2	6.0	S_GPE
Research Project Political Science	Period 2+3	6.0	S_RPPS
State, Power and Conflict	Period 1	6.0	S_SPC

Minor Philosophy

Courses:

Name	Period	Credits	Code
Big Names in Philosophy I	Period 1	6.0	W_BA_KOPI
Big Names in Philosophy II	Period 2+3	6.0	W_BA_KOPII
Ethics I	Period 2	6.0	W_BA_ETH1
Philosophy of Mind II	Period 2	6.0	W_BA_PHMII
Philosophy of Science Minor	Period 1	6.0	W_BA_MWET

Derde jaar Econometrie en Operationele Research – These

Courses:

Name	Period	Credits	Code
Thesis	Ac. Year (September)	12.0	E_EOR3_THS

Specialization Econometrics and Data Science

Programme components:

- [First year Econometrics and Data Science](#)

First year Econometrics and Data Science

The first year of the study consists of compulsory courses (total 60 EC).

Courses:

Name	Period	Credits	Code
Calculus 1	Period 1	6.0	E_EOR1_CAL1
Calculus 2	Period 2	6.0	E_EOR1_CAL2
Corporate Finance in Emerging Economies	Period 5	6.0	E_IBA2_CFEE
Data Analysis 1	Period 3	6.0	E_EOR1_DA1
Data Analysis 2	Period 6	6.0	E_EOR1_DA2
Introduction to Data Science	Period 1+2	6.0	E_EOR1_IDS
Introduction to Programming (Java)	Period 1+2	6.0	X_400634
Linear Algebra	Period 4+5	6.0	E_EOR1_LINA
Macroeconomics I	Period 4	6.0	E_EBE1_MACEC
Statistics	Period 4+5	6.0	E_EOR1_STAT

Honours programme

The Honours Programme (HP) offers several advantages to our students that are summarized on the first page of your BSc in this study guide under the heading of 'General information about the SBE Honours Programme'. All honours courses are special courses that are only accessible to honours students.

The increased study load is 30 EC of honours courses (or more if you prefer). The programme consists at least 12 credits SBE honours courses, of at least 12 credits Interdepartmental honours courses and 6 credits for an elective that you are free to choose within all honours courses offered either by our School or elsewhere by Vrije Universiteit, the University of Amsterdam and Amsterdam University College.

For more information, use the link to Honours Programme at the first page of this study guide.

Programme components:

- [SBE Honours Courses](#)

- [Interdepartmental Honours Courses](#)

SBE Honours Courses

The SBE honours courses of the Honours Programme are taught mainly in the evening by lecturers from our School. The classes are small and you will be expected to give presentations, write papers and make an active contribution to discussions.

The 6 credits of the Research Assistantship count only as elective and not as credits to fulfill the 12 credits of SBE honours courses.

You have to choose at least 12 credits of SBE honours courses from the list below. Enrollment into these courses is via VUnet, except for a Research Assistantship.

Courses:

Name	Period	Credits	Code
Behavioral Game Theory	Period 2	6.0	E_HP2_BGT
Bubbles and Crashes	Period 5	6.0	E_HP1_BC
Contemporary Challenges in Corporate Strategy	Period 4	6.0	E_HP1_CCCS
Economics of Globalization: A Transaction Cost Perspective	Period 4	6.0	E_HP1_EGTC
Research Assistantship Honours Course	Ac. Year (September)	6.0	E_HP2_RASS

Interdepartmental Honours Courses

The interdisciplinary components of the Honours Programme are taught mainly in the evening by lecturers from Vrije Universiteit, the University of Amsterdam and Amsterdam University College, as well as guest lecturers from the Netherlands and abroad. The classes are small and you will be expected to give presentations, write papers and make an active contribution to discussions.

You have to choose at least 12 credits of Interdepartmental honours courses from the overview of interdepartmental honours courses, as well as an application form, at: <http://www.vu.nl/honourscourses>.

Extra cursussen voor toelating tot een van de Masteropleidingen van SBE

Na de bacheloropleiding kun je je verder specialiseren in een masteropleiding. De masteropleiding is een wetenschappelijke opleiding, waarbij niet alleen het doen van onderzoek, maar ook de toepassing van de wetenschap centraal staat. Zo neemt in alle masteropleidingen van onze faculteit het zelfstandig opzetten en uitvoeren van wetenschappelijk onderzoek een belangrijke plaats in. Daarnaast wordt er ook veel met cases gewerkt. Alle masteropleidingen zijn Engelstalig.

Op de introductiepagina van deze studiegids vind je de ingangseisen voor studenten met een FEWEB-Bacheloropleiding Econometrie en Operationele Research voor toelating tot een masteropleiding van FEWEB.

Voor de meeste masters geldt dat je binnen je bachelor de specialisatie of track kunt volgen in die richting en dan direct kunt doorstromen naar die master. In sommige gevallen is dit echter niet mogelijk en zul je extra vakken bovenop je bachelorprogramma moeten volgen voor toelating.

In onderstaande lijst staan alle vakken die niet binnen je curriculum vallen. Mocht je een van onderstaande vakken moeten volgen om toegelaten te kunnen worden tot je gewenste masteropleiding, dan kun je hiervoor op de gebruikelijke manier intekenen via de intekenmodule in VUnet.

Courses:

Name	Period	Credits	Code
Accounting II	Period 1	6.0	E_EBE2_ACC2
Business Information Technology	Period 1	6.0	E_BK2_BUSIT
Contemporary Perspectives on HRM Theory	Period 5	6.0	E_IBK3_CPHRM
Contemporary Perspectives on OB: Leading Change	Period 4	6.0	E_IBK3_CPOB
Corporate Finance	Period 5	6.0	E_EBE2_CF
Debates in Consulting Research	Period 5	6.0	E_IBK3_DCR
Finance II	Period 2	6.0	E_EBE2_FINA2
Financial Accounting	Period 4	6.0	E_EBE2_FAC
Foundations of Strategic Management	Period 4	6.0	E_IBK3_FSM
Knowledge Management	Period 5	6.0	E_IBK3_KM
Management Accounting	Period 5	6.0	E_EBE2_MANAC
Managing and Improving Quality	Period 5	6.0	E_IBK3_MIQ
Microeconomics II	Period 4	6.0	E_EBE2_MICEC
Procurement and Supply Management	Period 4	6.0	E_IBK3_PSM
Small Business Development	Period 5	6.0	E_IBK3_SBD
Strategic Management from a Practice Perspective: A Day in the Life of a CEO	Period 5	6.0	E_IBK3_SMPP
Technology and Innovation Management	Period 4	6.0	E_BK2_TIM
Value Based Marketing	Period 5	6.0	E_EBE2_VBM

A Big Risk Experience

Course code	E_EBE3_BRE ()
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Period	Period 3
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	M.J. Hopman
Examinator	M.J. Hopman
Teaching method(s)	Lecture
Level	300

Course objective

This is the practical course in the minor Risk Management for Financial Institutions (RMFI). The objective is to experience a real risk management challenge or problem in a Financial Institution. In a group of students you will be working on a practical problem regarding risk management. Your group will write a report and give a presentation.

Course content

After the gained knowledge in the four RM courses, it is time to experience risk management in practice. There will be several topics regarding risk available where financial institutions has to deal with. With your group (2-4 students) you will identify, monitor and assess the problem. Depending on the underlying request of the institution you will analyse and find an answer to the problem. Your group will be guided by an risk expert from a financial institution. You will visit and or working at a financial institution on this assignment.

Form of tuition

Kick-off meeting, guidance of experienced risk expert. 4 weeks full practical research, 2 weeks preparation for presentation and report

Type of assessment

Written report and presentation

Course reading

Not applicable

Entry requirements

There is no formal entrance requirement for the Deloitte minor RM except for VWO Wiskunde A (or B).

Recommended background knowledge

A basic course in quantitative methods and/or statistics is strongly recommended

Target group

The Deloitte minor RMFI is for students from all bachelor programmes (with some exceptions, see the admission criteria below) who want to acquire familiarity with Risk Management and Financial Institutions.

Academic Skills: Probability and Inference

Course code	E_EOR1_ACSK ()
Period	Period 6
Credits	6.0

Language of tuition	Dutch
Faculty	School of Business and Economics
Coordinator	dr. C.S. Bos
Examinator	dr. C.S. Bos
Teaching staff	dr. C.S. Bos
Teaching method(s)	Lecture
Level	100

Course objective

Contemplate the links between notions of probability and inference.
 Stimulate thinking of economic data as realization of random variables.
 Learn how to make use of the information contained in the data. Practice how to implement tests and simulations using matrix-oriented software.
 Study how to present results.

Course content

- Practice implementing exercises in software in a matrix-oriented environment
- Think about presentation in writing and wording: What is important for audience, what does it mean to be complete, clear, concise, and academic?
- Revisit the notions of conditional density and conditional expectation and explore their role in inference.
- Revisit the Law of Large Numbers (LLN) and the Central Limit Theorem (CLT) and explore their role in approximate inference.
- Understand the role of the random sample assumption in the LLN and CLT, and discuss its adequacy in economics.
- Explore relationships between random variables.

Form of tuition

Lectures, practicals, question hours

Type of assessment

Assignments, presentation.
 The final grade will only be granted if the conditions of Colloquium II are met.

Course reading

Slides and relevant articles

Recommended background knowledge

Knowledge of analysis, probability theory and statistics at the first year bachelor level.

Accounting and IT Systems I

Course code	E_EBE3_AIT1 ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	drs. J.G.I. van den Belt RA
Examinator	drs. J.G.I. van den Belt RA

Teaching method(s)	Lecture, Seminar
Level	200

Course objective

Knowledge:

Students are able to translate a situation from the fields of financial accounting, management accounting or tax into the book-keeping of a company. In other words: learn to think in journal entries.

Bridging theory and practice:

Students will learn the consequences in the book-keeping of decisions that are taken in the organization, but also how information from the book-keeping supports management with decision taking.

Course content

For the basic functions in an organization as well as for some advanced themes consequences in the book-keeping are taught. After the basic concepts of the system of book-keeping are discussed (or refreshed) journal entries of typical processes that exist with a service, trade and production organization are taught. Next, the representation of some general items in the books of a company is discussed, among others: reporting principles; provisions; fiscal versus commercial valuation and mergers and consolidation.

Form of tuition

Lectures.
Tutorials.

Type of assessment

Written exam – Individual assessment.
Interim Assignments – Individual assessment.

Course reading

Bouwer, H.J., Emmerson, M. and M.B.J. Schauten (2013). Basics of bookkeeping, Noordhoff Uitgevers, Groningen/Houten, ISBN 978-90-01-83284-1, 1-220.

Additional reading will be announced on Canvas.

Entry requirements

Basic theory of book-keeping.

Accounting and IT Systems II

Course code	E_EBE3_AIT2 ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	drs. J.G.I. van den Belt RA
Examinator	drs. J.G.I. van den Belt RA
Teaching method(s)	Lecture, Seminar
Level	200

Course objective

The goal of this course is to give insight into the acquisition and implementation of an ERP-system as well as the relationship between recording data in the primary process and journal entries in the ERP-system.

Knowledge:

Research on the factors that influence the success of acquisition and implementation of an ERP-system as well as the realization of a business case is discussed. Practical knowledge about the ERP-system SAP will be gained.

Bridging theory and practice:

Themes that were learned in Accounting and IT Systems I will be brought into practice with the application SAP.

Quantitative skills:

Realization of purchases, production and sales in a company is analyzed a.o. by comparison with planned figures and reported to management.

Course content

The theoretical part starts with some basic concepts of automation in a company followed by the acquisition, implementation, operation and management of an ERP-system from a practical as well as an academic point of view. Attention is given to the influence of an ERP-system on business and administrative processes.

In the practical part a business is set up in SAP and a purchase, production and sales process is simulated resulting in management reports about the performance of the company.

Form of tuition

Lectures.

Tutorials.

Type of assessment

Written exam – Individual assessment.

Case – Individual assessment.

Course reading

Laudon & Laudon, Management Information Systems, Managing the digital firm, Global Edition, isbn 1397812920940

D.J. Schenk, C.T. Draijer, Hands-on with SAP ERP and IDES, ISBN 9781783654529 (free download from Bookboon)

VU-Syllabus (published on Canvas)

Academic papers (published on Canvas)

Details will be announced on Canvas.

Recommended background knowledge

Accounting and IT Systems I

Accounting II

Course code	E_EBE2_ACC2 ()
Period	Period 1
Credits	6.0
Language of tuition	Dutch
Faculty	School of Business and Economics
Coordinator	dr. G. Budding
Examinator	dr. G. Budding
Teaching method(s)	Study Group, Lecture, Response class
Level	200

Accounting Information Systems

Course code	E_EBE3_ACIS ()
Period	Period 4
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	drs. J.B.T. Bergsma RA
Examinator	drs. J.B.T. Bergsma RA
Teaching method(s)	Lecture, Seminar
Level	300

Advanced Practical

Course code	E_EOR2_ADVP ()
Period	Period 6
Credits	6.0
Language of tuition	Dutch
Faculty	School of Business and Economics
Coordinator	dr. A.A.N. Ridder
Examinator	dr. A.A.N. Ridder
Teaching method(s)	Lecture, Study Group
Level	200

Advanced Programming

Course code	X_400561 (400561)
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	ir. M.P.H. Huntjens
Examinator	ir. M.P.H. Huntjens
Teaching staff	ir. M.P.H. Huntjens

Teaching method(s)	Lecture
Level	200

Course objective

To learn advanced programming skills, to get to know and understand advanced programming concepts like inheritance and to get experience with programming some of the data structures that were taught in the course Data Structures & Algorithms.

Course content

abstract data types (ADT's), exceptions, inheritance, interfaces, modifiers, polymorfisme, marker interfaces, wrapper classes, Javadoc, super, this, instanceof, copy constructor, from class Object: clone(), equals() and toString(), auto (un)boxing, generic classes, command line arguments, iterators, interface Iterable, for-each statement, methods with a variable number of parameters, implementation of: list and binary search tree, EBNF, parsing when EBNF of input is given, from API: ArrayList

Form of tuition

lectures and practicals

Type of assessment

practical

Course reading

Absolute Java, Walter Savitch, Pearson International Edition, Fifth International Edition, ISBN: 978-0-273-76479-3.

Entry requirements

Practical of Programming (X_400554)

Target group

2CS, 2BA, 3ECTR

Remarks

Via VUnet en BB

Agriculture for Food and Nutrition Security

Course code	E_MG_AFNS ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. ir. B.G.J.S. Sonneveld
Examinator	dr. ir. B.G.J.S. Sonneveld
Teaching method(s)	Lecture, Study Group, Computer lab
Level	200

Course objective

After successfully completing this course, students will:

- be familiar with main concepts of agronomy relevant for Food and Nutrition Security (FNS) analysis;

- understand the relation between locational (environmental) factors and the food production system;
- understand the relation between food production systems and FNS;
- be able to analyze these relationships with empirical data, including spatial analysis, and to interpret the results;
- be able to critically reflect and communicate on contemporaneous land use issues.

Course content

- Understanding the interlinkage between locational (environmental) factors and the food production system;
- Understanding the interlinkage between agricultural production systems and food productivity;
- Understanding the position of agriculture in total land use.

Form of tuition

Lectures (7 x 2 hours), workgroups (6 x 4 hours).

Type of assessment

Exam (60%), assignments (30%), presentation (10%)

Recommended background knowledge

Basics of geography; basics of biology

Target group

Bachelor students interested in Food Security

Remarks

In this course you will learn the basic agronomic principles underlying the interlinkages between food production and agricultural production systems on the one hand, and between agricultural production systems and environmental resources on the other hand. Basic principles of crop and livestock production will be introduced, and you will learn how they are employed across different production systems and how they affect the interaction between production systems and the environment. Given that the nature of these linkages also vary across space and time, the course will have an explicit temporal (dynamic and historical) and spatial focus to understand long term trends and diversity in food production and environmental impacts. Also alternative agricultural production systems to the dominant systems currently in used will be discussed, such as low input farming systems, including their potential for up-scaling and sustainability. You will also be taught the basics of GIS and how spatially explicit analysis can be utilized to better understand land use patterns and production possibilities and restrictions

American Film: Cinematic Representations of the "Other"

Course code	L_ELBAELK208 ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Geesteswetenschappen
Coordinator	dr. R.V.J. van den Oever
Examinator	dr. R.V.J. van den Oever
Teaching staff	dr. R.V.J. van den Oever
Teaching method(s)	Seminar

Level	200
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Course objective

Students become acquainted with the study of identity representation in American film.

Course content

What theoretical questions arise when studying the representation of identity - think of race, gender, sexuality - in American film? Per meeting, we discuss a particular theoretical issue - for instance, stereotyping, the male gaze, character engagement, identity politics, queer subtext - after which students apply this theoretical perspective to an assigned filmic text.

Form of tuition

Seminar meetings, 2 x 2 hours per week.

Type of assessment

Exam.

Course reading

To be announced.

Entry requirements

None.

Target group

This course is part of two minor packages: (1) American Studies; (2) Gender and Diversity. Students from other Bachelor's programs are welcome.

Registration procedure

There is a slightly different enrollment procedure for this course. The standard procedure of the Faculty of Humanities has students sign up for (i) the course, (ii) the type of class (lecture and/or preferred seminar group), and (iii) the exam. However, for this course the instructor will assign the students to the seminar groups. Therefore, students should sign up for (i) the course, (ii) the lectures (if applicable), and (iii) the exam, but not for the seminar groups.

There is limited seating in this course. Priority will be given to students of two minor packages: (1) American Studies; (2) Gender and Diversity. Students from other Bachelor's programs are initially placed on a waiting list.

Remarks

The level of English in this course is high.

Analysis I

Course code	X_400641 ()
Period	Period 1+2
Credits	6.0
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	dr. ir. R.F. Swarttouw
Examinator	dr. ir. R.F. Swarttouw

Teaching staff	dr. ir. R.F. Swarttouw
Teaching method(s)	Lecture, Seminar,
Level	100

Analysis II

Course code	X_400642 ()
Period	Period 4+5
Credits	6.0
Language of tuition	Dutch
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	dr. ir. R.F. Swarttouw
Examinator	dr. ir. R.F. Swarttouw
Teaching staff	dr. ir. R.F. Swarttouw, dr. M.A. Estevez Fernandez
Teaching method(s)	Lecture, Seminar,
Level	100

Applications in Economic Policy: Policy Analysis, Formulation and Evaluation

Course code	E_ME_AEP ()
Period	Period 3
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. W. Zant
Examinator	dr. W. Zant
Teaching method(s)	Lecture, Study Group
Level	300

Course objective

The objective of this course is to develop your capability to independently analyse a policy issue, design a policy response, or evaluate a policy intervention from an economic point of view.

Specific learning outcomes upon completion of this course are:

- you are able to identify a relevant (economic) policy issue, to motivate the urgency of the issue, and to formulate an appropriate research question;
- you are able to locate relevant economic theory in the literature and to apply it correctly in order to analyse the policy issue and to identify the economic rationale of potential or actual policy responses;
- you are able to identify, interpret and compare empirical findings from the economic literature to describe the policy issue, and/or the behavioural response of the market and government actors, and/or the impact of these responses;
- you have developed a critical attitude to the relevance and shortcomings of empirical data compared to theoretical requirements, and have become aware of limitations in insights that can be gained from theoretical reasoning alone when addressing real-life issues;

- you are able to present your findings clearly to academic expert and non-expert audiences;
- you are able to work independently, while incorporating relevant feedback into their work;
- you are able to give constructive feedback to peers.

Course content

In this intensive period course, you work in a policy area of your choice (e.g. international financial systems and banking regulation, macro policy, development and growth, environment, urban/transport, health, human capital, competition policy, industrial policy). You write an economic policy-oriented research paper focusing on policy analysis, design and/or evaluation.

Form of tuition

One introductory lecture followed by weekly working groups (compulsory attendance)

Type of assessment

Paper, presentation and working group participation

Course reading

Various theoretical and empirical academic papers (dependent on the topic)

Entry requirements

Foundations of Microeconomics and Development of Macroeconomic Thought

Recommended background knowledge

Business Cycles and Stabilization Policy and Structural Policy

Applications in Food and Nutrition Security Analysis

Course code	E_MG_AFNSA ()
Period	Period 3
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. R. de Wildt-Liesveld MSc
Examinator	dr. R. de Wildt-Liesveld MSc
Teaching method(s)	Lecture
Level	300

Applied Analysis: Financial Mathematics

Course code	X_400076 (400076)
Period	Period 1+2
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	prof. dr. A.C.M. Ran
Examinator	prof. dr. A.C.M. Ran

Teaching staff	prof. dr. A.C.M. Ran
Teaching method(s)	Lecture
Level	400

Course objective

The course aims to introduce the student to several aspects of the mathematical theory of option pricing.

Course content

This course gives an introduction to financial mathematics.

The following subjects will be treated:

- introduction in the theory of options;
- the binomial method;
- introduction to partial differential equations;
- the heat equation;
- the Black-Scholes formula and applications;
- introduction to numerical methods, approximating the price of an (American) option.

Form of tuition

Lectures, exercises, discussion of exercises.

Type of assessment

Homework exercises and final examination

Course reading

The Mathematics of Financial Derivatives, A Student Introduction, by Paul Wilmott, Sam Howison, Jeff Dewynne. Cambridge University Press.

In addition, lecture notes will be made available for several topics which are not treated in the book.

Recommended background knowledge

Calculus and Linear Algebra

Target group

3W, mMath, mBA, 3Ect

Applied Exercise Physiology

Course code	B_TIF (900322)
Period	Period 2
Credits	6.0
Language of tuition	Dutch
Faculty	Fac. der Gedrags- en Bewegingswetensch.
Coordinator	dr. J.J. de Koning
Examinator	dr. J.J. de Koning
Teaching staff	dr. J.J. de Koning, dr. R.T. Jaspers, prof. dr. H.A.M. Daanen
Teaching method(s)	Lecture, Practical
Level	300

Auditing

Course code	E_EBE3_AUD ()
Period	Period 5
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	prof. dr. A.H. Gold
Examinator	prof. dr. A.H. Gold
Teaching method(s)	Lecture, Seminar, Instruction course
Level	300

Course objective

The goal of this introductory course to auditing is to learn about fundamental elements of (financial statement) auditing, both from a practical perspective and from a theoretical/academic point of view. With respect to the practical perspective, students will be exposed to the purpose of and economic demand for auditing, fundamental elements of conducting an audit, and the process employed by financial auditors (Knowledge; Academic skills; Bridging theory and practice). Significant attention will be devoted to ethical threats facing the auditor (Self-awareness, General development). Finally, students will analyze, discuss and interpret academic audit research output (Knowledge; Research skills; Academic skills).

More specifically, on successful completion of this course, students will be able to:

- explain the economic and societal role of financial audits;
- describe applicable regulatory and ethical requirements that guide the conduct of audits and determine when these requirements are applicable;
- describe the career path that the auditing profession offers;
- define the main concepts of auditing, such as reasonable assurance, the audit risk model, and materiality;
- identify and illustrate all the stages of the audit process;
- reflect on ethical dilemmas that the student will face in his/her future role as auditor;
- analyze and interpret auditing cases using the obtained knowledge about main auditing concepts, the audit process, and given ethical awareness;
- recall the essence of a select number of state-of-the-art research articles in auditing and critically discuss and reflect on their findings.

Course content

Auditing involves the testing and evaluation of evidence against agreed norms or criteria. The auditor has an important societal function because financial statement users (e.g. shareholders) and other stakeholders require some level of third party assurance on the qualitative aspects of information found in the financial statements, such as information reliability and relevance. For example, shareholders require primarily assurance about the reliability of financial statements, since they use these statements for their professional decision-making. Providers of debt financing, such as banks, need to know whether the presented liquidity ratios are accurate.

The course will focus on the role of the auditor in society and what demands this role imposes on the auditor. We start by giving an introduction to the demand for auditing, relying on the theoretical

economic foundations of the profession. Next, the course focuses on the audit process, starting with the planning stage of the audit, where the auditor obtains an understanding of the client and its business and designs the audit plan, while paying careful attention to the audit risk model. The next two audit stages discussed at a general level include the conduct of audit procedures. Auditors can obtain various types of audit evidence to test the assertions (claims) made by management in the financial statements. The audit process concludes with the completion stage of the audit. By examining audit evidence obtained during an audit, auditors ultimately decide which type of auditor's report to issue. We also devote significant attention throughout the course on the audit profession's need for ethical behavior and professional skepticism, as well as the auditor's role and responsibilities with respect to fraud. Throughout the course, students will be offered the opportunity of interacting with practice during audit firm visits, practice-based case studies and/or guest lectures by practitioners.

Aside from offering students a practice-based introduction to the auditing profession, students will also be exposed to the academic auditing discipline by reading a selection of academic audit research papers and discussing the importance of the findings for the auditing profession.

Form of tuition

Lectures.
Tutorials.

Type of assessment

Multiple choice quizz(es) – individual assessment.
Essay - individual assessment.
Cases - group assessment.
Written exam with multiple choice and open questions – individual assessment.

Course reading

- 'Principles of Auditing' by Rick Hayes, Hans Gortemaker, and Philip Wallage, Pearson 3rd Edition.
- Academic papers (available on Canvas).
- Additional readings will be announced on Canvas.

Recommended background knowledge

Basic understanding of Financial Accounting and Accounting Information Systems.

Automata and Complexity

Course code	X_401049 (401049)
Period	Period 4
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	drs. J. Endrullis
Examinator	drs. J. Endrullis
Teaching staff	drs. J. Endrullis
Teaching method(s)	Lecture, Seminar

Course objective

The student is acquainted with important notions and algorithms regarding formal languages, automata, grammars, compilers, computability and complexity.

This course addresses foundational questions in computer science, such as: "What is a (programming) language?", "How can languages be recognised by computers (automata)", "Which problems can be solved using a class of automata?", "How much time and memory does solving a problem require?".

The course is divided into the following parts: automata & languages and computability theory (and, if time permits, quantum computing).

Course content

The first part, on automata and languages, deals with the concepts of formal language, grammar, and automaton. Two types of languages are covered: regular and context-free languages. Regular languages are used, e.g., in search queries, in the form of regular expressions.

Context-free languages are suitable to describe programming languages. The automata-theoretic counterparts here are finite automata and the more powerful pushdown automata. Pumping lemmas are discussed to determine whether a language is regular or context-free. With each type of language a class of grammars is associated: left-linear and context-free grammars. Parsing algorithms are presented for context-free languages, to determine whether a string is in the language.

In the second part of the course, on computability theory, the central question is "Which computations can be performed on a computer?". To reason about this question, Turing machines are introduced, as well the Church-Turing thesis, along with examples of undecidable problems: the halting problem and the Post correspondence problem. It is shown how undecidability of new problems can be shown by reduction from a known undecidable problem. Important complexity classes from the complexity hierarchy are discussed, notably P, NP, and NP-complete, together with the corresponding reduction arguments.

If there is enough time left, the final part treats basic concepts in quantum computing: qubits, entanglement and quantum-operations. It is shown how quantum computing can improve computing, first using a parity game, and later by introducing Simon's algorithm. The latter solves a problem in polynomial time, where in the traditional setting the best known solution has an exponential time complexity. We conclude with the quantum and probabilistic complexity classes BQP and BPP.

Form of tuition

4 hours per week lectures; 4 hours per week exercise classes

Type of assessment

Weekly homework exercises (which can earn up to 0.5 bonus points). The homework is mandatory to qualify for the exam.

Written exam.

Course reading

Target group
3CS

Bayesian Statistics

Course code	XBU_400468 ()
Period	Period 4+5
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Teaching method(s)	Lecture, Seminar,
Level	400

Target group
3W

Remarks

This course is offered at the UvA. For more information contact: FNWI Education Service Centre, Science Park 904, servicedesk-esc-science@uva.nl, +31 (0)20 525 7100.

Enrolment via <https://m.sis.uva.nl/vakaanmelden> is required.

Behavioral Finance and Real Estate

Course code	E_EBE3_BFRE ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	prof. dr. M.J. van den Assem
Examinator	prof. dr. M.J. van den Assem
Teaching staff	prof. dr. M.J. van den Assem, dr. K.L. Wolk, dr. D. van Dolder
Teaching method(s)	Lecture
Level	300

Course objective

The aims of the course are to understand:

- how people are subject to distortions or biases in their beliefs and have preferences that are not understood in a normatively acceptable framework;
- how behavioral biases affect the decisions of participants in real estate markets;
- how the bounded rationality of market participants can explain the dynamics of real estate markets.

Course content

This course provides a behavioral perspective on real estate decision making and markets. In particular, students learn how behavioral biases

affect the decisions of participants in real estate markets, and how the bounded rationality of market participants can explain real estate market dynamics. The course starts with a general introduction into the psychology of decision making. The second part provides a psychological perspective on property valuations, negotiation outcomes, and mortgage choices. The last part of the course considers the efficiency and dynamics of real estate markets, with a special focus on bubbles and crashes.

Form of tuition

Lectures (2 times 3 hours per week)

Type of assessment

Written exam (80%) and assignment (20%)

Course reading

- Bazerman & Moore, Judgment in Managerial Decision Making, Wiley, most recent edition.
- Selected articles (to be announced).

Target group

This course is part of the Minor Real Estate Economics and Finance.

Behavioral Game Theory

Course code	E_HP2_BGT (60322180)
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. H.E.D. Houba
Examinator	dr. H.E.D. Houba
Teaching staff	dr. H.E.D. Houba
Teaching method(s)	Lecture
Level	300

Course objective

To get acquainted with behavioral game theory: what is it, what does it want to accomplish, and can it deliver with respect to the aims it has set. This includes explaining why observed behavior in experiments systematically deviates from predictions made by classical Game Theory. Through performing classroom experiments students will get a more intense experience of what it means to participate in a game setting, to better interpret and understand experimental design and develop a critical attitude towards empirical evidence from experiments.

Course content

Everywhere people, firms and institutions interact with each other in many different settings. For instance, negotiations for a contract or treaty, individuals or firms contributing to a joint partnership, managers motivating employees. Firms competing on the market, including web-shops, procurement auctions in B2B for contractors, and art-lovers competing at Christies. In all cases, the final outcome for each participant also depends upon the behaviour of others. Each participant has to deal with the strategic uncertainty about how the others will

behave. Game theory deals with such strategic uncertainty.

For these reasons, game theory has become an influential toolbox in all branches of Economics, Finance, Management Science and other Social Sciences.

It sometimes serves a normative role for policy advice (central banks should be independent), and at other times a descriptive role (keeping right when driving is stable and explains reality). There is also substantial evidence from experiments and reality that Game theory (and Economic Theory in general) sometimes makes lousy predictions. This course offers an inquiry for understanding the discrepancy between theory and reality. Also, theoretical developments to resolve this discrepancy need investigation.

The inquiry starts with laying bare the foundations of Game Theory: What are the driving principles and can these principles be tested in practice? What empirical evidence has behavioral economics produced, in particular for game theoretic experiments. This evidence will be investigated to establish the discrepancy between theory and reality. Finally, theoretical attempts to restore the descriptive power of Game Theory are discussed.

Form of tuition

Because of the small group size (less than 15 students), the format differs from regular bachelor courses. The course consists of a mixture of classroom experiments, lectures in which participants and lecturer interact, presentations, discussions, reading scientific literature.

Type of assessment

Presentation and a final individual assignment that includes conducting experiments and writing an essay.

Course reading

Selected scientific articles that are disclosed through Canvas.

Entry requirements

None, except some elementary knowledge of economics and statistics.

Recommended background knowledge

None

Target group

Honours students from SBE, other honours students

Blackboard/Canvas Explanation

Canvas

Registration procedure

SBE rules and dates apply for this SBE HP course. Registration for this SBE HP course is via VU.net.

Behaviour Genetics

Course code	P_BBEHGEN ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	Fac. der Gedrags- en Bewegingswetensch.
Coordinator	prof. dr. C.V. Dolan
Examinator	prof. dr. C.V. Dolan
Teaching staff	prof. dr. C.V. Dolan
Teaching method(s)	Lecture, Practical
Level	300

Course objective

The aim of this course is to introduce students to behavior genetics as applied to psychological variables. The students will learn what questions behavior genetics addresses, and how these questions are answered using the classical twin design, and some extensions of this design. The course includes practicals in which you will analyze real and simulated twin data using the R library OpenMx.

Course content

This course will include explanation of the following:

- 1) The biometric model, underlying the twin and family designs which are used to infer the role of genetic and environmental effects from family resemblance).
- 2) Univariate and multivariate modeling of twin data using OpenMx (an R library) in the programming environment R
- 3) The meaning of gene-environment interplay (genotype X environment interaction, and genotype -environment correlation) and to model these in the classical twin design.
- 4) Detailed discussions of applied papers and papers concerns the statistical background of the twin design.

Form of tuition

Lectures and computer practicals

Type of assessment

A exam consisting of open and multiple choice questions and take-home computer assignments which are based directly on the computer practicals.

Course reading

Articles + book chapters

Entry requirements

Please note: this course includes a statistical component.

You are expected to have a basic practical understand of correlation, linear regression and basic descriptive statistics, such as means, variance, standard deviation.

Some experience in the use of statistical programs like SPSS is useful.

Knowledge of R is an advantage.

However, the practicals include explanation of R (using the R studio interface).

Big Names in Philosophy I

Course code	W_BA_KOPI ()
Period	Period 1
Credits	6.0
Language of tuition	Dutch
Faculty	Faculteit der Geesteswetenschappen
Coordinator	prof. dr. M. Martijn
Examinator	prof. dr. M. Martijn
Teaching staff	prof. dr. M. Martijn
Teaching method(s)	Lecture
Level	200

Big Names in Philosophy II

Course code	W_BA_KOPII ()
Period	Period 2+3
Credits	6.0
Language of tuition	Dutch
Faculty	Faculteit der Geesteswetenschappen
Coordinator	dr. J.M. Halsema
Examinator	dr. J.M. Halsema
Teaching staff	dr. J.M. Halsema, dr. C.H. Krijnen
Teaching method(s)	Lecture
Level	200

Biological Psychology (UM)

Course code	P_UBIOPSY ()
Period	Period 2
Credits	6.0
Language of tuition	Dutch
Faculty	Fac. der Gedrags- en Bewegingswetensch.
Coordinator	dr. D. van t Ent
Examinator	dr. D. van t Ent
Teaching staff	dr. D. van t Ent
Teaching method(s)	Lecture
Level	200

Biomedical Mathematics

Course code	X_401056 (401056)
Period	Period 4+5
Credits	6.0

Language of tuition	Dutch
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	dr. R. Planque
Examinator	dr. R. Planque
Teaching staff	dr. R. Planque, dr. W.N. van Wieringen
Teaching method(s)	Lecture, Seminar,
Level	300

Brain in Trouble

Course code	AB_1038 ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	Fac. der Aard- en Levenswetenschappen
Coordinator	dr. H.K.E. Vervaeke
Examinator	dr. H.K.E. Vervaeke
Teaching staff	prof. dr. S. Spijker, prof. dr. T.J. de Vries, dr. H.K.E. Vervaeke
Teaching method(s)	Lecture, Study Group, Computer lab
Level	300

Course objective

The goal of this course is to deepen understanding of the etiology, expression and treatment of (psychiatric) brain disorders, as well as models used in preclinical science. Students will be encouraged to critically analyze the impact of brain disorders on society.

Learning outcomes:

The student is able to explain the contribution of genetic and environmental factors to complex multifactorial diseases such as mental disorders.

The student is able to elaborate on various treatment options for psychiatric disorders.

The student is able to critically reflect on the boundaries between normal (healthy) and abnormal (ill) behavior and the implications for society.

Course content

The focus of this course is on the etiology of mental disorders, such as addiction, ADHD, obsessive-compulsive disorder, eating disorders and mood disorders, with special attention for the nature-nurture discussion. Various treatments options for these conditions, including the use of pharmacological agents, behavioral therapy and deep brain stimulation will be discussed. Students will be challenged to critically reflect on the boundaries between normality and abnormality and the implications for society.

First Theme: addiction and impulsivity

What is addiction? Is addiction truly a brain disorder? Do genes play a role in addiction? How does society view illicit drug use and addiction? Are all drugs equally harmful? How to treat addiction? Is ADHD a real mental disorder, or a cultural construct used to bring deviant or socially undesirable behavior under medical surveillance and control? Is it a good idea to treat children who have been diagnosed ADHD, with psychostimulant medications? What is the role of pharmaceutical companies? Do sugar and food additives elicit hyperactive behavior? Are there any advantages in having ADHD?

Second Theme: obsessive compulsive disorders, eating disorders and cognitive enhancement

Can you treat OCD with Deep Brain Stimulation? Is our Western beauty ideal at the root of eating disorders? Is the individual to blame for being obese? Is it ethical to improve your mental performance by cognitive enhancers?

Third Theme: mood disorders & social behaviours

Is depression a real brain disorder or an inability of our culture to accept sadness as an integral part of life? Do genes play a role in the etiology of major depressive disorder and bipolar disorder? What is the efficacy of pharmacotherapy and behavioral therapy? What is the role of pharmaceutical companies?

Is there a neural basis to antisocial behavior? If biology and circumstance conspire to prime certain individuals toward violence, how much responsibility do people really bear for their actions? Are violent delinquents worth treating? Should brain imaging / genetic profiling be used in legal cases? Can neuroscience assist in determining responsibility? If neural circuitry underlying morality is compromised, is it morally wrong to punish prisoners?

Form of tuition

Lectures (30 hours), computer practical (2 hours), homework assignments (6 hours), class discussions (2 hours)

Course coordinators are Hylke Vervaeke and Taco de Vries

Type of assessment

Written exam (combination of MC-questions and open-end questions) (75%) and class discussions/assignments (25%), each at least grade 5.5.

Course reading

"Foundations Of Behavioral Neuroscience" by N.R. Carlson (Pearson Education (US)), 8th edition.

Extra literature on Canvas

Recommended background knowledge

The courses 'Cognitive Neuroscience' and 'Nature vs. Nurture' from the minor 'Brain & Mind'

Target group

Part of minor Brain and Mind

Open to students from all educational backgrounds (e.g., exact, social, life and economic sciences) with an interest in the brain and mind.

Registration procedure

Groups for Class Discussions and Home-work Assignments via Canvas

Remarks

Central Academic Skill: Debating and discussing

Bubbles and Crashes

Course code	E_HP1_BC ()
Period	Period 5
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. A.H. Siegmann
Examinator	dr. A.H. Siegmann
Teaching staff	dr. A.H. Siegmann
Teaching method(s)	Lecture
Level	300

Course objective

The goal of the course is to introduce you to the economic thinking on the causes of stock market bubbles and crashes. Two additional goals are the development of your discussion skills and writing in English.

Course content

The financial crisis that started in 2007/2008 led to the most serious economic and financial crisis since the 1930s. However, many of the elements of the current crisis are not new. In fact, there is a whole body of literature studying bubbles and crashes. In this course, we will learn about historical bubbles, crises and their causes, and the economic models that offer an explanation for these phenomena. The models include behavioral finance explanations as well as classical theories on the behavior of lenders, borrowers, investors and political institutions.

Form of tuition

The course is structured as a series of discussion sessions, for which students prepare discussion questions on selected academic papers. The role of chair is rotated among students. Three assignments deal with (i) identifying stock market crashes, (ii) predicting crashes, and (iii) setting up and evaluating an investment strategy that exploits bubble and crash patterns over time.

Type of assessment

The course grade consists for 50% of preparation and in-class participation and for 50% of the assignments.

Course reading

A reader is provided by the lecturer at a cost of €10.

Target group

The intended audience is second and third-year students of Economics and Business Economics, (International) Business Administration and Econometrics.

Registration procedure

SBE rules and dates apply for this SBE HP course. Registration via VUnet.

Business Cycles and Stabilization Policy

Course code	E_ME_BCSP ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. M. Mastrogiacomo
Examinator	dr. M. Mastrogiacomo
Teaching method(s)	Lecture, Seminar
Level	200

Course objective

The objective of the course is to introduce you to the theory and practice of macroeconomic and monetary policy, including regulation of the financial system. This course is complementary to the parallel course of Structural Policy. It is highly recommended to take both courses.

Specific learning outcomes upon completion of this course are:

- Ability to apply macroeconomic concepts and theories to analyze problems of employment and inflation;
- Capability to analyze the role macroeconomic policymakers in managing business cycles;
- An understanding of the policy problems facing central banks;
- Ability to interpret recent macroeconomic empirical work on economic crises and the effects of fiscal and monetary policy.

Course content

The course starts with discussing the historical development of macroeconomic theories explaining the origin of business cycles:

- Say's law versus Malthus' gluts;
- The Great Depression and the Keynesian revolution: Keynes, Hicks, Modigliani, Samuelson;
- Business cycle theory: Schumpeter, Austrians, Kuznets;
- Recent financial crises.

Next, the course continues with discussing the roles of different authorities in conducting macroeconomic policies. This part of the course includes the following topics:

- Money: creation, control of the money supply, interest rates, bank reserves, securitization;
- Central banking: Fed, ECB, independence, different targets;
- Stabilizing role of Fiscal policy: automatic stabilizers, crowding out, budget deficits, effectiveness;
- Stabilizing role of Monetary policy: Taylor rules, quantitative easing, liquidity trap, effectiveness;
- The Debt-Driven Crisis: the Micro-explanation to the Great Recession.

The course concludes with discussing recent empirical work on economic crises and the effects of fiscal and monetary policy.

This course is the sequel to the course Development of Macroeconomic Thought and is suggested to be taken together with the course of Structural Policy that runs in parallel.

Form of tuition

Lectures, guest lectures and working groups

Type of assessment

Grade is average of problem sets (30 %) and written examination (70%), with written exam grade of at least 5.0. To those who participate into less than four compulsory tutorials and/or do not deliver their tutorial work, one point will be subtracted from the final grade.

Course reading

Acemoglu, Daron, David Laibson and John A. List, 2016, Economics, Harlow, Essex, Pearson Education Ltd. ISBN 13: 978-1-292-07920-2, incl. access code MYECONLAB.

Entry requirements

Basic knowledge of math and statistics, as provided in the academic core of any academic program at the Vrije Universiteit Amsterdam or equivalent.

Recommended background knowledge

Development of Macroeconomic Thought

Business Information Technology

Course code	E_BK2_BUSIT ()
Period	Period 1
Credits	6.0
Language of tuition	Dutch
Faculty	School of Business and Economics
Coordinator	dr. M.G.A. Plomp
Examinator	dr. M.G.A. Plomp
Teaching method(s)	Lecture, Study Group
Level	200

Business Intelligence and Analytics

Course code	E_IBK3_BIA ()
Period	Period 4
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	M. Shafeie Zargar
Examinator	M. Shafeie Zargar
Teaching method(s)	Lecture, Seminar, Instruction course, Response class
Level	300

Course objective

Being able to define, describe and recall the basic concepts, principles and theories underlying business intelligence & analytics solutions (decision support systems). Also, to classify and compare business intelligence & analytics solutions as well as the constituent components of business intelligence & analytics solutions (Academic Skills).

Become proficient at exploring data-driven business models and to apply business intelligence & analytics concepts, principles and theories to business problems (Quantitative Skills).

Learn to explore, analyze and determine how big data can drive business model innovation as well as to analyze business cases, and propose business intelligence & analytics solutions and decide which data to use given a business problem to be solved (Knowledge).

Adeptly evaluating and discussing the organizational and social implications of business intelligence & analytics solutions and to create insights using established business intelligence & analytics tools (Bridging Theory & Practice).

Course content

Data is hot! How organizations deal with the overabundance of data and the ability to transform data into insights have become critical success factors for every organization. Key words in this context are 'big data', 'data science', and 'data-driven decision making and innovation'. This course offers the handles that are needed to fully deploy the potential of data, and business intelligence & analytics solutions in order to create competitive advantage. The course primarily has a managerial focus, technology will be used primarily to create hands on experience with relevant BI&A technologies and as such enhance insights in their features and characteristics. There is a lot of business involvement in this course: experts from industry and BI&A consultants will share their insights and experience in the weekly workshops.

Form of tuition

Lectures
Tutorial classes & workshops

Type of assessment

Written exam – Individual assessment
Analytics practicum tests – Individual assessment

Course reading

This course is article based. Readings are specified in the course manual.

Recommended background knowledge

Recommended knowledge Elementary course on (Management) Information Systems (for example: Laudon, K.C. & Laudon, J.P. (2016). Essentials of MIS (12th edition).

Basic knowledge on statistics and Microsoft Excel.

BK: 2.1 Business Information Technology
IBA: 2.1 Business Information Systems

Business Intelligence and Analytics

Course code	E_MM_BIA ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	prof. dr. J.F.M. Feldberg
Examinator	prof. dr. J.F.M. Feldberg
Teaching method(s)	Lecture, Seminar, Response class

Course objective

Being able to define, describe and recall the basic concepts, principles and theories underlying business intelligence & analytics solutions (decision support systems). Also, to classify and compare business intelligence & analytics solutions as well as the constituent components of business intelligence & analytics solutions (Academic Skills).

Become proficient at exploring data-driven business models and to apply business intelligence & analytics concepts, principles and theories to business problems (Quantitative Skills).

Learn to explore, analyze and determine how big data can drive business model innovation as well as to analyze business cases, and propose business intelligence & analytics solutions and decide which data to use given a business problem to be solved (Knowledge).

Adeptly evaluating and discussing the organizational and social implications of business intelligence & analytics solutions and to create insights using established business intelligence & analytics tools (Bridging Theory & Practice).

Course content

Data is hot! How organizations deal with the overabundance of data and the ability to transform data into insights have become critical success factors for every organization. Key words in this context are 'big data', 'data science', and 'data-driven decision making and innovation'. This course offers the handles that are needed to fully deploy the potential of data, and business intelligence & analytics solutions in order to create competitive advantage. The course primarily has a managerial focus, technology will be used primarily to create hands on experience with relevant BI&A technologies and as such enhance insights in their features and characteristics. There is a lot of business involvement in this course: experts from industry and BI&A consultants will share their insights and experience in the weekly workshops.

Form of tuition

Lectures
Tutorials
Workshops

Type of assessment

Assessment Written exam – Individual assessment
Interim Assignment(s) / Tests:
Analytics practicum tests – Individual assessment

Course reading

This course is article based.

Readings will be announced in the course manual.

Recommended background knowledge

Recommended knowledge Elementary course on (Management) Information Systems (for example: Laudon, K.C. & Laudon, J.P. (2016). Essentials of MIS (12 th edition).

Basic knowledge on statistics and Microsoft Excel.

BK: 2.1 Business Information Technology

IBA: 2.1 Business Information Systems

Business Model Assessment

Course code	E_MB_BMA ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. L. Lu
Examinator	dr. L. Lu
Teaching method(s)	Lecture, Study Group
Level	200

Course objective

A basic understanding about corporate finance is required to assess the efficiency and efficacy of a company's business model. Would it be possible for companies like Google, Microsoft and Uber to develop (new) strategies and business models without insight in the present and future financial viability of the company? Corporate finance pertains to the sources of funding, the capital structure of corporations, and the actions that managers take to increase the value of the firm, as well as the tools and analysis used to allocate financial resources. The course Business Model Assessment provides an introduction in corporate finance for students in the program. This course has three main learning objectives:

1. Gain knowledge of basic concepts and theories pertaining to firm behaviors in the area of corporate finance in order to assess the business (Knowledge)
2. Provide standard answers to hypothetical cases, e.g. through solving exercises from the textbook (Quantitative skills)
3. Apply obtained knowledge in corporate finance to real life cases, e.g. interpret financial information, formulate them into standard framework, and provide comments and remarks for corporate decision makers (Bridge theory and practice)

After participating in this course, you should:

- Understand corporate finance concepts, including their strengths and limitations in explaining the realities
- Understand unique features of these concepts and their interrelationship, and the relevant corporate finance theories for firm behaviors
- Have quantitative skills to apply these concepts, e.g. solve exercises in the textbook
- Be able to choose between various concepts and apply them in real life

cases, e.g. provide advice and remarks for corporate decision makers

Course content

The course will start with an introduction of business assessment approaches and basic concepts. We will start with an introduction to corporations, and proceed with financial statement analysis, financial decision making, investment decision rules, capital budgeting, and raising equity capital, etc. The focus is on applying concepts and theories to real-life situations during lectures, and providing students with feedback on their exercises and cases in the tutorials. We will explain the basic concepts and theories in the lectures, and apply to relevant exercises and cases in the tutorials. Students need to solve two cases in groups of 4 or 5 members, and present their reports in the tutorials.

Form of tuition

lectures and tutorials

Type of assessment

Individual and group assessment

Course reading

The case materials and exercises will be posted on Canvas

Business Model Innovation

Course code	E_MB_BMI ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. J. Du
Examinator	dr. J. Du
Teaching method(s)	Lecture, Study Group
Level	200

Course objective

The past few years have witnessed the emergence and success of several pioneering new types of companies, such as Uber, Airbnb, facebook, Tesla, and Amazon. While many long-established, resource-abundant and technologically-advanced firms gradually lose profit margins in their traditional markets, these new types of companies have achieved extraordinary performance. The main objective of the course 'Business Model Innovation' (BMI) is to prepare students with fundamental knowledge about business models and business model innovation. This course is built on the combination of different streams of literature/theories on business strategy, innovation management, and entrepreneurship. Students are expected to be able to understand and apply the related theories and frameworks and to write a business plan. Being part of the whole Minor, this course also prepares students for the following courses "Business Model Assessment", in which they will learn how to assess their business models, and "Business Professionals", in which particular interests and skills in a specific field are developed and deepened.

In particular, after following the course students:

- Are able to critically reflect on business model innovation theories and tools
- Are able to apply theoretical perspectives from the different streams of literature to explain the observed business model innovation and their effects on corporate strategies and performance
- Are able to develop team skills, creative skills, develop cases, and communicate a business plan

Course content

The course will start with an introduction of business models and corporate innovation strategies. It will then focus on two main paths: Business model innovation based on internal resources and capabilities, as well as business model innovation leveraging external opportunities. A wide range of topics such as business idea generation, business opportunity identification, start-up firms creation, as well as corporate venturing will be discussed in each lecture, respectively. During the lecture, the first part is related to the theories and process of business model innovation. The second part is concerned with the application of tools and models necessary to write a business plan for the business ideas of student groups.

Form of tuition

Lectures and seminars. During the lectures, the different streams of literature will be explained and illustrated with real-life examples. Throughout the seminars, the theory is applied to student business plans and case analysis. Students will have the opportunity to learn from and interact with leading business practitioners, discuss their progress through peer-review and with the support of experienced business developers.

Type of assessment

Business plan (group), and essay (individual)

Course reading

- Afuah, Allan. Business Model Innovation: Concepts, Analysis, and Cases. Routledge, 2014.
- Selection of academic papers and news articles

Entry requirements

None

Business Modeling and Requirements Engineering

Course code	X_401005 (401005)
Period	Period 1
Credits	6.0
Language of tuition	Dutch
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	dr. H. Leopold MSc
Examinator	dr. H. Leopold MSc
Teaching staff	dr. H. Leopold MSc
Teaching method(s)	Lecture, Seminar
Level	200

Business Professionals

Course code	E_MB_BPROF ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	drs. A.C. Guldemond
Examinator	drs. A.C. Guldemond
Teaching method(s)	Lecture, Study Group, Instruction course
Level	300

Course objective

In the course Business Professionals, the focus is on the human element in the business modeling paradigm. The overall objective is gain knowledge about business models and management from the perspective of the professional.

In particular, when students complete this course, they will:

- Understand the profiles of key business professional roles such as chief executive officers, marketing, finance, human resources, operations and technology executives
- Be able to apply ideas about professionals for a reflection on their own background, personal role and career development as a (future) business professional
- Be able to formulate and analyze business modelling problems from the perspective of the business professional
- Be able to verbally and in written report on assignments

Course content

During the course students will explore cases and theories about the contribution of professionals in management and organization. Guiding questions are: Who are the people behind the key strategic decisions for the business model of an established firm or a new business venture? What functions, behaviors and capabilities are required for successful collaboration on the design and implementation of new business models? The content of the course entails an even-handed appreciation for theory and practice.

Form of tuition

Lectures and tutorials. In the first part of the course, lectures start with an introduction to (management) professionals; their task, responsibilities, and activities. Throughout the tutorials, students have the opportunity to apply the theoretical frameworks introduced in the lectures. To this end, the tutorials combine assignments, case studies and round-table discussions. Students are expected to actively contribute to the group's experience and learning.

Type of assessment

Written exam, assignments, presentation

Course reading

- Selection of articles, cases and support materials

Business Project

Course code	E_MB_BPROJ ()
Period	Period 3
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. B.V. Tjemkes
Examinator	dr. B.V. Tjemkes
Teaching method(s)	Lecture, Study Group
Level	300

Course objective

The main objective of the course 'Business Project' is to familiarize students with knowledge and challenges associated with the design, execution, and evaluation of management (change) projects. Whereas during prior Minor business Administration courses students have been acquainted with various elements of management, during this course students are asked to integrate knowledge and adopt a multi-disciplinary approach in resolving real-life business issues. As the course builds on knowledge and skills acquired in the whole Minor, it encourages an even-handed appreciation of business model thinking and management disciplines. In particular, after following the course students:

- Have an advanced understanding of the decisions (conceptual, methodological and managerial) associated with designing and conducting a business project (research, advise) in the area of business administration
- Are able to act professionally (individually and in teams) and systematically report their results, both verbally (report) and orally (presentation)

Course content

The core of the course is based on a business venture. A real-life business which is confronted with specific challenges that demand a resolution (company visit). During the lectures students will be confronted with knowledge required to design and conduct a business project. The focus will be on knowledge and understanding associated with multi-disciplinary approaches to deal with real-life business challenges, project management approaches to deal with these challenges, and academic research to obtain and access relevant knowledge. In addition, during tutorial sessions students are challenged to explicate their decisions, and they will receive feedback. To conclude the course a presentation is given to the management team of the company.

Form of tuition

Lectures and tutorials. During the lectures, theory will be explained and illustrated with actual examples. Throughout the tutorials, the theory is applied to students business project, and teams will receive feedback. Students also discuss their progress through peer-review and in the form of written reports and/or oral presentations.

Type of assessment

Individual and team assignment

Course reading

Selection of articles.

Calculus 1

Course code	E_EOR1_CAL1 ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. H. Karabiyik
Examinator	dr. H. Karabiyik
Teaching method(s)	Lecture, Seminar
Level	100

Course objective

The student studies the basic principles in mathematics including functions

of one real variable, limit functions, continuity, derivative and integral.

Much attention is given to basic principles and basic derivations of the results.

Course content

The main topic is real functions of one variable:

- 1) Real functions and trigonometric functions
- 2) Limits and continuity
- 3) Inverse functions
- 4) Differentiation, chain rule, mean value theorem
- 5) Applications such as l'Hôpital's rule and Taylor polynomial
- 6) Integration

Form of tuition

Main lectures (4 hours per week) and tutorial classes (4 hours per week)

Course reading

Stewart, J., Calculus, 7th Edition, International Edition, Cengage Learning, 2011.

Registration procedure

Via VUnet.

Calculus 2

Course code	E_EOR1_CAL2 ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics

Coordinator	dr. H. Karabiyik
Examinator	dr. H. Karabiyik
Teaching method(s)	Lecture, Seminar
Level	100

Course objective

The student studies the basic principles in mathematics including functions of one real variable, limit functions, continuity, derivative and integral. Much attention is given to basic principles and basic derivations of the results.

Course content

The main topic is real functions of one variable and more variables.

Form of tuition

Main lectures (4 hours per week) and tutorial classes (4 hours per week)

Type of assessment

Written exam.

Course reading

Stewart, J., Calculus, 7th Edition, International Edition, Cengage Learning, 2011.

Registration procedure

Via VUnet.

Case Study: A Modelling Competition

Course code	E_EOR3_CSMC ()
Period	Period 3
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. L.F. Hoogerheide
Examinator	dr. L.F. Hoogerheide
Teaching method(s)	Lecture

Course objective

This course in the minor Applied Econometrics is targeted at both econometrics and non-econometrics students. The objectives are to work together in a group, to describe methods and results in a report and presentation, to learn to perform empirical research and to apply the material of the courses in the periods 3.1 and 3.2 of the minor Applied Econometrics.

