Finance (MSc)

Vrije Universiteit Amsterdam - Fac. der Economische Wet. en Bedrijfsk. - M Finance - 2016-2017

The Master's programme in Finance is an intensive yet flexible programme, which provides a rigorous training in all key aspects of finance. After an advanced and comprehensive introduction to the various areas of finance, the student can specialise in her or his own field of interest, ranging from corporate financial management to asset management, to quantitative risk management. After completion, the student will have developed into an academic financial specialist with a profound knowledge of financial economics, solid analytical and communication skills, and a multidisciplinary outlook.

The Master Finance is a one year programme en consists of 60 EC.

For students with an appropriately quantitatively oriented university bachelor degree, the master's programme offers the Duisenberg Honours Programme in Quantitative Risk Management, containing 84 EC.

- Course programme 2016-2017 master Finance
- Academic calendar 2016-2017
- Teaching and Examination Regulations 2016-2017 Master programmes FEWEB
- Rules and Regulations 2016-2017 FEWEB

Inhoudsopgave

Master Finance

The Master Finance consists of obligatory courses, electives and a thesis.

Opleidingsdelen:

- Master Finance - Obligatory courses
- Master Finance - Electives

Master Finance - Obligatory courses

Five courses and a thesis are obligatory

Vakken:

Naam	Periode	Credits	Code
Advanced Corporate Finance	Periode 1	6.0	E_FIN_ACF
Asset Pricing	Periode 1	6.0	E_FIN_AP
Empirical Finance	Periode 2	6.0	E_FIN_EF
Financial Markets and Institutions	Periode 4	6.0	E_FIN_FMI
Research Project for Finance	Periode 3	6.0	E_FIN_RPFIN
Thesis	Ac. Jaar (september)	18.0	E_FIN_THS

Master Finance - Electives

Choose 2 electives in total. Choose at least 1 elective from the list, below.

The second optional course you may:
- choose from the list as well, or
- choose one of the faculty's other master programmes (with the exception of the courses Advanced Corporate Financial Management, Financial Decision Making and Financial System Design from the Master Business Administration), or
- after approval of the examination board, you may choose a master's course taught outside the faculty.

Vakken:

Naam	Periode	Credits	Code
Bank Management	Periode 4	6.0	E_BA_BANKM
Behavioral Finance	Periode 4	6.0	E_FIN_BF
Corporate Valuation for Finance	Periode 2	6.0	E_FIN_CVF
Derivatives	Periode 2	6.0	E_FIN_DER

Institutional Investments and Asset Liability Management	Periode 4	6.0	E_FIN_IIALM
Quantitative Financial Risk Management	Periode 5	6.0	E_FIN_QFRM
Real Estate Management	Periode 5	6.0	E_BA_REM

M Finance - Duisenberg HP QRM

For students with an appropriate quantitatively oriented university bachelor degree, we offer the Duisenberg Honours Programme in Quantitative Risk Management within the MSc Finance programme. Upon successful completion, students obtain an MSc Finance diploma, with the diploma annex clearly stating that the student successfully completed the Duisenberg Honours Programme.

For more information on this programme, see the Master site of the university (www.vu.nl > study at vu amsterdam > Finance (Msc) > Duisenberg honours programmes in Quantitative Finance and Risk Management)

Opleidingsdelen:

- M Finance - Duisenberg QRM - Obligatory
- M Finance - Duisenberg QRM - Electives

M Finance - Duisenberg QRM - Obligatory

The Honours programme contains 9 obligatory courses plus a thesis.

Vakken:

Naam	Periode	Credits	Code
Asset Pricing	Periode 1	6.0	E_FIN_AP
Derivatives	Periode 2	6.0	E_FIN_DER
Econometrics for Quantitative Risk Management	Periode 1+2	6.0	E_FIN_EQRM
Ethics	Periode 3	3.0	E_BA_ETH
Financial Sector Regulation	Periode 4	6.0	E_BA_FSR
Institutional Investments and Asset Liability Management	Periode 4	6.0	E_FIN_IIALM
Quantitative Financial Risk Management	Periode 5	6.0	E_FIN_QFRM
Research Project for Finance	Periode 3	6.0	E_FIN_RPFIN
Stochastic Proces for Finance	Periode 1+2	6.0	E_FIN_SPF
Thesis	Ac. Jaar (september)	21.0	E_FIN_THSQFD

M Finance - Duisenberg QRM - Electives

Choose 2 courses from the list.