Course content

Case studies are carried out by teams of a heterogeneous group of students, coming from different study backgrounds. The students must write case reports and present their results. The groups compete to come up with the best specification of an econometric model.

Form of tuition

Lecture.

Working groups of students.

Type of assessment

Presentation and written report. At the end of the course each group must submit a final report (and the computer code that they used), and each group must give an oral presentation. The grade is mainly based on the final report, where only exceptional computer code and/or an exceptional oral presentation (in a good or bad sense) may lead to a (positive or negative) adaptation of the grade.

Course reading

Selection of articles and papers.

Entry requirements

The courses of periods 3.1 and 3.2 in the Minor Applied Econometrics.

Challenges of Food and Nutrition Security

Course code	E_MG_CFNS ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. C.F.A. van Wesenbeeck
Examinator	dr. C.F.A. van Wesenbeeck
Teaching method(s)	Lecture, Study Group
Level	100

Course objective

After successfully completing this course, students will:

- have a broad understanding of the concept of Food and Nutrition Security (FNS);
- be able to identify, calculate and interpret basic indicators for FNS and judge their relevance;
- be familiar with and understand the challenges to achieve FNS;
- be familiar with and understand the challenges posed by FNS failure for societies and individuals;
- be familiar with and understand the rationale for possible interventions to improve FNS.

Course content

Food and nutrition security is a critical input for the functioning and wellbeing in any society. At the same time, food and nutrition security remains far from guaranteed with more than 700 million people being undernourished and another billion people suffering from a lack of vitamins and minerals. In this course you will first develop a broad and deep understanding of the concept of FNS, both historically and contemporaneously. Next, the course will analyze challenges to ensure food and nutrition security for all now and in the future as well as challenges posed for societies and individuals by food and nutrition insecurity.

Form of tuition

Lectures and workgroups

Type of assessment

Exam (60%), assignments (30%), presentation (10%)

Course reading

To be announced

Entry requirements

There is no formal entrance requirement for the minor Global Food Security Studies, and hence also not for this course. We specifically aim for a diverse group as we strongly believe that interdisciplinary research is best taught through active interaction between students from different disciplinary backgrounds. However, we expect that this course is especially of interest to students of economics, social sciences and health sciences. The minor is a university minor which implies that VU students do not need to ask for permission from the Examination Board to acquire the credits for courses for their own BSc degree.

Target group

The minor Global Food Security Studies and hence also this course is open for students from all majors who want to acquire familiarity with the core principles of global food security and interdisciplinary methods. We are particularly interested in students who wish to contribute to food security through rigorous interdisciplinary knowledge production. The international staff that teaches in this minor program conducts research in a variety of regions around the globe. This holds great appeal to students who are keen to understand the diversity and similarity in problems and solutions related to food (in)security.

Registration procedure

To register you should enroll through VUnet. Registration is open from mid-July. Early registration is recommended. Students without access to VUnet should enroll as secondary course students ('bijkvakstudent'). More information can be found on this pages:

[Dutch information about the application procedure >](#)

[English information about the application procedure >](#)

Remarks

Part of minor Global Food Security

Climate Change Law

Course code	R_TL-TP ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Rechtsgeleerdheid
Coordinator	C. Kaupa
Examinator	C. Kaupa
Teaching staff	C. Kaupa
Teaching method(s)	Lecture

Course objective

The course analyzes climate change as a transnational legal phenomenon. Students will learn to work across different legal fields (ranging from international and human rights law to private and economic law) and different jurisdictions (including international, European, national and local regulation), and to handle legal questions in the context of complex economic, political, social and ethical debates. Students will be encouraged to participate in the course of the lectures, with the goal of developing the sort of critical and analytical skills conducive to the practice of transnational law, and to understanding transnational global developments.

Course content

Climate change is one of the most pressing issues the world faces in the 21st century. It is also a particularly complex and interesting problem from a legal perspective: this is because climate change affects multiple jurisdictions (from the international to the local level), numerous areas of law (ranging from international to private law) and multiple actors (ranging from governments and international organizations to multinational businesses, NGOs and private citizens). Moreover, complex scientific, economic, political, social and ethical questions feed into the legal processes.

Analyzing the interaction of different legal fields:

Greenhouse gases originate from a broad range of activities, including energy production, industry and transport to agriculture. These are regulated in, or otherwise affected by, numerous fields of law, such as international law, European and national economic law, private law, environmental law, international trade and investment law and human rights law. Tackling climate change therefore requires understanding how these various legal fields interact.

Analyzing how different jurisdictions interact:

Climate change is a transnational phenomenon, having local causes, but creating global effects: consequently, the problem must be addressed at the same time at a global scale, by regional organizations (such as the EU), at the national and at the regional level (e.g. cities). The course will look at how these different jurisdictions interact.

Understanding the role of different legal actors:

Climate change is not only a concern for national governments and international organizations. The European Union, as a regional organization, has long been an important actor in this field; moreover, non-state actors play an important role as well: multinational businesses, NGOs and private citizens aim to influence the regulatory process, most notably by bringing lawsuits. The course will analyze the activities of these different actors.

Understanding the context of climate change law:

Climate change has complex scientific, economic, political, social and ethical dimensions: for example, given that the emission of greenhouse gases is related to many different business sectors, a transition towards a low-carbon society will likely transform the existing economy in significant ways. This will inevitably create „losers“ along the way (e.g. coal and oil companies), who may aim to slow down the transition, thereby posing difficult economic and political questions. Or, to give

another example, as greenhouse gas emissions are related to consumption, they are mainly attributable to the wealthy parts of the global population; however, climate change disproportionately affects poor populations in developing countries, and therefore raises complex ethical issues. In this course, we will study how scientific, economic, political, social and ethical questions feed into the legal process.

The course will cover:

Part 1: the science, economics and politics of climate change;

Part 2: Climate change as a global issue; the international climate change regime (e.g. Paris Agreement), international law, human rights law and international trade and investment law;

Part 3: European and national legislation (e.g. Emissions Trading System)

Part 4: Lawyering for change (e.g. lawsuits against governments and businesses in the US and in Europe)

Type of assessment

Small written and oral assignments throughout the course and a final written assignment.

Course reading

The literature will be announced on Canvas.

Target group

Apart from regular students, the course is also available for:

Students from other universities/faculties

Exchange students

Contractor (students who pay for one course)

Remarks

The following course objectives are only available in Dutch:

Eindtermen bachelor Rechtsgeleerdheid

De afgestudeerde bachelor beschikt over een fundamenteel academisch werk- en denkniveau;

-heeft kennis van en inzicht in de kernleerstukken van de hoofdonderdelen van het geldende recht (in het bijzonder het Nederlandse privaatrecht, staatsrecht, bestuursrecht, strafrecht en internationaal en Europees recht), alsmede de systematiek daarvan, met inbegrip van recente ontwikkelingen

-heeft kennis van en inzicht in het internationale en het Europese recht in hun verhouding tot het nationale recht

-heeft elementaire kennis van Engelse juridische terminologie

-beseft dat het recht zich ontwikkelt en manifesteert in een maatschappelijke context

-heeft kennis van de grondslagen van het (Nederlandse) recht, rechtshistorische en rechtsfilosofische aspecten en heeft besef van de eigen aard van de rechtsbeoefening

De afgestudeerde bachelor beschikt over de volgende (juridische) vaardigheden:

Analytische vaardigheden

-lezen, begrijpen en analyseren van juridische, rechtswetenschappelijke en rechtstheoretische teksten en betogen, waaronder jurisprudentie en wetgeving

-kritisch reflecteren op regelgeving, rechtspraak en literatuur, onder meer vanuit rechtshistorisch, rechtsvergelijkend en rechtsfilosofisch

perspectief; is in staat om te reflecteren op de grenzen van het vakgebied

- reflecteren op de eigen maatschappelijke verantwoordelijkheid in de maatschappelijke context waarin het recht functioneert
- is in staat om juridische argumentatiestructuren te analyseren en op te zetten

Probleemoplossende vaardigheden

- selecteren van juridisch relevante feiten uit een feitencomplex
- selecteren van rechtsregels die bijdragen aan het oplossen van een juridische casus
- oplossen van juridische casus, waaronder begrepen hanteren van een systematische aanpak bij het toepassen van rechtsregels op concrete gevallen

Communicatieve vaardigheden

- een gefundeerde en beargumenteerde positie innemen in een maatschappelijk, juridisch debat

Informatievaardigheden

- op een efficiënte manier juridische bronnen raadplegen en informatie verzamelen uit juridische (digitale) bibliotheken en databestanden, en de waarde, relevantie en kwaliteit van de informatie beoordelen
- op efficiënte wijze relevante ontwikkelingen bijhouden en kennis actualiseren

Cognitive Neuroscience

Course code	AB_1056 ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	Fac. der Aard- en Levenswetenschappen
Coordinator	dr. S. van der Sluis
Examinator	dr. S. van der Sluis
Teaching staff	prof. dr. S. Spijker, dr. C.P.J. de Kock, dr. H.K.E. Vervaeke, dr. S. van der Sluis, M. Loos
Teaching method(s)	Practical, Computer lab, Study Group, Lecture
Level	300

Course objective

Introduction to the field of cognitive neuroscience: understanding the biological mechanisms underlying cognitive processes such as learning and memory, discussing recent developments in the field with leading scientists, and acquiring knowledge on how the brain, and its different cell types, function.

Course content

In the first course of this Minor, you will learn the basics of cognitive neuroscience through a series of introductory lectures on brain function and (dysfunctional) cognitive behavior. More specifically, we will teach you the structure and function of the major building blocks of the brain, ranging from single cells to neuronal networks, and from emotion to

motor control. We combine workshops and keynote lectures, delivered by renowned neuroscientists, to discuss recent advances in the field of learning and memory, brain plasticity, and brain disease (e.g., Angelman syndrome, OCD). Finally, you will learn about and experience various technical approaches to measure the brain (e.g., histology) in hands-on practicals.

Form of tuition

Lectures 25 hours 44% 2.6 ECTS
 Workshops 16 hours 28% 1.7 ECTS
 Practicals 6 hours 11% 0.7 ECTS
 Keynote lectures 8 hours 14% 0.8 ECTS
 Quiz 2 hours 3% 0.2 ECTS

Total 57 hours 100% 6.0 ECTS

Type of assessment

Written exam & assignments

Course reading

Recent literature, to be announced at the start of the course.

Foundations of Behavioral Neuroscience
 Carlson, Neil R.
 (9th edition)

Exam material:
 CH2, CH3, CH5, CH6 (pg. 136 - 146), CH7 & CH12

Entry requirements

No special requirements.

Target group

Open to students from all educational backgrounds (e.g., exact, social, life and economic sciences) with an interest in the brain and mind.

Remarks

Coordinators: Christiaan de Kock and Sophie van der Sluis.
 No special requirements to be met.
 Part of minor Brain and Mind. This minor course requires a minimum of 25 participants to take place.

Cognitive Neuroscience

Course code	P_BCOGNEUS ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	Fac. der Gedrags- en Bewegingswetensch.
Coordinator	dr. D.J. Heslenfeld
Examinator	dr. D.J. Heslenfeld
Teaching staff	dr. D.J. Heslenfeld
Teaching method(s)	Lecture, Study Group
Level	300

Course objective

To introduce students to the multidisciplinary area of cognitive, social, clinical and emotional neuroscience.

Course content

The course will treat modern techniques and recent data that relate mental processes to brain functions. Techniques that will be covered are EEG, MEG, MRI, lesions. Mental functions that will be studied include perception, memory, emotion, consciousness, and social cognition. The aim of the course is to provide a sound basis for the master program.

Form of tuition

Lectures, computer practicals and literature study.

Type of assessment

Written examination, multiple choice questions. Practical have to be completed

Course reading

Gazzaniga, M.S., Ivry, R.B., & Mangun, G.R. (2016). Cognitive Neuroscience: The Biology of the Mind (4th Edition). New York: Norton. ISBN: 9780393912036

Entry requirements

Some background in psychology and biology is recommended.

Recommended background knowledge

Biologische en Cognitieve Psychologie

Remarks

Language: Tuition in English.

As of 2018-19 this course is no longer part of the University Minor. Students who still need to complete this course for the UM, can contact the course coordinator.

Collective Intelligence

Course code	X_401047 ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	dr. E.W. Haasdijk
Examinator	dr. E.W. Haasdijk
Teaching method(s)	Lecture, Seminar
Level	300

Course objective

The overall aim of this course is to provide an in-depth study of a range of ideas, theory, and techniques used in Collective Intelligence.

The module will be oriented towards (1) the modelling of real-life (biological) collective systems (Artificial Life) and (2) the

application of ideas and principles from natural Collective Intelligence and evolution to computer science in the areas of optimisation, intelligent agents, and engineering, and feedback to the biological sciences. There is a substantial practical element to the module with the students gaining experience in developing collective intelligence models.

Course content

Aims

To enable students to:

- develop skills in the modelling Collective Intelligent systems (particularly, Artificial Life) through use of appropriate programming languages, tools and methodologies;
- investigate the application of collective intelligence techniques to optimization, to understanding biological systems, and to agent modelling;
- appreciate relevant current research topics in the theory and practice of Collective Intelligence and Artificial Life;
- appreciate a range of advanced ideas and techniques modelling the properties of living systems and the exploitation of these techniques in computer science and its applications.

Learning Outcomes

Knowledge and Understanding: Successful students will typically have knowledge and understanding of a variety of Collective Intelligence techniques and methods applicable across domains ranging from molecular computational biology and evolution of agents to behaviour-oriented and social robotics.

Skills and Attributes

Successful students will be able to critically evaluate some recent Collective Intelligence / Artificial Life paradigms for building agent systems and modelling biological systems.

Form of tuition

Lectures and intervision meetings.

Type of assessment

Assignment and written report in teams of 3 students

Course reading

There is no set textbook for the course; a collection of papers will be made available

Target group

3CS, 3IMM, 3LI

Colloquium 1

Course code	E_EOR1_COL1 ()
Period	Period 1+2
Credits	0.0
Language of tuition	Dutch
Faculty	School of Business and Economics
Coordinator	dr. F. Blasques Albergaria Amaral
Examinator	dr. F. Blasques Albergaria Amaral

Teaching staff	dr. F. Blasques Albergaria Amaral, dr. H. Karabiyik
Teaching method(s)	Lecture

Colloquium 2

Course code	E_EOR1_COL2 ()
Period	Period 4+5
Credits	0.0
Language of tuition	Dutch
Faculty	School of Business and Economics
Coordinator	dr. H. Karabiyik
Examinator	dr. H. Karabiyik
Teaching staff	dr. F. Blasques Albergaria Amaral, dr. H. Karabiyik
Teaching method(s)	Lecture

Comparative Political Research

Course code	S_CPR ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Sociale Wetenschappen
Coordinator	dr. P.J.M. Pennings
Examinator	dr. P.J.M. Pennings
Teaching staff	dr. P.J.M. Pennings
Teaching method(s)	Lecture, Study Group
Level	200

Course objective

This course presents an overview of the field of Comparative Political Research by placing particular focus on the following aspects. This course:

- provides students an overview of the central debates within Comparative Political Research.
- teaches students to critically evaluate the premises of theories and the comparative method.
- trains students to set up a research design. Students are familiarized with key methodological issues such as internal and external validity, conceptualization, operationalization, and case- selection.
- teaches students the basic skills necessary for performing comparative research across a number of cases (e.g. countries).
- teaches students how to apply the comparative method in qualitative and quantitative research, to think about the advantages and disadvantages of both types of research, and how they can complement each other.

Course content

In this course students will compare two contrasting case studies and make a design for a comparative case study themselves. These tasks will

help students to gain the basic skills necessary for performing comparative research and to set up a research design.

Form of tuition

- The course will be taught in the form of lectures and tutorials.
- The tutorials provide students with the opportunity to discuss their preliminary answers to the assignments. The more students prepare and participate in the tutorials, the more feedback they receive in return.

Type of assessment

Written assignments.

Course reading

Main Textbook (To be purchased):

Gerring, J. (2017). Case Study Research. Principles and Practices. Cambridge: Cambridge University Press. 2nd Edition.

In addition students will read a number of articles.

Target group

Bachelor students Political Science and students of the Pre-Master Political Science.

Remarks

Each week one lecture and one tutorial (and/or feedback by appointment).

Complexe Analyse

Course code	X_400386 (400386)
Period	Period 4+5
Credits	6.0
Language of tuition	Dutch
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	dr. O. Fabert
Examinator	dr. O. Fabert
Teaching staff	dr. O. Fabert
Teaching method(s)	Lecture, Seminar,
Level	300

Computational Econometrics

Course code	E_EOR3_CE ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. L.F. Hoogerheide
Examinator	dr. L.F. Hoogerheide
Teaching method(s)	Lecture, Seminar

Course objective

This course in the minor Applied Econometrics is targeted at Bachelor Econometrics students and Bachelor students with different backgrounds who have already had an introduction to programming and econometrics/statistics. The objective is to acquaint the student with Bayesian statistics and applications thereof to econometric problems, using advanced computational methods.

Course content

This course will cover Bayesian statistics where the topics include the prior and posterior density, Bayesian hypothesis testing, Bayesian prediction, and Bayesian Model Averaging for forecast combination. Several models will be considered, including the Bernoulli/binomial distribution, the Poisson distribution and the normal distribution. Obviously, attention will be paid to the Bayesian analysis of linear regression models. Also simple time series models will be considered. An important part of the courses is the treatment of simulation-based methods such as Markov chain Monte Carlo (Gibbs sampling, data augmentation, Metropolis-Hastings method) and Importance Sampling, that are often needed to compute Bayesian estimates and predictions and to perform Bayesian tests.

Form of tuition

Lectures and exercises in the computer lab.

Type of assessment

Final written exam – Individual assessment.

Exercises - groups of 1 or 2 students.

Course reading

Slides and exercises that will all appear on Canvas.

Recommended background knowledge

Programming, Econometrics I, Numerical Methods.

Concurrency & Multithreading

Course code	X_401031 (401031)
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	prof. dr. W.J. Fokkink
Examinator	prof. dr. W.J. Fokkink
Teaching staff	prof. dr. W.J. Fokkink
Teaching method(s)	Lecture, Seminar
Level	400

Course objective

This course provides a comprehensive presentation of the foundations and programming principles for multicore computing devices.

Specific learning objectives are:

* To provide insight into fundamental notions of multicore computing and their relation to practice: locks, read-modify-write operations, mutual exclusion, consensus, construction of atomic multi-reader-multi-writer registers, lost wakeups, ABA problem.

* To provide insight into algorithms and frameworks for multicore computing and their application in multi-threaded programs: mutual exclusion algorithms, spin locks, monitors, barriers, AtomicStampedReference class in Java, thread pools in Java, transactional memory.

* Analyzing algorithms for multicore computing with regard to functionality and performance: linearizability, starvation- and wait-freeness, Amdahl's law, compute efficiency gain of parallelism.

* Mastering elementary datastructures in the context of multicore computing: lists, queues, stacks.

* Programming in multi-threaded Java, and performing experiments with such programs.

Course content

The course consists of the following topics: Shared memory, mutual exclusion, synchronization operations, concurrent data structures, scheduling, transactional memory, and a multithreaded programming assignment.

Form of tuition

4 hours per week HC, 4 hours per week WC.

Type of assessment

The written exam counts for 75% and the programming assignment for 25% of the final mark.

Both for the written exam and the programming assignment at least a 5.0 must be obtained (and the overall average mark should be at least 5.5).

Only students that achieved at least a 3.0 for their initial programming assignment are offered a resit opportunity for this assignment.

Course reading

Maurice Herlihy, Nir Shavit, The Art of Multiprocessor Programming, Morgan Kaufmann, 2008.

Recommended background knowledge

Datastructures & Algorithms

Programming in Java

Target group

3CS

Remarks

The homepage of the course is at <http://www.cs.vu.nl/~tcs/cm/>

The lectures and written exam of the BSc and MSc variant of Concurrency & Multithreading coincide. The difference is that the BSc variant has a smaller programming assignment than the MSc variant.

Consumer Behavior

Course code	E_EBE3_CBEH ()
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Period	Period 4
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. K.M.T. Millet
Examinator	dr. K.M.T. Millet
Teaching method(s)	Lecture, Seminar
Level	300

Course objective

At the end of this course you will be acquainted with the psychological theories, concepts, methods, and research findings central to the study of consumer behavior (Knowledge). You will be able to understand consumer decisions from different perspectives as well as to apply theoretical frameworks in different settings (Academic skills). In addition, you will be able to apply these theories in order to develop effective marketing strategies to influence thinking and behavior of consumers (Bridging theory and practice). Critical reading of and reflection on scientific articles will give you a good sense of how behavioral experiments are set up and analyzed. Moreover, you will actively participate in experimental research as well as develop the skills needed to understand experimental research, and interpret its experimental results (Research skills).

At the end of the course students will be able to:

- explain important concepts and theories in the study of consumer behavior;
- identify different drivers of consumer decisions;
- apply fundamental psychological theories to real-world consumer decision situations;
- interpret graphical output of simple experiments;
- explain the methodology of academic articles as discussed in class.

Course content

We are consumers, every day, every moment of the day. We consume food, drinks, education, and television programs. It is however not always easy to understand or predict the behavior of consumers. Why do consumers choose one car or holiday destination over the other? How are advertisements processed and when are they effective? Are preferences stable or easily malleable? For successful marketing management and strategy, it is essential to get an understanding of the behavior of consumers. After all, marketing begins and ends with the consumer, from determining consumer needs to finally providing and maintaining consumer satisfaction. The course introduces you to some important psychological theories on memory, learning, perception, attitude, motivation, identity and social influences. We do not only focus on "big theories", but also study specific articles from top-notch journals in the field, thereby illustrating how research in this field is done, how this contributes to our knowledge on consumer decisions as well as to develop critical thinking.

In addition to the conceptual part of the course, considerable attention is allocated to (experimental) research methodology.

By doing so, you will develop skills that are essential to truly understand specific academic articles in the field from A to Z (insights in methodology included).

Form of tuition

Lectures.
Tutorials.

Type of assessment

Written exam – Individual assessment.
(Interim) Assignment(s) – Group assessment.

Course reading

A customized handbook: Consumer Behavior (compiled by Kobe Millet) – Available in the VU Bookstore; ISBN 978-1-4737-5799-8

Additional readings (tba) will be announced on Canvas.

Entry requirements

None.

Recommended background knowledge

None.

Consumer Science for Online Commerce

Course code	E_IBA3_CSOC ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. M.H.P. Kleijnen
Examinator	dr. M.H.P. Kleijnen
Teaching staff	dr. M.H.P. Kleijnen
Teaching method(s)	Lecture, Seminar, Instruction course
Level	300

Course objective

Academic skills:

- analysis – ability to examine and understand problems from different perspectives
- argumentation – ability to put forward well-founded, substantiated points of view, both in spoken and written format

Knowledge:

- Ability to make connections between theories, models, and concepts
- Acquire specialized, in-depth knowledge and insights in the field consumer science in online commerce

Bridging theory and practice:

- applying theoretical knowledge in a specific business situation
- experience real-life business problems

Social skills:

- ability to present on substantive issues related to consumer science in online commerce
- ability to work in a team and reflect on your own role in the team

Course content

The Internet and digital media have transformed marketing and business since the first website went live a long time ago. More than 20 years later over one billion people around the globe regularly use the web to find products, entertainment and soulmates. Consumer behavior and the way companies market to both consumers and businesses have changed dramatically. To succeed in the future, organizations will need marketers, strategists and agencies with up-to-date knowledge about the digital consumer and his or her behavior. Digital marketing is an exciting area to be involved in, since it poses many new opportunities and challenges yearly, monthly and even daily. Innovation is a given with the continuous introduction of new technologies, new business models and new communication approaches. How consumers deal with these changes and apply them to their personal lives becomes more important for marketers to understand.

In this course you are inspired and challenged to discover the possibilities and consumer response to digital developments. Typically, topics may evolve around issues such as: (online) customer journeys; different phases and touch points in the journey; contextual influences (assortments, web design, product presentation); social interactions (social media, online reviews); and mobile commerce.

The classes are highly interactive. This means, that it will require a high degree of participation and preparation from the students.

Form of tuition

Lectures
Tutorials

Type of assessment

Assignment – Individual assessment
Group project assignment – Group assessment
Group and in-Class participation – Individual assessment

Course reading

Required readings consist of articles and will be announced via Canvas (together with other required materials).

Entry requirements

N/A

Recommended background knowledge

A basic understanding of marketing principles and business-related courses

Remarks

N/A

Contemporary Challenges in Corporate Strategy

Course code	E_HP1_CCCS ()
Period	Period 4
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics

Coordinator	dr. J. Du
Examinator	dr. J. Du
Teaching staff	dr. J. Du
Teaching method(s)	Lecture
Level	300

Course objective

The main objectives of this course are to: (1) familiarize students with the most significant and fundamental perspectives in corporate strategy and (2) apply strategic management thinking to understand and explain capability development and performance heterogeneity across firms.

After successful completion of the course, students:

- Possess an in-depth and theory-driven understanding of some of the most significant tensions inherently connected to strategic management;
- Are able to apply each perspective to a real-life situation (i.e. cases) and develop meaningful interpretations of their findings;
- Are able to communicate their views with respect to each perspective, both verbally and through written reports (individual and team-based)

Course content

The course consists of six lectures over a period of six weeks. After an introduction lecture, the five remaining lectures are divided into five themes, each covering one of the five main focal areas in the course. These main areas focus on the deliberate and the emergent strategies, capability development of firms, and strategic implementation.

Each theme lecture is motivated by a hot topic or debate in news articles and/or social media in order for students to enter the scene, and consists of an introduction to the topic, an in-depth, very interactive discussion of how to cope with the key issues based on the selected literature, as well as an application to business practices.

The five main building blocks of this course include: management frameworks and human resources; ethics and sustainable development; business ecosystems, networks and alliances; entrepreneurship; innovation, capability development and evolution.

Form of tuition

The form of tuition consists of a mixture of classroom interaction, presentation, and in-depth discussion.

Type of assessment

The grade of this course is based on two types of assessments: (1) preparation, class participation and discussion; (2) depending on the number of students, individual and/or group assignments will be assessed.

Course reading

Collection of carefully-selected scientific literature and business articles, case studies, video materials that are disclosed through Canvas.

Recommended background knowledge

A basic understanding and acquaintance with the fundamentals of corporate strategy (or, a great passion and desire to understand and get acquainted) is expected of students in order to allow an in-depth discussion of the selected topics.

Target group

Honours Program students; The course can be followed by a broad audience, but requires an interest in business administration in general, and strategic management in particular.

Registration procedure

SBE rules and dates apply for this SBE HP course. Registration via VUnet.

Contemporary Perspectives on HRM Theory

Course code	E_IBK3_CPHRM ()
Period	Period 5
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. D.A. Driver-Zwartkruis
Examinator	dr. D.A. Driver-Zwartkruis
Teaching method(s)	Lecture, Seminar, Instruction course
Level	300

Course objective

Academic Skills: First, students will be able to understand complex organizational problems from an interdisciplinary perspective. Second, students will be able to identify the gap between HR theory and HR practice, and thereby, formulate research problems.

Knowledge: First, students will acquire knowledge of the history, philosophy, and the contemporary developments in the study of Human Resource Management by reviewing scientific articles. Second, students will gain an appreciation for theories which (should) inform the HR professional in playing a strategic role in assisting management with syncretizing organizational goals and employee talent. Third, students will gain awareness of the broader society and the role of the HR professional in assisting management with understanding the significance of HR theory, societal realities in the HR Planning process. Fourth, students will develop an appreciation of the interaction between organizations' financial capacity and the influence of societal realities including economic conditions, international treaties, labor market situations, and the demographic composition, and how these realities impinge on the HR decision making process.

Bridging Theory and Practice: Based on empirical data gained from a review of the literature, students will identify relevant HR theory and HR practices to address complex organizational problems from an interdisciplinary perspective which includes workplace diversity a.o. gender, sexuality, ethnicity, culture and demographic composition. Additionally, students will understand the need for theories which inform Ethics and Corporate Social Responsibility (CSR) practices in the workplace.

Course content

Human Resource Management is the design of formal systems in an organization to ensure the effective and efficient use of human talent. These formal systems should generate activities that involve the utilization and development of an organization's resources which include personnel, technical equipment, and policies. Thereby, an organization is equipped with essential elements to facilitate individual, groups and teams with achieving stated goals. The study of HRM is informed by the behavioral and social sciences which includes psychology, economics, law, anthropology and sociology.

In this course emphasis is given to the HR theory which underpins HR practices. Therefore, special attention is given to identifying the gap between HR theory and HR practices in an organization context, this will include contemporary topics such as Workplace Diversity, Ethics and Corporate Social Responsibility (CSR). Thus, a variety of theories will be explained.

Form of tuition

Lectures
Tutorials

Type of assessment

individual and group assessment

Course reading

Literature will be posted on Canvas

Recommended background knowledge

BK 1.5 HRM & OB 3.4 Contemporary Perspectives on OB Leading Change

Contemporary Perspectives on OB: Leading Change

Course code	E_IBK3_CPOB ()
Period	Period 4
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. E. Doci
Examinator	dr. E. Doci
Teaching method(s)	Lecture, Seminar, Instruction course
Level	300

Course objective

Leadership is a fundamental aspect of human organization. It occurs quickly and automatically across all cultures and levels of complexity. Unfortunately, even though transformational leadership is widely studied, much of our understanding remains disjointed. In this course we connect the phenomenon of transformational leadership to study how it functions in the context of planned organizational change. The purpose of this course is 1) to help you generate a clearer understanding of the leadership process and how it connects with mobilizing people to change, 2) develop your own leadership skills (once we know what we need to develop), and 3) provide a roadmap for your future as an effective transformational leader.

Learning Outcomes.

- Knowledge: Student is familiar with the generative processes that gives rise to leadership, planned organizational change, and the connection between these two.
- Bridging Theory & Practice: Student is familiar with the practical problems which business leaders and change consultants face when managing organizational change.
- Self-awareness about one's tendencies as a leader and follower in different organizational change situations.
- Social skills: the 'discursive ability' to motivate and mobilize others, awareness of verbal and non-verbal signaling.
- Research skills: the student is able to gather quantitative survey data, analyze the data (using SPSS) and effectively report on the results
- Academic skills: the student is able to systematically analyze a practical change-related problem and come up with a plan of action.

Course content

The first part of this course is an overview of the various definitions of leadership, including the many styles of leadership that are relevant to organizational change (i.e., evolutionary, charismatic, transformational, ethical leadership). In the process you will learn the boundaries and generative processes that give rise to leadership and the different levels of analysis that apply. For instance, you will learn that the ultimate why of leadership is quite different from the proximate how of leadership. This process will help us generate a general definition of leadership that integrates factors you will need to become an effective transformational leader. For example, you will learn about the different phases of leadership, how it can mobilize people, but also how it may finally lead to a state of disenchantment and disengagement. You will also learn which personal and contextual factors influence tie into the leadership process. This will help you maximize the good of charisma and ideology and avoid its dark side to maintain trust and maximize followership investment. You will also gain a deeper appreciation for the role leadership has on followership attitudes and motivation.

The second part of this course focuses on change as a process, that is, a journey. You will learn to think about organizational change as a risky, adventurous journey with an uncertain outcome (for leaders and followers alike). That said, change has a number of recognizable phases that each offer unique challenges to change leaders. The second part also involves an overview of employees affective/attitudinal reactions of change recipients over time. You will learn about best practices of change management and the Theory of Planned Behavior as integrative framework. Last but not least, you will learn about rhetorical practices (framing, stories, narratives, vision) in change implementations and their intimate connection with charismatic-transformational leadership.

4. Change as a perilous journey

- Phases of change, obstacles, overcoming obstacles

5. Attitudinal reactions to organizational change

- Different types of organizational change (e.g., cost-focused vs. people focused and combinations) and reaction pattern to these changes

6. Best practices in leading change

- John Kotter; Theory of planned Behavior; behavior change

7. Rhetorical strategies of the transformational leader

The third part of this course is organized around application. Some leadership qualities are important across situations whereas other

qualities are context-specific. For example, hierarchy and dominance may not always be the best strategy. For this course we will focus on a number of important leadership contexts that you will consistently encounter throughout your career. You will first learn about these dynamics and then in groups you will practice your ability to lead across different change contexts. You will evaluate yourself and be evaluated by others to supply you with comprehensive feedback. The primary goals are

8. Understanding yourself as a leader,
9. Identifying strengths and weaknesses across contexts (e.g., you may perform better in one situation relative to another),
- 10 Practice improving your leadership (e.g., rhetorical ability) in a variety of organizational contexts.

Form of tuition

Lectures
Tutorials

Type of assessment

Written exam – Individual assessment
Assignment(s) – Individual assessment
Assignment(s) – Group assessment

Course reading

This course is taught article based,

Recommended background knowledge

BK:
1.5 HRM & OB; 2.5 BRM II - Quantitative
IBA:
2.1 HRM & OB; 2.4 HRM Practices - A Global Perspective; 2.4 BRM I – Quantitative

Corporate Finance

Course code	E_EBE2_CF ()
Period	Period 5
Credits	6.0
Language of tuition	Dutch
Faculty	School of Business and Economics
Coordinator	dr. J.A.F. Schnitzler
Examinator	dr. J.A.F. Schnitzler
Teaching method(s)	Lecture, Seminar, Instruction course
Level	300

Corporate Finance in Emerging Economies

Course code	E_IBA2_CFEE ()
Period	Period 5
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. T. Artiga Gonzalez

Examinator	dr. T. Artiga Gonzalez
Teaching staff	dr. T. Artiga Gonzalez
Teaching method(s)	Lecture, Study Group
Level	200

Course objective

Corporate finance is the discipline that studies investment and financing decisions taken by firms. The goal of this course is to develop a framework that provides guidance for these decisions. This requires not only a fundamental understanding of most common corporate finance theories but also a sensible selection of applications for them (Academic Skills, Knowledge). The ultimate decision criterion is based on value creation, which we aim to quantify in various valuation models (Quantitative Skills). Practical applications for the knowledge are widespread and not only of interest to managers, but part of a toolkit required by everyone who is dealing with financial markets on a professional level (Bridging Theory and Practice). Even students specializing in other disciplines of business and economics should take this elective into consideration as it complements your core curriculum by offering an extensive overview of corporate behavior as a key player in market economies (Broadening your Horizon).

Course content

The course Corporate Finance in Emerging Economies provides a discussion of most important financing decisions taken by firms. Throughout the course, we will put a particular emphasis on highlighting differences between developed and emerging economies. We will discuss capital structure decisions, payout policies, corporate valuation models, markets for corporate securities, and corporate governance. In particular the latter topics allow broad international comparisons due to historical, cultural, and regulatory differences across countries. After successfully attending this course, students should be able to:

- Discuss differences between equity and debt financing
- Critically assess assumptions and outcomes of most common valuation models
- Highlight international differences in markets for financial securities and corporate governance

Form of tuition

Lectures
Tutorials

Type of assessment

Written exam – Individual assessment
Case assignments – Group assessment
Mandatory attendance tutorials

Course reading

J. Berk and P. DeMarzo, Corporate Finance, Pearson, 3rd Global Edition

Additional (required) materials will be announced via Canvas.

Recommended background knowledge

2.2 Finance

Remarks

Completing this course (or alternatively a corporate finance course in the other BSc tracks) is a prerequisite for the MSc Finance, and recommended for the MSc Business Administration - specialization Financial Management.

Corporate Governance and Accountability

Course code	E_EBE3_CGA ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. J.P. Mendoza Rodriguez
Examinator	dr. J.P. Mendoza Rodriguez
Teaching method(s)	Lecture, Seminar
Level	300

Course objective

The goals of this course are:

- To acquire and make use of appropriate terminology related to corporate governance (CG).
- To learn what empirical research says about CG.
- To acquire and make use of tools to properly analyze conflicts of interest and dilemmas.
- To connect accounting practices and corporate misconduct.
- To get a closer look at major corporate scandals.
- To become acquainted with the format and content of CG principles and codes.

Course content

The course employs an integrated “building-blocks” approach. Each week, a new block covers – but is not limited to – the following topics:

+Block 1. Terms and concepts: surveys about fraud and misconduct (what's happening now? why is this important?) • defining CG • terminology • identification of main actors involved

+Block 2. Theory: main theories (agency, resource-dependent / stewardship, stakeholder) • alternative theories (power, culture) • firms' motives to comply • game theory as a tool

+Block 3. Research findings: how is CG measured? • empirical findings (what does the evidence say?) • limitations, myths, criticism

+Block 4. Accounting and CG: financial accounting and reporting • detecting fraud • compensation • internal control • enterprise risk management

+Block 5. Law and CG (guest lecture): legal basics • tasks, responsibilities, liabilities • different models of CG (1 tier, 2 tier) • Dutch CG Code & regulatory framework • principle-based & “comply or explain” models • principles & best practices

+Block 6. Principles. principles and recommendations • financial crisis (what have we learned?) • future directions

These blocks provide answers to the following questions:

- How is CG understood and defined? How is it measured?
- How does CG relate to accounting practices, internal control, financial reporting, and enterprise risk management?
- How do executive and supervisory tasks of boards relate to strategies

of management, monitoring, accountability, and control?

- What are the objectives of CG codes and principles? How do they look like?

Form of tuition

Lectures.

Tutorials.

Type of assessment

Written exam – Individual assessment.

(Interim) Assignment(s) – Individual assessment.

(Interim) Assignment(s) – Group assessment.

Mandatory attendance tutorials.

Course reading

This course covers content from various sources, including:

- research papers;
- media reports;
- in-depth analyses and examples;
- actual CG codes.

All content is freely accessible for students, and available online.

The references are listed in the course "Live spreadsheet"

(<https://is.gd/CG2017>).

Entry requirements

None.

Creative Writing

Course code	L_NNBAALG001 ()
Period	Period 2
Credits	6.0
Language of tuition	Dutch
Faculty	Faculteit der Geesteswetenschappen
Coordinator	dr. J.H.C. Bel
Examinator	dr. J.H.C. Bel
Teaching staff	dr. J.H.C. Bel
Teaching method(s)	Seminar
Level	200

Critical Perspectives on Science

Course code	W_CPOS ()
Period	Period 1+2+3
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Geesteswetenschappen
Coordinator	dr. J.M. Halsema
Examinator	dr. J.M. Halsema
Teaching staff	dr. J.M. Halsema

Teaching method(s)	Seminar, Lecture
Level	200

Course objective

- Knowledge of the feminist critique of science, and of critiques of science from the perspectives of race and intersectionality;
- Insight in the way in which these perspectives structure the student's own discipline;
- Developing the skills to critically question texts from the perspective of gender, race, and sexuality.
- Developing writing skills (by getting feedback) and presentation skills.

Course content

This course introduces diverse critical perspectives upon science that are developed from feminist, race, and intersectionality theory. In the first four weeks, on the basis of key articles in these fields (such as Harding, Haraway, bell hooks, Crenshaw), the different perspectives will be introduced, as well as the most important debates in these fields that form the backbone of this minor: the sex/gender debate, the problem of the relationship between gender and race theory, the intersectional framework. The course does not only aim at introducing the perspectives theoretically, but also at self-reflection by the students. In two weekly seminars the students will work at relating these perspectives to their own discipline. The seminars aim at developing a critical perspective upon the central texts in the student's discipline. The course will start in the first period and will end in period 3. The seminars will take place every two weeks, during the entire semester. The final course assessment will take place in period 3: students will give a presentation at the closing symposium of the minor and write a paper in which they demonstrate to be able to analyze from the angle of gender and diversity a subject/text/film/book from their own discipline.

Form of tuition

Lectures and seminars (active learning groups).

Type of assessment

- Three reflections of 500 words (divided over the semester) (30%; 10% for each reflection)
- Presentation at closing symposium (period 3) (10%).
- Paper (end of the minor, period 3), of 2000 words in which the perspectives developed in the minor are related to the discipline of the student (60%).

Course reading

To be announced on Canvas

Target group

The course is at Bachelor 3 level and open for students from different disciplines.

Current Issues in Migration Law

Course code	R_HumRCI (200994)
Period	Period 3

Credits	3.0
Language of tuition	English
Faculty	Faculteit der Rechtsgeleerdheid
Coordinator	T.K. Last
Examinator	T.K. Last
Teaching staff	prof. mr. T.P. Spijkerboer
Teaching method(s)	Tutorial, Lecture, Seminar
Level	300

Course objective

Course objectives are:

- To formulate an original research question
- To write a research paper
- To practice peer review
- To relate what is in the news to migration law scholarship
- To develop and express independent and objective opinions on current issues

Course content

This course invites students to engage critically with a current topic in international and European migration law. Topic areas that have featured in the news in recent months will be recommended, but students must develop their own research question. Previous current issue topic areas include: family reunion, non-refoulement, immigration detention, trafficking, smuggling.

Form of tuition

One lecture on how to relate what is in the news to existing migration law scholarship and introduction to the current issue topic areas on Canvas. Another lecture on how to formulate a research question and write a research paper. Students will also attend one working group session to present their research proposals and peer review others' research proposals. Supervisors will offer office hours to guide students through the writing process if necessary.

Type of assessment

Written research proposal, presentation of that research proposal, and a final research paper. Students will work in pairs.

Course reading

Preliminary reading lists will be announced on Canvas for a range of current topics.

Target group

Apart from regular students, the course is also available for:

Students from other universities/faculties

Exchange students

Contractor (students who pay for one course)

Current Issues in Transnational Law

Course code	R_CIsTrL ()
Period	Period 3
Credits	3.0

Language of tuition	English
Faculty	Faculteit der Rechtsgeleerdheid
Coordinator	prof. dr. G.T. Davies
Examinator	prof. dr. G.T. Davies
Teaching staff	prof. dr. G.T. Davies
Teaching method(s)	Lecture
Level	300

Course objective

This course introduces students to selected topics in transnational law which are of particular current importance or interest. Classes are interactive, involving some lectures, but also discussions and exercises. The aim is to help students understand the kinds of law and policy problems which are important at European and International level, and to critically evaluate the responses to these. This prepares the students for advanced courses at masters level, where they may engage with these problems in more detail.

Students will have to read and analyse academic literature and engage in active discussion of current issues, as well as formulating problems and questions in short essay(s). Oral and writing analytic abilities are therefore the major skills advanced in this course.

Course content

In 2017, the course focused on the following three topics:

- International trade and investment agreements - TTIP
- Problems of the International Criminal Court
- Legal issues of geoengineering

The subjects for 2018 will be announced nearer the time, but will be similarly diverse and contemporary.

Type of assessment

Short paper and presentation. Attendance is compulsory in order to obtain a grade.

Course reading

Reading will be placed on Canvas nearer the time.

Recommended background knowledge

Exchange students - basics of EU law and integration, good command of English

Target group

Apart from regular students, the course is also available for:

Students from other universities/faculties

Exchange students

Contractor (students who pay for one course)

Remarks

The following course objectives are only available in Dutch:

De afgestudeerde bachelor beschikt over een fundamenteel academisch werk- en denkniveau;

-heeft kennis van en inzicht in de kernleerstukken van de

hoofdonderdelen van het geldende recht (in het bijzonder het Nederlandse privaatrecht, staatsrecht, bestuursrecht, strafrecht en internationaal en Europees recht), alsmede de systematiek daarvan, met inbegrip van recente ontwikkelingen

-heeft kennis van en inzicht in het internationale en het Europese recht in hun verhouding tot het nationale recht

-heeft elementaire kennis van Engelse juridische terminologie

-beseft dat het recht zich ontwikkelt en manifesteert in een maatschappelijke context

-heeft kennis van de grondslagen van het (Nederlandse) recht, rechtshistorische en rechtsfilosofische aspecten en heeft besef van de eigen aard van de rechtsbeoefening

De afgestudeerde bachelor beschikt over de volgende (juridische) vaardigheden:

Analytische vaardigheden

-lezen, begrijpen en analyseren van juridische, rechtswetenschappelijke en rechtstheoretische teksten en betogen, waaronder jurisprudentie en wetgeving

-kritisch reflecteren op regelgeving, rechtspraak en literatuur, onder meer vanuit rechtshistorisch, rechtsvergelijkend en rechtsfilosofisch perspectief; is in staat om te reflecteren op de grenzen van het vakgebied

-reflecteren op de eigen maatschappelijke verantwoordelijkheid in de maatschappelijke context waarin het recht functioneert

-is in staat om juridische argumentatiestructuren te analyseren en op te zetten

Probleemoplossende vaardigheden

-selecteren van juridisch relevante feiten uit een feitencomplex

-selecteren van rechtsregels die bijdragen aan het oplossen van een juridische casus

-oplossen van juridische casus, waaronder begrepen hanteren van een systematische aanpak bij het toepassen van rechtsregels op concrete gevallen

Communicatieve vaardigheden

-schriftelijk presenteren van een (juridisch) betoog in correct en helder Nederlands

-mondeling presenteren van een (juridisch) betoog in correct en helder Nederlands

-een gefundeerde en beargumenteerde positie innemen in een maatschappelijk, juridisch debat

-met anderen samenwerken om een opdracht binnen een voorgeschreven termijn te voltooien

Informatievaardigheden

-op een efficiënte manier juridische bronnen raadplegen en informatie verzamelen uit juridische (digitale) bibliotheken en databestanden, en de waarde, relevantie en kwaliteit van de informatie beoordelen

-op efficiënte wijze relevante ontwikkelingen bijhouden en kennis actualiseren

Data Analysis 1

Course code	E_EOR1_DA1 ()
Period	Period 3

Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. P. Gorgi
Examinator	dr. P. Gorgi
Teaching method(s)	Lecture, Study Group, Computer lab
Level	100

Course objective

The main task of a data scientist is to extract relevant information from data. Statistical knowledge together with a data manipulation and statistical software play a key role in data analysis. This course provides an introduction to the software R and to some data visualization and data modeling techniques.

In this course, participants will:

- (1) Become familiar with some basic concepts of data visualization and modeling.
- (2) Learn the data analysis software R.

Course content

The course will present basic concepts of data analysis such as summarizing and visualizing data. The course will also discuss some data modeling methods. These concepts and methods will be applied using the software R. In particular, the course will cover how to handle real datasets, visualize data and implement some basic modeling techniques with R.

Form of tuition

Lectures and tutorials

Data Analysis 2

Course code	E_EOR1_DA2 ()
Period	Period 6
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. L.F. Hoogerheide
Examinator	dr. L.F. Hoogerheide
Teaching method(s)	Lecture, Study Group
Level	100

Course objective

The student further explores the practices of statistics, data science and econometrics, and also obtains first skills of programming in Python.

Attention is given to how methods are implemented in a matrix-oriented software environment. A case study on the house prices in Amsterdam is carried out and the student practices the presentation of empirical results.

Course content

- Analyse large data sets and make predictions using statistical models
- Practice software implementations in a matrix-oriented environment
- Practice how to present results: written reports and presentations.

Form of tuition

Lectures, practicals, question hours

Type of assessment

Assignments and presentations.

Course reading

Slides and relevant articles

Recommended background knowledge

Knowledge of calculus, probability and statistics

Data Analytics

Course code	E_EOR3_DA ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. R. Heijungs
Examinator	dr. R. Heijungs
Teaching method(s)	Lecture, Instruction course
Level	300

Course objective

This course teaches the students the importance of data analysis as the process of transforming data into useful information in order to support decision making. It equips the students with the tools, techniques and common practices used in the field of data analytics, including how to obtain, manipulate, explore, model, and present data.

Course content

Data analytics is a booming term that is used for the use of large amounts of data to gain knowledge, to optimize operations, and to explore markets. An example is the use of real-time traffic data to analyze vehicle movements, to predict congestions, to find the fastest route, and to schedule maintenance operations. Underlying data analytics is a series of methods and tools that include querying databases, using multivariate statistics, and visualizing high-dimensional data. This course will address theoretical and practical aspects in a number of selected topics relating to data analytics.

The following approaches to data analysis will be covered:

- Exploring data
- Preprocessing
- Statistics
- Regression
- Beyond regression
- Classification
- Clustering
- Importing data

- Missing data and outliers
- Validation

We will use flipped classroom approach, in which most of the time will be devoted to in-class working on assignments, helping your fellow students, and discussing suitable approaches.

Form of tuition

Lectures, computer assignments, student presentations

Type of assessment

Written exam – individual assessment
 Individual assignments – individual assessment
 Team assignments –team assessment
 Participation and attendance – individual assessment

Course reading

D.T.Larose, Discovering Knowledge in Data: An Introduction to Data Mining, 2nd Edition, Wiley
 Extra documents (articles, data sets, weblinks, etc.) will be provided through Canvas

Entry requirements

Basic course in statistics

Recommended background knowledge

Elementary computer skills, handling spreadsheets or programming

Remarks

For doing the in-class work of this course, you are strongly recommended to bring a laptop with internet connection. This may be a Windows, Mac OS or Linux computer, at your choice. It is convenient when you have some of the programs that you can operate (e.g., Excel, SPSS, Matlab, R, etc.) available on this laptop.

Data Analytics and Privacy

Course code	R_DAP ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Rechtsgeleerdheid
Coordinator	dr. mr. M. van der Linden
Examinator	dr. mr. M. van der Linden
Teaching staff	prof. mr. A.R. Lodder
Teaching method(s)	Lecture, Tutorial
Level	300

Course objective

Data Analytics and Privacy focuses on the role of fundamental rights and legal principles in the regulation of business analytics and data science, with a general focus on the right to privacy. The student will learn and understand the ethical and legal aspects of business analytics and data science. The student will be able to analyze the role of fundamental rights and legal principles in the regulation of these

issues. The student will be able to deal with the similarities and differences between legal admissibility and ethical acceptability when working with large datasets and the application of the outcomes of the analysis.

Course content

In the field of business analytics and data science the opportunities seem endless. Perfect enforcement of norms, excellent personally targeted advises and advertments. Outcomes of data analytics can even preceed what's on a man's mind: the cab arrives at the moment you did not even know yet you needed it, the packages are already posted before you ordered them, or the criminal behavior is predicted before it takes place. This course obviously is not about the possibilities, but about the limits we as a society want to put on those possibilities. The legal and ethical standards for this area have not yet been crystallized, but in general fundamental rights and ethical principles are well known. This course also explores the boundaries between legal admissibility and ethical responsibility.

Form of tuition

Lectures, tutorials, peer review

Type of assessment

Paper, presentation

Course reading

Made available via Electronic Learning environment

Target group

Apart from regular students, the course is also available for:
 Students from other universities/faculties
 Contractor (students who pay for one course).

Data Structures and Algorithms

Course code	X_400614 (400614)
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	dr. F. van Raamsdonk
Examinator	dr. F. van Raamsdonk
Teaching staff	dr. F. van Raamsdonk
Teaching method(s)	Lecture, Seminar,
Level	200

Course objective

To obtain basic knowledge about data structures, algorithmic design, and worst-case time complexity.

Course content

Concerning data structures:
 Linear data structures:
 stacks, queues, linked lists.
 Tree-like data structures:

binary trees, binary search trees, heaps, red-black trees or AVL-trees.
Graphs-like data structures.
Hash tables.

Concerning algorithms:
sorting algorithms,
the divide-and-conquer programming paradigm,
dynamic programming,
greedy algorithms,
string matching.

Complexity analysis:
big-Oh notation, worst-case time complexity, amortized analysis.

Form of tuition

Lectures: 4 hours per week (in total 28 hours).
Exercise classes: 4 hours per week (in total 28 hours).
There is also obligatory practical work.

Type of assessment

A mid-term exam (not obligatory) and a final exam.
The written exam contributes for at least 80% to the final grade.
Moreover, there are probably obligatory programming assignments
contributing for at most 20% to the final grade.

Course reading

Introduction to Algorithms
third edition,
Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest and Clifford
Stein, MIT Press 2009.

Entry requirements

Concerning algorithmics:
recursive procedures, arrays, elementary Java.
For instance the course Programming (X-400554) of year I of the Bachelor
Computer Science.

Concerning discrete mathematics:
some familiarity with mathematical reasoning in general and induction in
particular.
For instance the course Logic and Sets (X_401090) of year I of the
Bachelor Computer Science.
Moreover elementary knowledge of graphs.
For instance the course Networks and Graphs of year I of the Bachelor
Computer Science.

Target group

2CS, 2BA, 3IMM, 3LI, 3W, 3Ect

Debates in Consulting Research

Course code	E_IBK3_DCR ()
Period	Period 5
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics

Coordinator	dr. L.C. Noury
Examinator	dr. L.C. Noury
Teaching method(s)	Lecture, Seminar, Instruction course
Level	300

Course objective

By following this course, you advance scholarly knowledge and skills within consulting, which goes beyond introductory courses. Next to that you study the course literature and develop a well-informed overview of the general field by reviewing the method and content of your fellow student's work. You further provide recommendations that aim at helping to improve the work of your peers. These research skills constitute an essential basis for writing a Bachelor Thesis in management consulting, an essential basis for the master specialization in management consulting, and a preparation for consultant practice.

Knowledge skills: Recognize, understand, construct, and critically assess positions in scientific debates expressed in the literature on management and consulting.

Research skills: Conduct literature search and literature review on topics that are prevalent in the context of consulting and consulting research.

Academic skills: Independently develop and deepen your own well-substantiated positioning in relation to a particular contemporary debate based on the literature.

Social skills: Critically review the work of peers and suggest improvements.

Course content

Building on an introduction on management consulting as provided in the integrative courses (BK/IBA) and related courses, students will explore and deepen their knowledge of classical and contemporary scientific debate in management consulting by means of a literature study. In this way, the course will advance the students' ability to develop a well-informed position in a scientific debate on:

- Consultants and their role in the diffusion of management knowledge
- Consultants and their role in managing resistance to change
- CSR consultants and their impact on the implementation of a management idea such as CSR in practice
- Complementary and conflicting consultant roles in the consultant-client interaction
- Consultants and their role in supporting strategic decision making

After some introductory lectures on these debates students are allocated one debate and work on papers related to this debate by further literature search. They prepare for a mini-conference in which papers will be presented and reviewed. Based on the on mini-conference, students can improve their papers.

Form of tuition

Lectures
Tutorials

Type of assessment

To be announced later.

Course reading

This course is article based.
Readings will be announced in the course manual

Recommended background knowledge

For BK:

1.3 Academic Skills, 1.6 Integration project), 1.2 Organization Theory
2.2 Strategy; 3.4 Foundations of Strategic Management.

For IBA:

1.3 Academic Skills; 1.2 Organization Theory; 2.3 International
Strategy; 2.6 integrative Research Project; 3.4 Foundations of Strategic
Management.

Remarks

For any question please contact the course coordinator Dr. Lucie Noury:
l.noury@vu.nl

Decolonizing Europe

Course code	L_GCBAALG008 ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Geesteswetenschappen
Coordinator	M.P. Groten
Examinator	M.P. Groten
Teaching staff	prof. dr. S. Legene, M.P. Groten
Teaching method(s)	Seminar, Lecture
Level	300

Course objective

Decolonizing Europe has both historical and methodological learning objectives. After the course, participants...

1. Have a good understanding of the main approaches to the postwar history of the European nation state and are able to situate leading historians in the historiographical debate on decolonization and postcolonialism
2. Are able to critically review (both in writing and speaking) a monograph and to develop, both orally and in writing an argued opinion about the issue addressed by the author(s)
3. Have been challenged to reflect on the own 'subject position' and explore the theme from various perspectives while acknowledging different experiences with respect to European postcolonial society.

Course content

The course focuses on the impact of European imperialism on the dynamics of nation state formation within 'Postwar Europe'.* While all around the globe countries became independent, what did that mean for Europe itself? Students will come across at least three developments that played a major role in the repositioning of Europe in the international arena after colonialism:

- The reordering of European national states in East and West and the impact of the Cold War
- The changes within Europe and between Europe and the 'Third World' as a result of decolonization.

- The gradual European integration process and, simultaneously, the emergence of major ambiguities within separate nation states concerning the concept of multicultural society.