Vakken:

Naam	Periode	Credits	Code
Advanced Corporate Finance	Periode 1	6.0	E_FIN_ACF
Behavioral Finance	Periode 4	6.0	E_FIN_BF
Corporate Law	Periode 4	6.0	E_BA_CL
Corporate Valuation	Periode 2	6.0	E_BA_CV
Data Mining Techniques	Periode 5	6.0	X_400108
Evolutionary Computing	Periode 1	6.0	X_400111
Real Estate Management	Periode 5	6.0	E_BA_REM
Simulation and Stochastic Systems	Periode 4	6.0	E_EORM_SSS
Time Series Econometrics	Periode 4	6.0	E_EORM_TSE

Master Finance - General information

Opleidingsdelen:

- Learning outcomes
- Teaching
- Enrolment for courses and exams
- Extra course

Learning outcomes

Intended learning outcomes MSc Finance

The programme is based on the following intended learning outcomes:

1. Disciplinary knowledge:
o 1.a: Students know the main defining principles. methodological
cornerstones. and tools in modern corporate finance and possess
applicable knowledge to analyse complex questions in this area.
o 1.b: Students know the main defining principles. methodological
cornerstones. and tools in modern investments / asset pricing and
possess applicable knowledge to analyse complex questions in this area.
o 1.c: Students know the main defining principles. methodological
cornerstones. and tools in modern institutional finance and possess
applicable knowledge to analyse complex questions in this area.

2. Analytical thinking:
o 2.a: Students are able to search. identify. read and understand
important contributions to the literature in the area of finance and
critically assess the (de)merits of these contributions as well as the
limitations of the conclusions and/or framework laid out in the
contribution;
o 2.b: Students are able to abstract complex realistic problems in
finance to their core. formulate the appropriate corresponding research

question. and create their own frame of analysis to address the research question; where appropriate. they are able to build bridges to other subfields in or outside finance to answer this research question.

3. Quantitative skills: Students possess the quantitative analysis skills to answer complex research questions in the area of finance and financial decision making; they are able to select the appropriate quantitative techniques for analysis. manipulate large data sets. efficiently use statistical software to perform the analysis. critically interpret the results and adjust methodology in those cases where initial assumptions appear to be violated.

4. Professional skills: Students possess the relevant professional skills to be successful academic professionals. In particular.
o 4.a: Students have the skill to be professionally independent: they have the ability to work and plan effectively. both individually and in teams; can identify the areas in which they need to develop and implement a strategy for self-development; they are able to communicate effectively and in a balanced way to a variety of audiences (professionals. non-experts).
o 4.b: Students possess the skills to identify new relevant questions in the area of finance; they are able to put these questions into societal context and reflect on their own responsibility. as well as that of organizations they may work for.
4.c: Students have the ability to self-reflect. to critically assess their own (and others) output and performance. and to improve upon this where needed; their critical reflection allows them to formulate issues and/or research questions that lie beyond (or after) the research question at hand and thus contribute to further knowledge creation.

The Duisenberg Honours Programme builds in the same intended learning outcomes, but distributes the weights differently compared to the regular MSc Finance programme. Specifically, the focus is more on intended learning outcome 3 and less on 1a and 1c.

Teaching

Tuition is carried out in plenary lectures and small groups. Much attention is paid to an active method of studying. This includes writing study papers, working out cases and preparing practical assignments. In this way students become familiar with the application of advanced theory to practical work. It also serves to integrate the theory studied in the individual courses into a comprehensive body of knowledge. Papers are written both individually and in groups of two or three students, thus furthering the students' ability to work in teams.

In the Research Project (period 3) much time is devoted to presentation and discussion of one's work to fellow-students and staff and to group discussions. The small-scale tuition environment provides an excellent opportunity for guidance and feedback by staff and other students. Apart from developing the student's communicative skills in oral and written presentation, attention is paid to the development of critical judgement in assessing research work of others.

Enrolment for courses and exams

See VUnet for more information about course enrolment.

Extra course

The RABO Honours Class is an extra course on top of the regular curriculum. This course may only be followed by a selected group of students.

Vakken:

Naam	Periode	Credits	Code
RABO Honours Class	Periode 4+5	9.0	E_FIN_RHC

Advanced Corporate Finance

Vakcode	E_FIN_ACF ()
Periode	Periode 1
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Economische Wet. en Bedrijfsk.
Coördinator	prof. dr. ir. H.A. Rijken
Examinator	prof. dr. ir. H.A. Rijken
Docent(en)	prof. dr. ir. H.A. Rijken
Lesmethode(n)	Hoorcollege, Werkgroep
Niveau	400

Doel vak
Achieve advanced knowledge in the theory and practice of corporate finance. The main objective is to fully understand theoretical concepts (their strengths and limitations) and to use these theoretical frameworks to solve in an effective way practical issues in corporate finance. After following this course, you: - understand basic Corporate Finance concepts, including their strengths and limitations - have the quantitative skills to apply these basic concepts - understand the interrelationship between various concepts and link them in a general framework - are able to apply this framework in real life cases.

Inhoud vak
This course elaborates on the course corporate finance in the bachelors program. The course has two focus areas: Corporate Security Design and Corporate (Financial) Risk Management

We will start off with a short review of the theory of Modigliani and Miller. Within the framework of these concepts we will pay attention to the issues on capital structure from the perspective of both the equity holders and the debt holders. A range of corporate financing options, like subordinated bond, convertibles and corporate securitization, will be discussed.

Thereafter we introduce comprehensively the concepts of the operational cash flow and the finance cash flow of a company. The added value of

Corporate (Financial) Risk Management will be discussed from a cash flow perspective and a capital cost perspective. Links with Short Term Financial Management, Credit Risk Management and Value Based Management will be made.

Substantial attention will be given to real life cases (agency questions and restructuring cases in practice) during the course.

Onderwijsvorm
Lectures (2 times 2 hours per week) and 3 working classes

Toetsvorm
written exam (80%) and two cases (20%)

Literatuur
Custom book "Advanced Corporate Finance" ISBN 9781783651931. This include a code to have (web) access to 5 online chapters from the book "Advanced Corporate Finance" (Odgen)

Vereiste voorkennis
Corporate Finance 3.2 or Corporate Financial Management 3.4. For students with no bachelor VU the admission to the Master of Finance is sufficient.

Aanbevolen voorkennis
Corporate Finance 3.2 or Corporate Financial Management 3.4. Students with no VU bachelor in Economics or BA should be familiar with a standard textbook in Corporate Finance, like "Principles in Corporate Finance" (Brealey and Myers) or "Corporate Finance" (Berk and DeMarzo).

Asset Pricing

Vakcode	E_FIN_AP ()
Periode	Periode 1
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Economische Wet. en Bedrijfsk.
Coördinator	prof. dr. R.C.J. Zwinkels
Examinator	prof. dr. R.C.J. Zwinkels
Docent(en)	prof. dr. R.C.J. Zwinkels
Lesmethode(n)	Hoorcollege, Werkgroep
Niveau	400

Doel vak
This course aims to deepen your knowledge in the field of asset pricing and asset allocation.

After completion of the course, you should:
- Have a thorough understanding of how security prices are determined in equity markets.
- Understand the drivers of equity returns.
- Understand and be able to apply optimal asset allocations for both individual and institutional investors.
- Acquire an academic and critical attitude towards competing theories in investment problems.

- Be comfortable with doing advanced analyses in Software such as Microsoft Excel.

Inhoud vak
Starting from basic (undergraduate) Investments knowledge, this course centers around the issues of asset pricing and asset allocation. In the first week we revisit the well-known mean-variance framework and derive the standard CAPM in this set-up. Starting from the second week, we carefully study the assumptions underlying the CAPM framework and ask ourselves what they imply for asset pricing. Examples include the assumption of mean-variance utility, rational expectations, and complete arbitrage. In the final week, we take a sidestep towards delegated asset management. Throughout the course, neoclassical and behavioral theories confronted with each other. In addition, the course builds on both theory and empirics.