The course investigates these developments with particular attention to a better understanding of colonialism as a history with a deep influence on notions of belonging, inclusion and exclusion with respect to citizenship at national and European level. Against the backdrop of a political history, this course will discuss how historians, philosophers, activists, politicians, have approached this history within a national, European or global frame of reference.

* Tony Judt, *Postwar, A history of Europe since 1945*. New York, 2005.

Form of tuition

Two introductory lectures (week 1 and 2) supported by common reading assignments, week 3 individual assignment to write a summary and discuss a monograph selected from the course list or at your own suggestion, followed by a guest lecture in week 4; as from week 5-7 intensive sessions focusing at the topics addressed in the selected monographs. In week 8 the course ends with a forum discussion organized by the participants.

Type of assessment

Mandatory: attendance of the seven plenary sessions and final forum discussion.

Grading elements:

1. pro-active role in class, including class notes or other prep. assignments 30%;
2. Monograph: summary and discussion paper (2.000 words) 40%;
3. ppt. presentation and discussion in class about topics addressed in the reviews 20%.
4. Contribution to final forum discussion 10%;

Instructions and criteria for the assessment of the summary and discussion paper on a selected monograph will be included in the full course description.

In order to be able to finish the course, each grading element per se has to be satisfactory. If failed, the paper can be re-submitted.

Course reading

An extensive list will be published in the full course description. The following titles will be used as common reference works:

- Elizabeth Buettner, *Europe after Empire. Decolonization, Society, and Culture* (Cambridge, Cambridge UP, 2015)
- Jan C. Jansen & Jürgen Osterhammel, *Decolonization: A Short History* (Translated by Jeremiah Riemer Princeton, Princeton UP, 2017) (or German edition)

Entry requirements

Students will need a sufficient background in contemporary history, either at a general level, or specifically concerning the history of their own country, region, continent of origin.

Recommended background knowledge

It is strongly advised to read Jansen/Osterhammel before class starts.

Target group

As from the start, the course will be at 300 level and require a dedication to reading a lot. The course aims at History students in their BA3-minor semester and at those students from other disciplines who follow the full History minor-program. Other international exchange

students and students from other disciplines, University colleges and VU-faculties with a sufficient level of historical knowledge, can participate after permission by the course coordinator.

Registration procedure

The maximum number of participants for this module is 25 students. Make sure that you register in time.

Remarks

Full course title:

Decolonizing Europe - Perspectives on Post-WW2 State Formation and the Cold War

Democracy: A History

Course code	L_GABAGES212 ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Geesteswetenschappen
Coordinator	dr. D.B.R. Kroeze
Examinator	dr. D.B.R. Kroeze
Teaching staff	prof. dr. C.A. Davids, dr. F.D. Huijzendveld, dr. D.B.R. Kroeze
Teaching method(s)	Lecture
Level	200

Course objective

Improve knowledge of the historical development of democracy and of democratization in history. Improve understanding of differences between classic, early modern and modern understandings of democracy. Being able to critically reflect on normative thinking in academic and political debates. Being able to formulate an independent opinion on historical and contemporary issues related to democracy.

Course content

Since the end of the eighteenth century ‘democracy’ slowly but steadily has become more popular. Democracy as a mode of government and the word ‘democracy’ itself has by leaps and bounds found acceptance in many parts of the world. Democracy has become the standard or the rule, while other modes of government are considered as deviations or exceptions. How and why has this evolution occurred in Europe and in other parts of the world? What sorts of changes or continuities can during this prolonged evolution be discerned in the concept of ‘democracy’, and how can we critically assess the dominant position of democracy? Answers to these questions will be presented by giving an overview of the historical development of democracy since the time of the Athenian democracy, the ‘Atlantic Revolutions’ of around 1800, and the rise, fall and rise in the era around the World Wars. The history of democracy will be related to theories about democracy and democratization. The main emphasis will be on the Western and European history of democracy but guest lecturers will also discuss the non-Western development of democracy.

Form of tuition

Lectures and discussion.

Type of assessment

Midterm and final exam.

Course reading

Roger Osborne, Of the people, by the people. A new history of democracy (2011); D. Held, Models of Democracy (2006; 3 edition); articles and book chapters (to be announced).

Entry requirements

First year completed.

Target group

Students BA2 Geschiedenis/ History; Dutch students and exchange students with a Humanities or Political Sciences profile.

Remarks

This course is obligatory in the second year.

Designing Interventions in Business and Society

Course code	E_BK3_DIBS ()
Period	Period 3
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	drs. I.J.C. Leijen
Examinator	drs. I.J.C. Leijen
Teaching method(s)	Lecture, Instruction course, Seminar
Level	300

Course objective

Knowledge: You will obtain knowledge on the design of interventions aimed at influencing behavior as well as on the ethical aspects when adopting influencing tactics. Moreover you will learn about theoretical basis of human happiness

Bridging Theory and Practice: You will make use of theoretical knowledge and concepts with regard to happiness, understanding and influencing human behavior, and apply these to real-world challenges, while focusing on the various stakeholders that are involved (co-workers, other organizations, consumers & citizens).

Social Skills: You will work in teams to plan and develop an intervention, which will help you develop many of the “soft skills” that are needed to collaborate with others and achieve challenging goals.

Course content

This integrative project is the capstone course of the minor “Understanding and Influencing Decisions in Business and Society”. The course evolves around the use of theories, tactics and insights in

consumer behavior, nudging, leadership and negotiations to design interventions that ultimately could make people more happy. After a brief introduction in which you get acquainted with some of the methods for designing interventions, you start working on an intervention that addresses one of the real-world challenges that will be selected for this course. In this project, you will touch upon (1) design, (2) implementation, and (3) testing/evaluation phases by the development of an action plan. Because this is an integrative course, your intervention will be a multi-disciplinary endeavour, combining for example the insights on leadership with those on judgment and decision making, or combining nudges with negotiation skills. You will work in teams, and present your interventions, which will be judged on both academic and managerial quality. In the other courses of the minor you have acquired a lot of knowledge on strategies how people can be influenced. As influencing people is surrounded with ethical dilemmas we will also give attention to the ethical aspects of such tactics.

Form of tuition

Lectures and small-group tutorials

Type of assessment

Team project – group assessment
(Interim) exam – individual assessment

Course reading

TBA, a literature list based on scientific articles will be provided on the electronic learning environment

Entry requirements

All courses of period 1 & 2 in the minor "Understanding and Influencing Decisions in Business and Society"

Recommended background knowledge

All courses of period 1 & 2 in the minor "Understanding and Influencing Decisions in Business and Society".
Well-trained in academic method and thinking (i.e., with an academic bachelor).

Designing Solutions for Global Sustainability

Course code	AB_1231 ()
Period	Period 3
Credits	6.0
Language of tuition	English
Faculty	Fac. der Aard- en Levenswetenschappen
Coordinator	dr. P.J.H. van Beukering
Examinator	dr. P.J.H. van Beukering
Teaching staff	dr. P.J.H. van Beukering, dr. ir. M.G. van der Meij
Teaching method(s)	Lecture, Seminar
Level	300

Development and Globalization

Course code	S_DG ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Sociale Wetenschappen
Coordinator	prof. dr. D. Dalakoglou
Teaching staff	prof. dr. D. Dalakoglou
Teaching method(s)	Lecture
Level	300

Course objective

The aim of this course is to introduce students to development sociology and more in particular to gain insight into issues of poverty, global inequality and development. Students will develop an anthropological perspective on developmental issues in the Global South.

Learning Objectives

Knowledge and Understanding. The student has acquired knowledge and understanding of:

(1) the development and globalisation related phenomena and their global effect on health, gender, urbanisation, migration, etc.

Application. The student has acquired the competences to:

(2) understand and analyse the historical, sociocultural and political dimensions of international development and globalisation and their role in shaping contemporary world.

Attitude. The student demonstrates:

(3) a critical attitude towards ideas on globalisation and development.

Course content

The development of a capitalist economy in the North and the ongoing, global restructuring of the economy have impacted on economic and social development of the global South. Policies of states, supranational development agencies, and local NGOs to raise the standard of living in the so-called less developed countries have not attained the success levels hoped for. In fact, growth-oriented policies may have negative side effects, such as increased inequality, both within and between states, and ecological degradation. In this course, we analyse the interactions between (inter)national stakeholders and local populations, substantiating how particularly the so-called "poor" people experience inequality and poverty. We also highlight potential and experienced gaps between intentions and outcomes of development policies and look at what anthropology can contribute to 'development' debates and policy implementation.

Form of tuition

Lectures.

Type of assessment

Final exam.

Course reading

To be announced on CANVAS

Target group

2nd year bachelor students in Cultural Anthropology and Development

Sociology

Students in the minor Development and Global Challenges

Students in the minor Anthropology

The course is also open as an elective course

Development of Macroeconomic Thought

Course code	E_ME_DMT ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	prof. dr. C.A. Davids
Examinator	prof. dr. C.A. Davids
Teaching staff	prof. dr. C.A. Davids, J. Chen MPhil
Teaching method(s)	Lecture, Study Group
Level	200

Course objective

The objective of this course is to introduce core concepts and theories of modern macroeconomic analysis including their development within the economic and social context of the past centuries.

Specific learning outcomes upon completion of this curricular item are:

- understanding of macroeconomic theories about growth, inequality and unemployment within their historical contexts;
- a basic knowledge of core macroeconomic concepts
- familiarity with recent empirical macroeconomic work on growth, inequality and unemployment.

Course content

The course starts with discussing the historical development of macroeconomic theories about growth, inequality and unemployment.

Next the course proceeds with the introduction of core macroeconomic concepts and theories including illustrations from recent empirical macroeconomic work on growth, inequality and unemployment:

- Circular flows and national accounts;
- Aggregate incomes and inequality;
- Growth accounting: labor productivity, technological progress, human capital, Solow model;
- Institutions and economic development;
- Unemployment: measurement, types, costs of unemployment, wage rigidity.

Form of tuition

Lectures and tutorials

Type of assessment

Grade is average of problem sets (30 %) and written examination (70%), with written exam grade of at least 5.0.

Course reading

Acemoglu, Daron, David Laibson and John A. List, 2016, Economics, Harlow, Essex, Pearson Education Ltd. ISBN 13: 978-1-292-07920-2, incl. access code MYECONLAB.

Entry requirements

Basic knowledge of math and statistics, as provided in the academic core of any academic program at the Vrije Universiteit Amsterdam or equivalent.

Target group

Remarks: this course is an integral part of the University Minor Economics; participants gain strongly from attending the entire minor program.

Differential Geometry

Course code	X_400631 ()
Period	Period 1+2
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	dr. O. Fabert
Examinator	dr. O. Fabert
Teaching staff	dr. O. Fabert
Teaching method(s)	Lecture, Seminar
Level	400

Course objective

The student understands how to read and write in the language of coordinate free analysis and geometry.

The student can reproduce the most important arguments and constructions in differential geometry.

The student can apply these to compute on concrete geometric objects (manifolds).

The student can translate between geometric intuition and mathematical statements.

Course content

This course is an introduction to the theory of manifolds. These may be interpreted as generalisations of curves and surfaces to arbitrary dimensions. Apart from giving the most relevant definitions from differential topology (manifolds, vector bundles and differential forms), we make short excursions to Riemannian geometry (Riemannian metric), dynamical systems (flows of vector fields) as well as to algebraic topology (fundamental group and de Rham cohomology). More precisely, the subject list includes:

- Submanifolds, manifolds, tangent vectors
- Smooth maps (between manifolds), differential, immersions/submersions/embeddings
- Vector fields and their flows, Lie bracket, Lie groups
- Vector bundles, tangent bundles, tensor products, sections
- Riemannian metrics, distances on Riemannian manifolds
- Differential forms, pullbacks, exterior derivative
- Stokes' Theorem and De Rham cohomology
- Fundamental group and outlook towards algebraic topology

Form of tuition

Lectures and tutorials

Type of assessment

Homework (makes up for 30% of the final grade), written final exam

Course reading

Lee, Introduction to smooth manifolds, Springer
 Warner, Foundations of differentiable manifolds and Lie groups, Springer
 Hirsch, Differential topology, Springer

Recommended background knowledge

Analyse 1, Lineaire Algebra 1, Analyse op R^n (Analyse 2 en 3), Topologie

Target group

3W, 3W-B

Remarks

In order to compensate for the fact that we will not strictly follow one book, there will be lecture notes made available.

Digital Humanities and Social Analytics in Practice

Course code	L_AABAALG048 ()
Period	Period 3
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Geesteswetenschappen
Coordinator	prof. dr. L.M. Aroyo
Examinator	prof. dr. L.M. Aroyo
Teaching staff	prof. dr. L.M. Aroyo
Teaching method(s)	Seminar
Level	300

Course objective

The goal of the course is to get acquainted with digital humanities research, by collaborating in current project through an intensive internship of one month. Students learn to put digital theory into practice, applying the knowledge gained from previous minor courses to a real-world project.

Course content

Throughout the Digital Humanities minor, you have learned about the field of digital humanities, you have engaged in critical reflection on

the tools and methods used, and explored the way digital techniques influence current research. The goal of the course is to put theory into practice, applying the knowledge gained from the minor to a real-world project. The course is set up as an internship at a current digital humanities project. Students can choose a digital humanities project that is close

to their field of study and interest, The projects are housed by cultural heritage institutions, or research labs. You will be guided by one tutor from UvA or VU and one cultural heritage professional. Through these intensive "collaboratories" students learn practical application of digital humanities knowledge, tools and methods.

Form of tuition

Project-based learning. Group work, weekly tutor meeting per group, final group presentation.

Type of assessment

Final grade is based on assessment of (1) final report, (2) final presentation, (3) self-assessment, (4) final product.

Course reading

Depending on the chosen project, t.b.a.

Entry requirements

The Digital Humanities minor is an interdisciplinary minor, welcoming both computer science students and humanities students of all disciplines: linguistics, media, communication, history, literature and arts. In order to participate in the course "Digital Humanities in Practice" you have at least completed two courses of the minor, as this course is set up as a practical application of knowledge, tools and methods discussed in the previous courses.

Target group

Minor Digital Humanities, BA Media and Information (UVA), BA specialisation e-humanities

Registration procedure

For UvA students: For registering for the VU-courses, you need to enrol as a guest student at VU for the BA History.

Read how to in Dutch:

<http://www.vu.nl/nl/opleidingen/toelating-en-inschrijving/bijvakken>

or in English: <http://www.vu.nl/en/programmes/short/secondary/index.aspx>

Remarks

This module is taught at the VU. Module registration at the VU is required.

Digital Marketing and Metrics

Course code	E_EBE3_DMM ()
Period	Period 5
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. F. Sotgiu
Examinator	dr. F. Sotgiu

Teaching method(s)	Lecture, Seminar
Level	300

Course objective

During this course, you will develop an in-depth understanding of online marketing from a theoretical, analytical and practical perspective (Academic Skills). Building on the knowledge of Marketing II, this advances your knowledge on how to strategically design online marketing activities, and also how to analyze and evaluate the effectiveness of these online marketing activities (Knowledge, Quantitative Skills). Moreover, you will apply this knowledge and skills in a real-life setting, enabling you to translate and apply theoretical knowledge into practice (Bridging Theory and Practice).

By the end of this course you will be able to:

- identify the right metrics and methods to evaluate online marketing activities;
- assess qualitatively and quantitatively online marketing strategies and tactics;
- identify which activities are more effective and why;
- use the information obtained to build an effective digital marketing strategy.

Course content

In the past decade, the Internet has caused fundamental changes in the way we live, learn, and do business. For marketers, the intense use of digital media, and the widespread adoption of smartphones has truly revolutionized the way marketing 'is done'. More than ever before, word of mouth and consumer communities are considered important market forces that influence consumer decision-making all along the purchase process. Moreover, companies are increasingly adopting a business logic based on co-creating value propositions with customers. Marketing, as a function that is closest to the consumer, plays a key role in giving shape to this new era in business management. With today's consumers continuously connected online, it is imperative for marketing managers to monitor the customer journey online in order to fully understand the impact of their marketing activities and plan successful new online marketing strategies. However, in the era of big data, managers often do not know which metric to focus on and how to extract valuable information from the data at hand.

By the end of this course, you will be able to assess qualitatively and quantitatively online marketing strategies during three important moments of the customer journey online: (1) Product search; (2) Purchase; (3) Post-purchase. For each moment, you will identify which factors play a bigger role in influencing consumers' attitude and behaviour, based on the literature and your own analyses. You will also be able to use the information obtained to evaluate the ROI of digital marketing and social media campaigns and build a successful online marketing strategy.

Form of tuition

Lectures.
Tutorials.

Type of assessment

(Interim) Assignment(s) - Group assessment.
Exam - Individual assessment.

Course reading

Articles, cases, lecture slides.

The reading list will be announced on Canvas.

Entry requirements

None.

Recommended background knowledge

Marketing I and Marketing II.

Remarks

The lectures are interactive.

Digitization: from Life to Data (UvA)

Course code	L_ABAUVA008 ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Geesteswetenschappen
Coordinator	dr. H.M.E.P. Kuijpers
Teaching method(s)	Seminar
Level	200

Course objective

At the end of this course the student is able to:

- understand the complexity and challenges of (global) data developments.
- understand the relevance of data-oriented research for humanities and social sciences.
- apply their knowledge by developing their own research projects.
- apply various computational techniques such as structuring and parsing digital data.
- critically reflect on the implications of the selection, structuring and manipulation of data for the outcome of their work.

Course content

The humanities and social sciences are confronted with more and more digital material. Digital methods allow researchers to study relations between objects from a different perspective and on a larger scale. How can humanities researchers and social scientists use digital data to support their research? What are the digital tools at their disposal and how can these tools provide new perspectives and research questions? This tutorial looks at the Humanities from a data-oriented perspective; it introduces students to the different stages of data-driven research in the Humanities: how to obtain data (e.g. scraping), extract information (parsing), and find patterns (mining). Students will apply their knowledge of these techniques (and their associated tools) by developing their own research project.

Form of tuition

Tutorial

Type of assessment

Assignments and final paper. For dates and deadlines see the timetable and/or the course manual.

Course reading

All material will be made available via Canvas.

Target group

This course is part of the UVA/VU Minor Digital Humanities and Social Analytics

<https://minor.vu.nl/nl/minoren/digital-humanities-and-social-analytics/i>

Registration procedure

Module registration at the UvA is required. Note that registration will take place from 13 juni t/m 27 juni.

For more information see:

<http://coursecatalogue.uva.nl/xmlpages/page/2017-2018-en/search-minor/pr>

or: Onderwijsadministratie BG2 +31 20 5254952

Remarks

This module is taught at the UvA, Capacity group Media Studies, dr. K. Beelen (coördinator)

E-Commerce Supply Chain Management

Course code	E_IBA3_ESCM ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	prof. dr. ir. S.L.J.M. de Leeuw
Examinator	prof. dr. ir. S.L.J.M. de Leeuw
Teaching method(s)	Lecture, Seminar
Level	300

Course objective

- Academic Skills:

This course furnishes you with the ability to recognize and analyze fundamental structures and starting points of e-commerce supply chains and to formulate management conclusions for improvements in ecommerce supply chains.

- Quantitative Skills:

You will study methods to analyze the performance of e-commerce supply chains

- Bridging Theory and Practice:

Students will be exposed to four parts of the supply chain in this course: (1) warehousing, (2), multi-channel fulfilment, (3) transportation in the last mile, and (4) returns management.

You will study stylized cases and analyze a real-life case study; we will include guest lectures and a company visit to an ecommerce warehouse.

- Social Skills:

You will analyze and develop solutions for stylized case problems in teams and present that in teams.

Course content

E-commerce retail has shown a consistent double-digit growth over the last years. It is generally recognized that the delivery of parcels to consumers is pivotal. The Netherlands, while being recognized as a world leader in logistics according to the Logistics Performance Index, is best in class on several aspects of ecommerce supply chains including short delivery lead-times and late order cut-off times. The EU has formulated a bold target to achieve 20% of all EU online retail via cross border retail by 2020. This provides enormous challenges and particularly in the supply chain.

In this course we address key themes in managing the supply chain of online transactions. We start this course with the consumer. We start with discussing consumer preferences related to logistics options in the ecommerce supply chain. We then review facility location and design literature and consecutively discuss inventory management and inventory pooling. We will pay attention to sustainability in managing ecommerce supply chains and to a method to benchmark fulfillment centers.

Form of tuition

Lectures
Tutorials

Type of assessment

Written exam - Individual assessment
Assignments - Group assessment

Course reading

Readings will be announced via Canvas

Recommended background knowledge

Bachelor BK SCM 1 or similar

Econometrics I

Course code	E_EOR2_TR1 ()
Period	Period 1+2
Credits	6.0
Language of tuition	Dutch
Faculty	School of Business and Economics
Coordinator	dr. L.F. Hoogerheide
Examinator	dr. L.F. Hoogerheide
Teaching staff	prof. dr. S.J. Koopman, dr. C.S. Bos, dr. F. Blasques Albergaria Amaral, prof. dr. J.R. Magnus
Teaching method(s)	Lecture, Study Group
Level	200

Course objective

Getting acquainted with the concepts, theory, methods and techniques from econometrics. Most importantly, the introduction of regression, testing and maximum likelihood will be covered.

Course content

Topics include

- Simple linear regression
- Hypothesis testing
- Finite-sample and asymptotic properties
- Multiple regression and its matrix algebra
- Inference : estimation and testing
- Maximum likelihood

Form of tuition

2 x 2 hours of classes per week.

Type of assessment

Intermediate exam – Individual assessment

Final exam – Individual assessment

Individual assignment - Individual assessment

Course reading

J.H. Stock and M.W. Watson (2012), Introduction to Econometrics. 3rd edition.

J.R. Magnus (2017). Introduction to the Theory of Econometrics, VU University Press.

Recommended background knowledge

Linear Algebra, Analysis II, Statistics

Econometrics II

Course code	E_EOR2_TR2 ()
Period	Period 4+5
Credits	6.0
Language of tuition	Dutch
Faculty	School of Business and Economics
Coordinator	dr. L.F. Hoogerheide
Examinator	dr. L.F. Hoogerheide
Teaching staff	dr. L.F. Hoogerheide
Teaching method(s)	Lecture, Study Group
Level	200

Course objective

Acquainting the student with misspecifications in the linear regression model and extensions of the linear regression model.

Course content

Topics include:

- Heteroskedasticity
- Instrumental variables and endogeneity
- Misspecification: non-linearity and dummy variables
- Regression models with time series data and serial correlation in the errors
- Strict and contemporaneous exogeneity
- Binary data: logit/probit models
- Multinomial data: ordered logit/probit model, multinomial logit model.
- Censored/truncated data: tobit models
- Non-normality

- Bootstrap methods

Form of tuition

2 x 2 hours of classes per week.

Type of assessment

Intermediate exam – Individual assessment
Final exam – Individual assessment
Individual assignment - Individual assessment

Course reading

Wooldridge (2013), Introductory Econometrics, A Modern Approach, 5th international edition.

Recommended background knowledge

Econometrics I, Linear Algebra, Analysis II.

Econometrics III

Course code	E_EOR3_TR3 ()
Period	Period 4
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. J. Schaumburg
Examinator	dr. J. Schaumburg
Teaching method(s)	Lecture, Seminar
Level	300

Course objective

Obtaining basic understanding of multivariate dynamic linear modeling and time series analysis and panel data. Understanding the introductory theory and practice of econometric analysis of stationary and non-stationary multivariate stochastic processes and panel data.

Course content

Econometrics III provides an introduction to multivariate dynamic models and time-series analysis. The course covers both theoretical and practical aspects of time-series econometrics including analysis of multivariate stationary and non-stationary processes, vector autoregressive (VAR) models, vector error correction models (VECMs), and cointegration tests. The course also introduces panel data models, methods and techniques.

Form of tuition

4 hours per week of lectures, 2 hours per week solving/discussing both theoretical and practical exercises

Type of assessment

Exam (80%) and practical assignment (20%)

Course reading

J.D. Hamilton, Time Series Analysis (1994), Princeton University Press
H. Lütkepohl, New Introduction to Multiple Time Series Analysis (2006), Springer

K. Juselius, The Cointegrated VAR Model: Methodology and Applications
B.H. Baltagi, Econometric Analysis of Panel Data (5th Edition, 2013),
Wiley

Entry requirements

Basics of statistics, probability, econometrics, algebra, and calculus

Remarks

The course is suitable to be taken in an exchange program.

Economic Assessment of Health Care

Course code	E_EBE3_EAHC ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	prof. dr. M.W. van Tulder
Examinator	prof. dr. M.W. van Tulder
Teaching method(s)	Lecture, Seminar, Computer lab
Level	300

Course objective

Learning objectives for this course are:

Academic skills

- the student is able to conduct a basic statistical analysis for an economic evaluation within a structured assignment;
- the student is able to coherently report findings from an economic evaluation in a written report.

Research skills

- the student is able to design a basic economic evaluation alongside a randomized controlled trial;
- the student is able to correctly interpret and report the findings from an economic evaluation alongside a randomized controlled trial;
- the student is able to critically assess a published economic evaluation.

Quantitative skills

- the student is able to perform a basic cost-effectiveness analysis (Incremental Cost-Effectiveness Ratio, bootstrapping, cost-effectiveness plane, cost-effectiveness acceptability curve) within a structured assignment.

Knowledge

- the student is able to explain why economic evaluations are fundamental for making allocation decisions in health care;
- the student has basic knowledge on the design, analysis, interpretation and reporting of economic evaluations.

Bridging theory and practice

- the student is able to formulate a reimbursement decision based on the knowledge obtained from an economic evaluation.

Course content

At the end of this course, you know the basic essentials of economic evaluations of health care processes and health care technology. You will be able to make an informed choice between a trial-based and a model-based approach. The limitations of economic evaluations will be clear and they can be taken into account in designing a specific evaluation project. You will be able to critically assess the results of cost-effectiveness studies conducted alongside a randomized controlled trial, and you will be able to interpret and use information from published economic evaluations.

Form of tuition

Lectures: 12 * 2 hours = 24 hours

Tutorials (including computer practica): 5 * 4 = 20 hours, at least 75% of the tutorial should be attended by the student

Type of assessment

Written exam: individual assessment, 60% of the final grade, minimum required 5.5

Assignments: group assessment (groups of two students), 40% of the final grade, minimum required 5.5, maximum grade resit 6.5

Course reading

Selected literature will be available in Canvas.

Entry requirements

None

Recommended background knowledge

None

Target group

Third year BSc students doing the minor Health Care Management

Economics and Politics for Food and Nutrition Security

Course code	E_MG_EPFNS ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	drs. G.J.M. van den Boom
Examinator	drs. G.J.M. van den Boom
Teaching method(s)	Lecture, Study Group
Level	300

Economics of Globalization: A Transaction Cost Perspective

Course code	E_HP1_EGTC ()
Period	Period 4
Credits	6.0

Language of tuition	English
Faculty	School of Business and Economics
Coordinator	prof. dr. H.L.F. de Groot
Examinator	prof. dr. H.L.F. de Groot
Teaching staff	prof. dr. H.L.F. de Groot
Teaching method(s)	Lecture
Level	300

Course content

Globalization is an important source of welfare, but at the same time heavily contested in modern societies. This course elaborates on the costs and benefits of globalization introducing modern non-mainstream theories that at points challenge the traditional wisdom regarding the benefits of globalization and helps to understand the prevailing sentiments against globalization. We will heavily rely on insights from transaction cost theory which challenges the neglect in traditional neoclassical theory of transaction costs. The (oftentimes implicit) reliance in mainstream trade theory on frictionless trade is surprising for theories in which exchange is at the heart of the matter. This course aims to familiarize you with the concept of transaction costs and to show the relevance of transaction costs for understanding several of the empirical phenomena that are impossible to understand without relying on such costs. Insights are particularly relevant to appreciate current discussions on the impact of globalization on a small open economy such as the Netherlands. Think, for example, about recent discussions on reshoring and the impact of globalization on wage inequality and unemployment. The course will focus on four main areas of research in which transaction costs are dominant, viz. (i) international trade with a focus on the multiple dimensions of transaction costs distinguishing between transport costs, institutional costs and cultural costs of exchange, (ii) foreign direct investments with a focus on outsourcing and the organization of the firm in a globalizing world, (iii) industrial organization with a focus on the determinants of the boundaries of the firm, and (iv) networks with a focus on the role of social and regional networks, and on standards as institutionalized settings that facilitate exchange of goods, ideas, etc.

Form of tuition

Six weekly interactive lectures of 3-4 hours in the early evening.

Type of assessment

Individual paper and presentation.

Course reading

An extensive reading list is made available at the start of the course.

Recommended background knowledge

Basic familiarity with the principles of economics and statistics.

Target group

Second and third year participants in the honours program.

Registration procedure

SBE rules and dates apply for this SBE HP course. Registration via VUnet.

Economics of the Dutch Health Care System

Course code	E_EBE3_EDHCS ()
Period	Period 1
Credits	6.0
Language of tuition	Dutch
Faculty	School of Business and Economics
Coordinator	dr. F.R.M. Portrait
Examinator	dr. F.R.M. Portrait
Teaching staff	dr. F.R.M. Portrait, dr. A.H.E. Koolman, B.H. Salampessij MSc
Teaching method(s)	Lecture, Seminar, Computer lab
Level	200

Course objective

At the end of the course you can:

- explain the trend in health care expenditures in The Netherlands (Bridging theory and practice);
- apply health economic theory to analyze and evaluate the recent developments in the Dutch health care market for cure, the Dutch long-term care market ("care") and the disability insurance market (Knowledge; Bridging theory and practice);
- understand the role of the government in the Dutch care markets (Bridging theory and practice);
- identify and understand the most important issues within the Dutch care system and evaluate already implemented or future solutions (Research skills; Broadening your horizon);
- understand and apply economic concepts to measure and interpret the (relative) efficiency of healthcare providers (Knowledge, Bridging theory and practice).

Course content

Health care economics is concerned with the provision of, and demand for, health care. We will discuss the relevant economic theories and concepts that are necessary to understand the working of the (Dutch) health care markets: the market for cure, the market for care and the market for disability insurance. During the course students will study how policy makers try to achieve the policy objectives of high quality, affordable and accessible care in the Netherlands. Dutch health care institutions and current regulations will be presented.

Form of tuition

Lectures.

Tutorials.

Type of assessment

One written exam – individual assessment.

Two take-home assignments – group assessment.

Course reading

Eric Schut and Marco Varkevisser (2012): *Economie van de gezondheidszorg*, Reed Business (vijfde druk).

Entry requirements

None.

Recommended background knowledge

None.

Emerging Technologies for E-Business and Online Commerce

Course code	E_IBA3_ETEOC ()
Period	Period 3
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. S.C. Friesike
Examinator	dr. S.C. Friesike
Teaching staff	dr. S.C. Friesike
Teaching method(s)	Lecture, Seminar
Level	300

Course objective

After completion of this course, students will:

- Have an integrative knowledge of the various aspects of E-business and online commerce discussed in the preceding courses.
- Have knowledge of the most important managerial barriers in E-business and online commerce processes.
- Be able to critically assess the pros and cons of applying recent technologies in E-business and online commerce processes.
- Be able to provide a concrete advice concerning the feasibility of the use of such technologies and an understanding of how to overcome barriers.

Course content

This course focuses on the question how emerging technologies can play a role in supporting organizations' E-business and online commerce processes. Based on the knowledge gained in the first four courses of this minor, students will conduct a feasibility study concerning a recently emerged technology. They will develop an application and study the possible barriers that could occur in bringing this application to the market. They will develop countermeasures to overcome the identified barriers and to involve the respective peer groups. The technology at hand will be selected by the course coordinators, and will be a technology that newly entered the market . The analysis will focus on questions like:

- What is the potential value of this technology in supporting organizations' E-business and online commerce activities?
- What are potential barriers that could hinder or block the roll-out of a technology?
- What are the demands and consequences of applying this technology in terms of consumer interaction, logistics, information systems and other relevant aspects?
- To what extent is applying this technology feasible in terms of costs, benefits, fit with the current enterprise architecture, business processes, consumer preferences, etcetera?

The outcome of this analysis is a business report in which a concrete

advice is given in terms of the feasibility of this technology, and sheds light on the different aspects of logistics and fulfilment as well as marketing, technology and data, and insights for the e-business solution. Although academic fundamentals should be applied, this business case has a highly relevant practical component as well.

Form of tuition

Lectures
Tutorials

Type of assessment

Written Assignment - Group Assessment
Presentation - Group Assessment
Participation - Individual Assessment

Course reading

Various papers that will be made available via Canvas.

Entry requirements

This course is part of the minor E-business and Online Commerce. Students should at least be familiar with the content of 'Introduction to E-business and Online Commerce' and 'Consumer Science for Online Commerce'

Recommended background knowledge

Courses in period 1 and 2 of the Minor E-business and Online Commerce

Target group

This minor can be followed by all SBE bachelor students. In addition, advanced bachelor students (third year) from other faculties as well as other universities are welcome to join. Particularly those with an interest in Business and Organization Studies, Economics, Social Sciences, Social Psychology, Healthcare, Media and Communication Studies, Engineering, Technology Management, Operations Management and Education.

It is especially interesting for:

- Future managers who want to understand how Emerging Technologies can be implemented in existing business
- Intrapreneurs that want exploit the opportunities Emerging Technologies offer for E-business and online commerce
- Future consultants in E-business and online commerce, strategic business consultants, or government policy consultants

Remarks

This course is part of the minor E-business and Online Commerce.

Empirical Economics

Course code	E_EOR3_EEC ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	prof. dr. B. van der Klaauw
Examinator	prof. dr. B. van der Klaauw

Teaching method(s)	Lecture, Study Group
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Course objective

The main goal of this course is to make students familiar with using microeconomic techniques to empirically analyze economic models. Students should be capable to test economic theories empirically and to estimate policy relevant parameters. Next they learn how to interpret estimation results and to translate these into policy conclusions. Students learn to distinguish between causality and correlation.

Course content

This course first provides an overview on microeconomic techniques to estimate causal effects. In particular, the potential outcomes framework is discussed and within this framework policy relevant treatment effects are defined. Next, more structural economic models are presented and empirical analyses of these models are discussed. More specifically, during the course labor market models, consumer choice models, school assignment models and production functions are evaluated. During the course, there will be a theoretical discussion, presentation of empirical studies and students have to work with data.

Form of tuition

Lectures and workgroups

Type of assessment

Written exam and homework exercises

Course reading

Stock, J.H. and M.M. Watson, "Introduction to econometrics", 3rd edition, Pearson.

Entry requirements

Introduction to econometrics (linear regression and maximum likelihood) and basic statistics (estimation and hypothesis testing)

Empirical Finance

Course code	E_EOR3_EFIN ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. N.J. Seeger
Examinator	dr. N.J. Seeger
Teaching staff	dr. N.J. Seeger
Teaching method(s)	Lecture, Seminar

Course objective

The objective of the course is to show how econometrics can be applied to empirical questions in finance. In particular the course will cover topics such as financial data and its properties, factor models and testing pricing efficiency, modelling volatility, risk management models, model performance comparison, simulation procedures and

continuous time finance. We will investigate how characteristics of financial data such as e.g. non-normality challenges the assumptions of econometric methods and how the methods can be adapted to handle such data properties. A mixture of academic papers and practical applications is used to study how econometric methodology is employed to facilitate financial decision making and extract information from financial market data. A vital part of the course will be tutorial sessions in which students have to solve programming problems that are topic-wise related to the theory discussed in class. Matlab and Stata will be used to apply methods learned in class to actual data.

Course content

Econometric methods covered are among others, factor models, event study methodology, volatility modelling (e.g. GARCH), historical simulation, Monte Carlo simulation.

Form of tuition

Classes. In separate tutorials session, Matlab and Stata are used as programming tools to apply knowledge learned in class to real data problems.

Type of assessment

Final exam – Individual assessment
Grading is based to 100% on the final exam

Course reading

Brooks (2014): Introductory Econometrics for Finance, 3rd
Danielsson (2011): Financial Risk Forecasting

Entry requirements

None

Recommended background knowledge

The courses of period 3.1 in the Minor Applied Econometrics.

Remarks

This course in the minor Applied Econometrics is targeted at both econometrics and non-econometrics students.

Empirical Marketing

Course code	E_EOR3_EMKT ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. F. Sotgiu
Examinator	dr. F. Sotgiu
Teaching method(s)	Lecture, Seminar

Course objective

The objective is to show how econometrics can be applied to empirical questions in marketing and consumer behaviour. In particular, how to build models to support marketing decisions. Given the current big data revolution, models from which useful information about market behaviour

and their sensitivity to marketing activities such as advertising, pricing, promotions and distribution are routinely used by managers (from leading organisations worldwide) for analyzing marketing programs that can improve brand performance. This course will introduce models and methods, together with their use in empirical marketing studies.

Course content

This course focusses on quantitative methods for empirical research in marketing and consumer behaviour. In particular, we discuss how to build models to support marketing decisions and how to adopt data science methods to investigate market behaviour and the impact of marketing instruments such as advertising, pricing, promotions and distribution.

The econometric methods that are employed include regression, multivariate statistical analysis, limited dependent variable models, panel data models, pooled regressions, forecasting methods, and trend extraction.

Form of tuition

Lectures and classes. During classes time will be made for discussing exercises and for supporting empirical work. Computer classes are also organised

Type of assessment

Final exam – Individual assessments

Course reading

Reader, a selection of chapters and articles on various topics. The econometrics is mainly based on the book "Introduction to Econometrics" by J.H. Stock and M.W. Watson, which is also used in earlier courses.

Entry requirements

None, but an introductory course in econometrics is highly recommended, see below.

Recommended background knowledge

Introductory courses in econometrics and time series, similar to the courses "Introduction to Econometrics" and "Introduction to Time Series" from our Minor program "Applied Econometrics: A Big Data Experience For All".

Target group

This course is part of the Minor program "Applied Econometrics: A Big Data Experience For All".

Blackboard/Canvas Explanation

See above.

Registration procedure

As usual.

Remarks

This is a 6 EC course presented in period 2 (November-December) in the academic year. This course is part of the Minor "Applied Econometrics: A Big Data Experience for All". It is targeted at both econometrics and non-econometrics students.

Enterprising Behavior

Course code	E_BK3_ENTBEH ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. N.A. Thompson
Examinator	dr. N.A. Thompson
Teaching staff	dr. N.A. Thompson
Teaching method(s)	Lecture, Study Group
Level	300

Course objective

L1. The student is able to analyse an EB-related practical case, and provide a theoretically sound advice. (Academic Skills)

L2. Students gain a basic understanding of concepts in Entrepreneurial

Behaviour, and are able to analyse, compare, and apply these concepts. (Knowledge)

L3. The student is able to apply EB concepts to a practical enterprising-related problem. (Bridging Research and Practice)

L4. The student is able to work in a small team, and is able to orally

present a case assignment that encompasses a theoretical analysis and practical advice based on an EB-related problem. (Social Skills)

L5. The student further develops his/her communication skills in writing

by actively improving English writing skills. (Broadening your Horizon)

L6. The student is able to critically reflect on his/her individual and

team performance during the course, and he/she is able to use EB concepts in order to illustrate reflection with theoretical arguments. (Self-Awareness)

Course content

This course takes an Opportunity-centred approach to enterprising behaviour (OCE). This distinctive approach to learning focuses students on the human behaviours used in thinking, learning, decision-making, working and managing in entrepreneurial ways. Students will learn about and experience thinking and acting as enterprising individuals using real-world learning cases, through which they can develop the skills and confidence to recognize, create and act effectively on opportunities. These competencies are the basic building blocks for a future enterprising career.

Form of tuition

The format of instruction is lectures and tutorials.

Type of assessment

Assessment is based upon individual and group assignments.

Course reading

Rae, D. (2014). Opportunity-Centred Entrepreneurship (Second edition). Palgrave Macmillan.

Remarks

Het vak wordt in het Engels gegeven.

Environment and Development

Course code	S_ED ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Sociale Wetenschappen
Coordinator	drs. W.A.M. Tuijp
Examinator	drs. W.A.M. Tuijp
Teaching staff	drs. S.L. Di Prima MSc, drs. W.A.M. Tuijp
Teaching method(s)	Lecture
Level	200

Course objective

This course aims to help the student to examine and critically reflect on the relationships between economic and social development, and the environment.

Course content

What do we mean by the concepts of environment and development and how are the two related? What are the causes and consequences of global environmental change? How is the global community dealing with ecological problems? How can smallholder farmers in the developing world adapt to climate change? How can the world adequately feed more than 9 Billion people by 2050? Is sustainable development, with its notions of environmental 'friendliness', really achievable?

These and many other questions will be discussed during this interdisciplinary course. After the introductory overview the course will discuss two overall aspects of the international E&D framework: (1) Global Issues - which considers the links between development on the one hand and environment, trade and poverty on the other; (2) Local Issues - which focuses on the increasingly serious problem of land degradation, deforestation and growing water shortages, and asks key questions of how these are related to aspects of human development in poor countries. Illustrated case studies from all over the world provide the basis for teaching. Through this course students learn to recognize and analyze the current and potential impact of the major international environmental concerns; to appreciate the complexities of environmental issues related to development at a global level; to take into account different perspectives on environmental problems and possible solutions; and learn lessons from international case studies.

Form of tuition

Lectures, group discussions and tutorials.

Type of assessment

Group presentations (40%) and exam (60%).

Course reading

Clapp, J., & Dauvergne, P. (2011) Paths to a Green World: the political economy of the global environment. 2nd edition. Cambridge: MIT Press.

Additional literature to be announced in the course manual (see CANVAS).

Target group

Students in the Minor Development Studies;
Students in the Minor Development and Global Challenges;
Open as an elective course for Exchange students;
Open as an elective course for VU students.

Remarks

Some comments from former students:

"Many case studies, examples and pictures from own experiences presented by enthusiastic teachers"

"Eye-opening to very important topics and a lot of additional info"

"I liked the broadness of the course. I really have an overview now of the main environmental issues"

"Thanks a lot for the course, I have learned a lot and will recommend it to others!"

Equational Programming

Course code	X_401011 (401011)
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	dr. F. van Raamsdonk
Examinator	dr. F. van Raamsdonk
Teaching staff	dr. F. van Raamsdonk
Teaching method(s)	Lecture, Seminar, Practical
Level	300

Course objective

To obtain basic knowledge of functional programming (using Haskell) and its foundations via lambda calculus and equational reasoning.

Course content

In the practical work we use the functional programming language Haskell.

We practice with the basics such as lists, recursion, data-types, and a bit of monads.

The theoretical part is concerned with the foundations of functional programming in the form of lambda calculus and equational reasoning.

We study in untyped lambda calculus beta reduction, reduction strategies, confluence,

encoding of data-types, fixed point combinators and recursive functions.

In addition we study the lambda-calculus with simple types, its typing system and a type inference algorithm, and possibly strong normalization of simply typed lambda-calculus.

In equational reasoning we work towards the results that all initial models are equal up to isomorphism, and that the term model is an initial model.

Form of tuition

The theoretical part is taught in the lectures and exercise classes.
In addition, there is a programming lab for programming in Haskell.

Type of assessment

Written examination,
programming assignments in Haskell,
and (possibly obligatory) hand-in theory exercises.

Course reading

Course notes.

Recommended background knowledge

It helps to be familiar with formal reasoning as for example taught in the course Logic and Modeling.

Target group

3CS, 3LI, 3IMM, 3W

Registration procedure

The registration procedure is the standard one.

Remarks

This course is part of the minor Deep Programming.

Ethics

Course code	E_EOR2_ETH ()
Period	Period 4+5
Credits	6.0
Language of tuition	Dutch
Faculty	School of Business and Economics
Coordinator	prof. dr. J.F.D.B. Wempe
Examiner	prof. dr. J.F.D.B. Wempe
Teaching staff	prof. dr. M.V.B.P.M. van Hees
Teaching method(s)	Lecture, Study Group
Level	200

Course objective

The student acquires knowledge of (a) the main positions in normative ethics, (b) approaches in and problems from business ethics, and (c) political-philosophical aspects of economic decision-making.

The student acquires the ability (a) to apply ethical concepts and theories, (b) to give a philosophical defence of a normative claim.

Course content

This course offers an introduction to and overview of the central and approaches in contemporary ethics, specifically in the context of economic issues. You will learn the essentials of the central ethical theories (utilitarianism, deontology, virtue ethics, ethics of care) and will learn to acknowledge and assess the ethical dimension of economic questions. The course also analyzes the different

interpretations of important ethical concepts, in particular freedom, justice, well-being, happiness, autonomy and equality. Finally, different normative views on the relation between economics and politics are discussed.

Form of tuition

Hoor- en werkcollege (geïntegreerd).

Type of assessment

Assignments, intermediate exam.

Course reading

Manuel G. Velasquez, Business Ethics: Concepts and Cases, 7th Edition, Pearson, 2011

Entry requirements

None

Recommended background knowledge

None

Ethics I

Course code	W_BA_ETH1 ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Geesteswetenschappen
Coordinator	dr. P. Robichaud
Examinator	dr. P. Robichaud
Teaching staff	dr. P. Robichaud
Teaching method(s)	Lecture, Seminar
Level	100

Course objective

- Develop a basic understanding of the most important theories in moral philosophy—this includes normative ethics and metaethics.
- Understand the relative strengths and weaknesses of distinct theories.
- Learn how to use concepts and insights from various theories in normative ethics to analyze contemporary moral problems
- Learn how to argue for a particular position in applied ethics debate.

Course content

Ethics is a branch of philosophy that focuses on questions such as “In virtue of what are actions right or wrong (morally obligatory, morally permissible, or morally impermissible)?”, “What makes a certain state of affairs good or bad?”, and “What constitutes a good life?”. In this course we will critically explore different theories that offer answers to these questions. These theories include consequentialism, deontology, virtue ethics, care ethics, and contract theory. We will also spend time examining how these ethical theories apply to contemporary moral issues, such as abortion, animal welfare, famine relief, and human enhancement.

Form of tuition

Lectures and workgroups

Type of assessment

Written exams (60%); Writing assignments (20%); Group Debate (20%)

Course reading

- Russ Shafer-Landau, The Fundamentals of Ethics (3rd edition), Oxford: Oxford University Press, 2015
- Readings in Canvas

Target group

First year philosophy BA, philosophy premaster, philosophy minor.

Remarks

This is a required first year course. It serves as a pre-requisite for the second year course Ethics II.

Ethics of Algorithms

Course code	E_MM_ETHA ()
Period	Period 3
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. ir. M. van Otterlo
Examinator	dr. ir. M. van Otterlo
Teaching method(s)	Lecture, Seminar

Course objective

After completing this course, students will

Understand the role of smart algorithms for big data, in digital interactions, and in physical manifestations such as robots and the internet-of-things.

Know broad classes of algorithms and how they are used for prediction, social sorting, curating, recommending, gatekeeping, experimentation, and profiling

Be familiar with some of the main contemporary thinkers and issues in the ethics of algorithms

Know and understand the ethical implications of (classes of) algorithms on privacy, surveillance, discrimination, access to information, security, free will, human rights, social norms, etc.

Be able to identify stakeholders and ethical implications in healthcare, design, crime, education, science, job markets, business, journalism, warfare, etc.

Course content

Digital innovation involves both the accumulation of large amounts of data (so-called Big Data) through various new sensors (such as smartphones and social networks) as well as artificially intelligent algorithms (software, but also robots) that can analyze and interpret that data (i.e. analytics) and act upon it. The main objective of this course is to develop “algorithmic literacy” which is an understanding of how (intelligent and adaptive) algorithms influence the way we communicate, work, obtain information, date, travel, and so on, but also how we can tackle grand challenges such as crime, healthcare and

education in new, innovative ways. Algorithms are not neutral or objective, but come with many biases, choices, and political influences built-in, which heavily determine how people are “seen” by these algorithms, and how they are treated.

The course covers specifically the various implications algorithms have on fundamental values in society dealing with privacy, surveillance, free will, and so on. For each implication typically several competing stakeholders are involved with opposing viewpoints, value systems or business models. This requires a delicate balancing of interests. Ethics deals with finding this balance, with identifying issues and stakeholders, with employing social and legal solution frameworks, and possibly with judging whether some developments are good or bad.

The course features lectures on algorithms, ethical issues and domains. In addition we will read and discuss relevant literature, for which active participation is required. Each student needs to write an individual essay about a (self-chosen) ethical problem in a particular domain. Furthermore, each student participates in a multidisciplinary design team consisting of students to find a practical solution for an ethical issue caused by the use of intelligent algorithms.

Form of tuition

Lectures and (interactive) literature discussions.

Type of assessment

Individual essay, team design project, active participation in group sessions, and a digital exam.

Course reading

Various articles that will be made available through Canvas.

EU Governance in an International Context

Course code	S_EUGIC ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Sociale Wetenschappen
Coordinator	H.L.M. Muehlenhoff
Examinator	H.L.M. Muehlenhoff
Teaching staff	H.L.M. Muehlenhoff, H. Mercenier
Teaching method(s)	Lecture, Study-group
Level	300

Course objective

- Gain a basic knowledge of the history of European integration, of the institutional structure of the European Union, and of the key issues in the most important policy fields.
- Introduction to the key approaches to European integration and their application to an understanding of the history and contemporary themes of European Union politics and governance.
- Gain insight into how the European Union affects domestic politics, whilst at the same time being situated in a global context.

Course content

The European Union has an ever growing influence on political decision-making and policy-making in Europe and its nation-states. This course introduces students to the way the EU operates, its institutional architecture, its history, and its modes of decision-making. The course highlights how EU decision-making affects domestic politics, whilst it is at the same time situated in a broader, international context. Besides attention for the main characteristics of EU decision-making, the course familiarizes students with key theories of European integration (more intergovernmental versus more supranational approaches) and with the interaction between different levels of governance (Multilevel Governance, Europeanisation). These insights are applied in a number of selected policy domains that touch both upon the EU's internal politics (e.g. competition, agriculture, environmental policy) as well as upon its engagement in the global realm (e.g. military interventions).

Type of assessment

Exam and written assignment.

Course reading

M. Cini & N. Pérez-Solórzano Borragán (eds.) (2016), European Union Politics. Fourth Edition, Oxford: Oxford University Press
+ articles.

Target group

2nd year Bachelor students Politicologie and Bestuur & Organisatie (Afstudeerrichting Bestuurswetenschappen); Exchange students.

Registration procedure

In this course you can not enroll yourself for the tutorials, but you will be assigned by the course coordinator. At the latest in the first week of the course you will find to which tutorial you are assigned in your personal schedule in VUnet.

Note: You do have to register for the course, with the corresponding parts!

Filming Entrepreneurship

Course code	E_BK3_FE ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. J.K. Verduijn
Examinator	dr. J.K. Verduijn
Teaching method(s)	Lecture, Seminar
Level	300

Course objective

Academic Skills: The student is able to question predominant ideas about entrepreneurship, and form their own. They are able to communicate these ideas visually, i.e. through moving images.

Knowledge: Students have a deeper and enhanced understanding of

entrepreneurial 'real' life, and the various presumptions attached to the phenomenon.

Bridging Research and Practice: The student will have experienced various facets of entrepreneurial 'real' life.

Social Skills: The student is able to work in a small team.

Broadening your Horizon: The student is able to come up with and explore a (divergent) set of ideas (rather than focus on just one idea/solution), and play with perspectives.

Self-Awareness: The student is able to be curious, and to (critically) reflect on his/her own ideas about entrepreneurship, in relation to extant entrepreneurship knowledge.

Course content

This course aims at facilitating students in experiencing, exploring, discovering and 'reporting' about entrepreneurship as a real-life and dynamic phenomenon and as an on-going process. Likewise, your ability to look, think, and report in a 'visual' way will be stimulated. In this course, we break with linear conceptualizations of entrepreneuring as a 'neat', straight road to success, a correct execution of a sound plan, based on a good idea, a well-spotted opportunity, or other such dominant (abstract) ideas. Instead, we are going to play with other, perhaps not so common ideas about entrepreneurship. During this course, you (in pairs) create a (short) film about entrepreneurship so as to 'activate' your own curiosity, and to – visually – communicate your ideas and perspectives.

Form of tuition

Interactive lectures and work group meetings

Type of assessment

Assignment 1: short film (group assessment)

Assignment 2: individual paper (individual assessment)

Mandatory attendance work group meetings

Course reading

To be announced.

Finance I

Course code	E_EBE1_FIN1 ()
Period	Period 5
Credits	6.0
Language of tuition	Dutch
Faculty	School of Business and Economics
Coordinator	dr. M.B.J. Schauten
Examinator	dr. M.B.J. Schauten
Teaching method(s)	Lecture, Study Group
Level	100

Finance II

Course code	E_EBE2_FIN2 ()
Period	Period 2

Credits	6.0
Language of tuition	Dutch
Faculty	School of Business and Economics
Coordinator	dr. S.A. Borovkova
Examinator	dr. S.A. Borovkova
Teaching method(s)	Lecture, Study Group
Level	200

Course objective

In this course you will learn about financial modelling of risk and financial derivatives.

In the financial modelling module, the central concept is the relationship between risk and return on financial assets (Knowledge). The goal of this part of the course is to gain insight into the risk associated with financial portfolios and investments and to be able to calculate/estimate such risk on the basis of historical data. Furthermore, other goal is to learn how to construct portfolios on the basis of mean-variance optimization and how to benefit from diversification possibilities. Finally, another goal is to learn how to compute expected returns on investments on the basis of the Capital Asset Pricing Model and multifactor models (Quantitative skills).

In the derivatives module, the goal is to gain insight into various financial derivatives such as futures and options, their properties, valuation and risks associated with them (Knowledge). Another goal is to learn how these derivatives can be used to hedge financial risks (Quantitative skills).

Upon accomplishing these goals, you will gain new academic, research and quantitative skills, as well as develop your professional knowledge in the area of financial risk and derivatives. Furthermore, by illustrating the concepts with examples of portfolios, investments and hedging problems provided by financial institutions, we will bridge the gap between theory and practice, enabling you to translate theoretical concepts into practical applications (Link to practice).

Course content

Central topics in financial modeling that will be discussed are:

- measures of risk in financial markets: variance and volatility of returns;
- trade-off between risk and return;
- estimation of average return and volatility;
- concepts of covariance and correlation; their estimation;
- risk and return of portfolios;
- diversification;
- universal risk measures: Value-at-Risk and Expected Shortfall;
- concept of efficient portfolio. Markowitz model;
- CAPM;
- risk premium and beta;
- multifactor models of risk.

Central topics in the part on derivatives that will be discussed are:

- types and characteristics of financial derivatives;
- use of derivatives in risk hedging;
- options: determining option price with the help of the binomial tree;

- sensitivities of options (Greeks);
- Black-Scholes model for option pricing and its assumptions;
- delta hedging of options;
- implied volatilities and volatility smiles;
- interest rate risk, curves and models;
- valuation of interest rate swaps.

Form of tuition

Lectures.

Tutorials.

Type of assessment

Written exam and computer assignment.

Course reading

J. Berk and P. DeMarzo (2017), Corporate Finance, Pearson, 4rd Global Edition, chapters 10-13, 20-22 and 30).

Recommended background knowledge

Finance I and Quantitative Research Methods I and II.

Remarks

None.

Financial Accounting

Course code	E_EBE2_FAC ()
Period	Period 4
Credits	6.0
Language of tuition	Dutch
Faculty	School of Business and Economics
Coordinator	prof. dr. C. Camfferman RA
Examinator	prof. dr. C. Camfferman RA
Teaching method(s)	Lecture, Seminar
Level	300

Financial Econometrics

Course code	E_EOR3_FTR ()
Period	Period 5
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. F. Blasques Albergaria Amaral
Examinator	dr. F. Blasques Albergaria Amaral
Teaching method(s)	Lecture, Study Group
Level	300

Course objective

This course introduces students to advanced models and econometric methods in financial econometrics.

By the end of this course, participants will:

- (1) know how to design, code, estimate and analyze time-varying parameter models used in Finance;
- (2) understand the interplay between econometric techniques and modeling assumptions;
- (3) have used computational methods to solve econometric exercises;
- (4) know how to estimate parameters of structural models using simulation-based estimators;
- (5) have gained experience in working with real data.