Onderwijsvorm
Each of the six weeks of the course feature four hours of lectures and two hours of tutorials. The content of the tutorials varies. There will, for example, be guest lectures from finance practitioners, discussions of the assignments (see below), and in-depth discussion of particular technical issues. In addition, there are individual as well as group assignments.
The focus of these assignments is to apply the theoretical knowledge from
class to real world problems using actual stock market data in Excel or other software. In addition to gaining a deeper understanding of the topics in the course, the assignments will train you in quantitative computer skills you will need later in their career and prepare you for similar assignments in other courses and your thesis.

Toetsvorm
To pass this course, you need a minimum final grade of 6.0 and a minimum grade on the written exam of 5.0. If you score less than 5.0 on the written exam, your final grade is equal to that grade. If you score 5.0 or higher, the final grade is given by:

Final grade = 0.75*(Written exam grade) + 0.2*(Average group assignment grades) + 0.05*(Individual assignment grade).

Literatuur
- Selected research articles and news clippings.
- Lecture notes.
- [For background reading] Boadie, Kane, Markus: Investments (2008; MacGraw-Hill)

Vereiste voorkennis
You should be familiar with investments at the level of Bodie, Kane & Marcus, Investments. Undergraduate level knowledge of statistics and mathematics is also required (e.g., Berenson, Levine, Krehbiel: Basic Business Statistics; and Sydsaeter and Hammond (2006; Prentice Hall): Essential Mathematics for Economic Analysis, Sydsaeter, Hammond, Seierstad, and Strom (2005; Prentice Hall): Further mathematics for Economic Analysis (chapters 4 and 11)).

Aanbevolen voorkennis
You are expected to be very versatile in a relevant software package, such as Microsoft Excel (or any other similarly advance package) and use it to perform estimation and optimization. Core texts here are Benninga,

Financial Modeling, or (more advanced) Jackson and Staunton, Advanced modeling in Finance using excel and VBA.

Overige informatie
This course may have an in-depth empirical follow-up by choosing an appropriate Investments team-research-project during the January / February period.

Bank Management

Vakcode	E_BA_BANKM (61442330)
Periode	Periode 4
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Economische Wet. en Bedrijfsk.
Lesmethode(n)	Hoorcollege
Niveau	400

Doel vak
This course aims to give students insight in various aspects in running a banking business. It applies various general academic frameworks - ranging from financial economics to organisation management - in the practical banking business.

Inhoud vak
This course deals with two important aspects of bank management: the bank business model and business process management within a bank. The fist topic is about financial economics, however will also zoom into the broader function of banks in the macro economy, the second is about business process management. In more detail there are 4 building blocks:
The first buidling block is about the postion of banks in the wider economy. Both the academic framweworks re macro and financial economy will be studied.
The second building block is about bank management and consist of balance sheet risk management and credit risk. Re the latter, the loan portfolio is on average 50-75% of the portfolio and determines for a large part the aforementioned RAROC. Focus will not only be on individual credits, also techniques to manage the loan portfolio will be studied. Balance sheet risk mangement consist out of capital, interest rate risk and liquidity.
Managing financial risk at both the asset and liability side is key for banks and has to be aligned with the Basel Framework, including Basel III. The current credit crisis shows the impact of overlooking and underestimation financial risks. Improving a banking business model can be seen as an optimisation of a banking portfolio -having various product-market combinations - in terms of (financial) risk and return.
The third building block focus on the regulatory environment.

Finally there will be attention for 'banking' alternatives. What is the future business model of banks, is it still viable in the coming decade? What will be the impact of alternatives like crowd-funding, private equity etc.

Onderwijsvorm

Lectures, and and a (group) assignment

Literatuur
Bank Management & Financial Services, by Rose & Hudgins, 9th

Behavioral Finance

Vakcode	E_FIN_BF ()
Periode	Periode 4
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Economische Wet. en Bedrijfsk.
Coördinator	prof. dr. M.J. van den Assem
Examinator	prof. dr. M.J. van den Assem
Lesmethode(n)	Hoorcollege
Niveau	400

Doel vak
The aims of the course are to understand
- how people are subject to distortions or biases in their beliefs, such
as overconfidence and optimism,
- that people have preferences that are not understood in a normatively
acceptable framework, and exhibit for example loss aversion and narrow
framing,
- why such phenomena are highly relevant in the contexts of firms and
financial markets, and
- how these insights can be applied to make better decisions and to
improve the behavior of others.

Inhoud vak
Finance courses and textbooks mostly tell us how we should make
financial decisions. This course asks how we actually do make financial
decisions, using insights from psychology, behavioral economics, and
behavioral finance. It repeatedly contrasts decision making behavior
with rational norms and explains why people deviate systematically from
these norms. Understanding your own financial decision processes and
those of others is fundamental to virtually every aspect of finance,
including valuation, capital budgeting, corporate governance, portfolio
selection, financing issues, dividend policy, and risk management.

Onderwijsvorm
Lectures (2 times 2 hours per week)

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

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

Vereiste voorkennis
None

Overige informatie
For students MSc Finance. Not accessible for students MSc Business
Administration (Financial Management track); these students can instead
take the course Financial Decision Making, which deals with similar
topics.

Corporate Law

Vakcode	E_BA_CL ()
Periode	Periode 4
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Economische Wet. en Bedrijfsk.
Coördinator	mr. dr. B.H.A. van Leeuwen
Examinator	mr. dr. B.H.A. van Leeuwen
Docent(en)	mr. dr. B.H.A. van Leeuwen
Lesmethode(n)	Hoorcollege, Werkgroep
Niveau	400

Corporate Valuation

Vakcode	E_BA_CV ()
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Economische Wet. en Bedrijfsk.
Coördinator	dr. M. Millone MSc
Examinator	dr. M. Millone MSc
Docent(en)	dr. M. Millone MSc
Lesmethode(n)	Hoorcollege, Werkgroep
Niveau	400

Doel vak
This course elaborates on the course Advanced Corporate Finance 4.1.
Aim is to complete the overview of Corporate Finance field. Corporate
Valuation is closely interconnected with Corporate Financing decisions.

Inhoud vak
The course kicks off with a discussion of value drivers and Financial
Statement Analysis. A valuation starts with a thorough understanding of
the business strategy and an analysis of the financial figures.
Quickly thereafter the hard core of Corporate Valuation will be
outlined: CF valuation techniques (theory and practice) and pricing
models for equity investments and debt investments. We follow closely
the methodology as outlined by McKinsey, regarded by professionals as
the standard practice.

Corporate valuation depends very much on the perception of investors in
financial markets. Therefore attention will be paid to the perspective
of banks as loan providers, investment banks as dealers, equity analysts
and private equity funds. These topics will be the basis of two guest

lectures.
After this overview specialized topics will be addressed: corporate valuation in special cases of high growth perspectives, valuation of corporate social responsibility and finally we will discuss the valuation of companies such as Facebook and Instagram.

Corporate Valuation topics will be applied in three business cases provided by the coordinator and one case provided by a guest lecturer.

Onderwijsvorm
Lectures (2 times 2 hours per week) and working groups (1 time 2 hours per week).

Toetsvorm
written exam (60%) and four case assignments (40%)

Literatuur
- Reading material provided on black board
- Harvard business case course pack (this will be made available for purchase at the beginning of the course)
- Valuation, McKinsey (6th edition). (The 5th edition of this book can also be found as an e-book, but the students will be responsible to match the content between the two editions and no rights can be derived from using the older version of the book).

Vereiste voorkennis
Advanced Corporate Financial Management 4. 1

Corporate Valuation for Finance

Vakcode	E_FIN_CVF ()
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Economische Wet. en Bedrijfsk.
Coördinator	dr. M. Millone MSc
Examinator	dr. M. Millone MSc
Docent(en)	dr. M. Millone MSc
Lesmethode(n)	Hoorcollege, Werkgroep
Niveau	400

Doel vak
This course elaborates on the course Advanced Corporate Finance 4.1.
Aim is to complete the overview of Corporate Finance field Corporate Valuation is closely interconnected with Corporate Financing decisions.

Inhoud vak
The course kicks off with a discussion of value drivers and Financial Statement Analysis. A valuation
starts with a thorough understanding of the business strategy and an analysis of the financial figures.
Quickly thereafter the hard core of Corporate Valuation will be outlined: CF valuation techniques (theory and practice) and pricing models for equity investments and debt investments. We follow closely the methodology as outlined by McKinsey, regarded by professionals as

the standard practice.