Participation in this course is a worthwhile preparation for the master courses in the MSc Econometrics program. The econometric techniques discussed will also be beneficial to everyone planning to write a Bachelor's thesis in Financial Econometrics.

Course content

This course covers both theoretical and practical aspects of modern econometric models that are used by financial institutions, investment banks, central banks, governments, think tanks, and other research institutes.

The students are introduced to models in Finance that feature nonlinearities, time-varying parameters and latent variables. In particular, the students learn how to design, implement, estimate and analyze both observation-driven and parameter-driven models.

This course further shows how to use simulation based methods and indirect inference for estimating the parameters of structural models in finance that feature latent variables.

Finally, from a practical perspective, the students also learn how to use these models in Finance to calculate important risk measures and design optimal portfolios.

Form of tuition

Lectures, tutorials and practical computer-lab classes.

Type of assessment

Final exam and group assignment – Individual assessment

Course reading

Lecture notes and other material provided by teacher.

Other reading material:

Francq and Zakoian, 2011, GARCH Models: Structure, Statistical Inference and Financial Applications. John Wiley & Sons.

Tsay, 2010, Analysis of Financial Time Series. John Wiley & Sons.

Gourieroux and Monfort, 1996, Simulation-Based Econometric Methods. Oxford University Press.

Entry requirements

None

Recommended background knowledge

This course builds on introductory time-series concepts. Attending courses such as "Introduction to Time-Series" in the minor of Applied Econometrics, or the third-year Bachelor course "Econometrics III", is not required, but certainly provides an adequate background knowledge.

Target group

This course is targeted at both econometrics and non-econometrics students that have an understanding of basic mathematics, probability, statistics and time-series analysis

Financial Engineering

Course code	E_EOR3_FENG ()
Period	Period 5
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	prof. dr. B.F. Heidergott
Examinator	prof. dr. B.F. Heidergott
Teaching method(s)	Lecture, Study Group
Level	300

Course objective

Student will be introduced to the theory of stochastic processes that are important in modeling financial products. Students learn how to translate a problem from finance into an appropriate feasible stochastic simulation model. Students learn how to apply optimization and simulation techniques for evaluating options and performing sensitivity analysis. Students learn the application of stochastic simulation in the evaluation of Greeks.

Course content

This is an introductory course in stochastic simulation in finance. The course contains a guest lecture from ORTEC Finance addressing the application of the discussed techniques in industry.

Form of tuition

Combined lectures and tutorials

Type of assessment

Final exam – Individual assessment
Individual assignment - Individual assessment

Course reading

P. Glasserman. Monte Carlo Methods in Financial Engineering, Springer 2003.

Entry requirements

Analysis, basic probability theory, basic programming

Recommended background knowledge

Analysis, basic probability theory, basic programming

Target group

Students from the bachelor "Econometrie en Operations Research" and students from the bachelor "Economie en Bedrijfseconomie" with interest in finance. The course is suitable to be taken in an exchange program

Financial Management in Health Care Organizations

Course code	E_EBE3_FMHCO ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. G. Budding
Examinator	dr. G. Budding
Teaching method(s)	Lecture, Seminar
Level	300

Course objective

In the Netherlands more than 15 percent of the Gross Domestic Product (GDP) is spent on health care. Based on the long-term trends that are visible in healthcare, such as the aging population, comorbidity, individualization, self-direction and the unlimited availability of information, it is clear that the expenditure on health care will continue the coming years. The government is looking for measures to control this. In order to operate efficiently, health care managers knowledge of the playing field in which health care organizations are essential to make a good translation for the internal control on the basis of management information. The course Financial Management for Healthcare Organizations is part of the minor Health care management and provides students tools and instruments which are essential for the financial management of health care organizations such as hospitals, health insurers and primary care organizations.

At the end of this course students have developed knowledge and competences in different fields of financial management in the health care:

- Students are able to discuss the role of financial management in health care organizations (Academic skills);
- Students can explain how developments in health care affect cost of health care organizations (Academic skills);
- Students have knowledge of the different costing systems and are able to apply these costing systems in a health care context (Link with practice);
- Students are able to develop budget systems and are able to evaluate the effectiveness of budgeting (Link with practice);
- Students are able to explain the specific characteristics and additional requirements of financial reporting for health care organizations (Knowledge);
- Students are able to calculate and analyze financial ratios of health care organizations (Knowledge);
- Students understand the meaning of the governance codes for health

care organizations and the quality of care these organizations deliver (Knowledge).

Course content

This course is relevant for SBE students who want to apply financial accounting, management accounting and management control knowledge in healthcare organizations. The course will also provide medicine students, earth & life science students and social sciences students who are going to work as clinicians or health care managers relevant financial management tools and instruments to deal with health care organization topics. More specifically, this course pays particular attention on the usefulness of management accounting information, management control systems and financial accounting information to support considered decisions in order to manage economically healthy businesses in the healthcare sector.

Form of tuition

Lectures.
Tutorials (with cases).

Type of assessment

Group assessments weekly cases (grades for case solutions as well as case presentation)
Multidisciplinary case assessment (grade for case solution as well as individual presentation)

Course reading

Recommended reading: Zelman W.N., M.J. McCue, N.D. Glick and M.S. Thomas (2014). Financial Management of Health Care Organizations: An Introduction to Fundamental Tools, Concepts and Applications, 4th edition, John Wiley & Sons.

Obligatory reading: Syllabus Financial management in health care organizations (available on Canvas)

Entry requirements

None.

Recommended background knowledge

None.

Financial Markets and Institutions

Course code	E_EBE3_FMI ()
Period	Period 4
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. J. Wrampelmeyer
Examinator	dr. J. Wrampelmeyer
Teaching method(s)	Lecture, Seminar, Instruction course
Level	300

Course objective

In the course students develop a deep understanding of financial markets, bank supervision and central banking (Academic skills, Knowledge). You learn to analyze real-life applications such as recent central bank and regulatory policies using the concepts from the literature (Bridging theory and practice). You solve problem sets (Quantitative skills) and form teams to work on case studies (Research skills).

After the course, you can:

- explain how financial markets and institutions affect everyday life as well as how they create value and why this is the case;
- state stylized facts of the term structure of interest rates;
- describe the structure of the banking sector and banking supervision;
- explain the main risks involved in banking and the most important tools to manage these risk;
- explain the need for regulation of the financial system;
- describe approaches to managing systemic risk and recent developments in the regulatory framework;
- define the principles of monetary policy;
- interpret decisions by central banks on monetary policy and how they affect the financial system and the real economy.

Course content

Financial markets are playing an important role in a modern economy. This course gives students an overview on how the financial system operates and where its weaknesses lie. It is an important building block for understanding our economy and students can connect micro and macro theories to the concepts developed in this course. The course also provides the necessary background for a future career in a policy environment or financial institution.

Form of tuition

Lectures.
Tutorials.

Type of assessment

Written exam – Individual assessment.
Interim Assignments – Group assessment.

Course reading

- Mishkin, Matthews and Guiliodori (2013) Economics of Money, Banking and Financial Markets: European edition, 1st European edition, Pearson. ISBN 978-0273731801
- Additional readings will be announced on Canvas.

Entry requirements

Finance I or equivalent.

Recommended background knowledge

Finance I, Finance II and Corporate Finance.

Remarks

It is not allowed to follow this course if you already earned credits (ECs) for the course Finance, Banking & Insurance from the old curriculum.

Financial Modelling and Derivatives

Course code	E_IBK3_FMD ()
Period	Period 4
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. T.C. Dyakov
Examinator	dr. T.C. Dyakov
Teaching method(s)	Lecture, Seminar, Instruction course
Level	300

Course objective

In this course you will learn about financial modelling of risk and financial derivatives.

In the financial modelling module, the central concept is the relationship between risk and return on financial assets (Knowledge). The goal of this part of the course is to gain insight into the risk associated with financial portfolios and investments and to be able to calculate/estimate such risk on the basis of historical data. Furthermore, other goal is to learn how to construct portfolios on the basis of mean-variance optimization and how to benefit from diversification possibilities. Finally, another goal is to learn how to compute expected returns on investments on the basis of the Capital Asset Pricing Model and multifactor models (Quantitative skills).

In the derivatives module, the goal is to gain insight into various financial derivatives such as futures and options, their properties, valuation and risks associated with them (Knowledge). Another goal is to learn how these derivatives can be used to hedge financial risks (Quantitative skills).

Upon accomplishing these goals, you will gain new academic, research and quantitative skills, as well as develop your professional knowledge in the area of financial risk and derivatives. Furthermore, by illustrating the concepts with examples of portfolios, investments and hedging problems provided by financial institutions, we will bridge the gap between theory and practice, enabling you to translate theoretical concepts into practical applications (Link to practice).

Course content

Central topics in financial modeling that will be discussed are:

- measures of risk in financial markets: variance and volatility of returns;
- trade-off between risk and return;
- estimation of average return and volatility;
- concepts of covariance and correlation; their estimation;
- risk and return of portfolios;
- diversification;
- universal risk measures: Value-at-Risk and Expected Shortfall;
- concept of efficient portfolio. Markowitz model;
- CAPM;
- risk premium and beta;
- multifactor models of risk.

Central topics in the part on derivatives that will be discussed are:

- types and characteristics of financial derivatives;

- use of derivatives in risk hedging;
- options: determining option price with the help of the binomial tree;
- sensitivities of options (Greeks);
- Black-Scholes model for option pricing and its assumptions;
- delta hedging of options;
- implied volatilities and volatility smiles;

Form of tuition

Lectures.

Tutorials.

Type of assessment

Written midterm test, written exam and computer assignment.

Course reading

J. Berk and P. DeMarzo (2013), Corporate Finance, Pearson, 3rd Global Edition, ISBN 9781783990320, chapters 10-13, 20-22 and 30).

Recommended background knowledge

Finance I and Quantitative Research Methods I and II.

Food and Quality of Life

Course code	E_MG_FQL ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. D.R. Essink
Examinator	dr. D.R. Essink
Teaching method(s)	Lecture, Study Group, Practical, Computer lab
Level	200

Course objective

- Be familiar with main concepts of nutrition science relevant for FNS analysis
- Understand what a healthy diet is
- Understand the relation between diets and quality of life outcomes: physical, mental and social
- Understand (behavioural/environmental reasons for food choices
- Understand differences in food intake/outcome between social groups
- Be able to collect and analyze data regarding food intake and outcomes
- Be able to critically reflect and communicate on contemporaneous FNS quality of life issues, such as the ‘balanced diet’

Course content

Food and nutrition security are quintessential to quality of life. This course introduces basic health and nutrition science principles to zoom in on the effect of food on individual wellbeing: a balanced diet can contribute to prevent diseases and improve cure rates, improve productivity and nutrition is an important aspect of social relations and wellbeing. The course starts by understanding the composition of nutrition (e.g. what are macro/micro nutrients) and the basic metabolism processes in the body. Thereafter we relate food intake to the concept of a healthy diet and quality nutrition. This student will learn to

conduct research into food intake (food frequency questionnaires / 24 hour recalls/food diaries). Thereafter we will relate the food intake to specific health outcomes and conduct basic quantitative analysis into these. The emphasis is on outcomes in relation to health, here we will go into basic measurements such as BMI, stunting, wasting. We will also assess how food intake will contribute to improved educational attainment and labor productivity. Students will further understand how foods, even those that contribute to ill health, may positively affect individuals social life's and their quality of life. Lastly we will also explore how individuals make decision in relation to food intake.

Form of tuition

Lectures, workgroups, practicals, peer review

Type of assessment

Exam (60%), assignments (30%), presentation (10%)

Course reading

Book chapters, articles, lectures and other literature made available on Canvas

Entry requirements

The minor is designed for students from all disciplines. The interdisciplinary nature of the minor broadens the 'more disciplinary' perspective taught to students in the major.

Recommended background knowledge

Preferably students either have followed the first two courses of the minor or have Insights into nutrition sciences and basic statistical skills

Target group

The main target population is all third year VU bachelor students. Students outside the VU will also be targeted, such as at UvA. Because the minor is interdisciplinary, the minor should also be of interest for economics and health sciences students. We specifically aim for a diverse group as we strongly believe that interdisciplinary research is best taught through active interaction between students from different disciplinary backgrounds.

Remarks

Food and nutrition security are quintessential to quality of life. This course introduces basic health and nutrition science principles to zoom in on the effect of food on individual wellbeing: a balanced diet can contribute to prevent diseases and improve cure rates, improve productivity and nutrition is an important aspect of social relations and wellbeing.

Foundations and Forms of Entrepreneurship

Course code	E_BK3_FFE ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	prof. dr. W. Stam

Examinator	prof. dr. W. Stam
Teaching method(s)	Lecture, Seminar
Level	300

Course objective

Academic skills: Students are able to critically analyze the opportunities and constraints that shape entrepreneurship in different contexts using insights from academic literature, and can provide theoretically sound recommendations for overcoming key management challenges faced by entrepreneurs.

Research skills: Students are able to conduct a feasibility study of a new business idea that validates the proposed customer needs and market potential by systematically collecting, analyzing, and reporting relevant data.

Knowledge: Students understand the core theories and concepts in the field of entrepreneurship, they are able to analyze, compare, and apply these theories, and are knowledgeable about the different types of entrepreneurship and the process of launching new entrepreneurial ventures.

Bridging theory and practice: Students are knowledgeable about the importance of entrepreneurship in the 21st century global economy as well as recent developments in entrepreneurial activity across different contexts, and are able to apply entrepreneurship theories and concepts to identify solutions for management challenges faced by real world entrepreneurs.

Social skills: Students are able to work effectively in teams and are able to orally present their own business ideas as well as solutions to assignments that require them to develop a theoretical analysis and practical recommendations regarding entrepreneurship-related management problems.

Course content

Foundations and Forms of Entrepreneurship is an introductory course for students who like to learn about entrepreneurship, its role and importance in our society, and the process by which entrepreneurs transform new ideas into successful business ventures. Entrepreneurship is commonly associated with the creation of new businesses, but it also captures a distinct mindset that is valuable across a wide range of contexts. In this course, students learn to understand and apply basic theories from economics, sociology, and psychology to study key topics in entrepreneurship. These include the role of entrepreneurship in economic growth; traits, motivations and behaviors of entrepreneurs; the process of identifying, evaluating and exploiting entrepreneurial opportunities; business planning and financing for new ventures; managing growth and founder-CEO succession; social entrepreneurship and corporate entrepreneurship. Theoretical understanding of these subjects is applied to real world cases focusing on key management challenges faced by entrepreneurs, and a team project in which students conduct a feasibility study to validate the customer needs and market potential for a new business idea.

Form of tuition

Lectures
Tutorials

Type of assessment

Assignments – Group assessment
Assignments – Individual assessment
Written exam – Individual assessment
Mandatory attendance tutorials and (guest) lectures

Course reading

Textbook
Selection of articles and cases

Entry requirements

Students must have completed at least 90 EC of their own Bachelor programme.

Remarks

This course is the first course of the SBE Minor in Entrepreneurship.

Foundations of Business Administration

Course code	E_MB_FBA ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. V. Duplat
Examinator	dr. V. Duplat
Teaching method(s)	Lecture, Study Group
Level	100

Course objective

Have you ever asked yourself why organizations such as Uber or Airbnb grow so fast? How do newspaper publishers or bookstores take advantage of the digital revolution? Why do some clothing brands opt for the franchise for internationally expanding and others like Zara don't? What makes the success of Tesla cars wider in some countries than in others? Searching for answers to questions like those is the main challenge of managers nowadays. Managers must deal with the sustained pace of changes characterizing current economic, legal and technological environments throughout the world. This requires them to think out of the box and to continuously adapt the design of their organizations. New approaches to business and management constantly emerge. The course 'Foundation of Business Administration' provides insights in traditional and new approaches, while adopting an even-handed appreciation for theory and practice. The students learn to apprehend real-world business situations by applying specific theoretical perspectives or using related analytic tools. To do so, the course familiarizes the students with the three main theoretical perspectives on organizations (Modern, Symbolic-interpretative and Post-modern perspectives) and presents analytical tools and framework rooted in those perspectives. After following the course students:

- Have an advanced understanding of the traditional and emerging theoretical frameworks and concepts developed for studying

organizations

- Are able to adopt theoretical frameworks and apply tools and framework to real-world situations and organizations
- Are able to report, expose and defend their analyses and business recommendations, both verbally (report) and orally (presentation and video)
- Are able to work in small teams and efficiently allocate tasks among team members under time pressure

Course content

The course is devoted to the study of organizations. During the lectures, three main theoretical perspectives and related sets of assumptions are introduced. These lectures are organized in five parts: (1) introduction of the three perspectives and their assumptions over time, (2) interdependency between organizations and their environment, (3) organizational social structure and organizational culture, (4) technology and physical structure of organizations, and (5) organizational power, control and conflict. Throughout the lectures, each perspective, concept and analytical tool is presented by referring to real-world and current business situations. Business and managerial articles from Harvard Business Review, McKinsey Quarterly and MIT Sloan Management are associated with each lecture to enrich students' learning and bridge theory with practice. In addition, lectures are combined with a company visit, business case studies and a consulting project. Students are challenged to mobilize the content of the lectures for building their own understanding of choices made by organizations. This course is relevant for students wishing to appreciate challenges that organizations face and how those challenges can be approached and dealt with. The different fields of expertise of the students who attend the course represent a key asset. This diversity is used as a means to strengthen the learning experience!

Form of tuition

Lectures, tutorials and a company visit. Lectures start with a practice-oriented question, which is addressed by introducing theory. A company visit will offer students an opportunity to understand how firms must quickly adapt their business model and physical structure to the rapidly changing technological environment and worldwide competition. Throughout the tutorials, students will apply the theoretical frameworks and analytical tools introduced in the lectures to real-world organizations and situations. To this end, the tutorials combine two case studies and a consulting project. Via lectures and tutorials, students are encouraged to develop and expose their personal position on choices made by existing organizations. They are also expected to actively contribute to the group's experience and learning.

Type of assessment

Three group assignments under the form of a consulting project (oral presentation, video-making, and written reports), one individual assignment (essay), and a final written exam.

Course reading

- Required reading: Hatch & Cunliffe, Organization Theory. Modern, symbolic and postmodern perspectives. 3rd edition. Oxford: Oxford University Press, 2012.
- Selection of business and managerial articles that will be posted on Canvas.

Foundations of Microeconomics

Course code	E_ME_FM ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	prof. dr. P.A. Gautier
Examinator	prof. dr. P.A. Gautier
Teaching method(s)	Lecture, Study Group
Level	100

Course objective

This course introduces you to modern microeconomics. At the end of the course you:

- (1) can abstract from irrelevant details.
- (2) can apply economic concepts and theory to analyze concrete problems;
- (3) are able to interpret economic news.

Course content

Topics to be discussed are:

- Consumers, sellers and Incentives;
- Perfect competition, Trade;
- Externalities and public goods;
- Labor market/ human capital/unemployment;
- Economics of Information;
- Game theory/ Auctions;
- Socio/behavior economics.

Form of tuition

Lectures and working groups

Type of assessment

Grade is average of problem sets (30 %) and written examination (70%), with written exam grade of at least 5.0.

Course reading

Acemoglu, Daron, David Laibson and John A. List, 2016, Economics, Harlow, Essex, Pearson Education Ltd. ISBN 13: 978-1-292-07920-2, incl. access code MYECONLAB.

Entry requirements

Basic knowledge of math and statistics, as provided in the academic core of any academic program at the Vrije Universiteit Amsterdam or equivalent.

Foundations of Strategic Management

Course code	E_IBK3_FSM ()
Period	Period 4
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. B.V. Tjemkes
Examinator	dr. B.V. Tjemkes

Teaching method(s)	Lecture, Seminar, Instruction course
Level	300

Course objective

At the end of the course, students should be able to:

- Critically reflect on foundational texts and central approaches and theories in strategic management and their underlying assumptions, by reading and interpreting texts from leading authorities in strategic management;
- Recognize, understand, construct, and critically assess positions in classical scientific debates in strategic management;
- Develop an own well-substantiated positioning in relation to a particular contemporary strategic management debate based on literature study
- Engage in a process of self-reflection and critically review the work of peers and suggest improvements.

Thus by following this course, students advance essential scholarly knowledge and research skills within the area of strategic management which goes beyond introductory courses such as Organization Theory and (International) Strategy. They also develop a well-informed overview of the general field by reviewing each other's work and by providing recommendations that aim at helping to improve course participants' work. As such students will also develop their social skills. Together, these skills constitute an essential basis for successfully continuing master studies in the area of strategic management and organization.

The course focuses primarily on the following overall learning objectives in line with the IBA/BK bachelor programmes:

- Academic skills in analysis, abstraction, argumentation, and application.
- Knowledge in terms of a comprehensive understanding of the fundamentals with distinctive in-depth knowledge of the strategic management discipline.
- Broadening students horizons by having a good understanding of current events on a global scale.

Course content

The course aims to familiarize students with a number of classical and influential debates in the strategic management literature. This includes examining some of the "founding fathers" of strategy, such as Sun Tzu and Marcus Aurelius as well as the work of more contemporary management thinkers such as Michael Porter, Henry Mintzberg, and Alfred Chandler. Students will read both original texts as well as recent studies applying these perspectives, in order to gain a better understanding how classical debates inform current strategic management research and practice.

In addition to acquiring general knowledge about the scientific field of strategic management, the focus is on critically reviewing the literature. Particular attention will be given to identifying and assessing different and potentially diverging positions in these central debates in the field. Students are thus invited and challenged to develop their own opinion and a genuinely scholarly attitude towards the literature. This approach will build on the dialectical approach, which has for instance been adopted in (international) strategy. This not only contributes to a deeper understanding of central debates in strategic management, but also provides an important basis for a students' further development in this field.

Form of tuition

Lectures
Tutorials

Type of assessment

Research Paper – Individual assessment
Essay – Individual assessment
Literature review and presentation – Team assessment

Course reading

This course is article based.
Readings will be announced in course manual.

Recommended background knowledge

BK:
1.2 Organization Theory; 1.3 Academic Skills; 2.2 Strategy; 2.5
Corporate Entrepreneurship

IBA:

1.2 Organization Theory; 1.3 Academic Skills; 2.2 International
Strategy; 2.4 BRM I - Quantitative

From Cell to Society

Course code	W_FCTS ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Geesteswetenschappen
Coordinator	dr. P. Verdonk
Examinator	dr. P. Verdonk
Teaching staff	dr. P. Verdonk
Teaching method(s)	Lecture, Practical, Study-group
Level	300

Course objective

Overall aims of the course (scientific and clinical):

Aim of the course is to offer an in-depth overview of sex/gender and diversity aspects in medicine from cell to society, to provide an overview of sex/gender and diversity and their implications across a wide range of disciplines (e.g. basic science, pharmacology, cardiology, mental health, social medicine) and health conditions. The students practice a critical approach to existing evidence and learn the tools to apply this knowledge to medical practice. Professional development specifically aims towards the integration of learning pathways in particular: development of reflexivity, ethics (social justice), academic development (critical analysis), patient safety (drug development), professional communication.

Learning goals: after the course students are able to

- Describe the meaning of sex/gender and other aspects of diversity for health and illness
- Explain the role of sex/gender and other aspects of diversity for diagnose and therapy and present examples

- Describe and explain the role of diversity in major health issues such as coronary heart disease and lifestyle and mental health problems and apply this knowledge to patient cases
- Describe theoretical developments and concepts in the field of gender and diversity medicine including cultural competence, bias, gender awareness, diversity
- Explain the intersections of aspects of diversity in health and illness (intersectionality perspective)
- Recognize and explain gender and diversity bias in research and practice and its consequences for clinical practice
- Apply a gender and diversity lens to academic papers, research proposals, presentations

Course content

General background

Health disparities and inequalities exist between men and women across (socio)cultural backgrounds, class, sexual orientation, abilities and age (intersectionality framework). To date, a sex/gender and diversity perspective is insufficiently incorporated in research from fundamental research to drug trials and in medical practice. Understanding the antecedents of differences and inequalities and their connections to biological and social processes is important to improve quality of health and health care for both women and men across their intersections. In this course, we will give an in-depth overview of the relevance for clinical practice of these issues across a number of disciplines and health conditions. In week 1, we address sex (biological) differences in basic sciences (e.g. clinical conditions, coronary heart disease) and musculoskeletal diseases and we address sex/gender and research, including women's exclusion from drug trials. In week 2, we address how gender (sociocultural aspects) and cultural background are related to public health issues in particular lifestyle, cardiology and we discuss sex/gender and ethnicity in pharmacological treatment. In week 3, we will focus on gender and class (incl. poverty and education) in relation to mental health particularly depression and stress. In week 4, we focus on the intersections between sex/gender, sexual orientation, and cultural/religious background and how they relate to health and health care.

Form of tuition

Lectures and small group practicals

Type of assessment

- Presentation of an article from the literature list
- Writing a paper on gender and diversity in medicine, topic of choice
- Final examination (open book, open questions)

Course reading

Articles. A full literature overview will be placed on Canvas

Entry requirements

Students have to fulfill the requirements of participation in a VUmc School of Medicine minor Bachelor year 3

Target group

All students with an interest in gender and diversity in medicine from an intersectional perspective

Functional Analysis

Course code	XBU_417013 ()
Period	Period 4+5
Credits	6.0
Language of tuition	Dutch
Faculty	Faculteit der Exacte Wetenschappen
Teaching method(s)	Lecture, Seminar
Level	400

Target group

3W

Galois Theory

Course code	XBU_417008 ()
Period	Period 4+5
Credits	6.0
Language of tuition	Dutch
Faculty	Faculteit der Exacte Wetenschappen
Teaching method(s)	Lecture, , Seminar
Level	300

General History

Course code	L_GABAALG013 ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Geesteswetenschappen
Coordinator	dr. S.W. Verstegen
Examinator	dr. S.W. Verstegen
Teaching staff	dr. S.W. Verstegen
Teaching method(s)	Lecture
Level	100

Course objective

Knowledge and insight in the development of world history and civilizations from antiquity to the present day from a cultural, religious, political, economic and social perspectives. Acquire basic knowledge necessary for a better understanding of the historical background of different civilizations and their interacting.

Course content

The course 'general history offers a brief orientation in global history, its general trends from the Antiquity to the present, and its current methods and historiography. The course focuses on the main trends in the history of civilizations all over the world and deliberately avoids an European centred world view. Working from the heritage available in Dutch museums the lectures illucidates what we know and what we don't know of our common past. We approach

world history by looking at the world of Antiquity, world religions, cultural and scientific history, political, social and economic history and world history from an anthropological perspective.

Form of tuition

Lectures in the English language.

Type of assessment

Assignments and final exam. Class participation is mandatory (80%).

Course reading

Eric Vanhaute, World History. An introduction (Londen, 2012).

Entry requirements

First year completed.

Target group

This minor is open to third year BA students from all disciplines.

Remarks

This course is the first course in the minor History. It offers an introduction to the minor and to the study of world history.

Global English

Course code	L_ETBAETK209 ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Geesteswetenschappen
Coordinator	dr. L.M. Rupp
Examinator	dr. L.M. Rupp
Teaching staff	drs. E. Akkerman, dr. L.M. Rupp
Teaching method(s)	Seminar, Lecture
Level	200

Course objective

Knowledge

You are able to describe the salient features of major varieties of English, and the way in which these varieties have evolved. You are able to describe theories of language variation and change, language acquisition, and language and identity, as well as methods in teaching English as a second or foreign language/lingua franca. You are able to describe the use of corpus analysis as an empirical method for linguistic research. You are also able to name and describe some of the most important corpora that can be used for research in the area of Global English and research in the area of English linguistics more broadly.

Skills

You are able to apply this knowledge in analyses of concrete situations of the globalization of English, for instance English language-teaching or language policy-making in the domains of education, government and business. You are able to apply corpus linguistic techniques to the analysis of a number of issues in Global English.

Attitude

You are able to present a well-informed perspective of the nature of different Englishes and the impact of the globalization of English on speakers of English around the world.

Communication

You are able to present results of a small linguistic research project of your own on a Wiki page.

Competence

You are able to identify situations in which corpus analysis is useful.

Course content

In the lecture, we consider the world-wide spread of the English language. We begin with areas where English is spoken as a first language (England, the Celtic countries, the US, Australia, etc.). We then move on to regions where English is spoken as a second language (Africa and Asia) and from there to regions where English is used as a foreign language or lingua franca (e.g. Europe, the Netherlands). We will explore different issues in the globalization of English. These include linguistic aspects (variation in English, World Englishes), social issues (dialect perception, attitude to language, and language and identity), literary concerns (postcolonial literatures), and the impact on education, business and other domains (language policy).

In the seminar, we address issues that have arisen from the lectures or the reading, and we discuss assignments.

In the practicum you will be introduced to the field of corpus linguistics as a research method for analysing linguistic data. You will apply this to the study of Global English.

Form of tuition

Lecture (2 hours per week), seminar (2 hours per week) and practicum (2 hours per week).

Type of assessment

Exam (50%, individual mark) and a Wikipage on a variety of English (50%, group mark).

Course reading

Schneider, E.W. 2001. English Around The World. Cambridge.
Other literature and materials will be made available in class and on Canvas.

Entry requirements

Students must have followed Academic English CIS-L&S Grammar (L_EABAALG103) and Academic English CIS-L&S Writing (L_EABAALG104). Students Minor English should contact the Education Office of FGW for course registration.

Target group

Second-year students CIW and Literature & Society, third-year minor students, and international students.

Remarks

Class attendance is obligatory (80%). Participants will also need to have submitted 80% of the weekly assignments set in order to be assigned a grade for the course.

Global Political Economy

Course code	S_GPE ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Sociale Wetenschappen
Coordinator	dr. M. Hoijtink
Examinator	dr. M. Hoijtink
Teaching staff	dr. M. Hoijtink
Teaching method(s)	Lecture
Level	300

Course objective

- Acquiring knowledge of and insight into the contemporary global political economy, in particular how the contradictory process of globalization reshapes the relationship between states and markets;
- Introduction to and an understanding of rival concepts and theories within International Political Economy and their application to issues in contemporary global political economy.

Course content

This course offers students an introduction to the subject of International Political Economy (IPE). Throughout, the course will be guided by the question to which extent, and how, the current process of globalization is changing the relationship between states and markets, between public regulation and the private economy, between state and capital. Traditionally IPE studies the relationship between 'the economic' and 'political' within the interaction of – patterns of co-operation and conflict between – national states. If anything, the global financial and economic crisis of 2008 and beyond has made clear that this state-centric perspective is no longer adequate. At the same time the crisis has also shown that states, although apparently vulnerable in the face of global market forces, are also crucial when it comes to protecting the workings of global capitalism. This shows that indeed the relationship between states and markets is not a one-way street. In other words, politics and policies are shaped by the interests and activities of transnational (market) actors and by economic globalization but the latter is also driven by politics, and shaped (indeed enabled) by the policy choices that states make. It is from this perspective that this course will examine the various approaches within international political economy; the historical evolution of the global political economy; the globalization of production and the role of transnational corporations; the international monetary system and the globalization of finance; the global financial crisis and the eurozone crisis; the political economy of development; the rise of China and other emerging powers, and the political economy of energy and the environment.

Form of tuition

Lectures.

Type of assessment

Written Exam.

Course reading

Balaam, D.N. and B. Dillman (eds). (2014). Introduction to International Political Economy. Pearson New International Edition (Latest edition). Harlow: Pearson Education.

Recommended background knowledge

Some introductory-level knowledge of political science and International Relations as well as of basic (macro-)economics is recommended but relevant concepts will also be explained in class.

Target group

Students Bachelor Political Science; Minor Political Science; exchange students

Governance and Regulation of Emerging Technologies

Course code	R_GRET ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Rechtsgeleerdheid
Coordinator	prof. mr. A.R. Lodder
Examinator	prof. mr. A.R. Lodder
Teaching staff	prof. mr. A.R. Lodder
Teaching method(s)	Lecture, Tutorial
Level	200

Course objective

The aim of this course is explore various ways to regulate and govern societal changes caused by new technological developments. After this course the student knows and understands the various regulative and governance instruments, such as laws, regulation via technology, self-regulation, standardisation, and how and when to apply these to new technologies, including so-called disruptive technologies like Ueber, whole genome sequencing, Airbnb, block chain technology.

Course content

This introductory course of the Minor Technology, Law and Ethics offers an introduction into and overview of ways technology can be regulated. Important general concepts to be discussed are the economy (market powers), the law (regulation and case law), social conventions and ethics, and the architecture (e.g. the software). Basically three angles can be used to approach a technological development:

1. The Possible: what is technically feasible? (Technology)
2. The Desirable: do we like it, do we want it? (Ethics)
3. The Permissible: do we allow it? do we permit it? (Law)

For all emerging technologies we have to think about these three questions. The answers can roughly be categorized as:

White: It is possible, desirable, and permissible.

Grey: It is possible and permissible, but desirable?

Black: It is impossible, or possible but not permissible.

We will analyze different kinds of emerging technologies, and discuss in what categories we believe they belong (white/grey/black)

Form of tuition

Lectures and tutorials

Type of assessment

Written exam

Course reading

Material will be made available via the electronic learning environment

Target group

Apart from regular students, the course is also available for:

Students from other universities/faculties

Contractor (students who pay for one course)

Governance of Global Sustainability

Course code	AB_1229 ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	Fac. der Aard- en Levenswetenschappen
Coordinator	prof. dr. P.H. Pattberg
Examinator	prof. dr. P.H. Pattberg
Teaching staff	prof. dr. P.H. Pattberg, prof. M. van Vugt
Teaching method(s)	Lecture, Seminar
Level	300

Course objective

After this course students:

1. can explain key concepts from social and behavioral sciences relevant for the study of sustainability;
2. can characterize main modes of governance and behavioral triggers;
3. can explain the role of the social system in socio-environmental systems;
4. are aware of methods to quantify/qualify the state of governance and institutional/organizational change;
5. can identify Strengths, Opportunities, Threats and Weaknesses (SWOT) related to specific transitions strategies.

Course content

How can we govern the transition towards a more sustainable society?

What are the mechanisms, interventions and governance approaches that are able to change unsustainable patterns and structures? The course

addresses these questions related to people at various levels of aggregation: at the individual and social group level, at the level of organizations (such as the United Nations or the World Trade Organization), and at the level of political institutions (such as the state/government, cities/regions and private/transnational regimes). Our course will consequently survey the existing modes of governance towards behavioral and institutional change: authority, markets and networks.

Methods to assess governance and transformative change are addressed and

students identify for their specific case studies what strengths, opportunities, weaknesses, and threats are associated to the 'people dimension'. The course comprises lectures, workshops and a negotiation simulation and is evaluated through written assignment and a written exam.

Type of assessment

The course will be evaluated through

- 1) an assignment, consisting of a) a presentation (10%) and b) a short student report (1500 words) regarding the governance/behavioral aspects of their topic and associated SWOTs (20%).
- 2) an exam (70%), which will be composed of multiple choice and open questions.

Course reading

For each week, a selection of articles will be made to be studied in advance. For background reading on the key concepts and empirical issues covered in this class, we will use Encyclopedia of Global Environmental Governance and Policy (edited by P. Pattberg and F. Zelli), Edward Elgar Publishing. There is an affordable paperback version available from the VU bookstore. Individual chapters can also be accessed via the VU library's electronic sources.

Recommended background knowledge

Interest in sustainability issues and social questions

Grand Challenges for Sustainability

Course code	E_IBA3_GCS ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. G.C. van der Meijden
Examinator	dr. G.C. van der Meijden
Teaching method(s)	Lecture, Seminar
Level	300

Course objective

Academic skills / Knowledge

- the biophysics behind global environmental problems such as climate change and biodiversity loss;
- the importance of the 17 Sustainable Development Goals (as agreed upon in 2012 by the UN General Assembly) for achieving sustainable development;
- the determinants of economic growth and development;
- why the management of natural resources cannot be left to the free market;
- the role of good governance, both by governments and multinational firms, for achieving sustainable development;
- whether the government can, and, if so, how the government should intervene to obtain sustainable development and how to combat poverty, climate change, biodiversity loss, and resource depletion;
- the role of cities, in which more than half of the world population currently lives, for achieving sustainable development

Research skills / Quantitative skills

After successfully completing this course, you are able to explain:

- will be acquainted with theoretical and empirical methods necessary to study economic growth, the effects of market failures, the optimal management of natural resources, the potentially adverse effects of resource abundance, and the effects of different policy interventions

Bridging theory and practice

- you can explain how the management of renewable natural resources, such as fisheries, works in practice (through the experiences you have gained from a game you have played in an interactive in-class setting)

Social skills

After successfully completing this course, you are able to

- present and actively discuss themes relevant to this course

Broadening your horizon

After successfully completing this course, you are able to explain

- the interactions of the world economy, global society, and the natural environment that are important for sustainable development;
- why sustainable development calls for socially inclusive and environmentally sustainable economic growth.

Course content

Sustainable development is the central challenge of our days. Currently, the Earth is inhabited by 7.2 billion people (9 times more than at the start of the Industrial Revolution in the 18th century) who together produce more than 90 billion US dollars of output (200 times more than at the start of the Industrial Revolution). Both population and output are projected to keep on growing during the next decades. Furthermore, our world is increasingly interconnected through trade, migration, technology diffusion, knowledge flows, and social networks. As a result, human influence on the Earth's physical processes has been increasing. Nowadays, in the Anthropocene, human activity is even deemed to be the dominant influence on the Earth's climate and natural environment. Although two decades of economic development have brought widespread prosperity, more than a billion people are still living in extreme poverty. Moreover, by crossing planetary boundaries human activities may plunge the world into a gigantic environmental crisis caused by climate change and biodiversity loss. In order to eradicate poverty and to prevent environmental catastrophes, a transition needs to be made from the business as usual (BAU) to a sustainable development (SD) path. Making this transition requires good governance, not only by governments, but also by citizens and businesses. The objective of this course is to characterize a path of sustainable development and to identify the Grand Challenges that the world faces in making the transition from BAU to the SD path.

The course is organized around the Sustainable Development Goals as adopted by the UN in 2015. The first week will start with a general introduction that sketches several important sustainability issues, illustrated by empirical evidence. During the course, we pay attention to the scientific as well as to the economic and societal dimensions of the identified challenges for sustainability. Furthermore, both the positive or analytical side (i.e., how to make sense of the interactions of the economy, society and the environment?) and the normative or ethical side (i.e., what should be the objectives of a well-functioning society?) of sustainable development will be discussed during the

course. The topics that will be dealt with during the course are:

1. Growth and development: capital accumulation and technological change;
2. Ending global poverty, education, and health;
3. Management of natural resources and planetary boundaries;
4. Climate change: climate science and environmental policies;
5. Biodiversity and land-use change; 6. Global governance and resilient cities.

Form of tuition

Lectures (with interactive elements)
 Tutorials (including presentation and discussion sessions)
 MOOC (to prepare at home for the lectures and tutorials)

Type of assessment

Written exam – Individual assessment
 Interim Assignments – Group assessment

Course reading

Sachs, Jeffrey D., *The Age of Sustainable Development*, 2015, Columbia University Press, New York.
 Collection of articles.

Recommended background knowledge

Microeconomics

Hadith Studies

Course code	G_HADITHW ()
Period	Period 2
Credits	6.0
Language of tuition	Dutch
Faculty	Faculteit der Godgeleerdheid
Coordinator	dr. Y. Ellethy
Examinator	dr. Y. Ellethy
Teaching staff	dr. Y. Ellethy
Teaching method(s)	Lecture
Level	300

Health Care Management

Course code	E_EBE3_HCM ()
Period	Period 3
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	prof. dr. T.L.C.M. Groot
Examinator	prof. dr. T.L.C.M. Groot
Teaching method(s)	Lecture, Seminar, Instruction course
Level	300

Course objective

This course introduces organizational theories that are relevant to health care organizations. Students will practice in applying these theories to real-life problems in health organizations. Both approaches contribute to enabling students to:

- gain understanding of different management practices (Knowledge; Bridging theory and practice);
- analyse the influence of management practices on motivation of individuals (Research skills);
- understand and solve situations of conflict within health care organizations (Academic skills; Knowledge; Bridging theory and practice);
- develop strategies for health organizations (Research skills; Bridging theory and practice);
- have theoretical and practical insight into leadership and leadership styles (Knowledge; Bridging theory and practice);
- communicate effectively (Social skills);
- manage and coordinate teams of health care professionals (Knowledge; Social skills).

Course content

Health organizations are fast changing entities, partly driven by new technological developments and by social complexity. This course helps students how to effectively contribute to the performance in health care institutions. This requires a good understanding of the macro-elements of organizational behavior, such as management abilities and strategic orientation. The following subjects will be addressed: motivation, management of professionals, leadership and leadership styles, and communication. In this course, relevant management theories will be discussed and applied to the health care sector. Students will practice in work groups on the assignment to prepare a policy paper.

Form of tuition

Lectures.
Tutorials.

Type of assessment

Written exam – Individual assessment.
Assignment – Performance as project manager.

Course reading

Textbook to be announced.
Additional reading (will be published on Canvas).

Entry requirements

None.

Recommended background knowledge

None.

Health Economics

Course code	E_EBE3_HEC ()
Period	Period 1
Credits	6.0
Language of tuition	English

Faculty	School of Business and Economics
Coordinator	prof. dr. M. Lindeboom
Examinator	prof. dr. M. Lindeboom
Teaching method(s)	Lecture, Seminar
Level	300

Course objective

In this course students learn to:

- make economic analyses of health care policies (Knowledge; Research Skills);
- analyse health care policy objectives (Research Skills);
- measure the extent in which health care policy objectives have been reached (Research Skills);
- formulate economic requirements for effective health care systems (Academic Skills);
- identify causes of cost increase in health care (Academic Skills);
- perform longitudinal analyses of cost developments in health care (Research Skills);
- design measures for effective cost containment (Academic Skills).

Course content

The central theme of this course is the economic optimization of health care systems. This course provides students the necessary economic knowledge to analyse health care policy and to analyse the economic effects of health care policy measures. The following topics will be addressed:

- health care system's main objectives;
- methods to evaluate the economic performance of health care;
- the analysis of the influence of market coordination;
- the causes of growth in health care expenditures;
- diversification of health care processes and ways to control this variation;
- cost control in health care.

Form of tuition

Lectures.
Tutorials.

Type of assessment

Written exam - individual assessment.
Assignment (policy report).

Course reading

Selection of chapters from Bhattacharya, J., T. Hyde and T. Tu (2014):
Health Economics, Palgrave McMillan.

Papers, to be published on Canvas.

Entry requirements

None.

Recommended background knowledge

None.

Heuristics

Course code	X_401012 (401012)
Period	Period 3
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	dr. J.G. Hubert
Examinator	prof. dr. A.E. Eiben
Teaching staff	prof. dr. A.E. Eiben
Teaching method(s)	Lecture, Seminar, Study Group
Level	200

Course objective

The overall objective of the course is to expose students to a "real life" problem solving situation, where the supervisor gives no hints about suitable algorithmic approaches to solve a given problem. Students will learn to understand the problem requirements and invent or find an appropriate algorithm to solve it. Bottom-line is: anything goes, as long as it works. Specific objectives include: identifying an algorithm for solving a given problem, implementing and testing this algorithm, summarising the results and self-assessing the whole approach.

Course content

Students have to form teams of three and choose one of the four predefined problems to solve. The problems range from combinatorial optimisation (airline scheduling) to game playing (free cell). The course offers software support for each problem, including user interface and quality assessment procedures for candidate solutions. The "only" missing part is the problem solving algorithm. These must be implemented and tested in Java or Python.

Form of tuition

Working groups

The course combines a free setup with intensive coaching. After two introductory lectures about heuristics and experimental methodology, the student teams are completely free to choose their algorithmic approach as was their working hours. Twice a week we have COMPULSORY coaching sessions (a.k.a. "brainstorming workshops") where teams discuss their ideas and progress. Reflecting on other teams' work is an important element during these sessions. The course is concluded by a one day symposium where each team presents its solution.

Type of assessment

The final grade depends on the quality of the solutions found by the team, the written report, the oral presentation, and the level of activity / involvement during the coaching sessions.

Course reading

N.a.

Entry requirements

Java or Python programming skills are necessary to implement and test the algorithms students use.

Target group

Human Capital Across the Life Cycle

Course code	E_EBE3_HCALC ()
Period	Period 5
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	prof. dr. M. Lindeboom
Examinator	prof. dr. M. Lindeboom
Teaching method(s)	Lecture, Seminar
Level	300

Course objective

After following this course, the student is able to understand the concept of Human Capital, its origins early in life, how it is influenced by individual decision making concerning education and health and how it relates to productivity, growth and health care consumption and the distribution of health.

This course is an introduction to the economics of human capital with an emphasis on applied microeconomic theory and empirical analysis.

After successfully completing this course, students will be able to:

- demonstrate an understanding of the theories of investment in schooling and training, the production of health and theories on discrimination in the labor market (Knowledge).
- demonstrate knowledge of the interplay between health, education, work and income across the life cycle (Knowledge);
- apply modern economic theories in the field of education and health to practical policy problems (Bridging Theory and Practice);
- demonstrate an understanding of how technological change, globalization and institutional forces shape labor market performance (Knowledge, Quantitative skills);
- make well founded decisions about the appropriate methods to assess the returns to education and assess discrimination (Quantitative skills);
- make well founded decisions about the appropriate methods to assess the effect of health on labor market outcome and vice versa (Quantitative skills);
- discuss critically existing empirical evidence (Research skills);
- perform own empirical analysis by means of a replication exercise (Academic skills, Broadening your horizon).

Course content

Human capital can be viewed as capital derived from investments in education and health. Both factors determine the returns on the labor market (work outcomes, income and wealth) and in general individual well-being. The joint distribution of education, work, income and health evolves across the life cycles of individuals as they grow from childhood, where they make educational choices, to adolescence and when they enter the labor market till prime ages and later when they enter the phase from working age into retirement. In the final stage the larger part of health care is consumed.

The course starts with an overview of some stylized facts concerning the returns to education, labour and health. Next, we introduce the most important microeconomic models of investment behavior in the field of education, labor (search) and health. Throughout the course, theories are confronted with empirical papers that test these theories and their consequences for public policy in the area of education, income, health and work. Finally, we address the issue of how to appropriately test for discrimination and evaluate the effectiveness of public and social policies in the field of education, income, health and work.

Form of tuition

Lectures.
Tutorials.

Type of assessment

Written (closed book) exam – Individual assessment.
Presentation of papers in groups of two students.
Paper in groups of two students.

Course reading

Chapter 12 from Barr, The Economics of the Welfare State, Oxford University Press, Edition 4 (or higher).

Chapters 4, 8, 10 & 11 from "Cahuc P., Carcillo S. and A. Zylberberg. 2014. Labor Economics (2nd edition). MIT press".

Selected papers, to be distributed via Canvas.

Entry requirements

Microeconomics I.

Recommended background knowledge

Microeconomics II.

Human Rights and Citizenship

Course code	R_HumRC (200995)
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Rechtsgeleerdheid
Coordinator	mr. dr. M.C. Stronks
Examinator	mr. dr. M.C. Stronks
Teaching staff	mr. dr. M.C. Stronks, dr. P. Cuttitta
Teaching method(s)	Tutorial
Level	300

Course objective

After successfully taking this course you will be able to:

- Analyse and evaluate the multi-faceted and changing character of citizenship and nationality;
- Recognise and explain the variety of rights that are connected to (European) citizenship and/or national membership;
- Critically engage with the concept of ‘integration’ and analyse the

assimilationist shift of mandatory integration measures;

- Scrutinize the temporal dimension of citizenship and the assumed relation between the migrant, the citizen and time;
- Thoroughly scrutinise the reading material and being able to engage with the literature in essays.
- Formulate your own opinion on the central issues of this course, well-informed by the literature and case-law.

Course content

What and who is a citizen? How does a migrant become a citizen? Which rights do migrants have? And how do these rights develop over time?

These are seemingly simple questions, but upon close scrutiny the relation between the citizen and an alien appears to be rather puzzling.

Migrants might for example enjoy all kinds of civil rights, while certain citizens might feel treated as aliens.

In this course we investigate which rights can be invoked by nationals and by migrants. We will address the different understandings of citizenship and nationality, the concept of and the rights attached to European citizenship, the difference that having or not having national membership makes, the possibility of being joined by family members from abroad, the concept of 'integration' and the relation all these different aspects of citizenship have with time. These issues will be addressed in weekly lectures and assignments.

Form of tuition

Weekly lectures, obligatory weekly assignments.

Type of assessment

Written exam. Re-examination might be an oral exam, depending on the number of participants. Submission of weekly assignments is required for taking the exam.

Course reading

Will be announced on Canvas.

Target group

Apart from law students of the VU, the course is also available for:

Students from other universities/faculties

Exchange students

Contractor (students who pay for one course)

Human Rights and the Border

Course code	R_HumRB (200996)
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Rechtsgeleerdheid
Coordinator	mr. dr. E.R. Brouwer
Examinator	mr. dr. E.R. Brouwer
Teaching staff	mr. dr. E.R. Brouwer
Teaching method(s)	Tutorial
Level	200

Course objective

The course aims at increasing your knowledge of the law concerning borders and your understanding of the changing meanings of borders. In particular, you will broaden your knowledge of the different categories of 'migrants' created by the law and the attaching differences with regard to the right to cross borders and the sanctioning of illegal border crossing. You will be able to identify relevant domestic, European and international law and to deal with conflicts among them. You will improve your ability to critically reflect on legislation, case-law, and practice concerning borders.

Course content

The operation of borders and border control in practice may differ greatly from how it may be understood to operate in theory. In this course, the knowledge of the law on borders will be connected to societal reality. In the course Human Rights and the Borders, you will learn to connect knowledge of the law on borders to societal reality. Aside from general topics including the law on asylum, internal and external border controls, we will address current issues such as the safety of boat migrants, the role of private actors, and the use of technologies at the borders. The precise content of the course will be announced on Canvas.

Form of tuition

The course contains of 7 lectures, each lecture is given twice a week. During the course excursions may take place, enabling students to learn how borders work in practice.

Type of assessment

The course will be concluded with an examination: a written exam which counts for 75%, and an oral presentation which counts for 25% of the final mark.

Course reading

Will be announced on Canvas.

Target group

This course is open to students of various disciplines who have completed their first year of their Bachelor program. Includes exchange students.

Remarks

This course is open to students from various disciplines who have completed their first year of their Bachelor program and exchange students.

Identity, Diversity and Inclusion

Course code	S_IDI ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Sociale Wetenschappen
Coordinator	prof. dr. S. Saharso
Examinator	prof. dr. S. Saharso

Teaching staff	prof. dr. S. Saharso, dr. M.C. de Regt
Teaching method(s)	Lecture
Level	300

Course objective

This course is part of both the bachelor program Sociology and Social and Cultural Anthropology & Development Sociology. Also, this course is part of the Minor Sociology, the Minor Anthropology, the Minor Development and Global Challenges and the Minor Gender and Diversity. Finally, the course is open as an elective for (international) students.

This course is designed to introduce students to the various issues concerning diversity and inclusion in an increasing globalizing world. The course focuses in particular on contemporary issues concerning processes of inclusion and exclusion in the Dutch/European context. The central questions in this course are:

1. How and why are identities based on ethnicity, gender, class and sexuality constructed by both insiders and outsiders?
2. How do (groups within) European/Dutch societies respond to diversity?
3. What are the relevant mechanisms of inclusion or exclusion?
4. How should we contextualize current debates and practices related to inclusion/exclusion processes in relation to Dutch/European historical developments?

Learning objectives

After having completed this course the student has acquired knowledge and understanding of:

- (1) the relevant forms and dimensions of social identities;
- (2) theories of identity construction inclusion and exclusion;
- (3) the questions, debates and policies on diversity in contemporary Western societies, and the differences between societies thereof;
- (4) the challenges of contemporary developments - such as globalization and individualization- on contemporary forms of diversity.

After having completed this course the student has acquired the competences to:

- (5) apply acquired knowledge in the analysis of contemporary forms of diversity.

After having completed this course the student is able to:

- (6) take a critical stance in contemporary debates over identity, diversity and inclusion.

Course content

Identity issues have become very prominent in our globalizing world. While migration is often presented as one of the main causes of the increasing emphasis on identity, other developments, such as those related to (cultural) globalization and economic transformations, have had a strong impact as well. In addition to ethnic and religious diversity, gender inequalities, class differences and issues related to sexual diversity have changed The Netherlands, and other European societies. Ethnicity, gender, class and sexuality are markers of identity, but have also become axes of inclusion and exclusion in contemporary European societies.

This course discusses how ethnic and religious diversity intersect with

other forms of diversity. While historical constructions of the nation were already gendered, in contemporary discourses on national identity gender (women) and (homo)sexuality have become more prominent as markers of national inclusion and exclusion. Or, as in Europe ethnic diversity largely coincides with class distinctions, how does this affect feelings of belonging and inclusion? Islamophobic rightwing radicalization and Islamic radicalization are studied as possible reactions to experienced threats to identity and/or social exclusion. The course will also zoom in on cases of local conflict and on related contemporary debates, such as feminist solidarity in an age of diversity.

Form of tuition

Lecture.

Type of assessment

Digital exam.

Course reading

TBA, a reader including texts by Alba & Foner (2015), Crenshaw (1991) and others.

Target group

Bsc2 SOC, Min SOC, Min SCA Bsc2 CAO, Min G&D, Min D&GC; Exchange

Remarks

This course is part of both the bachelor program Sociology and Social and Cultural Anthropology & Development Sociology. Also, this course is part of the Minor Sociology, the Minor Development and Global Challenges and the Minor Gender and Diversity. Finally, the course is open as an elective for (international) students.

Imagining the Dutch: themes Dutch History

Course code	L_GCBAALG003 ()
Period	Period 1+2
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Geesteswetenschappen
Coordinator	W.J. de Vries MA
Examinator	W.J. de Vries MA
Teaching staff	M.P. Groten, W.J. de Vries MA
Teaching method(s)	Lecture
Level	200

Course objective

Learn about the characteristics and dilemma's of Dutch national history by discussing chapters from handbooks, articles and lectures.

Improve knowledge of Dutch modern history (writing) in general and more particularly learn about important themes, such as national history, political history, colonial history and different representations of Dutch history and identity in museums and media.

Throughout the course we will discuss these themes in relation to important concepts such as nationalism, democracy, pillarization and (religious) tolerance.

Being able to integrate information of case studies and guest lecturers

into the broader scientific framework that is discussed.
 Being able to critically review and discuss mandatory literature, used theories, dominant opinions and information on public websites.
 Being able to recognize normative thinking in scientific literature and in the work of historians.

Course content

A country of cheese and herring, that experienced an extraordinary Golden Age in the seventeenth century. And a country of tolerance, pillarization and consensus democracy. These are just a few examples of how the Netherlands has been imagined in the past and in recent periods by foreigners and by Dutch citizens themselves. These images tell a story of the Netherlands and are informed by both past and contemporary experiences.

Over the years questions about the true meaning of these images of the Netherlands have been raised. Who are the Dutch? What is 'typically Dutch' about the Dutch from an international perspective? What are the differences between how the Dutch themselves and how foreigners have imagined the Netherlands? And how should we deal with these images from an academic perspective?

The course will offer an introduction on Dutch history that is explicitly related to contemporary debates. The lectures of the course focus on themes in Dutch history and will cover a wide range of topics. The historical reasons for the extraordinary economic growth and cultural richness of the Netherlands in the 17th century; the development of the Dutch as a maritime nation in the 18th century; the rise of democracy in the 19th and 20th century; recent debates about the colonial past and immigration.

Discussion among students about the content of the lectures and the course literature is part of this course. Students have to read the literature in advance and have to make exercises. The course is finished with a written exam.

Form of tuition

Lectures (two periods every week one lecture)

Type of assessment

Written Exam and assignments

Course reading

To be announced on Canvas.

Target group

Students taking part in program 'Semester in Amsterdam'; International Students; Dutch students interested in Dutch History.

Remarks

This course will be provided two times: in periods 1&2 (L_GCBAALG003) and in periods 4&5 (L_GCBAALG004).

Inclusive Growth and Sustainability

Course code	E_EBE3_IGS ()
Period	Period 5
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics

Coordinator	prof. dr. M.W. Hofkes
Examinator	prof. dr. M.W. Hofkes
Teaching method(s)	Lecture, Seminar
Level	300

Course objective

This course aims at providing a solid understanding of economic growth and its links to sustainability and changes in well-being.

Specific learning outcomes upon completion of this curricular item are:

Knowledge:

- gaining a deep understanding of economic growth theory;
- gaining insight into drivers of growth, both theoretically as well as empirically;
- gaining insight into the relationship between growth, sustainability and changes in well-being;
- insight into the long-term balancing of growth in income, environmental sustainability and changes in other aspects of society ;

Bridging Theory and Practice:

- being able to describe and interpret patterns of growth.

Broadening your horizon:

- being able to judge the prospects of the concept of green growth;
- being able to judge the prospects of the concept of inclusive growth.

Course content

Growth in knowledge has been the main driver of increases in per capita income over the past 300 years, but has also changed the organization of society and has put pressure on natural resources. Major questions are why countries grow, why growth rates differ between countries and over time and how economic growth can be reconciled with societal well-being and environmental sustainability. These questions will be analysed by studying the main existing theoretical models as well as by relating empirical data to theory.

The course starts with an overview of key stylized facts relating to growth, sustainability and well-being. Next, the main theoretical models will be introduced, including the Solow model, endogenous growth models and models that take into account the (dual) role of natural resources.

There will be a special focus on the interrelationship between income growth, environmental sustainability and social well-being. Growth models will be studied that incorporate natural capital, providing insights into the possibilities of long-term balancing of economic growth and environmental sustainability.

Finally the importance of directed technological change and the implications for policy will be addressed.

Throughout the course theoretical models will be confronted with empirical data.

Form of tuition

Lectures.
Tutorials.

Type of assessment

Assignments,
Written exam

Course reading

To be announced.

Entry requirements

Quantitative Research Methods I.

Recommended background knowledge

Quantitative Research Methods II, Macroeconomics II, Microeconomics II,
Regional and Urban Economics.

Industrial Organization

Course code	E_EBE3_IO ()
Period	Period 4
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. E.I. Motchenkova
Examinator	dr. E.I. Motchenkova
Teaching staff	dr. S. Hochguertel, dr. E.I. Motchenkova
Teaching method(s)	Lecture, Seminar, Instruction course
Level	300

Course objective

Upon completion of the course you:

1. have knowledge of main models and tools used in industrial organization for analysis of firm behavior (Knowledge);
2. understand the notion of market failure, the role of regulation and the role of antitrust (Knowledge);
3. can name and explain the determinants of the actions taken by firms and are able to explain the relationships between firms' actions and market outcomes (Knowledge);
4. are able to determine optimal firm and regulator behavior conditional on the type of market structure and nature of competition in the market and draw policy conclusions (Knowledge);
5. are able to apply mathematics, game theory, and micro-economic tools to analyze such market phenomena as collusion, abuse of dominance, entry and exit decisions, and regulation of natural monopoly (Academic Skills);
6. can discuss real-world experiences of abuse of dominant position, cartel agreements and predatory conduct (Bridging Theory and Practice);
7. are able to analyze real markets, identify the situations where competitive forces are weak, and discuss public policy measures intended to deal with diagnosed problems (Academic Skills; Research Skills).

Course content

Many markets of interest are dominated by a few firms. Microsoft, Google, Apple, Intel, Airbus and Vodafone are examples of firms with significant market dominance. These firms not only choose their prices, but also the quality and the design of their products. They buy other firms and perhaps engage in illegal practices such as collusion and abuse of dominance. These choices have far-reaching effects on the markets in which they operate as well as throughout the economy. This course presents an approach –based on strategic decision making– for understanding the functioning of such markets.

This course is designed to give students an overview of the theory of Industrial Organization, to provide students with insights in the organization of markets, and to give an overview of the main models and tools used for analysis of imperfectly competitive markets. In addition, this course studies public policy aimed at industries where the competitive forces fail to deliver efficient outcomes. In particular, the course focuses on sources of market failure such as economies of scale, barriers to entry, collusion, and abuse of dominant position. After introducing the basic notions of market failure and market structure the course concentrates on public policies to alleviate possible negative effects on consumer welfare. The course covers key antitrust issues such as abuse of dominance, collusion, merger analysis, entry deterrence and predation as well as regulation of natural monopoly, regulation under asymmetric information, and public choice aspects of regulation. Empirical approaches to measuring market power and estimating structural relationships will also be discussed.

Form of tuition

Lectures.
Tutorials.
Seminars.

Type of assessment

Assignments and presentations - group assessment.
Written exam - individual assessment.

Course reading

Church, J. and Ware, R. (2000), "Industrial Organization: A Strategic Approach," McGraw Hill (see https://works.bepress.com/jeffrey_church/23/).

Additional articles (to be specified).

Entry requirements

Microeconomics I

Familiarity with concepts / topics discussed in chapters 2-8 of Goolsbee, A., S. Levitt and C. Syverson (2013): Microeconomics. New York: MacMillan/Worth Publishers.

Students also should be familiar with main analytical tools used in microeconomics such as calculus, optimization, and integration.

Recommended background knowledge

Microeconomics II

Information Retrieval

Course code	X_400435 (400435)
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Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	dr. T. Kuhn MSc
Examinator	dr. T. Kuhn MSc
Teaching staff	dr. T. Kuhn MSc
Teaching method(s)	Lecture, Seminar,
Level	300

Course objective

The goal of this course is to learn how search engines and other information retrieval systems work, to understand their principles and methods, and to acquire some basic skills in programming important aspects of such systems.

Course content

This course covers the aspects of indexing, Boolean retrieval, query types, query execution, the vector space model, web crawling, networks, link analysis, PageRank, classification, clustering, and more.

Form of tuition

Lectures and practical work

Type of assessment

Midterm exam, final exam, and assignments

Course reading

Introduction to Information Retrieval

Entry requirements

Programming skills will be an advantage.

Information Systems in E-Business and Online Commerce

Course code	E_IBA3_ISEOC ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. J. Andersen
Examinator	dr. J. Andersen
Teaching method(s)	Lecture, Seminar
Level	300

Course objective

Knowledge:

- Obtain in-depth insight into the important trends in Information and Communication Technologies (ICT) and how these trends impact organizations' E-business activities;
- Understand the role and value of ICT in the digital transformation of organizations;

- Understand how e-business relates to various degrees of digitalization by 1) optimizing industrial production logic, 2) integrating market feedback in service delivery processes and 3) facilitating supplier, crowd or peer production networks;
- Have knowledge of relevant theories about the various aspects of ICT in relation to organizations' E-business activities;

Bridging Theory & Practice

- Be able to apply their understanding, insight and knowledge about ICT in relation to E-business to a practical case and the development of an E-business solution.

Course content

Recent technological developments in ICT are creating new possibilities for the interactions between organizations and various parties in their environment – business partners, customers, and others. At the same time, the use of these technologies also creates unprecedented amounts of data that organizations need to make sense of. In this course, we focus on these technologies, how they affect organizations' E-business and online commerce activities, and the demands this puts on the Information Systems (IS) used in the organization. This course does so by covering the following themes:

- Relevant developments in hardware, software and networking;
- The interaction between technology and organization;
- Enterprise Architecture and Enterprise Systems;
- How changing ICT architectures and developments in the area of big data, cloud computing, the Internet of Things, social media and mobile technologies affect organizations' E-business activities
- The changing nature of markets and supply chains related to these technological developments

We relate these themes to concrete issues related to managing ICTs for E-business. Examples of such issues are:

- How to optimally support both back- and front-office E-business processes with ICT;
- How to derive meaningful intelligence from the big data generated by interactions and transactions through applications in the area of business Intelligence and algorithmic decision making;
- How the increasing flexibility of IS (as a consequence of moving to the cloud, modular ICT architectures and the increasing use of mobile devices) influences the way these technologies meet the requirements of these processes;
- How to manage the security of data, processes and systems in light of these developments.

We will not only be discussing these themes and issues in lectures, but you will also apply your knowledge about them in the analysis of a practical case and the development of an E-business solution in relation to that case.

Form of tuition

Lectures
Tutorials

Type of assessment

written exam - Individual assessment
case assignment - group assessment

Course reading

Papers that will be made available via Canvas

Integrative Modelling

Course code	X_401001 (401001)
Period	Period 1
Credits	6.0
Language of tuition	Dutch
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	dr. T. Bosse
Examinator	dr. T. Bosse
Teaching method(s)	Lecture, Practical
Level	200

Integrative Practical

Course code	E_EOR2_INTP ()
Period	Period 3
Credits	6.0
Language of tuition	Dutch
Faculty	School of Business and Economics
Coordinator	dr. M.A. Estevez Fernandez
Examinator	dr. M.A. Estevez Fernandez
Teaching method(s)	Lecture, Study Group
Level	200

Integrative Practice Lab

Course code	E_EOR3_IPL ()
Period	Period 3
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	prof. dr. G.T. Timmer
Examinator	prof. dr. G.T. Timmer
Teaching method(s)	Lecture, Study Group
Level	300

Course objective

Learn how to model a business problem in such a way that:

- the resulting models are simple enough to allow for analyses and optimization and
- are close enough to reality to make the results practically relevant.

Deepening the understanding of optimization methods through hands on application.

Practice the communication with - and the presentation of results to - business owners.

Course content

An essential part of the Operations Analytics program is to expose the students to actually apply the knowledge they have on modelling and optimization techniques using the computer. During the course, students work together in small groups on selected cases that originate from practice.

At the start, it is not clear how optimization techniques can be used to improve the business process that is central in the case. Nor is it clear which optimization techniques should be chosen.

Interpreting the business process and modelling it in a way that selected optimization techniques can be applied successfully is central in "solving" the cases.

Form of tuition

Group discussions on (intermediate) reports of the groups, with input from both the students from other groups as well as from the teacher, also giving directions for next steps in the research, are combined with background information by the teacher on models and techniques that could be relevant for the cases at hand.

Type of assessment

Research reports – team assessment

Oral examination – individual assessment

Course reading

Dedicated articles and background information on the problems that are studied in the cases.

Entry requirements

Knowledge and skills acquired in other four courses of the minor Operations Analytics or in an a similar curriculum. Experience with a computer language like R or Python.

International Financial Management

Course code	E_IBK3_IFM ()
Period	Period 5
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. K.L. Wolk
Examinator	dr. K.L. Wolk
Teaching method(s)	Lecture, Seminar, Instruction course
Level	300

Course objective

The objective of the course is to acquaint students with the developments in international financial markets from a perspective of managerial decision making. The course is designed to provide future's financial managers with an understanding of the fundamental concepts and the tools necessary to be effective global managers. The aim is to provide students with an understanding of these concepts and techniques used in risk management. (Knowledge, Quantitative Skills) The students will develop skills in reading and understanding academic papers as well

as critical thinking on economic events with a focus on the financial aspects of managerial decisions. (Research Skills, Bridging Theory and Practice) They are encouraged to improve analytical thinking abilities, to think beyond the boundaries of economics and finance theories. (Academic Skills, Broadening your Horizon)

Course content

During the course, we will mainly discuss the structure of financial markets (foreign exchange, fixed income and equity markets) and explore the issues that are encountered by multinational enterprises, with an emphasis on risk management. When having completed this course, students will have a clear understanding how financial markets work and how the multinational firm interacts with other market participants. In particular, students will:

- understand the development of the international monetary system and other financial institutions,
- be acquainted with different financial instruments used to manage foreign exchange rate risk (forwards, futures, options)
- be acquainted with the specifics of various financial markets (money, bond, equity)
- learn how to manage foreign exchange risk and interest risk in a multinational firm.

Form of tuition

- Lectures
- Tutorials

Type of assessment

Written exam – Individual assessment
(Interim) Assignment(s) – Individual assessment

Course reading

1. Eun & Resnick: International Finance, Global Edition (ISBN: 9780077161613)
2. Additional articles and/or cases (announced at the start of the course)

Recommended background knowledge

BK:
2.2 Finance; 3.4 Financial Modelling and Derivatives; 2.5 Finance II

IBA:
2.2 Finance; 2.5 Corporate Finance in Emerging Economies; 3.4 Financial Modelling and Derivatives

Internet Governance

Course code	R_InternGov (200331)
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Rechtsgeleerdheid
Coordinator	mr. T.H.A. Wisman
Examinator	mr. T.H.A. Wisman
Teaching staff	prof. mr. A.R. Lodder, mr. T.H.A. Wisman
Teaching method(s)	Lecture, Study Group

Course objective

At the end of this course students:

- Understand the basics of the Internet;
- Understand the challenges posed by the Internet to national regulation;
- Understand and be able to apply the modalities of Lessig;
- Understand and be able to apply the models of Solum;
- Understand what Internet governance is, both in the broad and the narrow sense and explain how they relate;
- Be able to apply the Lodder & Jiminez model of jurisdiction;
- Know the materials regarding privacy, freedom of expression and copyright, and be able to apply to this Lessig's modalities and Solum's models.

Course content

The first half of this interdisciplinary course the focus is on the (legal) challenges and problems introduced by the internet. The course shall first identify the special characteristics of the internet in an effort to demonstrate and discuss the associated challenges. Besides identifying and subsequently discussing (legal) challenges, this course shall also treat the different models of internet governance, both legal and non-legal, which can be used in developing a critical mind towards possible solutions. Additionally, the course shall cover modalities of regulation as introduced by Lawrence Lessig.

The second half of this course deals with specific legal subjects: freedom of expression, privacy and copyright. In this half we delve deeper in these various subjects, the specific challenges that arise in the context of the internet and the developments in case law. The models of internet governance and modalities of regulation will be used in this stage to critically reflect on these subjects and the respective challenges they bring.

Form of tuition

Student presentations, in class (group) exercises, discussion of the literature.

Type of assessment

The course is assessed by the following components:

Assignments: 5%

Exam: 95%

Course reading

Amongst others: L. Lessig, Code and Other Laws of Cyberspace, (Basic Books, New York 2006)

L.B. Solum, Models of Internet Governance

Material will be made available on Canvas before the start of the course.

Target group

Apart from regular students, the course is also available for:

Students from other universities/faculties

Exchange students

Contractor (students who pay for one course)

Internship Minor Applied Econometrics: A Big Data Experience for All

Course code	E_EOR3_IMAE ()
Period	Period 2+3
Credits	12.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. L.F. Hoogerheide
Level	300

Course objective

Academic Skills

- Ability to examine and understand problems from different perspectives;
- Ability to put forward well-founded, substantiated points of view, both in spoken and written format;
- Ability to apply acquired knowledge to other problems and in other contexts.

Research Skills

- Ability to translate practically relevant problems into (academically) relevant research questions;
- Ability to design and execute a project using a systematic, analytical approach in a real business environment (of profit or not-for-profit organizations).

Knowledge

- Have specialized, in-depth knowledge and insights about the minor theme;
- Ability to make connections between theories, models, and concepts of that specific minor theme/ discipline.

Bridging Theory and Practice

- Ability to apply theoretical knowledge in a specific organizational context;
- Ability to formulate relevant recommendations for practice based on your knowledge acquired;
- Have a better understanding of what the expectations of the academic and professional field are in terms of knowledge and skills needed;
- Have awareness of the various career opportunities the field offers.

Social Skills

- Have a better understanding of roles and needs of different types of stakeholders that you need to interact with as a professional;
- Ability to work well in a team and reflect on your own role in the team.

Self-awareness

- Ability to reflect on your own responsibilities as well as others;
- Ability to reflect on your personal development;
- Ability receive and are able to deal with feedback from others.

Course content

Increasingly organizations and maybe even your future employer are looking for experience as well as academic credentials. The School recommends doing an internship, because it is an excellent way to apply the knowledge and (academic) skills which you acquired during your studies. Your most important learning goal as a student-intern is to familiarize yourself with professional and market-related skills in a real and new organizational environment. With the job market becoming increasingly competitive, gaining relevant experience will give you a good start into your professional career.

Companies offer a wide range of internships in various disciplines. What is crucial in obtaining approval for your internship and eventually obtaining your study credits, is that there is a clearly defined project that allows you to fulfill the learning objectives. Also, the project needs to allow for an individual assessment.

Finally, note that in order to obtain your internship credits, your internship has to be pre-approved by the minor coordinator and supervised by a School member that is assigned to you by either the minor coordinator.

Form of tuition

On-site Internship

Type of assessment

Written report – Individual assessment

Course reading

Literature relevant to the theme of the minor and internship should be used to develop a solution to the problem that is investigated with the internship project.

Recommended background knowledge

The courses in period 3.1 of the minor Applied Econometrics.

Remarks

IMPORTANT:

- Subscription to the internship through VUnet is not possible.
- CONTACT THE MINOR COORDINATOR as soon as you have an INITIAL proposal for the internship. Approval of the minor coordinator is essential in order to be able to do a minor internship.
- The general internship manual will be available through VUnet (including more details on a time plan and practical matters). CAREFULLY READ THE MANUAL ON VUNET (go to Services > Degree programme > Internship, or Serviceplein > Opleidingsprogramma > Stage). The manual will provide more insights in what is exactly expected in terms of your internship proposal, the concrete requirements, and the related time line of activities.
- After completing the internship the subscription to the course as well as the registration of the result will be done by the back office.

Internship Minor E-business and Online Commerce

Course code	E_IBA3_IMEOC ()
Period	Period 2+3
Credits	12.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	drs. F.E.J.M. Derksen
Examinator	drs. F.E.J.M. Derksen
Level	300

Course objective

Academic Skills

- Ability to examine and understand problems from different perspectives;
- Ability to put forward well-founded, substantiated points of view, both in spoken and written format;
- Ability to apply acquired knowledge to other problems and in other contexts.

Research Skills

- Ability to translate practically relevant problems into (academically) relevant research questions;
- Ability to design and execute a project using a systematic, analytical approach in a real business environment (of profit or not-for-profit organizations).

Knowledge

- Have specialized, in-depth knowledge and insights about the minor theme;
- Ability to make connections between theories, models, and concepts of that specific minor theme/ discipline.

Bridging Theory and Practice

- Ability to apply theoretical knowledge in a specific organizational context;
- Ability to formulate relevant recommendations for practice based on your knowledge acquired;
- Have a better understanding of what the expectations of the academic and professional field are in terms of knowledge and skills needed;
- Have awareness of the various career opportunities the field offers.

Social Skills

- Have a better understanding of roles and needs of different types of stakeholders that you need to interact with as a professional;
- Ability to work well in a team and reflect on your own role in the team.

Self-awareness

- Ability to reflect on your own responsibilities as well as others;
- Ability to reflect on your personal development;
- Ability receive and are able to deal with feedback from others.

Course content

Increasingly organizations and maybe even your future employer are looking for experience as well as academic credentials. The School recommends doing an internship, because it is an excellent way to apply the knowledge and (academic) skills which you acquired during your studies. Your most important learning goal as a student-intern is to familiarize yourself with professional and market-related skills in a real and new organizational environment. With the job market becoming increasingly competitive, gaining relevant experience will give you a good start into your professional career.

Companies offer a wide range of internships in various disciplines. What is crucial in obtaining approval for your internship and eventually obtaining your study credits, is that there is a clearly defined project that allows you to fulfill the learning objectives. Also, the project needs to allow for an individual assessment.

Finally, note that in order to obtain your internship credits, your internship has to be pre-approved by the minor coordinator and supervised by a School member that is assigned to you by either the minor coordinator.

Form of tuition

On-site Internship

Type of assessment

Written report – Individual assessment

Course reading

Literature relevant to the theme of the minor and internship should be used to develop a solution to the problem that is investigated with the internship project.

Recommended background knowledge

Courses of the minor E-business and Online Commerce period 1

Target group

Students of the minor E-business and Online Commerce.

It is possible to replace two of the courses for an internship that will be supervised by one of the lecturers of the courses. The courses to be replaced are one out of the two courses “E-commerce Supply Chain Management” and “Information Systems in E-business and Online Commerce” (both in period 2) in combination with “Emerging Technologies for E-business and Online Commerce” (in period 3). Internships should be aligned with a topics addressed in the minor and should be initiated by students. Proposals for an internship need approval from the minor coordinator.

Remarks

IMPORTANT:

- Subscription to the internship through VUnet is not possible.
- CONTACT THE MINOR COORDINATOR as soon as you have an INITIAL proposal for the internship. Approval of the minor coordinator is essential in order to be able to do a minor internship.
- The general internship manual will be available through VUnet (including more details on a time plan and practical matters). CAREFULLY

READ THE MANUAL ON VUNET (go to Services > Degree programme > Internship, or Serviceplein > Opleidingsprogramma > Stage). The manual will provide more insights in what is exactly expected in terms of your internship proposal, the concrete requirements, and the related time line of activities.

- After completing the internship the subscription to the course as well as the registration of the result will be done by the back office.

Internship Minor Entrepreneurship

Course code	E_BK3_IMENT ()
Period	Period 2+3
Credits	12.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	prof. dr. W. Stam
Examinator	prof. dr. W. Stam
Level	300

Course objective

Academic Skills

- Ability to examine and understand problems from different perspectives;
- Ability to put forward well-founded, substantiated points of view, both in spoken and written format;
- Ability to apply acquired knowledge to other problems and in other contexts.

Research Skills

- Ability to translate practically relevant problems into (academically) relevant research questions;
- Ability to design and execute a project using a systematic, analytical approach in a real business environment (of profit or not-for-profit organizations).

Knowledge

- Have specialized, in-depth knowledge and insights about the minor theme;
- Ability to make connections between theories, models, and concepts of that specific minor theme/ discipline.

Bridging Theory and Practice

- Ability to apply theoretical knowledge in a specific organizational context;
- Ability to formulate relevant recommendations for practice based on your knowledge acquired;
- Have a better understanding of what the expectations of the academic and professional field are in terms of knowledge and skills needed;
- Have awareness of the various career opportunities the field offers.

Social Skills

- Have a better understanding of roles and needs of different types of stakeholders that you need to interact with as a professional;
- Ability to work well in a team and reflect on your own role in the

team.

Self-awareness

- Ability to reflect on your own responsibilities as well as others;
- Ability to reflect on your personal development;
- Ability receive and are able to deal with feedback from others.

Course content

Increasingly organizations and maybe even your future employer are looking for experience as well as academic credentials. The School recommends doing an internship, because it is an excellent way to apply the knowledge and (academic) skills which you acquired during your studies. Your most important learning goal as a student-intern is to familiarize yourself with professional and market-related skills in a real and new organizational environment. With the job market becoming increasingly competitive, gaining relevant experience will give you a good start into your professional career.

Companies offer a wide range of internships in various disciplines. What is crucial in obtaining approval for your internship and eventually obtaining your study credits, is that there is a clearly defined project that allows you to fulfill the learning objectives. Also, the project needs to allow for an individual assessment.

It is possible to replace two of the courses in the Minor Entrepreneurship by an internship that will be supervised by one of the lecturers of the courses. An internship counts for 12 EC: it replaces one out of the two courses "Enterprising Behavior" and "Filming Entrepreneurship" (both in period 2) in combination with the course "New Venture Creation" (in period 3). Internships should be aligned with the topics of the minor and should be initiated by students.

Finally, note that in order to obtain your internship credits, your internship has to be pre-approved by the minor coordinator and supervised by a School member that is assigned to you by either the minor coordinator.

Form of tuition

On-site Internship

Type of assessment

Internship report - Individual assessment

Entry requirements

Courses related to the minor

Remarks

IMPORTANT:

- Subscription to the internship through VUnet is not possible.
- CONTACT THE MINOR COORDINATOR as soon as you have an INITIAL proposal for the internship. Approval of the minor coordinator is essential in order to be able to do a minor internship.
- The general internship manual will be available through VUnet (including more details on a time plan and practical matters). CAREFULLY READ THE MANUAL ON VUNET (go to Services > Degree programme > Internship, or Serviceplein > Opleidingsprogramma > Stage). The manual

will provide more insights in what is exactly expected in terms of your internship proposal, the concrete requirements, and the related time line of activities.

- After completing the internship the subscription to the course as well as the registration of the result will be done by the back office.

Internship Minor Operations Analytics

Course code	E_EOR3_IMOA ()
Period	Period 2+3
Credits	12.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	prof. dr. L. Stougie
Level	300

Course objective

Academic Skills

- Ability to examine and understand problems from different perspectives;
- Ability to put forward well-founded, substantiated points of view, both in spoken and written format;
- Ability to apply acquired knowledge to other problems and in other contexts.

Research Skills

- Ability to translate practically relevant problems into (academically) relevant research questions;
- Ability to design and execute a project using a systematic, analytical approach in a real business environment (of profit or not-for-profit organizations).

Knowledge

- Have specialized, in-depth knowledge and insights about the minor theme;
- Ability to make connections between theories, models, and concepts of that specific minor theme/ discipline.

Bridging Theory and Practice

- Ability to apply theoretical knowledge in a specific organizational context;
- Ability to formulate relevant recommendations for practice based on your knowledge acquired;
- Have a better understanding of what the expectations of the academic and professional field are in terms of knowledge and skills needed;
- Have awareness of the various career opportunities the field offers.

Social Skills

- Have a better understanding of roles and needs of different types of stakeholders that you need to interact with as a professional;
- Ability to work well in a team and reflect on your own role in the team.

Self-awareness

- Ability to reflect on your own responsibilities as well as others;
- Ability to reflect on your personal development;
- Ability receive and are able to deal with feedback from others.

Course content

Increasingly organizations and maybe even your future employer are looking for experience as well as academic credentials. The School recommends doing an internship, because it is an excellent way to apply the knowledge and (academic) skills which you acquired during your studies. Your most important learning goal as a student-intern is to familiarize yourself with professional and market-related skills in a real and new organizational environment. With the job market becoming increasingly competitive, gaining relevant experience will give you a good start into your professional career.

Companies offer a wide range of internships in various disciplines. What is crucial in obtaining approval for your internship and eventually obtaining your study credits, is that there is a clearly defined project that allows you to fulfill the learning objectives. Also, the project needs to allow for an individual assessment.

Finally, note that in order to obtain your internship credits, your internship has to be pre-approved by the minor coordinator and supervised by a School member that is assigned to you by either the minor coordinator.

Form of tuition

On-site Internship

Type of assessment

Written report – Individual assessment

Course reading

Literature relevant to the theme of the minor and internship should be used to develop a solution to the problem that is investigated with the internship project.

Entry requirements

No other requirements than the ones for this minor

Recommended background knowledge

Courses related to the minor

Remarks

IMPORTANT:

- Subscription to the internship through VUnet is not possible.
- CONTACT THE MINOR COORDINATOR as soon as you have an INITIAL proposal for the internship. Approval of the minor coordinator is essential in order to be able to do a minor internship.
- The general internship manual will be available through VUnet (including more details on a time plan and practical matters). CAREFULLY READ THE MANUAL ON VUNET (go to Services > Degree programme > Internship, or Serviceplein > Opleidingsprogramma > Stage). The manual will provide more insights in what is exactly expected in terms of your

internship proposal, the concrete requirements, and the related time line of activities.

- After completing the internship the subscription to the course as well as the registration of the result will be done by the back office.

Internship Minor Sustainability and Innovation

Course code	E_IBA3_IMSI ()
Period	Period 2+3
Credits	12.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. P.R. Tuertscher
Examinator	dr. P.R. Tuertscher
Level	300

Course objective

Academic Skills

- Ability to examine and understand problems from different perspectives;
- Ability to put forward well-founded, substantiated points of view, both in spoken and written format;
- Ability to apply acquired knowledge to other problems and in other contexts.

Research Skills

- Ability to translate practically relevant problems into (academically) relevant research questions;
- Ability to design and execute a project using a systematic, analytical approach in a real business environment (of profit or not-for-profit organizations).

Knowledge

- Have specialized, in-depth knowledge and insights about the minor theme;
- Ability to make connections between theories, models, and concepts of that specific minor theme/ discipline.

Bridging Theory and Practice

- Ability to apply theoretical knowledge in a specific organizational context;
- Ability to formulate relevant recommendations for practice based on your knowledge acquired;
- Have a better understanding of what the expectations of the academic and professional field are in terms of knowledge and skills needed;
- Have awareness of the various career opportunities the field offers.

Social Skills

- Have a better understanding of roles and needs of different types of stakeholders that you need to interact with as a professional;
- Ability to work well in a team and reflect on your own role in the team.

Self-awareness

- Ability to reflect on your own responsibilities as well as others;
- Ability to reflect on your personal development;
- Ability receive and are able to deal with feedback from others.

Course content

Increasingly organizations and maybe even your future employer are looking for experience as well as academic credentials. The School recommends doing an internship, because it is an excellent way to apply the knowledge and (academic) skills which you acquired during your studies. Your most important learning goal as a student-intern is to familiarize yourself with professional and market-related skills in a real and new organizational environment. With the job market becoming increasingly competitive, gaining relevant experience will give you a good start into your professional career.

Companies offer a wide range of internships in various disciplines. What is crucial in obtaining approval for your internship and eventually obtaining your study credits, is that there is a clearly defined project that allows you to fulfill the learning objectives. Also, the project needs to allow for an individual assessment.

Finally, note that in order to obtain your internship credits, your internship has to be pre-approved by the minor coordinator and supervised by a School member that is assigned to you by either the minor coordinator.

Form of tuition

On-site Internship

Type of assessment

Written report – Individual assessment

Course reading

Literature relevant to the theme of the minor and internship should be used to develop a solution to the problem that is investigated with the internship project.

Recommended background knowledge

Courses related to the minor, specifically those of period 1.

Target group

Students of the Minor Sustainability & Innovation.

It is possible to replace two of the courses for an internship that will be supervised by one of the lecturers of the courses. The courses to be replaced are one out of the two courses “Organizing sustainable innovation” and “Sustainable supply chain management” (both in period 2) in combination with “Marketing sustainable innovations” (in period 3). Internships should be aligned with a topics addressed in the minor and should be initiated by students. Proposals for an internship need approval from the minor coordinator.

Remarks

IMPORTANT:

- Subscription to the internship through VUnet is not possible.
- CONTACT THE MINOR COORDINATOR as soon as you have an INITIAL proposal for the internship. Approval of the minor coordinator is essential in

order to be able to do a minor internship.

- The general internship manual will be available through VUnet (including more details on a time plan and practical matters). CAREFULLY READ THE MANUAL ON VUNET (go to Services > Degree programme > Internship, or Serviceplein > Opleidingsprogramma > Stage). The manual will provide more insights in what is exactly expected in terms of your internship proposal, the concrete requirements, and the related time line of activities.

- After completing the internship the subscription to the course as well as the registration of the result will be done by the back office.

Internship Minor Understanding and Influencing Decisions in Business and Society

Course code	E_BK3_IMUID ()
Period	Period 2+3
Credits	12.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. K.M.T. Millet
Examinator	dr. K.M.T. Millet
Level	300

Course objective

Academic Skills

- Ability to examine and understand problems from different perspectives;
- Ability to put forward well-founded, substantiated points of view, both in spoken and written format;
- Ability to apply acquired knowledge to other problems and in other contexts.

Research Skills

- Ability to translate practically relevant problems into (academically) relevant research questions;
- Ability to design and execute a project using a systematic, analytical approach in a real business environment (of profit or not-for-profit organizations).

Knowledge

- Have specialized, in-depth knowledge and insights about the minor theme;
- Ability to make connections between theories, models, and concepts of that specific minor theme/ discipline.

Bridging Theory and Practice

- Ability to apply theoretical knowledge in a specific organizational context;
- Ability to formulate relevant recommendations for practice based on your knowledge acquired;
- Have a better understanding of what the expectations of the academic and professional field are in terms of knowledge and skills needed;
- Have awareness of the various career opportunities the field offers.

Social Skills

- Have a better understanding of roles and needs of different types of stakeholders that you need to interact with as a professional;
- Ability to work well in a team and reflect on your own role in the team.

Self-awareness

- Ability to reflect on your own responsibilities as well as others;
- Ability to reflect on your personal development;
- Ability to receive and are able to deal with feedback from others.

Course content

Increasingly organizations and maybe even your future employer are looking for experience as well as academic credentials. The School recommends doing an internship, because it is an excellent way to apply the knowledge and (academic) skills which you acquired during your studies. Your most important learning goal as a student-intern is to familiarize yourself with professional and market-related skills in a real and new organizational environment. With the job market becoming increasingly competitive, gaining relevant experience will give you a good start into your professional career.

Companies offer a wide range of internships in various disciplines. What is crucial in obtaining approval for your internship and eventually obtaining your study credits, is that there is a clearly defined project that allows you to fulfill the learning objectives. Also, the project needs to allow for an individual assessment.

Finally, note that in order to obtain your internship credits, your internship has to be pre-approved by the minor coordinator and supervised by a School member that is assigned to you by either the minor coordinator.

Form of tuition

On-site Internship

Type of assessment

Written report – Individual assessment

Course reading

Literature relevant to the theme of the minor and internship should be used to develop a solution to the problem that is investigated with the internship project.

Recommended background knowledge

Courses related to the minor.

Well-trained in academic method and thinking (i.e., with an academic bachelor).

Remarks

IMPORTANT:

- Subscription to the internship through VUnet is not possible.
- CONTACT THE MINOR COORDINATOR as soon as you have an INITIAL proposal for the internship. Approval of the minor coordinator is essential in order to be able to do a minor internship.
- The general internship manual will be available through VUnet

(including more details on a time plan and practical matters). CAREFULLY READ THE MANUAL ON VUNET (go to Services > Degree programme > Internship, or Serviceplein > Opleidingsprogramma > Stage). The manual will provide more insights in what is exactly expected in terms of your internship proposal, the concrete requirements, and the related time line of activities.

- After completing the internship the subscription to the course as well as the registration of the result will be done by the back office.

Introduction Migration Studies

Course code	L_GABAALG011 ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Geesteswetenschappen
Coordinator	dr. N.F.F. Karrouche
Examinator	dr. N.F.F. Karrouche
Teaching staff	prof. dr. P.D. Nyiri, dr. N.F.F. Karrouche, prof. dr. U.T. Bosma
Teaching method(s)	Lecture
Level	100

Course objective

(1) Students are introduced to the fundamentals of migration studies (including a variety of disciplinary approaches and theoretical concepts, in particular in the fields of anthropology, economics, sociology, history and law). (2) Students are able to identify and understand key theories and analytical concepts in migration studies and their relationship to history and contemporary societies, and to apply these concepts and insights to a diverse range of qualitative data. (3) Students are able to identify and understand social, cultural and economic relations and political organization in the so-called age of migration, from 1500 until present day. (4) Students are able to reproduce, summarize, interpret and critically comment on the substance of the course subject, both orally and in written form. (5) Students are able to present a clear position and personal stance in an academic essay that is substantiated with solid arguments within debates on the topic of migration studies, based on secondary sources and by referring to one or more theoretical concepts.

Course content

This course introduces students to the study of migration in a wide range of academic disciplines, with special emphasis on socio-economic and cultural history, social and cultural anthropology, and migration and citizenship law. It is intended to acquaint students with theoretical and methodological insights from these disciplines and to familiarize them with old and new concepts in the broad and interdisciplinary field of migration studies. In this course, students focus on the agents of migration, the migrants themselves, as well as the international state and non-state actors and networks that are involved with and also impact the daily lives and activities of these agents of migration. Why do people migrate across borders? What are the different forms of migration and how do specific migration patterns come

into being? And when and why do states aim at structuring migration? The course is divided into two sections. During the first three weeks, students tackle basic concepts and theories, such as the push-pull model, structural migration theory, transnationalism, and the concept of diaspora. They also study the global history of migration from 1500 onwards, gaining insight into colonial and postcolonial migration patterns, and the ways in these may or may not continue to influence contemporary migrations. Lastly, students look at the ways in which societies organize and respond to immigration and emigration. In this first part of the course, students not only focus on European history and society, but also gain insight into African, Asian and American migrations. These three weeks assist students in understanding and framing historical and contemporary migration processes and diverse migrant experiences.

The second part of the course departs from a case-study perspective. It does by offering in-depth views into the research of experienced migration scholars in the fields of migration and citizenship law, the anthropology of migration and identity, and socio-economic migration history. Each week, you will learn about a different topic of research into Asian, Middle Eastern and North African, and European migrations, and the different methods and concepts involved and used in each case. Each guest lecturer will tell you about her or his own experience as a migration researcher. During the seminars, students experiment with the different sources and methods from each discipline. The second part will henceforth prepare you for the experience of conducting your own independent research project.

Form of tuition

Lectures, seminars.

Type of assessment

Personal essay, written exam.

Course reading

Khalid Koser, *International Migration. A Very Short Introduction*, Oxford: Oxford University Press, 2016 (second edition). (Students are required to purchase this book.) Other literature will be announced on Canvas.

Target group

This course is open to students from various disciplines who have completed their first year of their Bachelor program. Exchange Students.

Remarks

This course is part of the minor 'Migration Studies'. For history students, this course is complementary to Global Migration History (BA2).

Introduction Psychology (UM)

Course code	P_UINLPSY ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	Fac. der Gedrags- en Bewegingswetensch.
Coordinator	dr. W. Donk

Examinator	dr. W. Donk
Teaching staff	dr. W. Donk
Teaching method(s)	Lecture
Level	100

Course objective

A first introduction to the field of psychology

Course content

The course provides an overview of the field of psychology. What are the genetic and biological fundamentals of behavior? How do we sense and perceive the (visual) world? How do we learn, remember, and think? Why do we behave as we do? Apart from these very fundamental questions, the course will also cover the following topics: intelligence, social psychology, developmental psychology, personality, psychopathology, and the treatment of psychopathology.

Form of tuition

14 lectures

Type of assessment

- Multiple choice exam

Course reading

-Gazzaniga, M., Heatherton, T., & Halpern, D. (2016). Psychological Science (5th edition). Norton.

Remarks

Lectures will be in English.

Introduction to Data Science

Course code	E_EOR1_IDS ()
Period	Period 1+2
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. H. Karabiyik
Examinator	dr. H. Karabiyik
Teaching staff	dr. H. Karabiyik
Teaching method(s)	Lecture, Study Group
Level	100

Course objective

For the data to tell a story, data scientists need to make use of statistics. Probability theory provides a foundation and the necessary language for statistics. The knowledge of concepts of probability theory can be used as a backbone of many important concepts in data science. This is why an introduction to data science should essentially contain elements of probability theory. This course is an elementary introduction to probability theory for data scientists. The aim is to gain understanding of the theoretical knowledge with an emphasis on the mathematical foundation of modeling and gain experience with

applications of this theory.

By the end of this course, participants will:

- (1) have detailed knowledge of mathematics of probability theory;
- (2) become familiar with the concepts like axioms of probability, random variables, limit theorems;
- (3) understand the bridge between probability theory and practice;
- (4) demonstrate a thorough knowledge of the core areas of probability theory and data science.

Course content

This course covers the topics of introductory and elementary probability theory for data scientists and it promises a comprehensive understanding of theoretical and practical applications of probability theory by bridging the theory and practice.

In particular upon a brief discussion of combinatorial analysis, the students will be introduced to axioms of probability and the concepts of conditional probability and independence. Then, the concept of random variables including will be discussed. This part will mainly cover discrete and continuous random variables and jointly distributed random variables. Next, the concept of expectation in probability theory will be discussed. This part will include expectations of sums of random variables, moments, moments generating functions. Finally, students will be briefly introduced to limit theorems such as central limit theorems and laws of large numbers.

Form of tuition

Lectures and tutorials

Type of assessment

Intermediate exam – Individual assessment

Final exam – Individual assessment

Individual assignments - Individual assessment

Course reading

Ross (2013), A first course in probability. Pearson New International Edition, Ninth Edition, Pearson

Recommended background knowledge

This course presumes that students are familiar with basic mathematical methods.

Introduction to Digital Innovation

Course code	E_MM_IDI ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. J. Andersen
Examinator	dr. J. Andersen
Teaching method(s)	Lecture, Seminar

Course objective

After successfully completing this course, students will:

- Understand the fundamental basics of hardware, software and networking that form the basis for digital innovation
- Be able to link past, current, and emerging technologies to digital innovation
- Be able to explain recent technological developments related to big data, social media, mobile, cloud computing and the Internet of Things
- Master the technological fundamentals of designing and developing innovative digital tools.

Course content

Digital innovation relates to “a product, process, or business model that is perceived as new, requires some significant changes on the part of adopters, and is embodied in or enabled by IT” (Fichman et al., 2014). In this course, we focus on the technological developments that have given rise to digital innovation. Topics addressed include the fundamental developments in hardware, software and networking that form the basis for digital innovation. Issues like the increasing processing and storage capacity of digital devices, the miniaturization of technology, smarter software and the increasingly interconnected nature of networks will be discussed to provide a basis for understanding where digital innovation comes from – and where it might go to. Secondly, the course addresses recent technological developments in information technology like big data, social media, mobile devices, cloud computing and the Internet of Things. We analyze what possibilities for innovation arose from these developments, and how digital innovations have been developed and implemented in practice. Many practical examples of digital innovations will be discussed in the lectures. Next to the lectures in which these subjects are discussed, students will also put their knowledge about digital innovation into practice in developing an innovative digital tool that connects to the developments and issues discussed in the lectures.

Form of tuition

Lectures

Computer tutorials

Type of assessment

Individual written exam

Group project assignment

Course reading

Various papers that will be made available through Canvas.

Introduction to E-Business and Online Commerce

Course code	E_IBA3_IEOC ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	prof. dr. ir. J.W.M. Gerrits
Examinator	prof. dr. ir. J.W.M. Gerrits
Teaching method(s)	Lecture, Seminar
Level	300

Course objective

Knowledge:

- Acquire an understanding of current E-business practices, developments and challenges.
- Have a basic understanding relevant E-business theory from the fields of information systems, economics, computer science, and logistics
- Ability to apply this theory to E-business (decision) challenges.
- Insight into the impact of E-business on business practices and the development of new business models.

Course content

Introduction

- Introduction to digital business and e-commerce
- Marketplace analysis for e-commerce
- Managing digital business infrastructure
- E-environment

Strategy and applications

- Digital business strategy
- Supply chain management
- E-procurement
- Digital marketing
- Customer relationship management

Implementation

- Change management
- Analysis and design
- Digital business service implementation and optimisation

Form of tuition

Lectures

Tutorials

Type of assessment

Written Exam - Individual Assessment

Course reading

Readings will be announced via Canvas

Entry requirements

None

Target group

All students wanting to know more about e-business and online e-commerce

Introduction to Econometrics

Course code	E_EOR3_IE ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. J. Schaumburg
Examinator	dr. J. Schaumburg
Teaching method(s)	Lecture, Seminar

Course objective

This course in the minor Applied Econometrics is targeted at non-econometrics students. By the end of this course students will have had an introduction to modern econometric techniques, that will enable them to conduct methodological or empirical analyses of their own. In particular, students will be familiar with both econometric theory and with real-world applications in macroeconomics, finance and business.

Course content

A review will be given of estimation and testing in the linear cross-sectional regression model. We will discuss the classical assumptions, and the consequences arising when these assumptions are not fulfilled.

Throughout the course, the focus will lie on developing an intuition for state-of-the-art econometric concepts. A balance will be struck between theoretical derivations and empirical applications. The textbook used (see below) is particularly well-suited for this purpose, as it is targeted at an audience of advanced undergraduate students in economics and business studies. Extensive use will be made of the statistical software Stata, both for in-class illustration and for hands-on exercises.

Form of tuition

Interactive lectures and exercises in the computer lab.

Type of assessment

Final written exam (85%) and practical assignment (15%)

Course reading

Stock and Watson (2010), Introduction to Econometrics, 3rd edition.

Recommended background knowledge

This course builds on the foundations laid either in the sequence of courses in `Kwantitatieve Methoden` (in the Economics programme) or in that of `Statistics` and `Business Mathematics` (in the Business Administration programme). It assumes familiarity with probabilistic concepts such as discrete and continuous random variables, conditional expectations, hypothesis testing and central limit theorems, with the basics of matrix calculus, and with the essentials of regression analysis. This material, excluding matrix calculus, corresponds more or less to chapters 1-5 in Stock & Watson, and students are recommended to refresh their memory prior to the first lecture.

Remarks

Participation in this course is a worthwhile preparation for the methodological elements of Master courses Advanced Microeconomics 4.2 and Empirical Finance 4.2 and is thus recommended to those intending to pursue a Master in Economics or Finance. The econometric techniques discussed will also be beneficial to everyone planning to write an empirical Bachelor's thesis.

Introduction to Econometrics, Operations Research and Mathematical Economics

Course code	E_EOR1_IEOMF ()
Period	Period 3
Credits	6.0

Language of tuition	Dutch
Faculty	School of Business and Economics
Coordinator	dr. C.S. Bos
Examinator	dr. C.S. Bos
Teaching staff	prof. dr. S.J. Koopman, dr. J.R. van den Brink, prof. dr. L. Stougie
Teaching method(s)	Lecture
Level	100

Introduction to Exercise Physiology

Course code	B_IF (900115)
Period	Period 1
Credits	6.0
Language of tuition	Dutch
Faculty	Fac. der Gedrags- en Bewegingswetensch.
Coordinator	dr. J.J. de Koning
Examinator	dr. J.J. de Koning
Teaching staff	dr. H.L. Gerrits, prof. dr. H.A.M. Daanen, drs. B.L. van Keeken, dr. J.J. de Koning
Teaching method(s)	Lecture, Practical, Seminar, Meeting
Level	100

Introduction to Information and the Digital (UvA)

Course code	L_AABAUVA001 ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Geesteswetenschappen
Coordinator	dr. H.M.E.P. Kuijpers
Teaching method(s)	Lecture, Seminar
Level	100

Course objective

At the end of the course the student is able to:

- identify and discuss the different types and definitions of information
- understand in outline current theories of information and information use;
- determine how information is applied in different contexts within the humanities and creative industries
- identify and describe different institutional implementations of information and information systems
- recognise and discuss the differences between institutionalised information and its use, and public contexts of information and its use.

Course content

Information is a fundamental constituent of all areas of public and private life. Whether it's in our media, cultural or economic activities of our social or professional lives, never before has information been so omnipresent. This course introduces you to the study of information as a pervasive and foundational part of public and professional practice, and its social and technical implications. You will be introduced to the concepts of information as data and resource; you will confront both the history and contemporary contexts of archives and digital archivalism; what is the relation of information and data, its assemblage and use; information analysis and visualisation in the humanities; citizen witnessing, social media and ubiquity; and contemporary social contexts of search and discovery.

Form of tuition

Lectures, seminars.

Type of assessment

Assignments and final paper. For dates and deadlines see the timetable and/or the course manual.

Course reading

All material will be available via Canvas.

Target group

This course is part of the UVA/VU Minor Digital Humanities

Registration procedure

Module registration at the UvA is required. Note that registration will take place from 13 juni t/m 27 juni.

For more information see:

<http://coursecatalogue.uva.nl/xmlpages/page/2017-2018-en/search-minor/pr>

or: Onderwijsadministratie BG2 +31 20 5254952

Remarks

This module is taught at the UvA; UVA code 118211006Y.

Introduction to Programming (Java)

Course code	X_400634 ()
Period	Period 1+2
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	ir. M.P.H. Huntjens
Examinator	ir. M.P.H. Huntjens
Teaching staff	ir. M.P.H. Huntjens
Teaching method(s)	Lecture, Practical

Course objective

This course teaches how to use computers to solve problems with algorithms and structured programming.

Course content

primitive types, declaration, expression, assignment statement, iterations, methods, I/O using PrintStream and Scanner, array, class, object, standard classes String and Math, design of programs, matrix, using several self made objects in a program, recursion and using a graphical interface through a pre-programmed package.

Form of tuition

Classes and practical

Type of assessment

grade for practical work + grade for examination. Both have to be passed.

If practical and examination are passed with grades P en E, the final grade F is calculated with the formula $F = \max(E, (2E+P)/3)$

Course reading

Absolute Java, Walter Savitch, Pearson International Edition, Fifth International Edition, ISBN: 978-0-273-76479-3

Target group

1BA, 1EOR

Introduction to Qu'ran and Sunna

Course code	G_INLKOSO ()
Period	Period 1
Credits	6.0
Language of tuition	Dutch
Faculty	Faculteit der Godgeleerdheid
Coordinator	dr. Y. Ellethy
Examinator	dr. Y. Ellethy
Teaching staff	dr. Y. Ellethy
Teaching method(s)	Lecture
Level	100

Introduction to Time Series

Course code	E_EOR3_ITS ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. F. Blasques Albergaria Amaral
Examinator	dr. F. Blasques Albergaria Amaral
Teaching method(s)	Lecture, Seminar

Course objective

This course introduces students to time series analysis and dynamic econometric models.

Course content

This course covers both theoretical and practical aspects of time series econometrics including the analysis of stationary and non-stationary stochastic processes in economics and finance.

The students are introduced to autoregressive moving average (ARMA) models, autoregressive distributed lag (ADL) models, and error correction models (ECM). Furthermore, the course provides both theoretical and practical insight into parameter estimation in time-series and the use of these models for forecasting, testing for Granger causality, and performing policy analysis using impulse response functions.

Finally, the students become familiar with the fundamental problem of spurious regression in time-series analysis. We find a solution to this problem by taking a journey into the theory and practice behind unit-root tests, cointegration tests and error-correction representation theorems.

Form of tuition

Lectures and practical classes. During practical classes time will be made for discussing exercises.

Type of assessment

Final exam and group assignment – Individual assessment.

Course reading

Lecture notes and other material provided by teacher.

Recommended optional reading material:

J. Stock and M. Watson, 2011, Introduction to Econometrics. Prentice Hall.

P. Brockwell and R. Davis, 2010, Introduction to Time Series and Forecasting. Springer.

C. Brooks, 2014, Introductory Econometrics for Finance. Cambridge University Press.

Entry requirements

None.

Recommended background knowledge

This course builds on the foundations laid either in the sequence of courses in `Kwantitatieve Methoden` (in the Economics programme) or in that of `Statistics` and `Business Mathematics` (in the Business Administration programme). It assumes some familiarity with probability and statistics. This material corresponds more or less to Part I (Chapters 1-3) in Stock & Watson, and students are recommended to refresh their memory on this prior to the first lecture.

Target group

This course in the minor Applied Econometrics is targeted at both econometrics and non-econometrics students that have knowledge of basic mathematics, probability and statistics.

Investments

Course code	E_EBE3_INVES ()
Period	Period 5
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. T.C. Dyakov
Examinator	dr. T.C. Dyakov
Teaching method(s)	Lecture, Seminar
Level	300

Course objective

This course offers a comprehensive introduction to the world of investments. The course is structured in four broad parts, covering fundamental areas of investments: Part 1. Portfolio theory and asset pricing; Part 2. Empirical evidence on security returns and portfolio management; Part 3. Fixed-income securities; Part 4. Options, futures and other derivatives. All four parts of the course are closely knitted to the learning goals of Academic Skills, Research Skills, Quantitative Skills, Knowledge and Bridging Theory and Practice.

By the end of the course you should be able to:

- compute fundamental risk-management techniques: Value-at-Risk and Expected Shortfall;
- apply the Markowitz portfolio selection model and construct an efficient frontier of risky assets;
- compare the Capital Asset Pricing Model (CAPM) against the Arbitrage Pricing Theory. Test the predictions of the CAPM;
- price fixed income securities and construct the Term Structure of Interest Rate;
- solve portfolio immunization problems by matching the duration of assets and liabilities;
- build a binomial tree and apply the Black-Scholes formula.

Course content

Investment decisions take a prominent role in everyday life. We can think of investment decisions taken by institutional investors (banks, insurance companies, pension funds, mutual funds), but also of financial decisions taken by individual households (additional pension savings, savings for children education, buying a house, etc.). Investment theory is also strongly linked to risk management. The importance of sound decision making in this field has been underlined by recent experiences on financial markets, law suits involving complex financial products for retail clients, etc. The key objective of this course is to provide understanding of the pricing of different asset classes and insights into the principles of investment analysis. A framework is developed that allows one to address a variety of (at first sight) completely different investment problems in a unified way.

Form of tuition

Lectures.
Tutorials.

Type of assessment

Written exam – individual assessment.
(Interim) Assignment(s) – group assessment.

Course reading

Zvi Bodie, Alex Kane and Alan J. Marcus: Investments, McGraw Hill (10th Global Edition).

Additional readings might be announced on Canvas.

(Literature has been adjusted at 26-03-2018)

Entry requirements

Finance I or equivalent.

Recommended background knowledge

The course relies on prior knowledge on linear algebra and statistics (QRM I, QRM II, and QRM III). Even though it offers a very brief introduction to the concepts and tools in this area that we will primarily use, students are strongly advised to review this material from relevant courses in the first two years of studies. I will further assume that students have a good understanding of the material covered in Finance I, Finance II, and Financial Markets and Institutions.

Students are also recommended to refresh their basic Excel and STATA skills, as weekly empirical assignments constitute an important part of the course.

Remarks

This course provides the knowledge basis for students aiming at an MSc in Finance and a career in the financial sector.

Islam and European Culture

Course code	G_ISLEURCUL ()
Period	Period 1
Credits	6.0
Language of tuition	Dutch
Faculty	Faculteit der Godgeleerdheid
Coordinator	dr. M. Aulad Abdellah
Examinator	dr. M. Aulad Abdellah
Teaching staff	dr. M. Aulad Abdellah
Teaching method(s)	Lecture, Seminar
Level	300

Islamic Ethics

Course code	G_ISLAMET ()
Period	Period 3
Credits	6.0
Language of tuition	Dutch
Faculty	Faculteit der Godgeleerdheid
Coordinator	dr. M. Aulad Abdellah
Examinator	dr. M. Aulad Abdellah
Teaching staff	dr. M. Aulad Abdellah
Teaching method(s)	Lecture, Seminar

Level	300
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Islamic Theology/Kalam

Course code	G_ISLMTHKAL (100037)
Period	Period 2
Credits	6.0
Language of tuition	Dutch
Faculty	Faculteit der Godgeleerdheid
Coordinator	dr. M. Ajouaou
Examinator	dr. M. Ajouaou
Teaching staff	dr. M. Ajouaou
Teaching method(s)	Lecture, Seminar
Level	200

Judgment and Decision Making

Course code	E_BK3_JDM ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. K.M.T. Millet
Examinator	dr. K.M.T. Millet
Teaching staff	F.M. Buehler
Teaching method(s)	Lecture, Instruction course, Seminar
Level	300

Course objective

Academic Skills: You will analyze and reflect on existing literature on judgment and decision making and apply this knowledge to examples and problems from business and public policy.

Knowledge: You will obtain a deeper understanding of theories, methodology (experiments and field studies) and findings on heuristics and biases in the area of judgment and decision making, from psychology and behavioral economics.

Bridging Theory and Practice: You will make use of theoretical knowledge and concepts such as biases, decision processes, risk perception to understand and analyze human decision making in practical settings. We will focus on business and policy decisions, but also draw from other settings.

Course content

This course provides an overview of scientific research on judgment & decision making, where psychology and economics collide and collaborate to understand human behavior. It provides you with the basic knowledge of theories, concepts and methods that is necessary to understand how decisions are made. The course is inspired by the groundbreaking, nobel-prize winning work of Kahneman and Tversky as well as other

seminal work and research programmes of other leading thinkers in the field (and society). One of the main topics of the course will be the question of how and when humans deviate from rational thinking. This is captured by a well-documented array of heuristics and biases, that help us to make reasonable and accurate decisions in some areas, but may crucially misguide us in others. We will discuss research that documents several well-known biases, such as anchoring effects, hindsight bias, and loss/gain framing. We will also study how decisions and behaviors are influenced by our physical and social environment. Topics covered include (dis)honesty, interdependent decision making and forecasting among others.

Form of tuition

Lectures and tutorials

Type of assessment

written exam – individual assessment
(interim) assignment – group assessment

Course reading

a set of academic articles (tba)

Entry requirements

none

Recommended background knowledge

Well-trained in academic method and thinking (i.e., with an academic bachelor).