Corporate valuation depends very much on the perception of investors in
financial markets. Therefore attention will be paid to the perspective
of banks as loan providers, investment banks as dealers, equity analysts
and majority shareholders. These topics will be the basis of two guest
lectures.
After this overview specialized topics will be addressed: corporate
valuation in special cases of high growth perspectives, valuation of
corporate social responsibility and finally we will discuss the
valuation of companies such as Facebook and Instagram.

Corporate valuation also is impacted in different ways by Corporate
Governance: ownership structure, control issues and legal environment.

Corporate Valuation topics will be applied in 3 business cases provided
by the coordinator and 1 case provided by a guest lecturer.

Onderwijsvorm
Lectures (2 times 2 hours per week)

Toetsvorm
written exam (60%) and four case assignments (40%)

Literatuur
- Custom book "Advanced Corporate Finance" ISBN 978 1 780163000
- Valuation, McKinsey (5th edition). This is an e-book.

Vereiste voorkennis
Advanced Corporate Finance 4.1

Data Mining Techniques

Vakcode	X_400108 (400108)
Periode	Periode 5
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	dr. M. Hoogendoorn
Examinator	dr. M. Hoogendoorn
Docent(en)	dr. M. Hoogendoorn
Lesmethode(n)	Hoorcollege
Niveau	500

Doel vak
The aim of the course is that students acquire data mining knowledge and
skills that they can apply in a business environment. How the aims are
to be achieved: Students will acquire knowledge and skills mainly
through the following: an overview of the most common data mining
algorithms and techniques (in lectures), a survey of typical and
interesting data mining applications, and practical assignments to gain
"hands on" experience. The application of skills in a business
environment will be simulated through various assignments of the course.

Inhoud vak

The course will provide a survey of basic data mining techniques and their applications for solving real life problems. After a general introduction to Data Mining we will discuss some "classical" algorithms like Naive Bayes, Decision Trees, Association Rules, etc., and some recently discovered methods such as boosting, Support Vector Machines, and co-learning. A number of successful applications of data mining will also be discussed: marketing, fraud detection, text and Web mining, possibly bioinformatics. In addition to lectures, there will be an extensive practical part, where students will experiment with various data mining algorithms and data sets. The grade for the course will be based on these practical assignments (i.e., there will be no final examination).

Onderwijsvorm

Lectures (h) and compulsory practical work (pra). Lectures are planned to be interactive: there will be small questions, one-minute discussions, etc.

Toetsvorm

Practical assignments (i.e. there is no exam). There will be two assignments done in groups of three. There is a possibility to get a grade without doing these assignments: to do a real research project instead (which will most likely to involve more work, but it can also be more rewarding). For the regular assignments the first assignment counts for 40% and the second for 60%. The grade of both assignments needs to be sufficient to pass the course.

Literatuur

Ian H. Witten, Eibe Frank, Mark A. Hall, Data Mining: Practical Machine Learning Tools and Techniques (Third Edition). Morgan Kaufmann, January 2011
ISBN 978-0-12-374856-0

Aanbevolen voorkennis

Kansrekening and Statistiek or Algemene Statistiek (knowledge of statistics and probabilities) or equivalent. Recommended: Machine Learning.

Doelgroep

mBA, mCS, mAI, mBio

Derivatives

Vakcode	E_FIN_DER (60442060)
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Economische Wet. en Bedrijfsk.
Coördinator	dr. N.J. Seeger
Examinator	dr. N.J. Seeger
Docent(en)	dr. N.J. Seeger
Lesmethode(n)	Hoorcollege, Werkgroep
Niveau	400

Doel vak

The primary objective of this course is to provide students with an advanced introduction to derivative instruments. By the end of the course students should have a sound understanding of the pricing concepts, practical applicability, operational complexity, and risks of several linear and non-linear derivatives.

Inhoud vak

In todays financial world, the role of derivatives gets increasingly important. Banks and pension funds use derivatives to manage their balance sheet risk, corporate treasuries need derivatives for mitigation of international trade risk, insurance companies actively apply derivatives strategically in order to hedge long term interest rate exposures. Worldwide derivatives trading has exploded to unprecedented levels in the last decades. Therefore, a sound understanding of derivatives is indispensable for anyone pursuing a job in finance.

The course aims to help students in developing a general understanding of the fundamental principles related to derivative instruments. When we try to understand derivative instruments we will ask questions like:

1. How do derivative instruments work?
2. Is it possible to decompose derivatives in basic assets?
3. How to determine the fair value of derivative instruments?
4. What are the risks of using derivative instruments?
5. How are derivative instruments applied in practice and are there any relevant operational issues in the real world?

Hence, the course focuses on facilitating conceptual understanding of derivative instruments and of the methods that are needed to apply derivatives in different settings of finance applications; whether it is for trading purposes, structuring products, risk management, etc.

The field of derivatives is one of the most mathematically sophisticated in finance. Therefore, to understand derivatives it is inevitable to deal with mathematical methods. However, we want to emphasize that in the course mathematical methods are primarily used as tools to understand derivatives. We intend to serve a balanced mix of theory, intuition and practical aspects.

The course will treat the following subjects:

- Why derivatives?
- Forwards, futures and options
- Pricing concepts of derivative instruments
- Discrete and continuous time option pricing models
- Understanding Black-Scholes formula
- Beyond Black-Scholes (stochastic volatility and jumps)
- Hedging strategies
- Estimating model parameters
- Credit derivatives / Financial Crisis

Onderwijsvorm

The course spans a period of six weeks. There will be 12 lecture sessions of 2 x 45 minutes each (for dates and times see course schedule), in which the course material is presented. There will be two additional tutorial sessions in which solutions to programming problems

related to derivatives topics will be discussed.

Toetsvorm
The final grade of the course is the grade of the written exam.

Literatuur
- Lecture slides
- John Hull: Options, Futures and other Derivatives, 8th Edition, 2011

Further References:
- Das, R.K. and S.R. Sundaram: Dervatives: Principles and Practice, McGRAW-Hill International Edition, 2010
- Jarrow, R. and A. Chatterjea: An Introduction to Derivative Securities, Financial Markets, and Risk Management, W. W. Norton & Company, 2013
- Baxter/Rennie: Financial Calculus, Cambridge, 1996. - Neftci: Principles of Financial Engineering, Elsevier, 2nd edition, 2008.
- Bingham/Kiesel: Risk-Neutral Valuation: Pricing and Hedging of Financial Derivatives, Springer, 2004.
- Björk, T.: Arbitrage Theory in Continuous Time, Oxford University Press, 2004.

Vereiste voorkennis
Students entering this course should be familiar with the basic corporate finance principles and techniques (e. g. Berk/DeMarzo, Corporate Finance. 2013) and investment management concepts (e. g. Bodie, Investments. 2010). In order to follow the course material right from the start it is recommended to review the derivatives material that has been covered in the courses: Financiering 2.5 and Investments 3.4. For solving the assignments, programming experience with Excel/VBA is required. A very good introduction to Excel/VBA can be found on the homepage http://xlvu.weebly.com; provided by Dr. Arjen Siegmann.

Econometrics for Quantitative Risk Management

Vakcode	E_FIN_EQRM ()
Periode	Periode 1+2
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Economische Wet. en Bedrijfsk.
Coördinator	dr. C.S. Bos
Examinator	dr. C.S. Bos
Docent(en)	prof. dr. A. Lucas, dr. C.S. Bos
Lesmethode(n)	Hoorcollege, Werkgroep
Niveau	400

Doel vak
Upon successful completion, students should
• have a thorough understanding of econometric estimation methodology (extremum estimation, regression, maximum likelihood, GMM);
• understand the asymptotic statistical behavior of typical estimation methodologies and have the means to develop inference procedures to answer finance/econometric questions of interest;
• be aware of typical statistical complications in financial econometrics and how to deal with these (endogeneity, time series

variation and model instability, unit roots and spurious regression, cointegration, heteroskedasticity, alternative standard errors);
• be able to implement econometric methods in computer code and run simulations to study the properties of estimation and inference procedures;
• download, process, and use real financial data, obtain results, and critically interpret the results obtained;
• be able to report the results clearly and concisely;
• be able to understand and critically evaluate financial econometric research as presented in the academic literature;
In this way students should be well prepared for the team research project in Block 3, and
for the academic thesis in Block 5/6.