Knowledge and Data

Course code	X_400083 (400083)
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	dr. K.S. Schlobach
Examinator	dr. K.S. Schlobach
Teaching staff	dr. R.J. Hoekstra
Teaching method(s)	Computer lab, Study Group, Lecture
Level	300

Course objective

The objective of the Knowledge and Data course is to make students acquainted with methods and technologies used for expressing knowledge and data, in particular on the Web. At the end of this course, students will have built an intelligent web application that queries and reasons over integrated knowledge from various sources obtained from the Web. All this will be based on the formal logical theory.

Course content

In this course we will study formalisms that are useful and necessary to represent knowledge and data, in particular when this knowledge and data is to be reused, e.g. published on the web. We introduce the technologies and representation formats (RDF, RDFS, OWL) for expressing semantics and linked data in a web-accessible format, use the SPARQL query language to query over this data, and build a Web application that uses the data for some intelligent task.

Even though content on the web is generally produced from structured data sources (databases), its representation is in a form that is meant for human consumption. Linked Data allows to scale the walls of this siloed information space, by reusing identifiers and vocabularies across these datasets, and presenting that information in a way that is appropriate for machine consumption. Google, Bing and Yahoo already use this type of linked, structured information to improve web search and information retrieval. But it also helps content providers, such as the BBC, to better augment their content with content from other sources (e.g. from Musicbrainz).

Form of tuition

The course consists of interactive lectures and lab sessions. Students will work on individual assignments. They will also collaborate in groups for a final project assignment.

Type of assessment

The final grade will be determined by the grades for the individual assignments and the final group project (report).

Course reading

A Semantic Web Primer (3rd edition)

Grigoris Antoniou, Paul Groth, Frank van Harmelen and Rinke Hoekstra, MIT Press, September 2012

Recommended background knowledge

Basic programming (Python, Javascript)

Web development

(Formal) Modeling (Basic propositional and predicate logic)

Target group

BSc Informatie, multimedia en management (2e jaar), BSc Lifestyle

Informatics (2e jaar)

Flexible Minor (voor CS, LI en IMM), Minor Web Services and Data, Minor

Artificial Intelligence, unless it was already part of the obligatory

curriculum

of this study.

Knowledge Management

Course code	E_IBK3_KM ()
Period	Period 5
Credits	6.0

Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. M.H. Rezazade Mehrizi
Examinator	dr. M.H. Rezazade Mehrizi
Teaching method(s)	Lecture, Seminar, Instruction course
Level	300

Course objective

The course enhances your knowledge and skills with regards to knowledge management theories and practices. More specifically, the course aims at the following learning objectives:

Academic skills:

Learn and critically analyze knowledge management theories and gain the experience of theorizing via abstracting the research findings and discussing them against the existing literature.

Research Skills:

Gain experience in conducting empirical research, by participating in small research projects, within the field of knowledge management.

Knowledge:

Have an in-depth understanding of the importance and implications of knowledge as the main organizational resource for knowledge-intensive organizations.

Bridging theory and practice:

Learn how to bridge theory and practice by formulating a research question, collecting and analyzing data and drawing conclusions for theory and practice.

Social skills:

Improve your social skills by working in teams and interacting with organizations.

Broadening your horizon:

Broaden your horizon by learning various theories related to knowledge management and acquire a critical, integrated, perspective on KM.

Self-awareness:

Enhance your self-awareness of your research skills and domain knowledge via team discussions.

Course content

Around 80% of the market value of leading companies such as Google, Amazon, Apple come from their intangible assets in general, and their knowledge in particular. Can you imagine that a bank or a small software company works without effective use of the expertise that their employees have? That's why companies like Shell not only spend massive efforts to manage their knowledge, but also gain hundred millions of Euros each year by effective management of their knowledge. In other words, creating, sharing, and utilizing knowledge is the core fabric of successful organizations.

Think, for example, of a multi-national company like Heineken: how can Heineken make sure that benefits from what its employees know and the expertise developed in one part of the company can be shared with and used by members in other parts? How can Nike make use of all the creative ideas that are developed within various online communities, such as Niketalk.com and competitors' online communities? Such questions are on the minds of many managers today. The course helps you understand the inter-disciplinary nature of knowledge management (KM) and its importance for organizations to improve their performance and innovation. The course also provides you with practical insights that

you can rely on when you serve as a manager, consultant, and entrepreneur for dealing with KM challenges.

As a result, when you work for organizations, knowledge management is part of your day-to-day activities, for which the course provides you with ample insights. Furthermore, new trends such as crowdsourcing, flexible work, and new ways of working have heightened the importance of KM, yet adding further challenges to it. For instance, new knowledge sharing mechanisms are needed when organizations run innovation projects via crowdsourcing of innovation challenges online (e.g., via “InnoCentive”).

In spite of its importance, managing knowledge is challenging. Knowledge often is tacit and hidden in human capabilities and social interactions. It is difficult to pin point knowledge and capture it, since its fluidity requires paying attention to a range of social and motivational factors.

This KM course is meant to help you to understand these new organizational challenges and to think of possible solutions. The course not only offers various insights into how organizations manage their knowledge, but also poses novel questions and challenges that you can explore further and conduct research on. To gain a deep understanding of knowledge management, you conduct a research project in an organization to examine a specific knowledge management challenge and provide insights about it by drawing on scientific literature.

The course provides several opportunities for you to interact with organizations, to learn from hands-on managers and consultants who will give guest lectures, and to be exposed to various job opportunities related to knowledge management.

Form of tuition

Lectures
Tutorials

Type of assessment

Group project; interim assessments; and final evaluation

Course reading

A selection of book chapters and academic articles to be announced.

Recommended background knowledge

BK:

2.1 Business Information Technology; 2.4 Technology and Innovation Management; 2.4; 2.5 BRM II Qualitative research methods

IBA:

2.1 Business information systems; 2.4 Digital innovation and virtual organizations in a global setting; 2.5 BRM II – Qualitative research methods

Law and Ethics of Reproductive Technologies

Course code	R_LERT ()
Period	Period 3
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Rechtsgeleerdheid
Coordinator	mr. B.C. van Beers

Examinator	mr. B.C. van Beers
Teaching staff	mr. B.C. van Beers
Teaching method(s)	Seminar
Level	300

Course objective

This interdisciplinary course explores the bioethical, biolegal and biopolitical dilemmas that are raised by technological developments at the intersection of reproductive medicine and genetics.

This course will enable the student to critically reflect upon legal and ethical dimensions of current public debates on the regulation of assisted reproductive technologies. This course will teach the student to come to an understanding of the key concepts and categories within legal regulation of reproductive technologies, and to connect these with various normative ethical theories. Through an examination of the existing legal frameworks surrounding reproductive and genetic technologies from the perspectives of law and bioethics against the background of ongoing contemporary political and societal discussions, the student will be trained to integrate ethical reasoning, daily practices and legal rules and regulations into a normative evaluation of these technologies. In this process the student will be encouraged to take a legally and ethically argued position in scientific debates on current developments in the field of assisted reproductive technologies through written and oral presentations of a legal and philosophical nature.

Course content

Technologies at the intersection of reproductive medicine and genetics offer new ways of creating human life. These technologies make it possible to assemble, genetically screen, choose and, possibly, even design one's future children. How can societies decide who may access these technologies to create what kind of children? Which rights, whose rights and which public values should be taken into account within the regulation of this complex field? And what are the legal and ethical limits to these currently emerging forms of 'liberal eugenics'?

The general focus in this course will be on the role and meaning of human rights and human dignity for the regulation of assisted reproductive technologies.

Topics in this course include:

- law and ethics of prenatal testing
- selective reproduction and 'designer babies'
- reproductive markets and reproductive tourism
- reproductive rights
- gestational and commercial surrogacy
- wrongful life
- the welfare of future children
- sperm and egg cell donation
- eugenics and human enhancement
- the status of embryos and gametes

Type of assessment

Paper and/or written exam (to be announced).

Course reading

All literature will be made available online, and will include legal and philosophical academic literature, legal and political documents, policy reports, news articles and audiovisual materials.

Entry requirements

No special knowledge of law, philosophy or bioethics is required to be able to participate in this course. A basic knowledge of human rights and a keen interest in the contemporary dilemmas surrounding reproductive technologies are a plus.

Target group

Because this course is also part of a university minor (Technology, Law and Ethics), it is open to students from various academic backgrounds.

Apart from regular students, the course is also available for:

Students from other universities/faculties

Exchange students

Contractor (students who pay for one course)

Leadership: Mobilizing People

Course code	E_BK3_LMP ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. J.K. Oostrom
Examinator	dr. J.K. Oostrom
Teaching method(s)	Lecture, Instruction course, Seminar
Level	300

Course objective

Academic Skills: You will analyze and critically reflect on existing literature on leadership and related areas, and translate this knowledge to different types of settings.

Knowledge: You will obtain a deeper understanding of the theoretical and methodological domain of leadership research.

Bridging Theory and Practice: This course will help you to structure and solve practical issues in the area of leadership and management, by applying relevant theoretical and methodological concepts.

Social Skills: You will work in small teams and in larger teams during exercises to assess and practice skills of interpersonal influence.

Self-awareness: You will develop a deeper understanding of your own leadership skills.

Course content

Everyone has a general idea of what (effective) leadership is. Every day we are confronted with leadership and its positive and negative consequences: in class, during group assignments, at your job, sport club, student organization, etc. Or simply think of the recent US

presidential elections, which provides a striking example of different visions of leadership. This course on leadership, which combines and integrates state of the art leadership theory and research, will help you understand these every day examples of leadership.

Leaders must be able to manage information, diagnose problems, negotiate with others, and make effective decisions, as well as coordinate and motivate the human and social capital of their organizational members. This course aims to prepare you to understand and meet these goals by familiarizing you with leadership theory, and providing you with practical experiences through case studies and experiential activities.

Form of tuition

Lectures and tutorials

Type of assessment

individual assessment
group assessment

Course reading

To be announced

Recommended background knowledge

Well-trained in academic method and thinking (i.e., with an academic bachelor).

Lineair Algebra 1

Course code	X_400638 ()
Period	Period 1+2
Credits	6.0
Language of tuition	Dutch
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	dr. R. Planque
Examinator	dr. R. Planque
Teaching staff	dr. R. Planque
Teaching method(s)	Lecture, Seminar,
Level	100

Linear Algebra

Course code	E_EOR1_LINA ()
Period	Period 4+5
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. H. Karabiyik
Examinator	dr. H. Karabiyik
Teaching method(s)	Lecture, Seminar
Level	100

Course objective

The student becomes familiar with the general theory of finite-dimensional vector spaces, the concepts of matrix algebra and finite-dimensional linear algebra, together with basic applications in statistics, data science and econometrics

Course content

The topics include

- systems of linear equations
- linear (in)dependence
- linear transformations and matrices
- matrix operations
- determinants
- vector spaces and subspaces
- rank of a matrix, dimension theorem
- eigenvalues and eigenvectors
- diagonalization of matrices
- inner product, length and orthogonality
- orthogonal bases and least-squares problem
- diagonalization of symmetric matrices
- quadratic forms
- singular value decomposition

Form of tuition

Main lectures (2 hours per week) and tutorial classes (2 hours per week).

Type of assessment

Written exam.

Course reading

David C. Lay, Stephen R. Lay and Judi J. McDonald, Linear Algebra and its Applications, 5th edition, Pearson Global Edition, ISBN-13 9781292092232

Logic and Modelling

Course code	X_401015 (401015)
Period	Period 5
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	drs. J. Endrullis
Examinator	drs. J. Endrullis
Teaching staff	drs. J. Endrullis
Teaching method(s)	Lecture, Seminar, Practical,
Level	200

Course objective

The course objective is to obtain a good knowledge and understanding of the most important logical systems: propositional logic, predicate logic

and modal logic.

The students learn to use these systems to model data, knowledge and actions.

An important aspect of the course is the ability to reason using these logics and reason about these logics:

what can and what can not be expressed with a logic system, and what are the differences between the systems with respect to expressive power or the existence of decision procedures.

Course content

The focus of the lecture is on propositional logic and first-order predicate logic. We work with natural deduction as proof system.

The relation between semantic and syntactic methods is important; the central keywords are correctness, consistency and completeness.

Moreover, we pay attention to expressive power, for example when formulating queries. A fundamental tool, for this purpose, is the compactness theorem.

Algorithmically there the contrast between the decidability of propositional logic and the undecidability of predicate logic (for example, seen by a coding of the Post Correspondence Problem).

As a variation of the mentioned logics, we consider modal logic with Kripke models as semantics.

Form of tuition

Lecture, exercise classes and computer practicum.

Type of assessment

Exam, and computer assignments.

Course reading

Michael Huth, Mark Ryan, Logic in Computer Science (tweede druk)
Cambridge University Press, 2004 ISBN 0 521 54310 X

Recommended background knowledge

Logic and Sets (Logica en Verzamelingen)

Target group

2CS

Machine Learning

Course code	X_400154 (400154)
Period	Period 4
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	dr. P. Bloem
Examinator	dr. P. Bloem
Teaching staff	dr. P. Bloem
Teaching method(s)	Lecture, Seminar
Level	300

Course objective

The goal of this course is to present the dominant concepts of machine learning methods including some theoretical background. We'll cover established machine learning techniques such as Decision Trees, Neural Networks, Bayesian Learning, Instance-based Learning and Evolutionary Algorithms as well as some statistical techniques to assess and validate machine learning results.

Course content

Machine Learning is the study of how to build computer systems that learn from experience. It is a very active subfield of Artificial Intelligence that intersects with statistics, cognitive science, information theory, and probability theory, among others. Recently, Machine Learning has gained great importance for the design of search engines, robots, and sensor systems, and for the processing of large scientific data sets. Further applications include handwriting or speech recognition, image classification, medical diagnosis, stock market analysis, bioinformatics, etc.

Form of tuition

The course will be taught in two parts; the first part consists of lectures with written examination. The second part of the course will have a more do-it-yourself character (e.g., practical assignment and/or literature research) and result in a report. The course will be taught in English.

Type of assessment

Exam and assignment with a written report in teams of 5 students

Course reading

TBA

Target group

2BA, 2BA-D, 3CS, 3LI, 3IMM, mBio

Macroeconomics I

Course code	E_EBE1_MACEC ()
Period	Period 4
Credits	6.0
Language of tuition	Dutch
Faculty	School of Business and Economics
Coordinator	prof. dr. E.J. Bartelsman
Examinator	prof. dr. E.J. Bartelsman
Teaching method(s)	Lecture, Study Group
Level	100

Management Accounting

Course code	E_EBE2_MANAC ()
Period	Period 5

Credits	6.0
Language of tuition	Dutch
Faculty	School of Business and Economics
Coordinator	dr. E. Wiersma
Examinator	dr. E. Wiersma
Teaching method(s)	Lecture, Seminar
Level	300

Managing and Improving Quality

Course code	E_IBK3_MIQ ()
Period	Period 5
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. Y. Ghiami
Examinator	dr. Y. Ghiami
Teaching method(s)	Lecture, Seminar, Instruction course
Level	300

Course objective

Managing and improving quality is a critical activity in any modern business organization. Quality is directly linked to productivity, competitiveness, customer satisfaction, business growth, elimination of waste and other non-value added activities, and overall business success. Cycle time and throughput is just as important in a hospital emergency room as it is in a semiconductor factory. Defects and errors don't occur just in factories, they occur in transactional and service business such as banks, insurance companies, and hospitals. Even your local and national governments have a keen interest in improving service quality in operations such handling tax forms and information requests, issuing driving licenses and international passports etc . Quality management has therefore become a well-known management philosophy, which has been adopted in many disciplines.

Contemporary organizations form networks with other businesses and organizations with which they have direct or indirect commercial relationships. These so-called supply chain networks aim at the integration of the integration of systems of customers, suppliers, technology and people to best meet customer demand. Successful quality management has the same ambition and scope. Quality management and improvement therefore represents an essential skill for supply chain managers. At the same time, the supply chain offers a unifying theme to apply the integration of systems of customers, suppliers, technology and people in quality management.

This course aims to equip students with practical quality management and improvement techniques using tools that are grounded in research.

Students learn how to describe and analyse quality problems (learning objective "academic skills") in order to understand the role of quality management in organizations (learning objective "knowledge") Students will be able to identify and select appropriate quality measurement and management techniques to study, quantify and improve a quality problem (learning objective "quantitative skills") and to apply results from

academic research in practical case settings (learning objective “bridging theory and practice”) and critically reflect on the research (learning objective “research skills”). Students present their findings (learning objective “social skills”).

Course content

Quality problems usually are the outcome of uncontrolled or excessive variability in product or service characteristics that are critical to the customer. Statistical tools and other analytical methods play an important role in solving these problems. However, these techniques need to be implemented within a management structure that will ensure success. We focus on both the management structure and the statistical and analytical tools. We focus on the following aspects in the course:

- Management aspects of quality
- Statistical process control
- Acceptance sampling
- Process Design
- Quality Function Deployment
- Design of experiments for improving quality
- Six sigma methodology

We furthermore aim to involve students in the entire process of performing a quality assessment and improvement cycle by studying a real-life case.

Form of tuition

Lectures
Tutorials

Type of assessment

Written exam – Individual assessment
(Interim) Assignment(s) – Group assessment

Course reading

To be announced

Recommended background knowledge

For BK:

1.1 Business Processes; 1.1 Business Mathematics; 1.4 Supply Chain Management I; 2.4 Supply Chain Management II

For IBA:

1.1 Business Mathematics; 1.4 Global Supply Chain Management; 1.6 Business Processes; 2.5 SCM in Emerging Economies

Managing Negotiations: Getting to Yes

Course code	E_BK3_MNGY ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. S.G.M. van de Bunt
Examinator	dr. S.G.M. van de Bunt
Teaching method(s)	Lecture, Instruction course, Seminar
Level	300

Course objective

Academic Skills: Students will enhance their analytical ability and be able to identify the need for negotiation skills in an organizational context.

Knowledge: Students will (1) identify, predict, and appreciate the role of conflict in social interaction, (2) learn how to apply mediation and dilemma reconciliation strategies, (3) understand the significance of workplace diversity and communication styles for developing negotiations skills, (4) develop an awareness of the emotional aspects of dealing with conflict, and (5) develop the ability to search for “both/and” and solutions when two apparently contradictory notions in negotiations must work together

Bridging Theory and Practice: Students will apply the knowledge gained from the lectures and group work.

Social Skills: Students will work in teams and practice negotiation skills via group work and quest blog

Self-awareness: Students are required to reflect on the content presented in the course and explain how this impacted their personal development.

Course content

Negotiation is all around you, whether it concerns international disputes, labor agreement negotiations, or even a discussion at home about who does the grocery shopping. In today's dynamic workplace, it's not an easy fix of dispute. More often it involves negotiation to reconcile dilemmas. Therefore, the overall theme of this minor program, is to become an effective negotiator, where all disputants feel confident or even happy with the jointly reached outcome. Throughout the course, we combine theoretical knowledge from the lectures with practical exercises. The three parts of the course are:

Part 1: Conflict Resolution. The type of conflict affects the negotiation process. What is the role of conflict across cultures and organizations?

Part 2: Negotiation Skills. Is it difficult to become an effective negotiator? Learn how to apply mediation and dilemma reconciliation strategies.

Part 3: Negotiation and Workplace Diversity. Topics in this part include (cross cultural) communication skills for interacting with different cultures, nationalities, gender, sexuality, political views, religions, disabilities and other types of diversity in the workplace.

Form of tuition

Lectures and working groups

Type of assessment

Team and individual assessment

Course reading

tba

Recommended background knowledge

Well-trained in academic method and thinking (i.e., with an academic bachelor).

Marketing Sustainable Innovations

Course code	E_IBA3_MSI ()
Period	Period 3
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. M.H.P. Kleijnen
Examinator	dr. M.H.P. Kleijnen
Teaching method(s)	Lecture, Seminar
Level	300

Course objective

Marketing sustainable innovations is a subject that is truly interdisciplinary in nature. You will study various perspectives of marketing (Knowledge), driven from an innovation, psychology, value and behavioural economics point of view. As a result, this course will challenge you to exam and understand sustainability issues from different perspectives, to abstract those insights relevant to specific consumer-related problems when marketing such innovations and to build a well-argued case for successfully launching sustainable innovations (Academic Skills).

Being the last subject in a series of five, this course brings together insights from previous courses, not just from a theoretical but also a practical point of view. Building upon the previous period where you learned about developing and designing sustainable innovations, this course takes you to final stage in effectively launching that innovation into the market (Bridging Theory and Practice).

This assignment is completed in a bootcamp-style setting, where you work intensively during a short time period in a team setting (Social Skills). Such 'pressure-cooker' situations challenge you to source various skills to create not only optimal content (a marketing plan) but also an effective team, where tasks and time are managed well and you can constructively reflect on your own as well as your team members' performance (Self-awareness).

Course content

Building on the preceding subjects in the minor Sustainability and Innovation, this course analyzes the final element in the value chain: bringing sustainable products and services to the market. The course will end with a boot camp in which the students are challenged to combine the insights gained in previous courses, into a an attractive marketing plan that takes all stakeholders into account.

The course starts with a stakeholder marketing perspective, specifically focusing on the consumer and how that consumer acts within a network of stakeholders. It discusses the psychological and behavioral aspects that come in to play when bringing sustainable innovations to the market. Despite efforts involving consumers in early stages of innovation, sustainable products and services in often struggle with limited take-off. As an (international) business professional, but also as a sustainability consultant or policy maker, it is crucial to understand the mechanisms that drive the adoption of sustainable innovations. We discuss relevant insights from innovation, psychology, behavioral economics, and consumer value research to gain a better understanding of what affects actual consumer behavior.

Based on these insights, students will develop a marketing plan . This will challenge students to connect and integrate knowledge and insights from different subjects and help to recognize how various elements of the value chain and value network need to be aligned to create a successful sustainable product or service.

Form of tuition

Lectures
Tutorials

Type of assessment

Group project assignment – Group assessment
Group and in-Class participation – Individual assessment

Course reading

This course is article based.
Readings will be announced on Canvas.

Recommended background knowledge

This course is part of the Minor Sustainability and Innovation.
This course builds on the courses of the minor in period 1 and 2.
Additionally, knowledge of basic marketing principles or marketing management is recommended

Target group

This course is part of the Minor Sustainability and Innovation. This minor can be followed by all SBE bachelor students. In addition, advanced bachelor students (third year) from other faculties as well as other universities are welcome to join. Particularly those with an interest in Business and Organization Studies, Economics, Social Sciences, Social Psychology, Healthcare, Media and Communication Studies, Engineering, Technology Management, Operations Management and Education.

It is especially interesting for:

- Future managers who want to understand how sustainability can be implemented in existing business
- Entrepreneurs / intrapreneurs that want exploit the opportunities sustainability offers
- Future consultants in sustainability, strategic business consultants, of government policy consultants
- Students that want to be active in NGO's or other societal organizations

Markov Chains

Course code	XBU_418085 ()
Period	Period 1+2
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Teaching method(s)	Lecture, Seminar
Level	400

Masterpieces from World Literature

Course code	L_AABAALG020 ()
Period	Period 1+2
Credits	12.0
Language of tuition	Dutch
Faculty	Faculteit der Geesteswetenschappen
Coordinator	dr. M.J.E. van Tooren
Examinator	dr. M.J.E. van Tooren
Teaching staff	dr. M.J.E. van Tooren, dr. J.F. van der Meulen, dr. J.H.C. Bel, dr. M.H. Koenen, dr. P.H. Moser, prof. dr. D.H. Schram
Teaching method(s)	Lecture
Level	200

Mathematical Economics I

Course code	E_EOR2_ME1 ()
Period	Period 1+2
Credits	6.0
Language of tuition	Dutch
Faculty	School of Business and Economics
Coordinator	dr. H.E.D. Houba
Examinator	dr. H.E.D. Houba
Teaching staff	dr. H.E.D. Houba, dr. J.R. van den Brink
Teaching method(s)	Lecture, Study Group
Level	200

Course objective

- Acquaint participants with classic mathematical models of economic decision making developed in the second half of the twentieth century, the fundamental critique of fact-driven behavioral economics (classic anomalies) and a sketch of economic models of the future.
 - The focus is on three topics: individual decision making, collective decision making (voting in groups or societies) and interdependent decision making (or game theory).
 - Participants understand the purpose and the mathematical properties of each model. Participants are able to execute several strategies to calculate simple models by hand, embed such strategies in algorithms (pseudo-code for software) and being able to use freeware Gambit.
 - Participants are confronted with the important difference between descriptive theory, aimed at explaining and predicting reality, and normative theory, what intervention should ideally be done.
 - Economic modeling of reality, embedding economic models in software and bringing economic models to the data will also be addressed.
- To summarize, participants will learn, understand and reflect on important economic models, their implementation in algorithms, and experiments.

Course content

Society asks for evidence-driven economic theories that can be used in economic decision making about complex economic situations. This requires on the one hand descriptive theory that explains and predicts

economic reality, and on the other hand normative theory that guides the decision maker what economic intervention should ideally be done. The financial crisis of 2007, and its aftermath, made clear that the classic models of economic decision making developed in the second half of the twentieth century are not up to this task. Also, these models ignored the classic anomalies (some dated early 1950s) and fundamental critique raised by fact-driven behavioral economics for too long. Since the financial crisis, (mathematical) economics is in transition, and for good reasons. This transition is reflected in this course and requires more academic reflection from participants than they are used in other EOR courses.

This course deals with individuals, companies, governments, NGOs that (want to) take economic decisions. Each decision maker is embedded by an economic context, e.g. you deciding how much effort to put in a team assignment. The interaction of decision makers and their economic contexts is at the heart of this course. We distinguish three major topics: individual decision making, collective decision making (how do groups or societies reach decisions) and interdependent decision making (how to bid in an auction anticipating others' bids).

Individual decision making (period 1)

In order to evaluate whether a decision is a good decision, economists developed the notion of preference relations that rank possible alternatives (possible choices) and utility / objective functions. In this course we introduce these concepts and investigate what mathematical structure needs to be imposed to move from preference relations to utility functions. From a descriptive perspective, this course addresses whether the mathematical structure is evidence-based. The classic economic experiments show it is not. From a normative perspective, how to obtain preferences and how to compute what is best according to these preferences. This is facilitated by constructive mathematical proofs that can be transformed into algorithms (and would lend itself for programming, which is outside the scope of this course). Classic economic theories about market demand of consumers, or the market supply of a product and market demand for inputs by price-taking firms are derived from objective functions. Noisy decision making, as introduced by Duncan Luce and popular in A/B testing in Data Analytics, will be introduced. Preferences for risky decisions are developed and expected utility theory derived. The famous Allais-paradox experiment that empirically rejects this theory is discussed, and Prospect theory, which can explain the paradox, will be discussed.

Collective decision making (period 1)

Individual decision makers often participate in groups or teams, and live in a society. Is it mathematically possible to derive group preferences from individual preferences? Impossible. What then? This part of the course is merely normative in analyzing classic ranking methods and voting procedures that are observed in reality. These methods and procedures will be compared with each other. One criterion employed is Pareto efficiency.

Interdependent decision making (period 2)

In many, if not all, economic situations what eventually happens depends upon decisions made by more than one individual of individuals. Whether your team assignment is evaluated with a high grade depends upon your own effort and that of your other teammates. Or, whether you win the item in an auction depends upon your own bid and the others' bids. Predicting what others will do, how they predict what you will do, etc.

becomes crucial in the mathematical analysis. Although this part can be used for normative theory (f.e. all driving on the same side of the road reduces accidents and is Pareto efficient, what is good antitrust policy to destabilize cartels), the focus of this course is mainly descriptive because of the need for evidence-based theories.

We focus on Nash equilibrium, k-level reasoning and (agent) quantal response equilibrium. Nash equilibrium dominated the economic literature during the 1980s and 1990s, but is rejected in many experiments. As a descriptive theory, Nash equilibrium is in trouble while quantal response equilibrium deals better with experimental data and is easier to bring to data. k-level reasoning is a competing theory that also explains experimental data. Both alternative theories cannot explain all experimental evidence and will not be mankind's final theory.

In many economic situations some individual are better informed than others, which is called private information. For example, in Poker you know the cards you are holding while the others do not. You will be introduced to the fascinating world of interdependent decision making with private information. Because analyzing such games by hand is rather hard, you will solve such games numerically in Gambit. Freeware Gambit is an open-source software tool programmed in Python that computes Nash equilibrium and quantal response equilibrium. Interpretation of the computed solution and its economic implications will be addressed. Gambit will be part of an assignment that counts as part of the final grade.

This part will also focus on the economic literature during the 1980s and 1990s that were so influential that many mathematical economists became Nobel laureates in Economics. Classic theories about Cournot competition in quantities (e.g. OPEC cartel), Bertrand competition in prices, sustainable cooperation in repeated games, antitrust policy to destabilize cartels are part of the course.

Form of tuition

Classes. One lecture and one practical per week. Active participation is key.

Participants may be partitioned to groups for the practical.

Participants of the practical PREPARE BEFORE coming to class and are expected TO PRESENT their answers before the Canvas in class and discuss where problems in solving questions arose.

Type of assessment

One team assignment based upon Gambit in period 2 – team assessment
Partial exams in October (covering period 1) and December (covering period 2) – individual assessment

An exam in March (covering period 1 and 2) – individual assessment

Individual Assignment (presenting before class) – individual assessment

Course reading

An electronic syllabus that contains exercises supplemented by some videos from Massive Open Online Courses (MOOCs). All compulsory literature and links will be provided through Canvas.

Recommended background knowledge

Knowledge of elementary mathematics and elementary probability theory. This includes differentiation, the Lagrange method, expectation, Bayes Rule.

For EOR students this translates in knowledge from Analysis I and II, Linear Algebra and Probability Theory, and to a much lesser extent

Finance, Statistics and Programming.

Target group

This course is an obligatory second-year course in the bachelor Econometrics and Operations Research.

Exchange students and other students from other bachelors, such as Economics, are welcome but should be motivated to follow a course with a lot of mathematics. Preferably, you have a sufficient mathematical background and can reason logically.

Mathematical Economics II

Course code	E_EOR2_ME2 ()
Period	Period 4+5
Credits	6.0
Language of tuition	Dutch
Faculty	School of Business and Economics
Coordinator	dr. M.A. Estevez Fernandez
Examinator	dr. M.A. Estevez Fernandez
Teaching staff	dr. I.D. Lindner, dr. M.A. Estevez Fernandez
Teaching method(s)	Lecture, Study Group
Level	200

Mathematical Economics III

Course code	E_EOR3_ME3 ()
Period	Period 4
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. J.R. van den Brink
Examinator	dr. J.R. van den Brink
Teaching staff	dr. H.E.D. Houba, dr. J.R. van den Brink
Teaching method(s)	Lecture, Seminar
Level	300

Course objective

The learning objectives of this course are that students:

- can apply theories and methods learned in Math.Econ. I and II to analyze situations of interaction between different decision makers in economic systems;
- gain a deeper knowledge of economic behavior and allocation in economic organizations;
- are able to critically discuss theoretical results in the context of economic problems,
- are able to apply and choose the appropriate tools for specific decision problems in economics and OR: use complex tools when necessary but use simple tools when these are sufficient;
- are able to design mechanisms and compute solutions for economic behavior and decision making situations such as auctions and identifying the most influential terrorists in a terrorist network;

-are able to read the scientific literature, and write a short paper or research proposal.

Course content

The focus of this course is to apply recent developments in Mathematical Economics to analyze complex systems with the purpose of understanding these systems and being able to make better decisions in economic decision problems. The course will be organized along the following two main themes: (i) Games and networks, and (ii) Auctions. These topics will be taught as separate modules of three weeks each.

Organizations in society and economics become more complex and it requires advanced knowledge of and skills in applying models of decision making in complex economic systems. For example, auctions of radio frequencies, 4G networks, gas station locations along highways etc. require sufficient knowledge of auction theory and mechanism design. Another example is that markets become less anonymous and networks of CEO's and customer networks become more and more important. Also, with sites as eBay, the internet is growing as an economic system of trade.

Analyzing complex economic systems requires not only knowledge of various theories and methods of economic behavior and economic organizations, but also to be able to combine different theories and methods in an appropriate way. The part on Games and Networks builds on the knowledge of Mathematical Economics 1 (individual, interactive and collective decision making) and Mathematical Economics 2 (cooperative games and networks), and discusses topics that combine different theories and methods studied before. We do not only give attention to how these concepts can be applied, but also how specific applications require modifications of these concepts. An example is finding the most influential terrorist in a terrorist network where typically the most important terrorists communicate as little as possible, while in a facebook network influential agents use many many links. Typical topics that will be discussed are auction games, systemic risk in financial networks, strategic foundations of cooperative game solutions, games and subjective beliefs, and river water allocation problems. Attention will be given to behavioral, game theoretic as well as computational aspects.

The second part of the course is devoted to Auction Theory. The approach to Auction Theory shifted from game theory to the design of auctions, called mechanism design and three of its pioneers were awarded the 2007 Nobel-prize in Economics. Nowadays, many consultancy companies specialize in auctions, e.g. TWS-Partners.com, and large multinationals have specialized in-house divisions e.g. Philips Negotiation Lab. In auctions, the focus is on private information held by bidders, bidding strategies, seller's revenue and efficiency. Critical assumptions underlying a successful mechanism design approach, inducing competition among bidders in an unequal playing field, the econometrics of first-prize auctions, jump bids in take-over battles in financial markets and some challenging mathematical techniques will be discussed also. The empirically observed declining price anomaly in sequentially held auctions touches upon behavioral economics, and can be dealt in practice with by holding simultaneous auctions, as successfully applied in the US spectrum auctions (see Wikipedia). A guest lecture will be given by a practitioner of auctions and/or auction design. This part will be examined with a case study in which you are asked to design for example auctions to sell licenses for gas stations along highways, or asked to develop a bidding strategy for a telecom company in a 5G

spectrum auction.

Using recent literature, developments in economic behavior and organizations will be studied, and students will play an active role, for example by writing short research proposals.

Form of tuition

Lectures, Tutorials

Type of assessment

Written exam, Home assignment, Auction Case

Course reading

Will be announced in the Course Manual and on Canvas.

Recommended background knowledge

Analysis I and II, Linear Algebra, Probability Theory, Mathematical Economics I and II, and to a lesser extent Statistics and Programming.

Target group

Third year bachelor students Econometrics and OR
International Exchange students with a quantitative interest (for information contact J.R. van den Brink, email: j.r.vanden.brink@vu.nl)

Measure Theory

Course code	X_401028 (401028)
Period	Period 1+2
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	prof. dr. R.W.J. Meester
Examinator	prof. dr. R.W.J. Meester
Teaching staff	prof. dr. R.W.J. Meester
Teaching method(s)	Lecture, Seminar,
Level	300

Course objective

After this course, the student will know and understand the basic concepts of measure theory and the theory of Lebesgue integration, as laid out in the content of the course. The student will understand the main proof techniques in the field, and he will also be able to apply the theory to concrete examples. The student should also be able to write elementary proofs himself, as well as guided more advanced proofs. The student will also understand and use the unifying nature of the subject, and in particular understand that sums and integrals are two appearances of the same underlying abstract notion.

Course content

We motivate and introduce the notion of a measure, that is, a way to assign a size to as many subsets as possible in an abstract space. It turns out that it is in general not possible to measure all sets, at least if one insists on additivity of the measure. This leads to the notion of a sigma-algebra.

Once we have defined measure, we can introduce and discuss so called measurable functions which, roughly speaking, form the class of functions which we will be able to integrate. We then introduce and study integration of these measurable functions with respect to a measure. We discuss (among other things) the monotone and dominated convergence theorems concerning the interchangeability of limit and integral, the substitution rule, absolute continuity and the relation of this new integral to the Riemann integral. We also discuss multi-dimensional Lebesgue measures, product measures and Fubini's theorem. The theory leads to a new perspective on integration of functions, which is not only more general when working on the real line, but also allows one to work in an abstract setting. This is of crucial importance for the development of (for example) functional analysis and probability theory.

Form of tuition

Classical classes with exercise classes.

Type of assessment

Written final exam, with a written midterm exam after 7 weeks. The final exam will be 50% of the final grade, and the midterm exam will be 40%. The remaining 10% will be homework, but the homework only counts if the weighted average of the two exams is at least 5,50.

Course reading

Rene L. Schilling: Measures, Integrals and Martingales, Cambridge University Press.

Entry requirements

Basics of calculus.

Target group

3W, 3Ect

Microeconomics II

Course code	E_EBE2_MICEC ()
Period	Period 4
Credits	6.0
Language of tuition	Dutch
Faculty	School of Business and Economics
Coordinator	dr. H.G. Bloemen
Examinator	dr. H.G. Bloemen
Teaching method(s)	Lecture, Instruction course, Seminar
Level	300

Migration, Ethnicity and the Economy

Course code	L_GWBAALG002 ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Geesteswetenschappen

Coordinator	R. Gowricharn
Examiner	R. Gowricharn
Teaching staff	R. Gowricharn
Teaching method(s)	Seminar
Level	200

Course objective

To familiarize oneself with and critically reflect on the ways immigrants have been incorporated and how their exclusion has been legitimized in social and public debates. To gain knowledge of and understand the relation between culture and economics as applied in integration studies. To gain knowledge of and insight into the ways culture generates economic forces and fosters or impedes immigrant incorporation. To learn how to write a position paper in which a personal stance is developed that addresses one of the key debates at the centre of the course.

Course content

Failing immigrant incorporation in many Western societies has been attributed to immigrant culture. Although an increasing proportion of immigrants are incorporated in society, they are blamed for their deficient attitudes, ethnic networks and incompatible values. Immigrants are urged to adopt the host society's culture to equalized their own culture and establish equal chances. This message of assimilation had been strongly recommended in public debate and scholarship. Failure to become integrated is often attributed to the persistence of immigrants' cultures. In this reasoning, two issues are downplayed. The first is that the causes of incorporation are determined in the realm of 'culture'. Culture becomes a master concept to explain every negative outcome concerning migrants. Culture also accounts for positive outcomes, since the incorporated migrants allegedly have adopted the host culture. In contrast, as it concerns the native population, the market accounts for incorporation—specifically the labour and housing market. The market is supposedly devoid of culture, as major players are rationally driven to maximize their gains. The second issue consists of a denial of the way culture frames and determines economic forces, including markets. The dominant concept is that economics determine culture (rather than culture determining economics) and that culture is something located outside the economic realm. This conception misrepresents that culture is often constitutive of economics and that the economic actor's culture enables incorporation. This course addresses the relationship between culture and economics. It discusses the current (mis)conceptualization of culture in the field of economics and the related consequences. It exemplifies these issues by discussing the incorporation of immigrants. Basic concepts:

- Labour selection and productivity
- Ethnicity and entrepreneurship
- Consumption of ethnic commodities

Form of tuition

Seminars, guest lectures and an excursion.

Type of assessment

Weekly assignments (20%), a mid-term essay (20%), presentations (10%) and a position paper (50%).

Course reading

To be announced.

Target group

This course is open to students from various disciplines who have completed their first year of their Bachelor program. Exchange Students.

Remarks

This course is part of the minor 'Migration Studies'.

Mind and Machine

Course code	AB_1060 ()
Period	Period 3
Credits	6.0
Language of tuition	English
Faculty	Fac. der Aard- en Levenswetenschappen
Coordinator	dr. L.N. Cornelisse
Examinator	dr. L.N. Cornelisse
Teaching staff	dr. K. Linkenkaer Hansen, dr. L.N. Cornelisse
Teaching method(s)	Computer lab, Study Group, Lecture, Excursion
Level	300

Course objective

To provide students with a broad insight in the rapidly developing field of brain modelling, artificial intelligence, brain computer interfacing and machine learning.

Specifically, at the end of the course the student should be able to:

1. explain the meaning of key concepts treated in the course and to give examples of where key concepts are already applied (services or products).
2. describe most commonly used forms of, as well as the state-of-the-art and trends in, brain modeling, AI and BCI as discussed in the course.
3. reproduce the underlying principles of brain modelling, AI and BCI at the level discussed in the course.
4. reproduce and present with a group of students the content of a scientific paper at the level of a science journalist for a layman audience.
5. provide constructive feedback to fellow students with the aim of improving their oral presentation and is able to use received feedback to improve his/her own oral presentation.
6. develop, present and defend a business proposal, i.e., an idea for a product or service that exploits state-of-the-art technological advances within the themes of the course, or advances that may be anticipated in the coming years.
7. formulate a scientifically informed opinion about the ethical aspects of AI and BCI.

Course content

People have always been fascinated with the idea to create intelligent computers and robots and to integrate computers in the brain to manipulate or enhance its performance. In this course, the current status is discussed of brain inspired artificial intelligence, realistic computer simulations

of the brain and brain-computer interfacing. To investigate how close science has come to science fiction students work in groups to prepare a business proposal in which they describe a new commercial application of artificial intelligence or brain computer interfacing. Students will present with their group a scientific paper describing the key technology of their project. The business proposal is presented to peers and a reviewer during a poster session at the end of the course. In addition, students will discuss the ethical, legal, and philosophical aspects of artificial intelligence and brain-computer-interfacing.

Form of tuition

Lectures 40 hrs
 Practicals 12 hrs
 Business project 60 hrs

Type of assessment

Exam 50%
 Business project 40%
 Discussion 10%

Weighted average of exam and business project need to be 5.5 or higher to pass the course and cannot be compensated by the Discussion grade.

Course reading

To be decided

Recommended background knowledge

Two years of study at bachelor's level.

Target group

All students with an interest in the computational abilities of the brain and brain-inspired technology

Remarks

Part of minor Brain and Mind.
 This minor course requires a minimum of 25 participants to take place.
 Central Academic Skills:
 Think out of the box: imagination may push basic science into applications and create business opportunities.

Minor English: English in my own Discipline

Course code	L_ETBAALG008 ()
Period	Period 3
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Geesteswetenschappen
Coordinator	dr. G.A. Dreschler
Examinator	dr. G.A. Dreschler
Teaching staff	dr. G.A. Dreschler
Teaching method(s)	Seminar
Level	300

Course objective

You gain insight into the language used in various text types which are common in your own academic discipline and the professional domains associated with your specialization. After successfully completing this course you will have (i) knowledge of the different types of texts written in your own discipline, either on an academic level or in the professional domain; (ii) insight into linguistic features related to structure, formality and stance in one or two text types in your discipline; and (iii) knowledge of several types of analysis and methods used in genre analysis and corpus linguistics. You will be able to apply these methods independently to a selection of texts from your discipline and use the knowledge gained from these analyses in your own writing.

Course content

In the first couple of sessions, we will discuss different methods of analysis used in linguistics for analyzing characteristics of texts and apply them to texts. You will then choose one of these methods and apply this in an analysis of a collection of texts in your own discipline, present the preliminary results of your analysis, and write a final research article in which you report on the analysis, following conventions from linguistic papers.

Form of tuition

2 seminars of 2 hours per week in weeks 1 - 3.

Type of assessment

The grade for this course will be based on the final report (after rewriting) (75%); and the grade for the presentation (25%). To pass the course, you need a minimum grade of 5.5 for both assignments.

Course reading

Materials will be made available or listed on Canvas.

Entry requirements

This course is only available as part of the <Minor Engels/Minor in English>. Students must have completed Writing 2 before embarking on this course.

Target group

The <Minor Engels/Minor in English> as a whole is aimed at bachelor and premaster students across the university who want to improve their written English in an academic context. The Minor is not open for students in the BA programme CIW who are following the specialization in English and International Communication.

Remarks

The course has obligatory attendance.

Minor English: Grammar and Writing 1

Course code	L_ETBAALG007 ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Geesteswetenschappen

Coordinator	dr. G.A. Dreschler
Examiner	dr. G.A. Dreschler
Teaching staff	drs. I.M.W. 't Hart MPhil, dr. G.A. Dreschler, dr. C.A.M. de Jong
Teaching method(s)	Lecture, Seminar, Instruction course, Study Group
Level	100

Course objective

After successfully completing this course you will have knowledge of and insight into the language which typifies academic writing in English and into English requirements of text structure, as well as into how these aspects are different from other languages, most importantly Dutch. You have knowledge of and insight into the most important aspects of English grammar, particularly those which typically cause students problems when writing formal English.

You will also be able to write a well-structured English text in a formal style about a subject related to your own study programme, free of serious lexical and grammatical error which would have an adverse effect on the readability of the text. In terms of the Common European Framework of Reference [CEFR], successful completion of this course will bring you to level B2 in terms of communicative competence and B2i in terms of grammatical accuracy and vocabulary control. You will have greater insight into the strengths and weaknesses of your English writing skills, and knowledge of how to further develop your strengths and reduce your weaknesses.

Course content

The course consists of a writing and a grammar component. In the writing component of the course the emphasis is on (a) identifying the paragraph structures, sentence structures and kind of language used across a range of academic texts in all kinds of disciplines, and (b) getting to grips with the basic problems involved in writing good, formal English (e.g. differences between English and Dutch, the essentials of English punctuation, formal style). The grammar component consists of a practical introduction to basic aspects of the grammar of contemporary English, with special attention for the problems that students typically have when writing formal English.

Form of tuition

For the writing component: 1 hr per week lecture; 2 hrs per week seminar.

For the grammar component: 1 hr per week lecture; 2 hrs per week seminar.

Type of assessment

(i) a text of 1000-1200 words on a subject related to the student's own discipline (50%); (ii) a multiple choice computer test on grammar (50%).

In order to pass the course students must score a minimum of 5.5 on each component.

Course reading

Hannay, M. & J.L. Mackenzie (2009). *Effective Writing in English*. 2nd edition. Bussum: Coutinho.

Book for grammar: to be announced.

Additional materials will be made available on Canvas.

Entry requirements

At least one year of university study, including experience in writing academic text; premaster students may also follow this course as long as they have completed an academic skills course.

Target group

Bachelor students across the university who want to improve their written English in an academic context; the course is not open for students who have done academic English in their academic core. The course is part of the [Minor Engels/Minor in English] but can also be followed separately.

Remarks

The course has obligatory attendance. Note that this is an English writing course rather than simply a writing skills course. The assumption is that participants have already successfully completed an academic skills course in their first two years of university study.

Minor English: Pronunciation and Presentation

Course code	L_EABAALG006 ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Geesteswetenschappen
Coordinator	dr. L.M. Rupp
Examinator	dr. L.M. Rupp
Teaching staff	dr. L.M. Rupp, dr. T. Krennmayr
Teaching method(s)	Seminar, Lecture
Level	200

Minor English: Writing 2

Course code	L_ETBAALG005 ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Geesteswetenschappen
Coordinator	dr. G.A. Dreschler
Examinator	dr. G.A. Dreschler
Teaching staff	dr. G.A. Dreschler
Teaching method(s)	Lecture, Seminar
Level	300

Course objective

After successful completion of the course students will feel confident that they can write a bachelor dissertation in English and embark on a Master's degree where English is the language of tuition. In terms of the Common European Framework of Reference [CEFR] you will be at level B2 for linguistic accuracy and at the high end of B2 for relevant

communicative competence. Specifically, the course aims to help students in:

- getting more practice in writing formal, academic English.
- developing reading skills which will allow them to note linguistic and structural features of relevant academic text types in their own discipline;
- gaining insight into how specific linguistic structures can contribute to text coherence and text cohesion;
- acquiring greater knowledge of the stylistic and rhetorical aspects of written formal texts;
- getting greater insight into the strengths and weaknesses of their English writing skills, and knowledge of how to further develop strengths and reduce weaknesses;

Course content

The main aim of this course is to further develop your writing skills in English. For this course we focus on your position as a writer in the academic world, i.e. as someone who is engaged in academic discourse. This means that you need to be aware of appropriate structures at sentence level as well as at text level, at ways of using language to refer to other writers, and at ways of using academic language effectively. The emphasis in this course is on (a) gaining more insight into the language and style of your own academic discipline, (b) improving coherence, compactness and readability, and (c) expanding your grammatical repertoire.

Form of tuition

2 hrs per week lecture; 2 hrs per week seminar.

Type of assessment

There are three assignments for this course: a short comparative essay (30%), a term paper on linguistic and stylistic features of academic texts in one's own discipline (30%), plus a paper of 2000 words on a subject related to your study (40% of the mark).

Course reading

Hannay, M. & J.L. Mackenzie (2009). *Effective Writing in English*. 2nd edition. Bussum: Coutinho.
Separate materials available via Canvas.

Entry requirements

Students must have either (a) completed an introductory academic English course earlier in their university studies or (b) already completed Minor English: Grammar and Writing 1.

Target group

Bachelor and premaster students across the university who want to improve their written English in an academic context, with the exception of students of CIW who are following the specialization in English and International Communication.

Remarks

The course has obligatory attendance. If you miss more than two weeks you will not be allowed to complete the course.

Minor's Tutorial in Development and Global Challenges

Course code	S_MWDCG ()
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Period	Period 1+2+3
Credits	0.0
Language of tuition	English
Faculty	Faculteit der Sociale Wetenschappen
Coordinator	dr. E.W. Bal
Examinator	dr. E.W. Bal
Teaching method(s)	Study-group, Lecture
Level	300

Course objective

The Minorwerklint Development and Global Challenges is a series of tutorials in preparation to the course Urban Studies. These tutorials are meant for students in the Minor Development and Global Challenges only. The tutorials also aim to facilitate the integration of the five courses that constitute the minor.

Course content

During the entire track (P1 and p2) students will take part in excursions, attend expert lectures and prepare (in teams of 4 students) the short research project that they carry out in P3 as part of the Urban Studies course. During P1, all activities carried out in the will be closely linked to the first two courses taught in the Minor. In P2 students will begin the preparations for their short research projects in Urban Studies.

Form of tuition

Guestlectures, excursions and tutorials

Type of assessment

To be announced in the course manual (see CANVAS).

Course reading

To be announced in the course manual (see CANVAS).

Entry requirements

Active participation in the parallel courses in this Minor

Target group

Students in the Minor Development and Global Challenges

Nation and Migration

Course code	S_NM ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Sociale Wetenschappen
Coordinator	dr. A. Hossain
Examinator	prof. dr. P.D. Nyiri
Teaching staff	prof. dr. P.D. Nyiri, dr. A. Hossain
Teaching method(s)	Lecture
Level	300

Course objective

This course introduces students to the study of international migration and how the phenomena, perceptions, and policies towards migration reflect and shape the governance and self-perception of nation-states. It is part of the curriculum strand 'World Making' and complements the course Identity, Diversity and Inclusion.

Learning objectives:

Knowledge and Understanding. Students have acquired knowledge and understanding of:

(1) key theories, concepts and methods for the study of migration in the social sciences.

Application. Students have acquired the competences to:

(2) apply these to analyse migration dynamics in selected case-studies.

Attitude. Students can demonstrate:

(3) a critical perspective on current events surrounding migration.

Course content

Today's debates on migration are often inseparable from nations' perceptions of themselves and each other. This course discusses the relevance of migration in today's global world, particularly in relation to: identity concerns (diasporas, transnationalism, nationalism, multicultural societies), development (migration and development) and international political issues (migration governance and ethnography of the state).

The course introduces students to major theories to understand migration, but privileges the adoption of constructivist approaches. It invites students to look at migration from the perspectives of people engaging in migration directly, of people encountering migrants as new neighbours, or of people tasked with the function of controlling and governing migration. Through this perspective, students engage with processes of community building and belonging, and with the power struggles associated with migration. They acquire a thorough theoretical knowledge and critical understanding of these phenomena and key concepts that can help understand them:

- (1) How do migrants construct their identities on the move?
- (2) How do transnational communities and diasporas develop?
- (3) How do national communities respond to migration and deal with the diversity that derives from it?
- (4) How is migration governed and controlled by state apparatuses in migrant countries of origin and destination?
- (5) How do the bureaucrats and professionals dealing with migration translate migration policies into everyday practices?
- (6) What are the implications of migration for development and social transformation in both origin and destination societies?

Form of tuition

Lectures, case-study presentations, peer discussions

Type of assessment

Final exam (digital)

Course reading

To be announced in Canvas

Target group

2nd year bachelor students in Cultural Anthropology and Development

Sociology

Students in the Minor Anthropology

Nature versus Nurture

Course code	AB_1057 ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	Fac. der Aard- en Levenswetenschappen
Coordinator	dr. J.C. Polderman
Examinator	dr. J.C. Polderman
Teaching staff	dr. P. van Nierop, dr. J.C. Polderman
Teaching method(s)	Practical, Computer lab, Study Group, Lecture
Level	300

Course objective

Students learn how individual differences in human complex behavior can be explained by genetic variation and environmental factors.

Course content

Human traits show considerable individual differences, which are due to differences in the individual's genes and/or the environment. In the Nature vs. Nurture course the influence of genes and the environment on human behavior will be discussed. Empirical evidence based on experiments with human subjects will guide these discussions. During the course many important topics from modern day society will be discussed, such as the influence of violent gaming on juvenile behavior, the role of parents in personality development of children, and the causes of mental disorders.

The genetic information contained in our DNA, represents the nature component that influences human behavior. An important aspect of the course is to show how research on genetic information is conducted. Students are introduced to various molecular biological techniques used to study the genome, such as DNA collection, isolation, and genotyping, and (statistical) methods to link variation in DNA to variation in behavior. The ultimate goal of this course is to understand the 'nature' and 'nurture' causes of individual differences in human cognitive and social behavior, and to be able to critically evaluate the nature-nurture debate.

Form of tuition

Practicals (10%), lectures (80%), debates + workshop presenting (10%)

Type of assessment

The final grade of Nature vs. Nurture is based on participation in debate sessions (5%), and the DNA practical (5%), and a written exam (90%). Of note: 55% of the written exam must be correct to obtain a final grade. Nature vs. Nurture is successfully completed with a final grade > 5.45.

Course reading

Text book "Behavioral Genetics" 7th edition, by Plomin et al.

Scientific papers, TBA during course

Entry requirements

None

Recommended background knowledge

Broad interest in brain, behavior, psychology, genetics and neuroscience

Target group

Third year BSc students alpha and gamma topics (Sociology, Psychology, Economics, Law, Artificial Intelligence etc.) and students from Lifesciences (Biology, Physics, Chemistry, Medicine, Movement Science, Nutrition etc.) with a broad interest in neuroscience. Students of Biomedical Sciences and Health and Life Sciences as well as students that plan to pursue a career in Neuroscience can follow the more specialised minor "Biomolecular/Neurosciences".

Remarks

Guest lecturers:

Prof Bartels (VU-FGB)

Dr. Lewis (University of London, UK)

Dr. van Dongen (VU-FGB)

Dr. Stringer (VU-CNCR)

Prof. Dr. Konijn (VU-Social Sciences)

Prof. Dr. Van Straalen (VU-FALW)

Prof. Dr. Schuengel (VU-FPP)

Neuropsychology and Rehabilitation Psychology

Course code	B_NEURREVPSY (900502)
Period	Period 3
Credits	6.0
Language of tuition	Dutch
Faculty	Fac. der Gedrags- en Bewegingswetensch.
Coordinator	dr. A. Ledebt
Examinator	dr. A. Ledebt
Teaching staff	dr. A. Ledebt, dr. J.F. Stins
Teaching method(s)	Lecture
Level	200

New Developments in Risk Management

Course code	E_EBE3_NDRM ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	M.J. Hopman

Examinator	M.J. Hopman
Teaching method(s)	Lecture, Study Group
Level	300

Course objective

This course offers a comprehensive introduction to new developments in Risk Management and how this impacts the risk management of financial institutions. The course is structured in 6 parts, covering the most interesting new developments:

1. Cybercrime;
2. Forensic;
3. Risk Management and Big Data;
4. Crisis Management;
5. Machine Learning and Robotics;
6. Recovery & Resolution.

All six parts of the course are closely knitted to the learning goals of Quantitative skills, Academic skills, Bridging theory and practice. You will enlarge your horizon and learn to think forward.

By the end of the course students should be able to (for each part):

- Explain how the new developments impacts the financial institutions;
- Illustrate what the consequences are for financial institutions;
- Analyse and motivate why these risks need to be mitigate;
- Develop possible solutions (plan of approach) to mitigate these risks;
- Create a view on future developments regarding these new developments.

Course content

Technology causes new developments in Risk Management. In the recent years it is accelerating and the regular financial institutions have to deal with it. This course will cover the most important developments, such as cybercrime, forensic research (to give more insight in e.g. anti-money laundering and terroristic financial transactions). What are FinTech's and what are the risks of FinTech's (both for the FinTech itself and the financial environment?). What are the possibilities of "Big Data"? How can we use this data to improve risk management? What are the pitfalls of Big data and how can we still see the big picture? You will also gain a good view on crisis management in financial institutions. You will also be able to interpret and discuss the failure of financial institutions. How can you manage recovery and/or a decent wind down (resolution) without bathering the economic environment and taxpayer? Upon completion you will be able to outline a good overview of new developments, the risks and how you can deal with these challenges. This course will be supported by Deloitte specialists.

Form of tuition

Interactive lectures and Tutorials

Type of assessment

Final written exam (Individual assessment) and assignments.

Course reading

To be defined and announced via Canvas.

Entry requirements

There is no formal entry requirement for the Deloitte minor Risk Management except for VWO Wiskunde A (or B). Students should have

followed Risk Management in Banking and Risk Management for Financial Institutions (offered in period 1)

Recommended background knowledge

Finance I; Accounting I; A basic course in quantitative methods and/or statistics is strongly recommended

Target group

The Deloitte minor RMFI is for students from all bachelor programmes (with some exceptions, see the admission criteria) who want to acquire familiarity with Risk Management and Financial Institutions.

New Venture Creation

Course code	E_BK3_NVC ()
Period	Period 3
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	drs. A.C. Guldemond
Examinator	drs. A.C. Guldemond
Teaching staff	prof. dr. E. Masurel
Teaching method(s)	Lecture, Study Group
Level	300

Course objective

In this course students create a business plan for a start-up venture based on knowledge provided in the previous courses of the Entrepreneurship minor (bridging theory and practice).

The student will first learn to systematically identify and evaluate entrepreneurial opportunities. A business opportunity is developed using the business model canvas. The student is able to use brainstorming and creativity in the process.

The student teams will test the business idea by collecting and analysing data to support the idea in the business plan and validate a possible investment in the business (quantitative skills). As part of the validation of the idea the concepts of sustainability, valorisation and technology will be used to categorise and demonstrate the economic feasibility of the idea. The course results in a business plan critical for successfully introducing a knowledge-driven innovation to the market.

The student cooperates with others in a team and presents and defends the business idea. Interviews and discussions with stakeholders of the business like investors, possible customers and partners gives insight in the context and validity of the idea. (social skills). The student will present the business plan to a panel of experts and entrepreneurs and learn to judge and evaluate different business plans (bridging theory and practice). Reflection on the process of developing a plan at the end of the course will result in feedback on what the student learned, what choices he/she made and how he/she was learning in the group (self awareness).

The course will challenge the student to use the skills and knowledge from previous courses and experiences. The course expects the students to interact with professionals from the community of entrepreneurs and business developers and society at large.

Course content

What is a startup and what does the entrepreneur do and what characterizes good, structured and effective business development?

In this course students work to create a business plan to validate a business idea in an iterative process. During this process business- and entrepreneurial theories are used in a context specific application.

In order to invest in a plan (this investment can be time, energy, knowledge, network and money) an entrepreneur needs to constantly learn and reflect and put this experience in his business and his business plan. A start-up will iterate, get feedback and change course during its development. These iterations are part of the course where feedback from professionals and coaches are integrated.

Business model version 4.0 is presented by Prof Enno Masurel and used to create a valid strategy to connect the needs of the customer with the value proposition and the required resources. Also the aspects of competition and sustainability are researched and connected to the overall aim of the business. Students will use valorization of new technology and academic knowledge to bridge the gap between research and practice. In the course students are challenged to think of alternative forms of financing such as crowd funding, subsidies and business angels to finance the business.

As the investors expect the business to create a return on investment the students will generate market knowledge about the customer needs, the product market fit and the growth potential. To make the business plan ready for evaluation by investors and stakeholders Investment analysis is an essential part of the business plan development.

The students will present to a panel of experts, entrepreneurs and investors. They will give feedback with a market perspective and based on their experience.

Form of tuition

Lectures and tutorials.

Type of assessment

individual and group assessment

Course reading

Required Reading:

- Sørensen, H. E. (2012). Business Development: A market-oriented perspective. West Sussex, United Kingdom: John Wiley & Sons Ltd.

Additional (required) materials will be announced via Canvas.

Recommended background knowledge

Basics of business administration or economics.

Target group

Students of the minor in entrepreneurship and other third year students with an interest in business.

New Ways of Working

Course code	E_MM_NWW ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. A. Sergeeva
Examinator	dr. A. Sergeeva
Teaching method(s)	Lecture, Seminar

Course objective

After completing the course, students will:

- Understand how the properties of digital technologies require, as well as enable new approaches to working and organizing
- Have knowledge of relevant theories of how working, coordinating, and managing in these new environments is different from traditional workplaces and critically reflect upon the underlying assumptions
- Understand the interplay between technology and work practices and be able to analyze and demonstrate that interplay
- Be able to apply academic insights to analyze and develop solutions for a real life case

Course content

In this course we focus on the demands digital technologies put on organizations and society, and on how new ways of working and organizing help adapt to these challenges. Topics addressed in this course include, amongst others, how new ways of working (for example workers as digital nomads, expert systems as alternative for legal workers, or production done by 3d-printers) and new distributed and networked organizational forms (for example peer to peer communities or crowdsourcing) have advantages and disadvantages over traditional organizational practices and structures. In addition to learning about these topics in interactive lectures, students will also be required to fulfill a number of assignments related to “real-life” challenges of new ways of working and organizing. The assignments are related to a particular organizational problem and will require students to apply theories discussed during the lecture to a particular case. These “hands-on” assignments are aimed to get a better understanding of the connection between theory and practice. With the assignments, students become academically prepared to understand and support the design, introduction and use of digital innovation and its implications for new ways of organizing and working in new distributed environments.

Form of tuition

The course will consist of a combination of interactive lectures, guest lectures, seminars, and assignments. The lectures will also include a critical discussion of selected readings, stimulated by obligatory individual reflections on the literature. The seminars will be used to have students present, discuss, and further develop the assignments.

Type of assessment

Individual assignments and Group project assignment

Course reading

A selection of readings (mostly academic papers, but also book chapters and thoughtful business magazine articles) will be made available before the start of the course.

Entry requirements

None

Nudge: Influencing Behavior

Course code	E_BK3_NIB ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. F. van Horen
Examinator	dr. F. van Horen
Teaching method(s)	Lecture, Instruction course, Seminar
Level	300

Course objective

Academic Skills: You will critically reflect on theoretical and practical value (/usability) of the concepts, theories and models offered in this course. Furthermore, the focus is on analyzing problems in organizations (/society) and applying knowledge (/searching for solutions) based on the theoretical models we discussed.

Research Skills: You develop the capacity to critically read and understand academic literature and to translate academic research to practically relevant outcomes.

Knowledge: You obtain knowledge on core subjects about influencing and nudging and gain deeper understanding of topics already discussed in "judgment and decision making".

Bridging theory and practice: You are challenged to apply theoretical knowledge in real-life situations.

Course content

How can you improve the efficiency of towel and linen reuse programs in hotels? Which incentives help consumers to eat healthier? How can people be motivated to take public transport instead of the car?

These are some of the questions we deal with in the course Nudge: Influencing behaviour. Nudging is the art of subtly influencing people to change behaviour to serve societal and/or commercial goals such as e.g. reducing the number of phone calls to helpdesks, cutting down on energy use, reducing pollution, stimulating healthy behavior, etc.

In this course we build further on the basic principles of consumer choice which you learned in the Judgment and Decision Making course. In the first part, you will be offered tools to implement strategies that will guide consumers toward preferable, sustainable, and healthy choices. You will develop a behaviour change intervention that can benefit society, business, and/or the consumer.

In the second part we focus on social influence strategies. You will get insights into the persuasion tactics used by sellers, advertisers, and online service providers, which will make you become better at recognising opportunities for influence and better at employing effective strategies to convince others.

Form of tuition

Lectures and small-group tutorials

Type of assessment

Individual exam – individual assessment
(interim) assignment – group assessment

Course reading

tba

Entry requirements

Judgment & Decision Making (course from same minor)

Recommended background knowledge

Well-trained in academic method and thinking (i.e., with an academic bachelor).

Remarks

Part of this course builds on the course Judgment & Decision Making.

Number Theory

Course code	X_400632 ()
Period	Period 1+2
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	dr. S.R. Dahmen
Examinator	dr. S.R. Dahmen
Teaching staff	dr. S.R. Dahmen
Teaching method(s)	Lecture, Seminar
Level	400

Course objective

- Knowing elementary concepts and techniques from number theory and being able to apply these to concrete problems.
- Being acquainted with a number of modern developments and open problems within number theory en being able to explain their importance.
- Knowing certain number theoretic algorithms and being able to perform and analyse them (e.g. by using the mathematics software system "SageMath").

Course content

The following subjects will be treated:

- integers, primes, prime distribution
- congruences, primitive roots
- primality tests, factorization
- public key cryptography
- quadratic reciprocity

- Diophantine equations, abc-conjecture
- algebraic numbers, algebraic integers
- continued fractions (if time permits)

Next to a theoretical approach, practical/algorithmic aspects will also be covered. In particular, the mathematics software system "SageMath" will be used to perform explicit number theoretic calculations.

Form of tuition

Lectures and exercise sessions ('werkcolleges'), both 2 hours per week.

Type of assessment

Homework assignments (25%) and a final written exam (75%).

Extra rule: the grade for the final exam must be at least 5.0 in order to pass the course.

The re-examination possibility consists of a written exam whose mark determines the final grade in principle for 100%.

Course reading

Lecture notes, the relevant literature will be made available online.

Recommended background knowledge

Basic knowledge of groups, rings, and fields is essential.

Remarks

Basic knowledge of groups, rings, and fields is essential.

Numerical Methods

Course code	E_EOR2_NUME ()
Period	Period 1+2
Credits	6.0
Language of tuition	Dutch
Faculty	School of Business and Economics
Coordinator	dr. L.F. Hoogerheide
Examinator	dr. L.F. Hoogerheide
Teaching staff	dr. A.A.N. Ridder, dr. L.F. Hoogerheide
Teaching method(s)	Lecture, Study Group, Computer lab
Level	200

Course objective

Acquainting the student with numerical methods and applications to econometric problems.

Course content

Several methods will be discussed for solving numerical problems in econometrics. Topics include:

- floating point representation of numbers on computers
- numerical differentiation
- numerical integration: quadrature and Monte Carlo integration
- interpolation methods
- finding zeros of functions: bisection, Newton(-Raphson), Secant methods
- univariate optimization: golden section search.
- multivariate optimization: Newton(-Raphson) and BFGS with linesearch,

Nelder-Mead. Differential Evolution.

- optimization under restrictions using transformations.
- using optimization methods to compute Maximum Likelihood estimators in non-Gaussian/non-linear econometric models
- Gaussian elimination with scaled partial pivoting.
- Power method for computing eigenvalues and eigenvectors.
- Monte Carlo simulation methods

Form of tuition

Classes and computer practicals.

Type of assessment

Intermediate exam – Individual assessment

Final exam – Individual assessment

Individual assignment - Groups of 1 or 2 students

Course reading

Cheney & Kincaid (2012), Numerical Mathematics and Computing. 7th edition.

Recommended background knowledge

Programming, Linear Algebra, Analysis II.

Operations Analysis

Course code	E_EOR3_OA ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. R. Roberti
Examinator	dr. R. Roberti
Teaching method(s)	Lecture, Instruction course
Level	200

Course objective

Upon completion of this course, the students will have learned the following.

Academic:

To analyze and solve operations management problems through a variety of models and concepts.

Professional skills and quantitative methods

To apply tools to direct, design, deliver and develop processes, products and services using quantitative decision models

Social

To analyze and develop solutions for stylized case problems in teams

Link to practice

To relate to the practice of analyzing and managing processes and operations through guest lectures from professionals

Course content

Operations management is the process of managing people and resources to create a product or a service. This course provides the student with analytical and quantitative methods to support the operations function and the decision making process in an organization. We will focus on a

number of topics at a strategic, tactical and operational level that are in reality closely related. We will analyze and solve key issues arising in operations management, such as facility layout and location, aggregate planning, project scheduling, operations scheduling and controlling. We will also investigate the applicability of the studied techniques by developing solutions for case studies and through guest lectures from practitioners.

Form of tuition

Lectures and Tutorials

Type of assessment

Written exam – individual assessment

Case assignment – team assessment

Course reading

Nahmias, S. (2013). Production and Operations Analysis, McGraw-Hill

A selection of additional papers that will be made available via Canvas.

Operations Research I

Course code	E_EOR2_OR1 ()
Period	Period 1+2
Credits	6.0
Language of tuition	Dutch
Faculty	School of Business and Economics
Coordinator	dr. N.K. Olver
Examinator	dr. N.K. Olver
Teaching staff	prof. dr. L. Stougie, dr. N.K. Olver
Teaching method(s)	Lecture, Study Group
Level	200

Entry requirements

Linear Algebra and Analysis

Target group

2nd-year students Econometrics and Operations Research, Applied Mathematics students

Operations Research II

Course code	E_EOR2_OR2 ()
Period	Period 4+5
Credits	6.0
Language of tuition	Dutch
Faculty	School of Business and Economics
Coordinator	dr. A.A.N. Ridder
Examinator	dr. A.A.N. Ridder
Teaching method(s)	Lecture, Study Group
Level	200

Operations Research III

Course code	E_EOR3_OR3 ()
Period	Period 4
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. N.K. Olver
Examinator	dr. N.K. Olver
Teaching staff	dr. ir. R.A. Sitters, dr. N.K. Olver
Teaching method(s)	Lecture, Seminar
Level	300

Course objective

A student who successfully completes the course will have an understanding of the techniques of combinatorial optimization and integer programming, and be ready to apply them to problems encountered in practice.

Course content

- * The notion of efficiency in algorithms; distinguishing between tractable and computationally "hard" problems.
- * The correctness and efficiency of key algorithms in combinatorial optimization will be shown rigorously. Problems studied will include: minimum spanning tree, maximum flow, minimum cost flow, and matching.
- * Formulation of problems as integer programs; the notion of the strength of a formulation; the central role of integral formulations.
- * The main techniques and theory used in commercial integer programming solvers such as CPLEX and Gurobi will be investigated in detail. A main focus will be on the powerful cutting-plane method.
- * Column generation, Lagrangian relaxation, modelling of disjunctions, and other problem-tailored techniques will be discussed.
- * Experience in the use of integer programming solvers will be gained.

Form of tuition

4 hours per week of lectures, 2 hours per week discussing theoretical exercises, and 2 hours per week working on problems with the aid of software tools in a computer lab.

Type of assessment

Project – group assessment
Written exercises - individual assessment
Final exam – individual assessment

Course reading

Main book: Cook, Cunningham, Pulleyblank & Schrijver, Combinatorial Optimization (1997)

Additional reference: Conforti, Cornuejols & Zambelli, Integer Programming (2014)

NB: Electronic access to both books is available through the library.

Entry requirements

Recommended background knowledge

It is expected that students are familiar with the contents of Operations Research I - and in particular linear programming - at the start of the course.

Some amount of programming experience, while not required, is helpful.

Remarks

The course is suitable to be taken in an exchange program.

Organizational Behavior and Decision Making

Course code	E_EBE3_OBDM ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. D.A. Driver-Zwartkruis
Examinator	dr. D.A. Driver-Zwartkruis
Teaching method(s)	Lecture, Seminar
Level	300

Course objective

Academic Skills: Students will be able to understand complex organizational problems, identify the gap in theory and practice via interactive lectures, and mapping exercises. And thereby, apply the Harvard Methodology for preparing an academic case study report.

Knowledge: Students will be introduced to the theories and concepts of the study of Organizational Behavior and Decision Making.

Bridging Research and Practice: Students will select a current business case from the media (relevant newspaper article) and apply related theory and concepts to problems in the actual business case.

Social Skills: Students will work in teams and prepare a case study report, and they will prepare a presentation of their case study report.

Self Awareness: Students will be required to provide their reaction to the study curriculum and explain how this impacted their personal development.

Course content

In this course an examination of the human factor in an organizational context is presented. The course includes an introduction to relevant theories and concepts that can be applied in actual practice.

Therefore, students will:

- 1) acquire a basic understanding of the role of teams and groups in contemporary organizations;
- 2) understand the importance of ethics;
- 3) appreciate the significance of leadership and culture for organizational effectiveness. Attention will also be given to workplace diversity;

4) acquire a basic understanding of heuristics and biases in decision making processes.

Thus, social behavior in an organizational context will be analyzed at the individual, group and organizational levels.

Form of tuition

Lectures.
Tutorials.

Type of assessment

Examination - individual assessment.
Case study report.

Course reading

Literature will be posted on Canvas.

Entry requirements

None.

Organizing Sustainable Innovation

Course code	E_IBA3_OSI ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. P.R. Tuertscher
Examinator	dr. P.R. Tuertscher
Teaching staff	prof. dr. ir. J.J. Berends, dr. P.R. Tuertscher, dr. ir. F. Deken
Teaching method(s)	Lecture, Seminar
Level	300

Course objective

Academic skills: ability to critically evaluate innovations and innovation approaches from the perspective of sustainability
Knowledge: theoretical understanding of the management of innovation processes and understanding of specific challenges and approaches for developing and adopting sustainable innovations
Bridging Theory and Practice: developing skills for applying creative and analytical methods for new product, service, and business model development
Social Skills: working in teams for idea development

Course content

This course concerns the development and commercialization of sustainable innovations. Organizing for sustainable innovation implies a shift away from a reactive approach (i.e. organizations responding to economic, societal and regulatory pressure) to a pro-active system oriented approach: by relying on creativity and a systematic (re)design of their business processes and interaction with stakeholders, organizations are now developing innovative products, services and business models that have sustainability at their core. Organizing for sustainable innovation involves many of the general processes and

methods for the development of new products and services, yet also offers particular challenges and approaches, which this course addresses by building upon the stakeholder perspective developed in the earlier courses.

The following topics will be covered:

- Innovation management for sustainability, including innovation in an ecosystem of stakeholders; types of innovation (incremental/radical; product, service, process and business model innovation); innovation processes;
- The business case for sustainability, including why sustainability can be framed as an opportunity (as opposed to a threat or disruption to current business), potential pitfalls and how these can be surmounted
- Templates and principles for sustainable innovation, including key approaches (e.g. circular business model, product servitization, base of the pyramid) and how they can be facilitated by digital technologies and innovative financing
- Developing ideas for sustainable innovation, including creativity and opportunity identification, and specific sustainability oriented approaches such as frugal innovation and reverse innovation
- The development of ideas into products, including co-creation with users and other stakeholders, design for sustainability, impact assessment, and the role of digitalization and dematerialization.
- Embedding sustainable innovations in value networks, including the important role that various stakeholders (e.g. suppliers, competitors, regulators, consumers) play in stimulating or inhibiting the adoption of sustainable innovations such as renewable energy.

Form of tuition

Lectures
Tutorials

Type of assessment

Individual assessments
Group assessment

Course reading

Collection of academic articles (will be announced on Canvas).

Recommended background knowledge

First two courses of the minor program “Sustainability and innovation.”

Partial Differential Equations

Course code	X_400163 ()
Period	Period 4+5
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	prof. dr. J. Hulshof
Examinator	prof. dr. J. Hulshof
Teaching staff	prof. dr. J. Hulshof
Teaching method(s)	Lecture, Seminar,
Level	300

Course objective

The majority of physical phenomena can be described by partial differential equations. This module discusses these equations and methods for their solution. For first order equations we discuss the method of characteristics and the solution by methods of ordinary differential equations. For second order equations, in particular for the heat and wave equation we discuss the method of separation of variables. This ties in with the remarkable result of Fourier that almost any periodic function can be represented as a sum of sines and cosines, called its Fourier series. An analogous representation for non-periodic functions is provided by the Fourier transform, to be discussed briefly in part 2, as well as some theoretical background for Fourier series. In Part 2 we discuss some of the background for generalised Fourier series: the role of eigenvalue problems and some basic spectral theory. Potential methods and fundamental solutions will be discussed for the standard examples: heat, wave and Poisson equation. Harmonic functions will be discussed in relation to mean value properties.

Course content

Part 1: - Classical examples - First order equations and characteristics - d'Alembert's solution for the wave equation - Separation of variables for second order equations - Fourier Series - Fundamental solutions for heat and wave equation in one spatial dimension - The Dirac delta-function.

Part 2 - Fourier theory - Laplace and Poisson equation through potential methods - Eigenvalue problems and some spectral theory - Special functions (Bessel functions) - Harmonic functions - Fundamental solutions in 2 and 3 spatial dimensions

Form of tuition

Course and exercise class

Type of assessment

Two written exams and incidental homework

Course reading

Partial Differential Equations, an introduction, Walter Strauss' book, see e.g.

<http://www.amazon.com/Partial-Differential-Equations-Walter-Strauss/dp/0470054565>

Additional course notes

Recommended background knowledge

Calculus, in particular vectorcalculus, Gauss divergence Theorem and Green's formulas

Philosophy and Neuroethics

Course code	W_BA_PNEU ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Geesteswetenschappen
Coordinator	dr. G. Meynen

Examinator	dr. G. Meynen
Teaching staff	dr. G. Meynen
Teaching method(s)	Lecture, Study Group
Level	200

Course content

In this course students are introduced to the most important schools of thought and key concepts in philosophical and ethical debates on the impact of neurotechnologies on society, more specifically, on healthcare and criminal law. Topics include: the problem of mind and brain, history and philosophy of neuroscience, and assessments of criminal responsibility in light of neuroscientific developments.

Form of tuition

(Interactive) lectures

Type of assessment

Written exam

Course reading

See the course manual

Remarks

This course is part of the Universiteitsminor Technology, Law and Ethics

Philosophy of Mind II

Course code	W_BA_PHMII ()
Period	Period 2
Credits	6.0
Language of tuition	Dutch
Faculty	Faculteit der Geesteswetenschappen
Coordinator	prof. dr. L.B. Decock
Examinator	prof. dr. L.B. Decock
Teaching staff	prof. dr. L.B. Decock
Teaching method(s)	Lecture
Level	300

Philosophy of Science

Course code	X_428002 (428002)
Period	Period 4
Credits	3.0
Language of tuition	Dutch
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	dr. J.S. de Boer
Examinator	dr. J.S. de Boer
Teaching staff	dr. J.S. de Boer
Teaching method(s)	Lecture, Seminar,

Level	300
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Philosophy of Science Minor

Course code	W_BA_MWET ()
Period	Period 1
Credits	6.0
Language of tuition	Dutch
Faculty	Faculteit der Geesteswetenschappen
Coordinator	dr. ir. G.J. de Ridder
Examinator	dr. ir. G.J. de Ridder
Teaching staff	dr. ir. G.J. de Ridder
Teaching method(s)	Lecture
Level	300

Principles of Bioinformatics

Course code	X_401094 ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	dr. S. Abeln
Examinator	dr. S. Abeln
Teaching staff	dr. S. Abeln, prof. dr. J. Heringa
Teaching method(s)	Lecture, Practical, Computer lab
Level	300

Course objective

Are you interested in bioinformatics? Would you like know how huge amounts of data can be analysed in order to discover new biology? Would you like to solve open questions in scientific research?

This course is open for any Bachelor student in a Science Degree (including Biology or Biochemistry).

Principles of Bioinformatics is the starting course for bioinformatics at an Academic level. It aims to give a broad overview of important topics relevant to the field, with a focus on current (open) problems in bioinformatics research.

During the lectures and practical sessions you will become familiar with practical solutions, but also discover that there is still a lot of room for improvement in this rapidly advancing field of research.

Goals:

- To make the students aware of gaps in their own background knowledge.
- The student will be aware of the major issues, methodology and available algorithms in bioinformatics.
- To work together in a group of diverse backgrounds.

- To gain hands-on experience in scripting and handling basic mathematical equations as a means of solving bioinformatics problems.
- To develop a basic understanding of major concepts in genomics and molecular cell biology or to develop a basic scripting skills in python that are relevant to current topics in bioinformatics

Course content

Theory:

- Evolution, Genomes, Sequences, Biomolecular Structure, Biological Databases BLAST & PSI-BLAST, Protein domains & evolution, Next Generation Sequencing (NGS) or Massively Parallel Sequencing (MPS) and analysis

Practical:

There are practicals sessions that aim to show you both existing solutions as well as open problems within the field of Bioinformatics. In the practicals you use existing databases and (web-server) solutions to solve biological problems. You will also use python scripts to automate queries to databases and web servers to investigate the value of current Bioinformatics Algorithms. We aim to organise the group project(s) in teams containing students with different BSc backgrounds.

The following topics are covered:

- Gene Ontology Database (GO) (python scripts)
- Homology Searching (web-based)
- BLAST / PSI-BLAST (python scripts)
- Benchmarking (python scripts)
- NGS (web-based)
- Network analysis

Form of tuition

- 10 Lectures (two hour lecture in the morning, two days per week)
- 12 Project practicals (two hour sessions following the morning lectures, two days per week), partially supervised.
- 12 optional conversion classes in biology (four hour sessions on Friday at the UvA) or python scripting (two hour sessions in the afternoon at the VU)

Type of assessment

- [50%] Project (group work)
- [50%] Oral or written exam (depending on number of course students) to assess: exercises, topics covered by the project and lecture topics

Course reading

- Course material (slides, scientific papers) on bb.vu.nl

Essential Bioinformatics methods are covered by the following books:

- Essential Bioinformatics, Jin Xiong, Cambridge University Press, ISBN978-0-521-60082-8 (this is a very basic book, for BSc level only)
- Marketa Zvelebil and Jeremy O. Baum Understanding Bioinformatics Garland Science 2008 ISBN-10: 0-8153-4024-9 (if you are planning to take any further courses in bioinformatics, we would advise you to get this book)

Recommended background knowledge

An interest in programming and biological problems.

Target group

3CS, 3IMM, 3LI and:
3BIO, 3MNW, 3BMW, 3FAR

Remarks

This course is part of the Minor Bioinformatics and Systems Biology

Depending on the number of students, a large part of this course may be given together with the MSc course "Fundamentals of Bioinformatics". The assessment is at third year BSc level.

This course is open for any Bachelor student in a Science Degree (including Biology or Biochemistry).

Probability Theory

Course code	E_EOR1_PT ()
Period	Period 1+2
Credits	6.0
Language of tuition	Dutch
Faculty	School of Business and Economics
Coordinator	dr. D.A. van der Laan
Examinator	dr. D.A. van der Laan
Teaching staff	prof. dr. B.F. Heidergott, dr. D.A. van der Laan
Teaching method(s)	Lecture, Study Group
Level	100

Procurement and Supply Management

Course code	E_IBK3_PSM ()
Period	Period 4
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. R. Roberti
Examinator	dr. R. Roberti
Teaching staff	dr. R. Roberti
Teaching method(s)	Lecture, Seminar, Instruction course
Level	300

Course objective

All organisations need inputs of goods and services from external suppliers or services providers. In this course we examine the developing role of the purchasing and supply function in managing and shipping inputs and outputs of companies, and address the ways in which the activity can contribute to the efficiency and effectiveness of an organisation.

Purchasing is seen by many of today's successful organisations as an activity of considerable strategic importance. The fact that the strategic role and contribution of purchasing and supply is well recognised in many leading commercial concerns and public institutions has meant that the strategic purchasing decisions may be taken by purchasing involvement at board level, rather than by a departmental manager. The ramifications of purchasing decisions on the operational processes may also be significant. Quantity discounts or optimal choice of transport may for example lead to gains in direct procurement expenses, but they may increase other cost in the supply chain (such as inventory). Such costs need to be traded off.

Students learn how to classify, describe and analyse key procurement and supply decisions (learning objective "academic skills") in order to understand the role of procurement and supply management in organisations (learning objective "knowledge"). Students learn how to understand, analyse and quantify trade-offs in procurement and supply decisions and to identify effects of procurement and supply decisions on supply chain performance (learning objective "quantitative skills"). Students apply results from academic research in practical case settings (learning objective "bridging theory and practice") and critically reflect on the research (learning objective "research skills"). Students present their case findings (learning objective "social skills").

Course content

In this course we aim to discuss the management of purchasing, transport and supply activities. More specifically we aim at lecturing the following topics:

- sourcing strategies
- outsourcing and supply risk management
- public sector procurement
- transport procurement
- managing inventory
- contracting
- the structure of freight transport cost
- freight transport demand
- value of time and reliability; modal choice and route choice
- urban transport systems: congestion and reliability
- environmental effects of transport and corporate responsibility
- transport policy at local, national and EU levels

Form of tuition

Lectures
Tutorials

Type of assessment

Written exam – Individual assessment
(Interim) Assignment(s) – Group assessment

Course reading

Literature: to be announced

Recommended background knowledge

For BK

1.1 Business Processes; 1.1 Business Mathematics; 1.4 Supply Chain Management I; 2.4 Supply Chain Management II; 3.4 Managing and improving quality

For IBA:

1.1 Business Mathematics; 1.4 Global Supply Chain Management; 1.6 Business Processes; 2.5 SCM in Emerging Economies; 3.4 Managing and improving quality

Programming for Humanities and Social Sciences

Course code	L_AABAALG069 ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Geesteswetenschappen
Coordinator	dr. H.D. van der Vliet
Examinator	dr. H.D. van der Vliet
Teaching staff	dr. H.D. van der Vliet, M.C. Postma MA, F. Ilievski, C.M. van Son
Teaching method(s)	Seminar
Level	300

Course objective

Goals of this course:

Get to know the basics of the Python programming language
Become an independent programmer, who is able to find solutions to new problems

Skills you will acquire during this course:

Learn how to deal with unstructured and structured data
Learn how to extract relevant statistics from large amounts of data
Learn how to share your code and results

Course content

As many humanities researchers use textual resources as their primary object of inquiry, you learn how to analyze the growing amount of digital text using the Python programming language. No programming knowledge is required; we believe that anyone can learn how to program.

You will learn how to extract information from text corpora; deal with different file types (plain text, CSV, JSON); deal with large amounts of data; and visualize and share your results. We will focus on readability and understandability of your code, so that you will be able to share it with others, and reuse your code in the future.

This is a practical course, in which you will get a lot of hands-on experience. Due to the nature of this course, active participation is required.

Form of tuition

Interactive practical sessions.

Although parts of the lectures will be about programming and language processing theory, the focus is on having interactive and practical sessions. Students are expected to actively participate and ask questions.

Type of assessment

Bi-weekly assignments (60%): The assignments are designed to practice your programming and problem solving skills. Moreover, they allow us to

keep track of your progress, and identify topics that require more attention in class.

Midterm exam (40%): The midterm exam is designed to test your knowledge of Python. To pass this course, you need a passing grade (at least 5.5) on the midterm.

Course reading

To be announced on Canvas. All materials are freely available online. The course materials for 2016/2017 can be found here:

<https://github.com/ctl/python-for-text-analysis>

Entry requirements

none

Target group

Students of the minor Digital Humanities and Social Analytics. Open to all other Bachelor students.

Remarks

This course is part of the minor Digital Humanities and Social Analytics and open for all interested students. Students are required to attend at least 80% of the classes. Students who fail to do so without a valid reason will be excluded from the course.

Psychophysiological and Cogn. Appl.

Course code	P_BPCAPP ()
Period	Period 3
Credits	6.0
Language of tuition	English
Faculty	Fac. der Gedrags- en Bewegingswetensch.
Coordinator	prof. dr. J.C.N. de Geus
Examinator	prof. dr. J.C.N. de Geus
Teaching staff	prof. dr. J.C.N. de Geus, dr. D.J. Heslenfeld, dr. ing. E. van der Burg
Teaching method(s)	Lecture, Practical
Level	300

Course objective

- Insight in the link between affective state and autonomic nervous system activity.
- Insight in the link between cognitive state and eye-movement, psychophysics and reaction time metrics.
- Knowledge of typical experimental approaches and research designs in psychophysiology and cognitive psychology.
- Practical skills in the laboratory measurement of autonomic nervous system activity, eye-movement, psychophysics and reaction time as windows into affective and cognitive processing in the brain

Course content

In plenary lectures we will outline how affective and cognitive processing is reflected in observable behavioral and physiological signals. The lectures are interspersed with a series of practicals, where the students learn how to record the ElectroCardioGram (ECG), Skin-conductance Level (SCL), eye movements, psychophysics and reaction

times in experimental designs aimed at isolating specific affective and cognitive processes. This will be done in a standardized laboratory setting using the Biopac system for ECG/SCL and the Eyelink system to measure the different aspects of eye movements. Amongst others, students will measure (on each other): skin-conductance responses to tonic and phasic emotional stimuli; eye-movements and reaction times when performing a xx task. Furthermore, tactile sensitivity will be measured by using a psychophysical approach. The main principles, strategies and limitations for data analysis will be covered in the lectures and then applied in the practicals to the self-recorded data-sets.

Form of tuition

Lectures and practicals.

Type of assessment

Written examination (50% of grade) of literature and execution of a short data collection experiment (25%) and the signal analysis on the data collected (25%).

Course reading

- 1) Psychophysiology Reader with selected articles
 - a) paper on SCL recording
 - b) paper on HR recording
 - c) paper illustrating the use of HR/SCL in practice (likely Critchley or Damasio)
 - 2) Cognitive Psychology Reader with selected articles
 - d) paper on psychophysics
 - e) paper on Eye movement recording (Van der Stighel, Meeter and Theeuwes, 2006)
 - f) paper illustrating the use of Eye-movement recording or psychophysics in research
 - 3) Powerpoints of the lectures
- More details on BlackBoard

Entry requirements

Finished 2nd year of the Bachelor Psychology, Education sciences or Movement Sciences

Remarks

Course registration must be completed before November 1, as sufficient assistance and rooms for practicals need to be organized up front.

The course is taught in English

As of 2018-19 this course is no longer part of the University minor. Students who still need to complete this course for the UM can contact the course coordinator.

Real Estate Economics and Finance Research Project

Course code	E_EBE3_REEFR ()
Period	Period 3
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	prof. dr. J. Rouwendal

Examinator	prof. dr. J. Rouwendal
Teaching staff	prof. dr. J. Rouwendal, dr. V.A.C. van den Berg
Teaching method(s)	Lecture, Study Group
Level	300

Course objective

This project offers you the opportunity to apply the knowledge and skills obtained in the earlier courses of the minor Real Estate Economics and Finance on a topic that you find interesting and important. This will make the material come even further alive. The project also helps you to further develop your research skills (making a good research question, choosing your method, literature review, analysis, and drawing conclusions), which are important skills for your future job, for an internship and for your bachelor thesis.

Course content

In this course you will identify a relevant research topic in real estate economics and finance, write a paper about it and present your results. The research topic must be in the field of real estate economics and finance, broadly defined so as to include urban economics, spatial planning and behavioural economics aspects of real estate markets. The topic can be in any type of real estate including that used for commercial and non-profit purposes, land and infrastructure. The choice of the topic can be based on current new items, large societal problems, a specific interest of yourself, et cetera. The earlier courses in the minor may also provide inspiration. Further to help you a list with potentially interesting topics will be provided. After having received approval of the chosen topic, you have to formulate the main research question and formulate a research strategy to find the answer. This can be a review of existing literature, but doing some research yourself is encouraged. This may involve the use of techniques like regression analysis, questionnaires, and interviews.

Form of tuition

An introductory meeting will be organized by the end of November. In December you have to register as a group or as a single student. The maximum group size is three students. Those registering as single students on related topics will be asked to make a group. By the end of the month students should have received approval for their chosen topic.

You will be appointed a supervisor who will advise you. There will be three tutorials, where groups present their progress and provide constructive feedback on each other. In the first week of January, groups present their research proposal. In the third week they report on the progress made. In the final week of the course results will be presented. For each meeting, each group will also give feedback on one other group's work to help them improve their work. This will result in a 'referee report' for another group that will be graded.

Type of assessment

Paper (75%), final presentation (20%) and referee report (5%). All grades are group grades.

Course reading

Course manual, lecture sheets, literature on your topic to be independently found.

Entry requirements

Participation in the other courses within the track.

Recommended background knowledge

Understanding of (Quantitative) Research Methods (e.g. from Quantitative Research Methods I and II or Statistiek en data-analyse) and of Academic Skills.

Real Estate Finance and Urban Development

Course code	E_EBE3_REFUD ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	prof. dr. J. Rouwendal
Teaching method(s)	Lecture, Study Group, Excursion
Level	300

Course objective

The purpose of the course is to introduce you to the functioning of real estate markets: developing, financing and investing in real estate, and its implications for urban development. In the lectures attention will be paid to investing in real estate, developments in various real estate markets and what is involved in the development of real estate and doing market research. The practices of investing in and valuing of real estate will be discussed. Relevant policies with respect to residential and other property markets and questions of integrity will be taken into account by studying real world cases. Excursions to projects in development and real estate agents will be organized.

Course content

The questions discussed during the lectures include:

- why invest in real estate?
- what is the use of investing in listed real estate (via REITS)?
- what are relevant developments on residential and commercial property markets?
- what is the impact of government policy and regulation on these markets?
- what about housing associations?
- how does market research and investment analysis for real estate projects work?
- how to value real estate?

After taking this course students possess knowledge of:

- real estate economics and the functioning of real estate markets;
- the basic elements of the valuation of real estate;
- current developments on residential and commercial real estate markets;
- (re) development of real estate and urban development;
- concepts of value and methods that apply them;
- management and marketing of real estate.

Form of tuition

Lectures, tutorials, workshops, case studies, presentations by the students themselves, excursions.

Type of assessment

Written exam (75%) and paper (25%).

Course reading

To be announced.

Recommended background knowledge

Some knowledge of macroeconomics, financial markets, financial products (equity, bonds, mortgages, etc), annuities and excel.

Target group

Students who are interested in the exciting and complex multi-disciplinary world of (international) real estate.

Real Estate Investment

Course code	E_EBE3_REI ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. F. Hamelink
Examinator	dr. F. Hamelink
Teaching staff	prof. dr. J. Rouwendal, dr. F. Hamelink
Teaching method(s)	Lecture, Study Group
Level	300

Course objective

The course introduces you to the functioning of real estate markets and the investment alternatives available to both debt and equity investors. All types of real estate (industrial, commercial, residential) will be discussed. Valuation, properties of lease contracts, and mortgage loans will be studied. The properties of REITS and other real estate investment vehicles will be studied. For some aspects special attention is given to the Dutch situation, but the course takes an international perspective.

Course content

A large part of the national capital stock consists of real estate. Most of it is located in cities and within cities there is a concentration in the center. The course introduces you to important aspects of real estate finance. After a general introduction that emphasizes the important role of real estate in the (urban) economy, the basics of real estate valuation (yield, DCFM) will be discussed. The various types of mortgage loans and their use will be discussed in detail. We will study residential property markets (including the specifics of the Dutch housing market and related policy issues) as well as commercial markets (offices, shops, industrial real estate). Attention will be paid to structuring real estate investments (organizational forms and joint ventures), to the secondary mortgage markets and to real estate investment trusts (REITs).

Form of tuition

Lectures, tutorials

Type of assessment

Written exam (75%), assignments (25%).

Course reading

William B. Brueggeman and Jeffrey D. Fisher 'Real Estate Finance and Investments' McGraw-Hill, 760 blz.

Rehabilitation

Course code	B_REVAL (900412)
Period	Period 1
Credits	6.0
Language of tuition	Dutch
Faculty	Fac. der Gedrags- en Bewegingswetensch.
Coordinator	prof. dr. T.W.J. Janssen
Examinator	prof. dr. T.W.J. Janssen
Teaching staff	prof. dr. T.W.J. Janssen
Teaching method(s)	Lecture, Practical
Level	300

Religions and Gender

Course code	G_RELGEN ()
Period	Period 3
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Godgeleerdheid
Coordinator	dr. L. Minnema
Examinator	dr. L. Minnema
Teaching staff	dr. L. Minnema
Teaching method(s)	Lecture
Level	300

Course objective

Learning objectives

- The student is able to describe analytically how certain aspects of gender have been or become an issue in religions
- The student is able to articulate major parallels and differences between a number of religious traditions in their approaches to gender issues in the past and present
- The student is able to switch from the religious insider view to the academic outsider view and back again

Course content

Course content

This course introduces students to a broad spectrum of religions in the past and present dealing with aspects of gender. Gender issues related

to male and female models in religious narratives, historical shifts in the religious status of women, mother goddesses and female power, religious views of homosexuality, notions of masculinity and power in religious politics, will be addressed across cultures and religions. The variety of religious traditions under consideration illustrates religious diversity. But there is more to it. Careful comparisons enable students to discover underlying patterns of similarity.

Six sessions will focus on the following six themes:

1. Male and female role models and stereotypes in ancient narratives: mythological and legendary couples and gender differences in the Babylonian Gilgamesh epic, the Greek Odyssey epic, the Hindu Mahabharata and Ramayana epics
2. The changing religious status of women during three crucial shifts in the world history of religions: the Neolithic, Axial Age, and Modernization breakthroughs
3. Cross-cultural comparison of mother goddesses and female power: the Shinto goddess Amaterasu in Japan, the Hindu goddess Durga in India, the Greek goddess Demeter in Minor Asia
4. The image of Mary in Christianity and Islam: virgin, Madonna, mother, heroine, virtue, saint, queen
5. Religious politics and symbols of masculinity and power in contemporary Hinduism
6. Religious rules and attitudes regarding homosexuality in Buddhism and in Islam

Form of tuition

lectures

Type of assessment

Assessment - written exam

Course reading

articles and book chapters (see Canvas)

Entry requirements

Prerequisites - none

Representation Theory

Course code	XBU_417004 ()
Period	Period 1+2
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Teaching method(s)	Lecture, Seminar
Level	400

Target group

3W

Research Assistantship Honours Course

Course code	E_HP2_RASS (986135)
Period	Ac. Year (September)

Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. H.E.D. Houba
Examinator	dr. H.E.D. Houba

Course objective

The primary purpose of the Research Assistantship (RA) is to gain first-hand research experience and enhance students' research skills. It entails a tutored research project at one of the research groups at SBE, which may be part of a larger research project/program of the group in which the student participates or may be set up as a separate project specifically for the RA-ship.

Course content

SBE HP students in their 3rd bachelor year can choose to substitute one of their elective courses for a high-quality RA. It entails a tutored research project at one of the research groups at SBE, which may be part of a larger research project/program of the group in which the student participates or may be set up as a separate project specifically for the RA-ship. Two general formats can be chosen to set up the RA-ship:

- (1) as an independent component of the honours program (6 credits),
- (2) a study combined with the BSc thesis, which allows to develop a research project of larger scale and/or scope (12 + 6 credits).

Option 2 seems the ideal way to combine the regular BSc thesis work with a more in-depth empirical study than is usually the case for the thesis. The RA allows students to build on their skills developed during the programme and, if combined with the BSc thesis, to extend this into a more complete research experience. Research in this description should be considered in a broad sense, and can involve different stages of research and different research methods. Although typically the RA will include an empirical research component, it may also involve extended literature research. Naturally, this should be reflected in the project design and criteria used for evaluation of the process and output.

Key for the evaluation of the RA is the provision of an independent piece of research output in the form of a research paper. The quality of the paper should be such that it can be graded and preferably be submitted to an academic conference or perhaps even to an academic journal. This paper can be complemented with other relevant project output as part of the evaluation such as databases, measurement instruments and reference list. These elements may also be part of the evaluation and grading of the project. The form of the RA that is chosen is an important determinant of the expected output and a major factor in the evaluation process. In case of option 1 described above, expectations about output of the project need to be in line with the credits (6 EC) that are available for the RA-ship. When option 2 is chosen, the output of the RA can be integrated into the BSc thesis, which results in a significant increase in expected output. Note that the scope of the RA-ship, expected output and evaluation should be proportional with the weights of the two components in the programme (i.e. 6 + 12 EC). Evaluation of the RA is context dependent, since this depends on the nature of the research and the tasks conducted by the RA. General guidelines for evaluation and grading can, however, be provided and include the following aspects:

- Quality, originality and relevance of the research question (or

of extensions/refinement of existing questions developed by the student)

- Theory development
- Extent and quality of data collection and analysis
- Description of findings and results
- Development and discussion of inferences and conclusions
- Independence (e.g. in formulating/developing/extending research questions, theory development, data collection and analysis and drawing of inferences)
- Overall quality of the research report (quality of writing, appearance etc.)

Not all elements may be equally important for each RA-ship, and weights should be determined in accordance with the nature of the project. When the RA is combined with the bachelor thesis, supervisors are recommended to take these criteria in conjunction with the evaluation checklist for the thesis. In this case, the thesis and RA can be evaluated and graded as if they are one study component, even though this grade will be registered separately for the two components.

The possibility to engage in an RA and to gain hands-on experience in conducting research is dependent on the availability of qualified researchers and projects within the different research groups. Interested honours students are advised to actively explore possibilities through their contacts with School members in the BSc and honours programme, and with their mentor in the honours programme. Research projects will usually be formulated close to ongoing research projects at the department or research group, and depending on students' interests, they can apply at the appropriate research group and supervisor. Research-assistantships can start any time during the academic year, although students are recommended to engage in an RA after, and not before having completed their advanced methods course in the bachelor program. Entry level requirement may also be set for specific projects, which require certain quantitative or qualitative research skills. Typically, the second half of the last year in the honours programme may fit best when combining this with the BSc thesis. Students engaging in an RA are required to notify the programme coordinator up-front, and send a project proposal for approval to honoursprogramma.feweb@vu.nl.

This proposal, developed jointly with the prospective supervisor, should include:

1. Research problem
2. Research question(s)
3. Research design
4. Relevance
5. Structure of the research paper
6. Planning

Form of tuition

Conducting an independent research project under individual supervision.

Type of assessment

Grading of the research paper and/or other research output by the supervisor.

Course reading

To be decided by the supervisor.

Registration procedure

Students who want to pursue a Research Assistentenschip are required to notify the programme coordinator up-front, and send a project proposal for approval to honoursprogramma.feweb@vu.nl.

Research Paper Migration Studies

Course code	L_GWBAALG003 ()
Period	Period 3
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Geesteswetenschappen
Coordinator	dr. N.F.F. Karrouche
Examinator	dr. N.F.F. Karrouche
Teaching staff	dr. N.F.F. Karrouche
Teaching method(s)	Seminar
Level	300

Course objective

(1) Students are able to produce a well structured and well written paper on a self-chosen topic in correct English. The paper will deal with the topic of migration and will be based on secondary scientific literature, an anthropological fieldwork, a historical study or law study, with correct references and citations. (2) Students are able to communicate and discuss their preliminary results in a presentation.

Course content

This course aims at training and improving students' academic research and writing skills in the field of migration studies and will result in an academic paper of 6000 - 7500 words (footnotes, bibliography and appendices not included). This course will guide students through the various stages of writing a larger academic paper, such as: selecting relevant literature and sources; phrasing a research question; planning, drafting and revising the manuscript and using references. Attention will also be paid to research ethics and scholarly integrity. Students work under the supervision of a migration scholar in the Humanities, Social Sciences or Law faculty. The seminars will outline and introduce main issues of academic writing and will support the research and writing process. The final result of this course is a well-structured research paper which answers a self-selected research question by means of a critical analysis of an anthropological fieldwork, historical study, law study and secondary literature.

Form of tuition

Seminars, independent study.

Type of assessment

Research paper, presentation.

Entry requirements

Students have completed the course 'Introduction to Migration Studies'.

Target group

Students enrolled in the Migration Studies minor.

Remarks

This course is part of the minor 'Migration Studies'.

Research Project Political Science

Course code	S_RPPS ()
Period	Period 2+3
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Sociale Wetenschappen
Coordinator	H.L.M. Muehlenhoff
Examinator	H.L.M. Muehlenhoff
Teaching staff	H. Mercenier
Teaching method(s)	Study-group
Level	300

Course objective

At the end of the course students will have:

- Improved their skills to analyze and interpret political data and evaluate the quality, validity and usefulness of political science research findings;
- Successfully carried out a limited group research project, applying and refining academic, writing and research skills acquired before;
- Shown their ability to work in a team and contribute to a group product;
- Written a group research paper according to the Political Science Writing Guide, and demonstrating their ability to clearly communicate their research findings and the acquired political science knowledge;
- Shown a critical attitude towards political science literature and established points of view;
- Demonstrated intellectual integrity and the ability to be self-critical.

Course content

This seminar will require students to apply at a more advanced level the academic and research skills they have already acquired within the first year of political science for political science bachelor students or in their own bachelor's for those who follow the minor political science, and apply these skills to a small research project of their own, to be carried out in a small group. The research project will have to address a relevant question pertaining to the content of either of two parallel courses followed in period 2 (EU Governance in an International Context and Global Political Economy in the track Mondiale Politiek or Economie van Markt & Overheid in Nationale Politiek en Bestuur). Class attendance is mandatory.

Form of tuition

Tutorials.

Type of assessment

Written assignments; class participation.

Course reading

To be announced.

Target group

Bachelor political science students and minor political science.

Registration procedure

In this course you can not enroll yourself for the tutorials, but you will be assigned by the course coordinator. At the latest in the first week of the course you will find to which tutorial you are assigned in your personal schedule in VUnet.

Note: You do have to register for the course, with the corresponding parts!

Research Tutorial

Course code	L_GABAALG014 ()
Period	Period 3
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Geesteswetenschappen
Coordinator	prof. dr. F.A. van Lieburg
Examinator	prof. dr. F.A. van Lieburg
Teaching staff	prof. dr. F.A. van Lieburg
Teaching method(s)	Seminar
Level	300

Course objective

Individual deepening of your expertise in one of the fields you have studied in the other minor courses.

Course content

Dependent on your personal choice under supervision of your teacher.

Form of tuition

Self tuition by reading and writing under supervision of your teacher.

Type of assessment

Paper.

Entry requirements

Completed other courses in the minor History.

Target group

All BA3 students.

Remarks

This research tutorial is part of the minor History.

Risk Management for Financial Institutions

Course code	E_EBE3_RMFI ()
Period	Period 1
Credits	6.0

Language of tuition	English
Faculty	School of Business and Economics
Coordinator	M.J. Hopman
Examinator	M.J. Hopman
Teaching method(s)	Lecture, Study Group
Level	300

Course objective

This course offers a comprehensive introduction in Risk Management and especially related to financial institutions like insurance companies, pension funds and asset managers. This course will be supported with Deloitte experts. This course is structured in 6 parts, covering the fundamentals how these institutions work and to what risktypes they are exposed:

Part 1 (three weeks) : Insurance companies;

Part 2 (two weeks): Pension funds;

Part 3 (one week): Asset managers.

The course consists of the following topics regarding each part/different financial institution:

1. The working and business model;
2. Supervision and regulation;
3. Different risk types: Credit Risk, Market Risk and Operational Risk, Interest Rate Risk and Liquidity Risk;
4. Strategic and integrated risk management.

All parts and topics of the course are closely knitted to the learning goals of Quantitative skills, Academic skills, Bridging theory and practice. You will learn to think as a risk manager and will be challenged to have a holistic view.

By the end of the course students should be able to:

- Explain and analyse the working of these financial institutions and their business models;
- Outline and interpret regulation and the impact on these financial institutions;
- Explain, analyse and evaluate the different risk types;
- Identify and apply different risk measure techniques;
- Create and discuss a view on integrated risk management.

Course content

You will learn the fundamentals of Financial Institutions (Insurance companies, Asset Managers and Pension Funds), and the working of these institutions in the financial markets. What are the risks where these institutions have to deal with? How can you identify, monitor and report the different risk types? How are they aligned with each other and, last but not least, how can you manage these risks with all this knowledge? The course will also focus on how you manage an Insurance company with regard to capital. How can you optimize your capital and is there a future for Insurance companies? Pensions are nowadays a actual and political topic. This course will elaborate on the complexity and possibilities of Pension funds. Upon completion you will be challenged to have a broader view on the issues and you will have more background for the actual discussions.

Form of tuition

Interactive lectures and Tutorials

Type of assessment

Final written exam (Individual assessment) and assignments.

Course reading

Richard Apostolik and Christopher Donohue (2015): Foundations of Financial Risk: An Overview of Financial Risk and Risk-based Financial Regulation, 2nd Edition, GARP (Global Association of Risk Professionals), ISBN: 978-1-119-09805-8.

Additional readings might be announced on Canvas.

Entry requirements

There is no formal entrance requirement for the Deloitte minor Risk Management except for VWO Wiskunde A (or B).

Recommended background knowledge

Finance I, Accounting I, A basic course in quantitative methods and/or statistics is strongly recommended.

Target group

The Deloitte minor RMFI is for students from all bachelor programmes (with some exceptions, see the admission criteria) who want to acquire familiarity with Risk Management and Financial Institutions.

Risk Management in Banking

Course code	E_EBE3_RMB ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	M.J. Hopman
Examinator	M.J. Hopman
Teaching staff	M.J. Hopman
Teaching method(s)	Lecture, Study Group
Level	300

Course objective

This course offers a comprehensive introduction in Risk Management and especially related to the banking sector. This course is structured in six parts, covering the fundamentals how a bank works and to what risktypes they are exposed:

1. The working of banks and the different business models;
2. Supervision and banking regulation;
3. Different risk types: Credit Risk, Market Risk and Operational Risk;
4. Different risk types: Interest Rate Risk and Liquidity Risk;
5. Integrated Risk Management and Stress Testing;
6. Fundamental uncertainty and Complexity.

All six parts of the course are closely knitted to the learning goals of Quantitative skills, Academic skills, Bridging theory and practice. You

will learn to think as a risk manager and will be challenged to have a holistic view.

Upon successful completion of the course students are able to:

- Explain and analyse the working of bank and the business models;
- Outline and interpret regulation and the impact on banks;
- Explain, analyse and evaluate the different risk types;
- Identify and apply different risk measure techniques;
- Create and discuss a view on integrated risk management and uncertainty.

Course content

You will learn the fundamentals of banking and the working of banks in the financial markets. What are the risks where the banks have to deal with? How can you identify, monitor and report the different risk types? How are they aligned with each other, and last but not least, how can you manage these risks with all this knowledge? The course will cover balance sheet management and the impact on the business model. How can you optimize your balance sheet and develop a sustainable business model taking all the risks into account. You will be able to interpret banking regulation and have a good view on the supervisory authorities. Upon completion you will be challenged to have a holistic view on risk management and discussions will take place regarding instability and uncertainty.

Form of tuition

Interactive lectures and Tutorials

Type of assessment

Final written exam (Individual assessment) and assignments.

Course reading

Richard Apostolik and Christopher Donohue (2015): Foundations of Financial Risk: An Overview of Financial Risk and Risk-based Financial Regulation, 2nd Edition, GARP (Global Association of Risk Professionals). ISBN: 978-1-119-09805-8.

Additional readings might be announced on Canvas.

Entry requirements

There is no formal entrance requirement for the Deloitte minor RM except for VWO Wiskunde A (or B).

Recommended background knowledge

Finance I; Accounting I; A basic course in quantitative methods and/or statistics is strongly recommended.

Target group

The Deloitte minor RISK is for students from all bachelor programmes (with some exceptions, see the admission criteria below) who want to acquire familiarity with Risk Management and Financial Institutions.

Robot Law and Artificial Intelligence

Course code	R_RLAI ()
Period	Period 1
Credits	6.0

Language of tuition	English
Faculty	Faculteit der Rechtsgeleerdheid
Coordinator	dr. mr. M. van der Linden
Examinator	dr. mr. M. van der Linden
Teaching staff	prof. dr. A. Lodder
Teaching method(s)	Lecture, Tutorial
Level	200

Course objective

Robot Law and Artificial Intelligence focuses on the societal impact of technological constructs such as intelligent software, robots, drones and nano-bots. The student will learn and understand the profound influence that the autonomous and intelligent technological constructs may have on society, as well as the ethical consequences and legal implications thereof. The student will be able to develop an academic, sound judgement on the future of a robotic society from an ethical and legal perspective. The student will be able to analyze and critically evaluate the legal-ethical dimensions of issues relating to the use of intelligent software, robots, drones and nano robots.

Course content

For long Robots and Artificial Intelligence used to belong to science fiction movies and stories as well as was discussed in theoretical academic and popular articles. In recent years both Robots and Artificial Intelligence gradually but strongly is moving away from theory and entering our daily lives. This course focuses on those practical developments, and what role law and ethics play. We do not stick to present technology, but include profecies on how society may change in the not so far off future and what we can and should do about it.

Form of tuition

Lectures and tutorials

Type of assessment

Assignments

Course reading

Made available via electronic learning environment, e.g. parts of Robot Law (2016) edited by Calo, Froomkin & Kerr

Target group

Apart from regular students, the course is also available for:
Students from other universities/faculties
Contractor (students who pay for one course).

Secure programming

Course code	XB_40005 ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	dr. S. Rawat

Examinator	dr. S. Rawat
Teaching method(s)	Lecture
Level	300

Course objective

This is an introductory course on information security. The emphasis will be on how to develop applications with security in mind. At the end of the course, students should have be familiar with the following:

1. Importance of security in modern engineering.
2. How common cryptographic primitives work, and why they are essential .
3. How bugs can degrade the security of software.
4. Common memory corruptions bugs and their (security) side-effects in software.

Course content

The course is devided into the following modules:

- A. Understanding Cryptographic primitives.
 1. Confidentiality, Integrity and authentication (CIA) properties.
 2. Symmetric/asymmetric/stream ciphers.
 3. Digital certificates/signatures.
 4. Cryptographic Hash Functions.
 5. OpenSSL engineering.
- B. Understanding (and avoiding) low-level bugs.
 1. Introduction to C (if needed) and assembly.
 2. Process memory layout.
 3. Buffer overflows.
 4. Integer overflow/format strings.
 5. Bug detection and Mitigation
 5. Secure Development lifecycle (SDL).
- C. Special topics in Security (optional).

Form of tuition

Lectures and practical assignments.

Type of assessment

Written Exam (60%). Practical assignments (40%).

Course reading

1. Principles of Information Security, By Michael E. Whitman and Herbert J. Mattord.
2. Security Engineering: A Guide to Building Dependable Distributed Systems Book by Ross J. Anderson (free on-line: <http://www.cl.cam.ac.uk/~rja14/book.html>)
3. Online materials (articles)

Entry requirements

Knowledge of computer programming, preferably in C.

Recommended background knowledge

Background in mathematics (number theory), working knowledge of web, python programming language.

Sensorimotor Coordination

Course code	B_SENSOCOR ()
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Period	Period 2
Credits	6.0
Language of tuition	Dutch
Faculty	Fac. der Gedrags- en Bewegingswetensch.
Coordinator	prof. dr. A.M.L. Kappers
Examinator	dr. C.E. Peper
Teaching staff	dr. C.E. Peper, prof. dr. A.M.L. Kappers
Teaching method(s)	Lecture, Seminar, Practical
Level	200

Service Science

Course code	X_401077 ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	dr. J. Gordijn
Examinator	dr. J. Gordijn
Teaching method(s)	Lecture
Level	300

Course objective

To The overall course objectives are:

- O1. Understand the multi-disciplinary nature of Service Science
- O2. How to Analyze and Design an e-service from both business/economic and IT perspectives
- O3. Reflect through a multidisciplinary lens on the gap between business and IT perspectives as well as on the process of how a business idea is converted to a set IT service solutions.

Considering the following objective, on completion of the course, the students will gain the following competencies:

- C1. Create different e-service (business) ideas and critically assess them. In this way the student will be able to take an informed decision about the e-services based on possible risks and opportunities.
- C2. Exploration of the e-Service idea from a business perspective. In this way the student will be able to further design and develop the e-service idea using different analysis techniques. The student will be able to to analyze and design an e-services from different views.
- C3. Transform the business perspective of the e-service design into a design reflecting the IT perspective. In this way, the student will be able to fully change the perspective and analyze and design the e-service from IT-perspective.
- C4. Assess the gaps between business and IT perspectives of their

e-service. In this way the students will be able to verify if the designed IT e-service realizes business idea behind the e-service.

Course content

Service science is organized in two tracks: (i) a business track and (ii) an IT track. The business track provides the students with the knowledge of different interpretations of 'service' and economic importance of services, strategic issues related to services as well as approaches to develop services. The IT track deals with a model-based approach to develop services, as well as service oriented IT development. Special emphasis is given to bridge the gap between business and IT. The students participate in small teams to develop and understand a service from both perspectives. In addition, experts from academia and industry are invited to give guest lectures.

Form of tuition

Lectures, individual case studies, and group assignment.

Type of assessment

Written exam, an integrated assignment, and case studies.

Both the exam and the integrated assignment count for 50% each.

Case studies will be marked as 'passed' or 'failed' only.

Students may fail one case study, but should pass all the others.

In order to pass the course, students should:

- 1) for the exam and the integrated assignment both score 5 or higher, and
- 2) the score for course (65% exam, 35% integrated assignment) should be 6 or higher, and
- 3) at most fail one case study

Course reading

Service Management, 8th international student edition, James A. Fitzsimmons, Mona J. Fitzsimmons, Sanjeev K. Bordoloi, 2014

Web Services, Gustavo Alonso, Fabio Casati, Harumi Kuno, Vijay Machiraju, 2004

Additional materials via Canvas

Recommended background knowledge

Business Modeling & Requirements Engineering

Target group

3IMM, 3CS, 3LI

Remarks

The maximum number of participants in this course is 30.

Shared Value Creation

Course code	E_IBA3_SVC ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	prof. dr. H.L.F. de Groot

Examinator	prof. dr. H.L.F. de Groot
Teaching method(s)	Lecture, Seminar, Instruction course
Level	300

Course objective

Academic skills:

Understanding and applying theories related to shared value and sustainable development.

Knowledge:

Understanding the complex theoretical, empirical and societal debate on the relationship between organizations, technological dynamics, society, and the natural environment and the implications for the transition in the direction of sustainable development; Knowing which stakeholders have which stakes, and how to act- react and report on those.

Bridging theory and practice:

Experiencing how concepts (shared value, sustainability, circular economy) translate into concrete actions, policies and products (integral accounting, innovation, adoption, lobby).

Social Skills:

Active debates will develop social skills and logic argumentation.

Course content

This course examines the fundamental technological and organizational transitions that are ahead of companies and that are required to deal with the grand challenge of sustainable development. A shift from narrow profit maximization to shared value creation seems eminent. But how is shared value created? With which stakeholders? How does value creation change the way companies report to their stakeholders? And how does financing and reporting accelerate sustainable transitions?

This course will give you insight into what strategic reorientation is needed to create shared value: what technologies, products and markets to focus on, whom to work with, how to report on performance? After completing the course, you will understand which fundamental changes are needed in business operations, how governments can successfully intervene to change firm behavior into a more sustainable direction, and how these changes are embedded within the wider stakeholder network.

Part 1 of the course presents the theoretical and empirical framework that will be used to analyze innovation and adoption behavior of firms. It includes a discussion of the context within which the company behaves and an analysis of the effectiveness of policy instruments. How can companies create shared value? How does this influence their strategy and performance? What are the challenges the firm and government face in the transition towards a sustainable future? Attention will also be devoted to the shift from financial, to sustainability and integral reporting and on how reporting influences a firm's legitimacy. Also the transition from linear to circular production processes will receive ample attention.

Part 2 focuses on how the paradigm shift from a shareholder to a stakeholder approach as shared value creation is a multi-stakeholder challenge. Who are key stakeholders? What challenges do companies face

in integrating stakeholder knowledge? And how can the collaboration with stakeholders help the company succeed?

Form of tuition

Lectures
Tutorials

Type of assessment

Written exam – Individual assessment
(Interim) Assignment(s) – Group assessment
Class participation

Course reading

Senge, Smith, Kruschwitz, Laur and Schley (2008), The Necessary Revolution: How Individuals and Organizations Are Working Together to Create a Sustainable World, Doubleday (selected chapters).

Additional selection of articles will be announced at the start of the course.

Small Business Development

Course code	E_IBK3_SBD ()
Period	Period 5
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	drs. A.C. Guldemond
Examinator	drs. A.C. Guldemond
Teaching method(s)	Lecture, Seminar, Instruction course
Level	300

Course objective

SBD specifically addresses the Small and Medium Sized Enterprise (SME) phenomenon: how are general trends and specific strategic issues and theories different (or: the same) when it comes to managing small businesses.

Learning aims concerning knowledge:

- To gain knowledge of the differences between large and small firms by learning about the characteristics of SME firms.
- To obtain in-depth knowledge of the theoretical domain of small business management and understanding factors influencing continuity of small firms.
- To understand the configuration and role of small businesses in various contexts like sectors and regions.

Learning aims concernin bridging the gap between theory and practice:

- To apply this knowledge, and previously acquired research skills to a selection of SME business contexts.
- To learn about using research methods in the context of SME cases

With regards to theory this course builds upon courses like Organization Theory, International- Strategy, Organisation Behaviour and Human Resource Management. With regards to the research and fieldwork to be

done, this course most specifically builds on Business Research Methods I (BK and IBA), Business Research Methods II (BK and IBA) and uses the learnings and experience from the Integrative Research Project (BK and IBA) in the second year. The students will employ previously learned qualitative research skills to research into SME cases.

Course content

SME businesses are facing tremendous challenges, with the ongoing digitalization and globalization today's world of business is facing. Next to the distinction in terms of size, SME businesses can also be distinguished on the basis of their qualitative characteristics, such as the crucial role of the owner-manager, the strong local and regional focus and the presence of family in the business.

This course offers a balance between theory, research and practice.

Form of tuition

Lectures
Tutorials

Type of assessment

Written exam – Individual assessment
Group project - Group assessment

Course reading

To be announced.

Recommended background knowledge

BK:
1.2 Organization Theory; 2.2 Strategy; 2.4 BRM I; 2.5 BRM II ; 2.5 Corporate Entrepreneurship;

IBA:
1.2 Organization Theory; 1.3 Academic Skills; 2.2 International Strategy; 2.4 BRM I; 2.5 BRM II.

Sport Psychology

Course code	B_SPORTPSY (900554)
Period	Period 1
Credits	6.0
Language of tuition	Dutch
Faculty	Fac. der Gedrags- en Bewegingswetensch.
Coordinator	dr. R.R.D. Oudejans
Examinator	dr. R.R.D. Oudejans
Teaching staff	dr. R.R.D. Oudejans
Teaching method(s)	Lecture
Level	200

State, Power and Conflict

Course code	S_SPC ()
Period	Period 1

Credits	6.0
Language of tuition	English
Faculty	Faculteit der Sociale Wetenschappen
Coordinator	dr. E.B. van Apeldoorn
Examinator	dr. E.B. van Apeldoorn
Teaching staff	dr. E.B. van Apeldoorn
Teaching method(s)	Lecture
Level	100

Course objective

This course aims to familiarize students with fundamental political science concepts, especially the concept of power, and apply those concepts in order to gain a better understanding of the recent history of, and contemporary issues in, world politics. After completing the course, students will have:

- Knowledge of different approaches to the concept of power and be able to apply these to the analysis of (contemporary) political issues;
- An understanding of what 'states' are and how the modern state and the modern states system came into being;
- Knowledge of some key approaches in political science and an overview of the discipline and major sub-disciplines;
- Knowledge of and insight into the main developments in the history of world politics from the Peace of Westphalia to the Iraq War and the current era of globalization and the power shift to Asia;
- Be familiar with main patterns of cooperation and conflict between states as well as between non-state actors and be able to understand some of these patterns by the application of key political science concepts and some key approaches within the sub-discipline of International Relations.

Course content

The course, which offers a broad introduction to the major concepts of and main approaches in political science, consists of two main parts. After a critical overview of different concepts of power, the concept of the state and contending perspectives on the conflict and cooperation within modern political systems, the course introduces students to contemporary world politics through an overview of international political history from the 17th century to the present. Here we seek to understand history by identifying recurrent patterns of cooperation and conflict not just between states but also involving non-state actors, and by applying some of the concepts and approaches dealt with in the first part of the course. The course will end with a discussion of contemporary issues within the context of a globalized world politics, such as the ongoing War on Terror, the communications revolutions and its impact upon power.

Form of tuition

Lectures

Course reading

- Nye, J., en D. Welch Understanding Global Conflict and Cooperation: An Introduction. Latest International Edition. Pearson.

- To be announced

Statistical Data Analysis

Course code	X_401029 (401029)
Period	Period 4+5
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	dr. D. Dobler
Examinator	dr. D. Dobler
Teaching staff	dr. D. Dobler, prof. dr. M.C.M. de Gunst
Teaching method(s)	Lecture, Seminar,
Level	300

Course objective

This course acquaints the students with the theory and application of several widely used statistical analysis techniques. After completing this course the student knows the theory behind the different techniques and is able to verify which techniques are applicable to a given data set. Using the learned statistical tools, the student is able to summarize and analyze real data sets using the statistical software package R.

Course content

This is an advanced level statistical data analysis course that builds on an introductory course on statistics, e.g. Statistics (Algemene Statistiek). The course introduces the students to several widely used statistical models and methods, and the students are taught how to apply these tools to real data with the use of the statistical software package R. The following subjects are covered:

- summarizing data;
- investigating the distribution of data;
- robust methods;
- non-parametric methods;
- bootstrap;
- two-sample problems;
- contingency tables;
- multiple linear regression.

The course is a combination of theory (in the lectures) and practice (in the computer classes). Since the solutions of the computer assignments are discussed during the lectures, the theory is explicitly linked to the practice of statistical data analysis.

Form of tuition

Lectures, computer classes.

Type of assessment

Weekly homework assignments in R and written exam.

Course reading

Lecture notes.

Recommended background knowledge

Students should have basic knowledge on statistics, e.g. Statistics (X_400004).

Target group

2BA, 2W, 2W-B, 3W, 3W-B, 3Ect.

Remarks

Language of tuition: English

Statistics

Course code	E_EOR1_STAT ()
Period	Period 4+5
Credits	6.0
Language of tuition	Dutch
Faculty	School of Business and Economics
Coordinator	mr. M.H.C. Nientker
Examinator	mr. M.H.C. Nientker
Teaching method(s)	Lecture, Seminar
Level	100

Strategic Management from a Practice Perspective: A Day in the Life of a CEO

Course code	E_IBK3_SMPP ()
Period	Period 5
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. M.M. Rietdijk
Examinator	dr. M.M. Rietdijk
Teaching method(s)	Lecture, Seminar, Instruction course
Level	300

Course objective

At the end of the course, students should be able to:

- Get insight into the tasks and challenges that CEOs of multinational firms are facing in their day-to-day work as a strategy maker;
- Bridge theory and practice by being able to relate popular management frameworks to strategic challenges that company leaders experience;
- Critically reflect on the interrelationships between the various strategic tasks of CEOs and how they can be successfully orchestrated.

These objectives will further develop various skills students had to master in the first two years of the program:

- Linking theory and concepts to practice;
- Gaining in-depth knowledge of the field of strategy.

The course focuses primarily on the following overall learning objectives in line with the IBA bachelor programme:

- Academic skills in analysis, abstraction, argumentation, and application.
- Bridging theory and practice with ability to translate and apply

theoretical knowledge into business situations.

- Broadening students horizons by having a good understanding of current events on a global scale.

Course content

The course aims to familiarize the student with the most important themes relevant for the strategic management of a firm. It aims to put students into the position of a CEO and expose them to those issues a CEO needs to deal with in a strategic manner. The session making up this course will each deal with a particular strategic question that addresses a broader theme, such as: How to gain and sustain a competitive advantage? (strategic positioning); In which markets to compete? (internationalization strategy); How to grow and expand our business? (M&A strategy); How to be successful and sustainable? (sustainability strategy); How to meet the challenges of the digital age? (digitalization strategy); How to manage relations with the board of directors? (corporate governance strategy); How to be a good leader? (leadership strategy). Students will learn to take a birds-eye point of view and discuss how these strategic issues are interrelated and together comprise the building blocks of corporate strategy. Invited guest speakers (CEOs) will allow students to be further exposed to real-life challenges of strategic management. Students will further be asked to examine critically the work (and strategy making) of one famous CEO of their choice (such as Steve Jobs, Bill Gates, etc.) based on publicly available data such as speeches and videos, and relate the CEOs behaviour to the strategic management approaches discussed in class. Findings will be presented during classes in teams.

Form of tuition

Lectures
Tutorials

Type of assessment

Individual and team assessment

Course reading

This course is article based.
Readings will be announced in course manual.

Recommended background knowledge

BK:
1.2 Organization Theory; 2.2 Strategy; 2.5 Corporate Entrepreneurship;
3.4 Foundations of Strategic Management

IBA:
1.2 Organization Theory; 1.3 Academic Skills; 2.2 International Strategy; 3.4 Foundations of Strategic Management

Strategic Management of Technology and Innovation

Course code	E_BK3_SMTI ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	prof. dr. ir. J.J. Berends

Examinator	prof. dr. ir. J.J. Berends
Teaching staff	J.T. Hummel MSc
Teaching method(s)	Lecture, Seminar
Level	200

Course objective

Academic skills: In this course students learn to critically evaluate innovation management concepts from academic literature and popular management press.

Knowledge: In this course, students gain theoretical understanding concerning:

- innovation types and the external innovation environment including innovation trajectories, standards, platforms, and ecosystems
- the development of innovation strategies and their operationalization in project selection, collaboration, and protection
- the product development process and organizational conditions for innovation

Bridging theory and practice: The course offers insight in the strategic importance of technological innovation for firms and society, recent developments in technology and innovation, and helps to develop skills to analyze real life cases.

Course content

This course focuses on the strategic management of technology and innovation. Innovation refers to the development and implementation of new products, services, processes and business models and many of those innovations are enabled by technological developments. Innovation is crucial for business organizations to stay competitive in ever changing markets. In this course, students learn to understand and apply basic theories behind the processes of technology-based innovation within organizations and their environments, the development of innovation strategies, and the organizational implementation of innovation strategies. Theoretical understanding is applied in a simulation game and real life cases focusing on managerial dilemmas in the management of innovation.

Form of tuition

Lectures

Tutorials

Type of assessment

Individual assignment

Group assignments

Written exam

Course reading

- Schilling, M. (2016). Strategic management of technological innovation (5th ed). Boston: McGraw-Hill.

- Selection of academic articles (listed in course manual)

- Lectures, tutorials, and lecture slides

Structural Policy

Course code	E_ME_SP ()
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Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. S. Hochguertel
Examinator	dr. S. Hochguertel
Teaching method(s)	Lecture, Seminar
Level	300

Course objective

The objective of this course is to identify, justify, analyze and evaluate policy options to various current economic problems, including issues in the fields of labor markets, social insurance, pensions, development, trade, environment and product market competition. Using problem sets and exercises, along with work on economic data will increase and deepen understanding and help broaching a large number of microeconomic policy fields.

Specific learning outcomes upon completion of this curricular item are:

- ability to formulate the economic rationale for policy intervention in various current economic problems;
- ability to develop policy options from economic theories;
- ability to evaluate existing and potential policy options, both in theory and in practice;
- critical attitude to existing theoretical and empirical policy analysis of current economic problems;
- ability to apply tools of economic modeling;
- ability to interpret economic data.

Course content

Structural policy is on top of the agenda when it comes to keeping individual countries on the path to stability and growth. Microeconomic structural reforms (say, in labor and product markets, social security and welfare systems) are often seen as long-run policy measures complementary to short-term macroeconomic stabilization policies.

This course discusses the role of economic policy in the context of both market failures and government objectives to adjust market outcomes. Each problem is analyzed along four different dimensions: (1) statement of the problem, (2) discussion of the rationale for government intervention, (3) policy options, and (4) evaluation of the economic outcomes of the policy in theory and practice.

Current structural economic problems arising in the following fields are prime candidates to be discussed:

- environment: externalities, property rights, tragedy of the commons, taxation, climate policy;
- competition policy and regulation: imperfect competition, market power, cartels, price-discrimination, regulation and de-regulation;
- labor market: unemployment incidence, active labor market policy, taxes and labor supply;
- social insurance and social security: disability insurance, moral hazard, welfare payments, pensions (social security), adverse selection;

- development and trade: analysis of living standards, provision of legal and political frameworks, trade protection, WTO.

During the course, both theoretical and empirical economic work in policy context is discussed.

Form of tuition

Lectures; tutorials

Type of assessment

Grade is average of problem sets (30 %) and written examination (70%), with written exam grade of at least 5.0.

Course reading

Background reference is: Daron Acemoglu, David Laibson and John A. List, 2016, Economics. Harlow, Essex: Pearson Education Ltd. ISBN13: 978-1-292-07920-2.

We further use J. Anthony Cookson, 2010, Intermediate Economics. (20 US\$, ca. 18 EUR), downloadable from www.lulu.com/cookson as well as various academic papers and ancillary textbook chapters, and/or to be announced on Canvas.

Entry requirements

Basic knowledge of math and statistics, as provided in the academic core of any academic program at Vrije Universiteit Amsterdam or equivalent.

Recommended background knowledge

The course builds on a previous courses in the Minor Economics program, in particular, Foundations of Microeconomics. Familiarity with contents of that course is assumed. Familiarity includes a working knowledge of how to apply economic models in context and how to select and use appropriate graphical tools of analysis.

Target group

Third-year bachelor students of any major.

Remarks

This course is an integral part of the University Minor Economics; participants gain strongly from attending the entire minor program. This course prepares for Applications in Economic Policy, and has intersections with the course Business Cycles and Stabilization Policy.

Supply Chain Dynamics

Course code	E_EOR3_SCD ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. N. Dzubur MSc
Examinator	dr. N. Dzubur MSc
Teaching method(s)	Lecture, Study Group
Level	300

Course objective

Academic:

In this course students will learn to understand and simulate dynamics in supply chains using management games and system dynamics simulation.

Professional:

This course provides students hands-on experience with dealing with supply chain issues in realistic game settings, gain an understanding of how behavioural issues interact with rational decision-making in a supply chain and with modelling real life situations in a dynamic fashion

Quantitative methods:

The students will apply quantitative (dynamic) simulation to understand core operations decisions in a supply chain. We will particularly pay attention to system dynamics.

Social:

In this course students work in teams on complex operations decision problems. They will learn how to deal with conflicting interests and problems they need to solve as a team.

Link to practice:

In this course we study and mimic realistic settings that relate to decision-making in operations practice.

Course content

After successfully completing this course you are able to analyze operations decision making using behavioral and system dynamics lenses.

More specifically you will:

- Understand and be able to analyse and model operations management problems using system dynamics;
- Gain experience in dealing with actual operations and supply chain problems using management games;
- Gain in-depth insight into how behavioural aspects influence decision making in game settings.

Form of tuition

Lectures and Tutorials

Course reading

Sterman, John D. (2000), Business dynamics: systems thinking and modeling for a complex world. Boston: Irwin McGraw-Hill

Other literature (via Canvas).

Recommended background knowledge

Knowledge similar to the Supply Chain Management 1 courses in the VU bachelor BK/IBA programme is highly recommended. Otherwise a course with contents similar to the following book: Chopra and Meindl (2013). Supply Chain Management: Strategy, Planning, and Operation. Global edition. Pearson Higher Education, 528 pp.

Sustainability and Environmental Change

Course code	AB_1230 ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	Fac. der Aard- en Levenswetenschappen
Coordinator	dr. A.J.A. van Teeffelen

Examinator	dr. A.J.A. van Teeffelen
Teaching staff	prof. dr. J.C.J.H. Aerts, prof. dr. G.R. van der Werf, prof. dr. ir. P.H. Verburg, dr. A.J.A. van Teeffelen, T.I.E. Veldkamp MSc
Teaching method(s)	Lecture, Seminar

Course objective

In this course students learn about the environment's pivotal role in achieving sustainable solutions for human development, mainly focused on global environmental problems. After this course, students:

1. can explain key concepts from the natural sciences relevant for the study of sustainability;
2. can characterize key components of the environment, namely water, land and atmosphere, and can explain key processes affecting their characteristics;
3. can explain the role of the environment in socio-environmental systems;
4. can identify methods to quantify the state of the environment, and analyze environmental change;
5. can perform SWOT derived from the environmental conditions for specific sustainability challenges.

Course content

The environment plays a crucial role in supporting societies, for example by providing materials, energy, food, clean air, and clean water. Environmental conditions change over space and time, influenced by both natural and human factors. In this course students learn about the environment's pivotal role in achieving sustainable solutions for human development. Starting from the key environmental components water, land and atmosphere, we characterize environmental change and how that leads to other environmental and societal changes. Methods to assess environmental change are addressed and students identify for their specific case studies what strengths, opportunities, weaknesses, and threats are associated to the 'planet dimension'. The course comprises interactive lectures and exercises and is evaluated through an assignment and a written exam.

Form of tuition

The course is organized in thematic weeks, which provide students with an understanding of the specifics of the dimensions water, land and atmosphere, how these can be studied and how they interact. Each week has 1 to 2 lectures, in parallel to which students develop their assignment. Lectures (H) and assignment are supported by in-class discussions (W), reading material, and exercises.

Lectures (H) 15-20h

Workshops (W) 15-20h

Assignment ~45h

Self study ~80h

Type of assessment

The course will be evaluated through

- 1) Group Assignment (A): SWOT analysis in Planet domain for personal case in the form presentation & working paper (30% of final grade)
- 2) A closed-book written exam (E) (70% of final grade).

A minimum grade of 5.5 is required to pass the course. There is one resit opportunity for the exam. Assignments with a grade lower than 5.5 can be improved once, after which the maximum grade that can be obtained

for the assignment is 6.0.

Course reading

- A textbook that introduces the planetary dimensions of sustainability (TBA)
- Selected articles as announce in the course guide (TBA), including:
 - o De Fries, R. S., Ellis, E. C., Chapin III, F. S., Matson, P. A., Turner II, B. L., Agrawal, A., ... Syvitski, J. (2012). Planetary Opportunities: A Social Contract for Global Change Science to Contribute to a Sustainable Future. *BioScience*, 62(6), 603–606. <http://doi.org/10.1525/bio.2012.62.6.11>
 - o Wu, J. (2013). Landscape sustainability science: Ecosystem services and human well-being in changing landscapes. *Landscape Ecology*, 28(6), 999–1023. <http://doi.org/10.1007/s10980-013-9894-9>
- Open data sources, educational software packages, websites, videos etc

Recommended background knowledge

Grand Challenges (minor Sustainability: Global Challenges, Interdisciplinary Solutions. Period 1)

Target group

Students following the minor Sustainability: Global Challenges, Interdisciplinary Solutions.

Remarks

The course is coordinated by Dr. Astrid van Teeffelen, and Ted Veldkamp, MSc. Lecturers include Dr. Philip Ward, Prof. Guido van der Werf, Prof. Peter Verburg.

Sustainable Supply Chain Management

Course code	E_IBA3_SSCM ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. ir. D.A.M. Inghels
Examinator	dr. ir. D.A.M. Inghels
Teaching staff	dr. ir. D.A.M. Inghels
Teaching method(s)	Lecture, Seminar
Level	300

Course objective

After successfully completing the course Sustainable Supply Chain Management you are able to

Academic Skills:

- Analyze supply chain problems taking into account interests of different stakeholders (economic, ecological, societal and others) and evaluate (future) performance effects of supply chain policy options. This type of analysis will support sustainable decision-making.

Quantitative Skills:

- Quantify the economic, ecological and societal objectives for supply chain management cases by applying and master commonly used techniques to tackle real life sustainable supply chain management problems.

Knowledge:

- Understand the transition from a linear to a closed loop (circular) economy and its implications for Supply Chain Management

Bridging Theory and Practice:

- Use a sustainable supply chain analysis framework to assess contemporary topics in sustainable supply chain management and to analyze supply chain management cases.
- Formulate recommendations for improvement of supply chains from a sustainable perspective

Course content

This course aims to introduce students in operationalizing sustainability in supply chains. We define sustainability as the combined economic, environmental, and social optimum of supply chain alternatives that take into account constraints, such as technological limits or legislation, also known as the triple bottom line (TBL) approach of People-Planet-Profit optimization. Life Cycle Assessment (LCA) is presented as a methodology to quantify the environmental impact of products and processes and Analytic Hierarchy Process (AHP) to quantify social impact. Multi Criteria Decision Analysis is introduced as a concept to operationalize the TBL approach for practical sustainable supply chain problems. Next we discuss systems thinking using Systems Dynamics for understanding and evaluating the complex and interactive behaviour of systems, such as sustainable supply chains. Finally the sustainability evaluation of chains and the management of reverse supply chains will be addressed.

Form of tuition

Lectures and computer tutorials

Type of assessment

Written exam – Individual assessment

(Interim) Assignment(s) – Group assessment

Course reading

Readings will be announced via Canvas.

Recommended background knowledge

It is recommended that students are familiar with key concepts and techniques from business or operations management and (business) mathematics.

Systems Programming

Course code	X_400377 (400377)
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	dr. A. Bakker
Examinator	dr. A. Bakker
Teaching staff	dr. A. Bakker
Teaching method(s)	Lecture, Seminar
Level	300

Course objective

The goal of this course is to prepare students for lab assignments and scientific research in computer systems (operating systems, compiler construction, network programming, computer networks, parallel programming, etc.) After attending this course, students should be able to develop, test, and debug "systems" programs written in C under Linux or BSD.

Course content

The course is a combination of lectures and lab assignments.

During the course, the student is taught how to program in C, use POSIX APIs for process control and networking, understand memory management, use low-level debugging and verification tools, and use performance profiling tools.

Form of tuition

7 lectures of 2h, in combination with several lab assignments to be returned during the study period. Extensive help will also be provided by ways of questions and answers sessions (1h), and a discussion mailing list.

Type of assessment

The student will be graded based on the lab assignments he or she handed in (i.e., a Practicum). Exact grading scheme announced at the start of the course. There is a resit opportunity later in the year.

Entry requirements

- must have studied algorithms (incl. sorting, basic graph processing) and data structures (incl. lists, trees, priority queues);
- must have basic understanding of Unix concepts (directory tree, file permissions, terminal).

Recommended background knowledge

Prior experience with another language from the C family (eg. Java, Arduino-C, C++, Objective-C, C# or D) is strongly recommended.

Target group

3CS

Remarks

Registration for this course is also compulsory via Canvas one week before the start. The course will be given in English.

The coordinator and teacher of this course is Arno Bakker

(arno@cs.vu.nl)

Taaltoets

Course code	E_BACH_TAALT ()
Period	Period 1
Credits	0.0
Language of tuition	Dutch
Faculty	School of Business and Economics
Coordinator	drs. R.W. de Crom
Examinator	drs. R.W. de Crom

Teaching method(s)	Practical
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Remarks

Omdat taalbeheersing onmisbaar is voor een academische studie, nemen alle eerstejaars bachelorstudenten van een Nederlandstalige bacheloropleiding aan de VU deel aan de Taaltoets Nederlands. De taaltoets is verplicht.

Kijk voor meer informatie op <http://www.vu.nl/nl/opleidingen/praktische-informatie/regelingen/taaltoets/index.aspx>.

Talent and Talent Identification

Course code	B_TALIDENT ()
Period	Period 3
Credits	6.0
Language of tuition	English
Faculty	Fac. der Gedrags- en Bewegingswetensch.
Coordinator	dr. D.L. Mann
Examinator	dr. D.L. Mann
Teaching staff	dr. D.L. Mann
Teaching method(s)	Lecture, Seminar
Level	300

Course objective

On the successful completion of this course, students will be able to:

1. Critically evaluate whether skilled athletes are 'born' or 'made' (i.e., evaluate the nature vs. nurture debate in the development of athletic skill);
2. Critically appraise current means of identifying talent and consider newer, more evidence-based methods;
3. Apply knowledge about the typical developmental pathways used to describe how talent develops;
4. Identify environmental factors associated with the development of athletic skill;
5. Evaluate the ethical considerations inherent in identifying talent from a young age;
6. Critically evaluate existing or new systems established by applied sporting organisations to identify and nurture talent.

Course content

The ability to identify and develop talent in potentially skilled athletes is a central role for many coaches, scientists, and sporting administrators. National and professional sporting organisations invest substantial amounts of time and money in establishing systems designed to identify and nurture future talent, yet there is still considerable doubt about how effective these systems may be. This course on Talent and Talent Development will assess what it takes to become a talented athlete, and will uncover what we know about the ideal conditions for developing athletic skill. The course will address the emerging body of research that seeks to evaluate existing talent identification systems and to develop newer, more evidence-based procedures for identifying and developing talent. Further, a number of applied case studies will be examined to discover how these issues have been addressed by

professional sporting organisations.

Form of tuition

The course consists of 12 lectures (18 hours in total), in addition to the expectations of self-study (approximately 114 hours), an assignment (approximately 10 hours total) and a final exam (3 hour duration)

Type of assessment

Textbook: Baker J., Cobley S., Schorer, J. (2012) Talent identification and development in sport. International perspectives. Routledge: Abingdon, Oxon

Tax and Organizations

Course code	E_EBE3_TO ()
Period	Period 3
Credits	6.0
Language of tuition	Dutch
Faculty	School of Business and Economics
Coordinator	mr. J. Gooijer
Examinator	mr. J. Gooijer
Teaching method(s)	Lecture, Seminar
Level	200

Technology and Innovation Management

Course code	E_BK2_TIM ()
Period	Period 4
Credits	6.0
Language of tuition	Dutch
Faculty	School of Business and Economics
Coordinator	dr. ir. F. Deken
Examinator	dr. ir. F. Deken
Teaching staff	dr. ir. F. Deken, dr. S.C. Friesike, D. van Kampen MSc, dr. S.A. Rijdsdijk
Teaching method(s)	Lecture, Study Group
Level	200

Text Mining for Digital Humanities

Course code	L_PABAALG004 ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Geesteswetenschappen
Coordinator	dr. A.S. Fokkens
Examinator	dr. A.S. Fokkens
Teaching staff	drs. E. Maks, dr. A.S. Fokkens

Teaching method(s)	Lecture, Seminar
Level	200

Course objective

In this course, students are trained in systematic text analysis. In particular, we explore the process of identifying and annotating information in historic and contemporaneous texts such as novels, lyrics, letters, newspaper articles, movie scripts, blogs and other social media texts using manual and automatic methods. They will learn the implications for the theoretical models and concepts they are familiar with in their own discipline. Students will work on a research project of their choice and annotate them in an interdisciplinary context using different tools and methods. They will apply expert and crowd annotations, develop code-books and compare the results. Finally, they will use a machine-learning program for analyzing text and reflect on the performance of the automatic annotation. We will focus on high-level semantic annotations of, for example, (historic) events, entities and emotions that are of interest to a broader range of humanities and social and computer science students. Students present their findings in a research paper.

Course content

This module addresses the process of systematic text analysis through human and automatic annotation. Annotations make information that is implicit in data explicit allowing researchers to search their data systematically. This kind of research forces Humanities scholars and social scientists to represent their Interpretation of texts in a data structure. Computer science students will learn about how text mining technologies can be applied in Humanities and Social Sciences. Annotation requires the use of some type of interpretation model and it results in an analysis that can be compared across annotators. As such, annotation can be seen as an important step towards the formalization of humanities and social science as a discipline. The degree to which annotators agree or disagree (the so-called Inter Annotator Agreement) tells us something about the reproducibility of the interpretation process, the matureness of theoretical notions and the criteria used to apply them to real data. Different backgrounds of annotators will lead to different types of annotations. Linguists, (cultural-)historians, social-scientists, and literature-scientists will consider sources and data differently and consequently come to different annotations of the same source/data. The same holds for experts and non-experts. The former are traditionally involved in assigning metadata to sources, the latter do the same in crowd-sourcing initiatives. Finally, annotated data can be used to train machines to do the same. How does this work? Can a machine do better than humans? How do you evaluate this?

Form of tuition

Lecture, Seminar (2 hrs a week each)

Type of assessment

Paper

Course reading

To be announced

Entry requirements

None

Recommended background knowledge

Course: From Object to Data

Target group

3rd year bachelor students, in particular Humanities, Social Science and Computer Science

Remarks

This module is taught at the VU. Module registration at the VU is required.

The Book: Print vs Online

Course code	L_AABAALG067 ()
Period	Period 1
Credits	6.0
Language of tuition	Dutch
Faculty	Faculteit der Geesteswetenschappen
Coordinator	dr. P.H. Moser
Examinator	dr. P.H. Moser
Teaching staff	dr. P.H. Moser
Teaching method(s)	Seminar
Level	200

The Developing Brain

Course code	AB_1059 ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	Fac. der Aard- en Levenswetenschappen
Coordinator	dr. M.C. van den Oever
Examinator	dr. M.C. van den Oever
Teaching staff	prof. dr. S. Spijker, dr. R.E. van Kesteren, dr. R.M. Meredith, dr. H.K.E. Vervaeke, dr. M.C. van den Oever
Teaching method(s)	Practical, Computer lab, Study Group, Lecture
Level	300

Course objective

Students acquire a basic understanding of the various stages of brain development that shape the life of individuals over time.

Course content

The brain performs differently at various ages; the young brain being very plastic, whereas the aging brain is gradually losing its adaptive capacity. Importantly, early and late brain development is affected by specific genetic factors and vulnerable to changes induced by environmental factors. These alterations can result in

neurodevelopmental and neurodegenerative disorders.

In this course, we will discuss pre- and postnatal brain development. We will first focus on early development and its relation to brain disorders such as autism and mental retardation. Then, we will focus on brain development during childhood and adolescence and discuss issues related to this stage of development, such as sexual orientation, gender identity, schizophrenia and the effects of drugs of abuse (alcohol, nicotine). Lastly, concerning the aging brain, we will discuss healthy brain aging as well as specific diseases of aging, such as Alzheimer's and Parkinson's disease.

Form of tuition

Lectures (34 hours)
Workgroups (7 hours)

Type of assessment

Exam (E; multiple choice questions and open questions): 80%
Academic skills assignment (A): 20%
Compensation: the average grade of both tests combined has to be >5.5.

Students have the option to resit the exam (E).

Course reading

"Foundations Of Behavioral Neuroscience" by N.R. Carlson (Pearson Education (US)), 8th edition.

Literature on Canvas.

Recommended background knowledge

The course 'Cognitive Neuroscience' of the minor 'Brain & Mind'.
Alternatively, a basic understanding of neurons, neurophysiology and neuroanatomy is required.

Target group

Students of the minor Brain & Mind.

Remarks

This minor course requires a minimum of 25 participants.

The Personal is Political: Biography, Gender and Diversity

Course code	L_AABAALG068 ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Geesteswetenschappen
Coordinator	dr. D.G. Hondius
Examinator	dr. D.G. Hondius
Teaching staff	dr. D.G. Hondius, dr. B. Boter, dr. J.C.A.P. Ribberink
Teaching method(s)	Seminar
Level	200

Course objective

1. Acquiring knowledge of and insight in the field of historical gender and diversity studies;
2. Acquiring knowledge of and insight in historical research perspectives;
3. Develop academic research skills;
4. Develop writing skills;
5. Develop presentation skills.

Course content

"The personal is political", was a well-known rallying slogan in the late 1970s women's movement. Modern historical research acknowledges the impact and influence of the many dimensions that shape individual lives, including gender, sexuality and sexual preference, ethnicity, race, age, religion and class. This seminar explores how these intersecting dimensions are present and influence the lives and biographies of politically engaged personalities, famous or unknown, by studying the genre of the political biography, autobiography and life writing. The seminar sets out with a short series of lectures by experts in the field, followed by writing and research assignments. Students will work at an individual paper, based in a biographical research project of their own choice; suggestions will be available. The course ends with student's presentations of their findings.

Form of tuition

Seminar (twice weekly), with assignments and several guest lectures . Meetings are scheduled on Wednesday morning and Friday morning, 10.00-12.45.

Type of assessment

- Active participation in class including following up the assignments (10%)
 - Individual presentation of the outline of the individual research paper and how it links to the common reading in class (15%)
 - Final discussion in semi-public seminar (15%)
 - Final paper (4000 words) (60%)
- Each element has to be satisfactory in order to pass the course.

Course reading

Literature will be made available for students in the first week of the course.

Entry requirements

Academic skills course (ACVA) passed.

Target group

BA2 students in History, Humanities, Social Sciences, Philosophy, and Medical Studies.

Remarks

This course is part of the Minor Gender and Diversity.

Thesis

Course code	E_EOR3_THS ()
Period	Ac. Year (September)
Credits	12.0

Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. A.A.N. Ridder
Level	300

Transport and Distribution Planning

Course code	E_EOR3_TDP ()
Period	Period 1
Credits	6.0
Language of tuition	English
Faculty	School of Business and Economics
Coordinator	prof. dr. J.A. Gromicho Dos Santos
Examinator	prof. dr. J.A. Gromicho Dos Santos
Teaching method(s)	Lecture, Instruction course
Level	300

Course objective

The learning outcomes of the course on Transport and Distribution Planning are the following:

Academic skills

In this course, the students learn the challenges faced when optimizing Transport and Distribution plans. Such plans often require the use of heuristics to be efficiently established. The course addresses the most important and powerful optimization techniques known, with emphasis on those techniques that work well for real-life planning.

Quantitative methods

The students learn how to distinguish heuristics in terms of efficiency, solution quality and other quantitative aspects.

Professional skills

The students will become able to solve challenging practical problems, which are within the realm of professionals only.

Social skills

In this course, the students work in teams. They learn how to combine different skills, backgrounds and interests to solve challenging and complex problems.

Link to practice

The lecturers have a sound practical record, complementing their extensive academic achievements. A representative choice of illustrative problem domains from practice is therefore guaranteed, as well as a good understanding on how to bridge the gap between theory and practice. Furthermore, the optimization techniques taught are among the best used in practice.

Course content

- Heuristics form an indispensable tool for everyone working in operations management, and in the planning of Transport and Distribution in particular.
- Problems arising from practice are often too hard to solve exactly and heuristics are relatively simple methods that may provide feasible solutions of good quality.
- The course covers two areas: the first is about heuristic ideas applicable to general problems and the second is focused on the

application of heuristics to Transport and Distribution problems. This field, of so-called routing problems, is so rich that virtually all published heuristic ideas have been applied to it.

- The course is further divided into three parts, each of which first covers general problems and then focuses on routing.
- These three parts are:
 - Classical heuristics to construct a feasible solution
 - Improvement heuristics based on structured local search
 - Heuristics aiming at escaping local optima

Regardless of the part being addressed attention is paid to:

- Meta-heuristics, i.e., general ideas applicable to a large variety of domains
- Complexity analysis
- Whether a performance guarantee can be given and how to prove it
- Ways to benchmark and empirically assess quality

Form of tuition

Lectures
Tutorials

Type of assessment

Written exam – Individual assessment
(Interim) Assignment(s) – Group assessment

Course reading

- Talbi, El-Ghazali (2009). Metaheuristics: From Design to Implementation. Wiley
 - Toth, P. and Vigo, D. (2002). The Vehicle Routing Problem, 1st edition. SIAM.
 - Toth, P. and Vigo, D. (2014). Vehicle Routing: Problems, Methods and Applications, 2nd edition. SIAM.
- complemented with slides and additional notes to be provided

Entry requirements

A quantitative background with some affinity with computer programming

Recommended background knowledge

Applied mathematics, econometrics, engineering, business administration, computer or data science, management sciences, or any quantitative study

Target group

Both BA/IE students with an interest in optimization and OR/AM students with an interest in computer implementations can participate, since they will work together in teams combining knowledge and skills.

Remarks

The students will experience optimization techniques. We will make as much use of the language R as possible to express the optimization algorithms addressed in the course. R is used through the minor, therefore learning it will be useful for several courses, and you may find it useful in your careers as well.

Urban Economics and Real Estate

Course code	E_EBE3_UERE ()
Period	Period 2
Credits	6.0

Language of tuition	English
Faculty	School of Business and Economics
Coordinator	dr. P. Mulder
Examinator	dr. P. Mulder
Teaching staff	dr. P. Mulder, dr. H.R.A. Koster
Teaching method(s)	Lecture, Study Group, Computer lab
Level	300

Course objective

This course in Urban and Real Estate Economics addresses the relationship between urban space, real estate development and economic development. It links economic theory to urban and real estate development, and it places real estate development in the wider context of the relation between city growth and economic development. Insights are developed both through studying theoretical backgrounds (the first eight lectures) and by considering practical examples of the issues at hand (the last four lectures). After a general introduction on the very nature and existence of cities, the following topics are covered: (1) location theory, (2) agglomeration economies, (3) city size and population distribution, (4) land use and land rents, (5) real estate and government policy, (7) growth and decline of cities, (8) sorting of people across neighborhoods within cities, (7) parking and real estate prices, (8) green buildings, (9) economics of skyscrapers, (10) economics of urban planning.

With respect to each topic you should be able:

- (i) to define and describe the topic;
- (ii) to understand the economic theory that explains the topic;
- (iii) to understand the empirical (econometric) analysis of the topic;
- (iv) to understand the (im)possibilities of urban and real estate policies;
- (v) use econometric methods to test theoretical predictions of urban economic models.

Course content

Particularly over the past decades, technological change caused the cost of connecting across space has declined sharply, which should have made it less attractive for people to cluster together in cities. Yet by many measures, cities are thriving all over the world. Most economic activities such as production, consumption and innovation take place in urban areas, despite the relatively high location costs.

Why is this the case? Why are some cities thriving, while others face serious decline? Why are real estate prices more or less stagnant in some cities or neighborhoods, while they rise sharply in others? Of course, this is a matter of supply demand. Therefore, a central topic in this course is the location behavior of firms and households. Why do they prefer one location of the other? More specifically, why are so many firms interested in expensive locations at, for example, the Amsterdam South Axis? Why do for example computer and fashion shops often cluster in space, while bakers are typically dispersed over a city? Will the advent of e-commerce cause firms to leave crowded and expensive cities? For households, comparable questions arise. Why do many higher educated people nowadays prefer to live in Amsterdam rather than in Almere, and why was the opposite true in the 1980s? Is the location choice of people merely driven by the composition of the

population or real estate characteristics in a certain area? Why do certain social and ethnic groups often cluster in space, and to what extent is this desirable? How do location choices of firms and households interact?

When thinking about location behavior of firms and households, we touch upon various topics that have a substantial impact on real estate markets. For example, the economic backgrounds and consequences of suburbanization, the rise of urban 'subcentres', and the rise of so-called 'network cities', as witnessed worldwide (and in The Netherlands alike). We will also look at interdependencies between cities, in terms of their economic dynamics and functional development. Why and how do cities specialize, why does nearly every country has a few big cities and many smaller towns and villages, and are such arrangements economically desirable?

At the aggregate level, location choices by firms and households translate into (changes in) land use and real estate development in modern cities. In this course you learn, both from a theoretically and empirically perspective, to analyze land prices as a function of, inter alia, population and real estate characteristics, location and transport costs. In addition, we identify the (im)possibilities of influencing the observed trends through urban and real estate policies. What is the impact of imposing or relaxing urban planning regulation on real estate development? Can and should we mix different kind of people in the same neighborhood? Is mortgage deductibility a good idea? What should we do with real estate in declining (country side) regions? Finally, we address some typically urban phenomena in relation to real estate markets: urban environment and green buildings, parking, and building height (skyscrapers).

Form of tuition

Twelve plenary lectures of two hours each, plus six tutorials of two hours each. Students are expected to have read the material in advance; the plenary lectures cover key elements only. Tutorials introduce the assignments, econometrics and working with Stata software.

Type of assessment

Written exam (60%) and two assignments (40%). The overall grade should be at least a 5.5 to pass.

Course reading

- Arthur O' Sullivan, Urban Economics, McGraw-Hill International – 8th Edition / 7th edition.
- Selected scientific papers (see Canvas for details).

Entry requirements

Introductory level of microeconomics.

Recommended background knowledge

Basic knowledge of econometrics (regression analysis) is recommended.

Target group

Second or third-year bachelor students who want to get a solid introduction into the economics of cities and real estate, economic geography or spatial economics.

Urban Studies

Course code	S_UBS ()
Period	Period 1+2+3
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Sociale Wetenschappen
Coordinator	dr. F. Colombijn
Examinator	dr. F. Colombijn
Teaching staff	dr. F. Colombijn
Teaching method(s)	Lecture, Study-group
Level	300

Course objective

Knowledge and Understanding. After having completed this course, the student has acquired knowledge and understanding of:

- (1) key concepts in urban anthropology;
- (2) the ways in which urban development and sustainable development are intertwined.

Application of knowledge and understanding. After having completed this course, the student has acquired the competences to:

- (1) apply key concepts from urban anthropology to an ethnographic research in public spaces in Amsterdam;
- (2) combine and compare key concepts in urban anthropology in a written argument.

Attitude. After having completed this course, the student demonstrates:

- (1) the ability to work in small research teams to carry out a small ethnographic research project;
- (2) to report about the research projects in verbal and written form.

Course content

Cities around the world are centres of economic development, attracting domestic and foreign investors, visitors, and high-skilled and low-skilled migrants. Locked in a global competition for investments, cities need to be developed in a way that they are attractive to investors and become socially and ecologically sustainable. Social sustainability requires that different actors get their fair place in the city, in terms of income opportunities, and a space to dwell, meet, express oneself, and work. Ecological sustainability requires that cities reduce their ecological footprint, compensate environmental damage to the planet, and reuse as many resources as possible. Taking urban space as the focus of our attention in this course, we will go into politics, inequality, lifestyles, and liveability.

Form of tuition

lectures and tutorials

Type of assessment

written exam (50%) and joint research paper (50%).

Course reading

To be announced on Canvas.

Recommended background knowledge

There are no requirements, but ideally students have completed the courses Political and Economic Anthropology, and Development and Globalization (for BSc CAO and minor Anthropology), or Development and Globalization and Identity, Diversity and Inclusion (Minor DGC).

Target group

Bachelor 2 Culturele Antropologie en Ontwikkelingssociologie; Minor Anthropology; Minor Development and Global Challenges; open as elective course to other students.

Remarks

This course fits into several programmes. It is part of the Bachelor Culturele Antropologie en Ontwikkelingssociologie; it is the closing of the theme block "Development", but in time follows directly on two courses from the theme block "World Making" (in particular Identity, Diversity and Inclusion, and Nation and Migration). The themes of these courses – politics, inequality, development, globalization, diversity, identity, migration– all return in Urban Studies. In the same vein, Urban Studies is the closing of the minor Development and Global Challenges. For students of the minor Anthropology, the most memorable element will be their first experience with ethnographic fieldwork. While Urban Studies is integrated in all these programmes, the course can also be taken as an elective course of its own. It is the only course on Urban Studies offered in the Faculty of Social Sciences of Vrije Universiteit Amsterdam and it is especially interesting to exchange students who wish to get to know Amsterdam better.

Note that students are expected to attend three meetings of the "studielint" in November-December (all students) and in September-October (only students of the Bachelor Culturele Antropologie en Ontwikkelingssociologie and the minor Anthropology).

Value Based Marketing

Course code	E_EBE2_VBM ()
Period	Period 5
Credits	6.0
Language of tuition	Dutch
Faculty	School of Business and Economics
Coordinator	prof. dr. R.T. Frambach
Examinator	prof. dr. R.T. Frambach
Teaching staff	prof. dr. R.T. Frambach
Teaching method(s)	Lecture, Seminar, Instruction course
Level	300

Visualizing Humanities and Social Analytics

Course code	L_AABAALG066 ()
Period	Period 2
Credits	6.0
Language of tuition	English
Faculty	Faculteit der Geesteswetenschappen

Coordinator	dr. H.M.E.P. Kuijpers
Examinator	dr. H.M.E.P. Kuijpers
Teaching staff	dr. J.W.H.P. Verhagen, prof. dr. I.B. Leemans, dr. H.M.E.P. Kuijpers
Teaching method(s)	Seminar
Level	300

Course objective

- Students will become familiar with the concepts of data visualization in Digital Humanities and Social Analytics, and acquire practical skills in data visualization techniques such as graphs and digital maps.
- Practical skills will include: processing of spatial data and creating appealing map visualizations in Google Earth, QGIS, ESRI Story Maps and other map services; and the quantitative analysis of textual data (e.g. (social) media data) through AmCAT and R.
- Students will learn to critically reflect on the implications of the selection, structuring and manipulation of data as well as the choice of visualization techniques to present the outcomes of research projects.
- Students will learn to position their own work in the field of Digital Humanities and Social Analytics.
- Students will learn to apply their knowledge by developing their own research projects around a given dataset.
- Students will learn to collaborate in an interdisciplinary group, manage group processes, and communicate their results to an audience of peers and teachers.

Course content

This course will offer practical training in digital visualization techniques, placed in the broader scope of Digital Humanities and Social Analytics. Visualization of data plays an important role in exploring and analysing quantitative data deriving from large and complex datasets, such as relational databases and text corpora varying from 17th century literature to newspaper archives to tweets. Visualizations can be used both to present the end results of research projects as well as to support all phases of the hermeneutic cycle of questioning, searching, aggregating and analysing data. They may reveal patterns and provide leads for new research questions. In this course students will become familiar with a number of visualization tools and learn to reflect critically on the way they can be used.

An important part of the classes will entail practical training in the processing of spatial and textual data. This course invites you to choose a personal research topic and will teach you basic practical skills in digital mapping and other visualisations to use in your own research. Digital mapping is a powerful visualization tool for both social science and humanities students who study events in space and time. The visualization of textual data will help you to manage and analyse large corpora of texts. You will define and investigate a research question, learn how to create and structure data and how to uncover patterns in your data through visualization. At the end of the course you will be able to use attractive visualizations to present your research results in both oral and written communications.

Form of tuition

Seminar, 2x2

Type of assessment

Participation, assignments and presentation (40%), research paper (60%)

Course reading

T.B.A.

Recommended background knowledge

This course is designed for students who study the minor Digital Humanities and Social Analytics. For other students it would be helpful to familiarize with the basics of digital data in advance. Please contact the instructors for more information and advice.

Target group

Students of the UvA & VU faculty of Humanities and Social Sciences, international exchange students as well as students of Informatics (UvA) and Computer Science (VU).

Registration procedure

This course is part of the joined UvA/VU Minor Digital Humanities and Social Analytics. This module is taught at the VU. Module registration at the VU is required for UvA students.

Remarks

This course is part of the minor Digital Humanities and Social Analytics. This module is taught at the VU. Module registration at the VU is required.

Workshop Mathematical Modelling

Course code	X_401062 (401062)
Period	Period 3
Credits	6.0
Language of tuition	Dutch
Faculty	Faculteit der Exacte Wetenschappen
Coordinator	prof. dr. J. Hulshof
Examinator	prof. dr. J. Hulshof
Teaching staff	dr. R. Planque, dr. ir. M.A. van de Wiel
Teaching method(s)	Lecture
Level	400

Course objective

Het doel van dit vak is om een indruk te krijgen hoe het is om aan een nog niet opgelost wiskundig probleem te werken. Andere doelen zijn het oefenen in groepswork en de mondelinge en schriftelijke presentatie van resultaten.

Course content

Dit vak is een intensieve workshop van vier weken, waarbij de studenten in groepen van 5 à 6 zelf een probleem uit een ander wetenschapsgebied of uit de industrie verkennen, wiskundig modelleren en analyseren. De probleemstellingen zijn open geformuleerd er is geen a priori sturing richting bepaalde deelgebieden van de wiskunde. In de vierde week wordt het werk afgerond met een presentatie en een verslag.

Form of tuition

Project

Type of assessment

Beoordeling van werkwijze, presentatie en verslag. De studenten worden op drie onderdelen beoordeeld: het (groeps)proces (30%), de presentatie (30%) en het verslag (40%). De beoordeling gebeurt door de begeleider van de betreffende opdracht (een van de twee docenten), met ruggespraak naar de opdrachtgever en de andere docent.

Target group

3W, 3-WN, mMath, mPhys

Writer at Work

Course code	L_NNBAALG002 ()
Period	Period 2
Credits	6.0
Language of tuition	Dutch
Faculty	Faculteit der Geesteswetenschappen
Coordinator	dr. J.H.C. Bel
Examinator	dr. J.H.C. Bel
Teaching staff	dr. J.H.C. Bel
Teaching method(s)	Excursion, Seminar
Level	300