Inhoud vak
This is a specialized course for the Duisenberg Honours Programme in Quantitative Risk Management and is not accessible to students outside this programme.
The course starts out with a series of models commonly applied in the financial econometrics literature and practice. These include linear and non-linear regression, maximum likelihood estimation, and GMM. We consider time series, cross-sectional, and panel data settings.
The common ground in estimation and inference behind these models is investigated, leading towards the theory for a general statistical framework for extremum estimators and inference procedures in the second part of the course.
Students are required to implement some of the methods in case assignments using computer coding. We use Ox as our standard programming language, but students are free to choose some other language if they prefer.

Onderwijsvorm
2h lectures, 2h tutorials, over two periods

Toetsvorm
Intermediate exam (40%), final written exam (40%), case work (20%).

Literatuur
Tsay, R. S. (2010): Analysis of Financial Time Series, 3rd edition. John Wiley & Sons. http://dx.doi.org/10.1002/9780470644560
Hansen, B. E. (2016): Econometrics.
http://www.ssc.wisc.edu/~bhansen/econometrics

Vereiste voorkennis
Students should have a sound knowledge of Probability Theory and Mathematical Statistics, Linear Algebra and Calculus, as well as an introductory knowledge in Econometrics. They should also be familiar with basic bachelor level finance concepts.
Students should also master a matrix-oriented programming language. During the course, Ox is used (www.oxmetrics.com). A bootcamp 'Principles in Programming in Econometrics' is organized for Ox in the last week of August, before the start of the course. Please register by signing up in BlackBoard for the bootcamp.

Indication of entry level:
 Edwards, C. H. and D. E. Penney (2007). Calculus, with Early Transcendentals. New International ed of 7th Revised. Pearson.
 Casella, G. and R. L. Berger (2008). Statistical Inference. International edition of 2nd revised. Cengage Learning, Inc.

Stock, J. H. and M. W. Watson (2011). Introduction to Econometrics. 3rd. UK: Pearson Education.
Bodie, Z., A. Kane, and A. Marcus (2013). Investments. 10th. McGraw-Hill Education.

Empirical Finance

Vakcode	E_FIN_EF (60442070)
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Economische Wet. en Bedrijfsk.
Coördinator	prof. dr. A. Lucas
Examinator	prof. dr. A. Lucas
Docent(en)	prof. dr. A. Lucas, dr. A. Opschoor
Lesmethode(n)	Hoorcollege, Casecollege, Werkcollege
Niveau	400

Doel vak
The student is able to:
1) translate a financial research question into a modelling equation
that can be operationalized for statistical or mathematical analysis.
2) Apply various empirical models and methods - ranging from linear
regression, maximum likelihood, time series models and forecasting – on
empirical data, using statistical software
3) Report the results of his/her analysis clearly according to academic
standards.

Inhoud vak
The course concentrates on the following methodologies: regression
model, endogeneity and instrumental variables, time series models, tests
for information efficiency, market microstructure, credit risk, event
study analysis, portfolio valuation, fixed income, volatility models
(GARCH), switching models, forecasting.

This course offers students the opportunity to study advanced empirical
research methods in finance. The objective is to increase the students'
ability to understand and to apply empirical methods in finance. The
course represents an integration of theory, methods and examples. We use
STATA as our standard software. The aim of the course is to enable
students to undertake their own quantitative research projects in
practice.

Onderwijsvorm
The first week there is an introductory computer lab session to get
familiar with the software used in class, STATA. There are two lecture
sessions each week for six weeks. Next to this, there is a lab session
each weak in smaller groups.
The programme consists of lectures, classroom discussions, case work,
and computer exercises. Students are expected to actively participate in
all classroom discussions. The purpose of the compulsory case work is to
give students the practical skills for solving empirical finance
problems.

Toetsvorm

There is a final written exam (70 percent; minimum grade 5.0 to pass the course).
There case work during the course (30 percent).
There is a reporting case (0 percent, pass/fail, must be passed to complete the course).

Literatuur

Book: Introductory Econometrics for Finance, 2nd Edition, Chris Brooks, Cambridge University Press.
Slides and lecture notes.
Relevant academic papers (to be indicated at the start of the course).

Vereiste voorkennis

Students should have a sound knowledge of introductory mathematics (including linear algebra) and statistics at the bachelor economics level and be familiar with key concepts of corporate finance, investments and financial markets.

Indication of entry level:
Sydsaeter and Hammond (2006, Prentice Hall): Essential Mathematics for Economic Analysis.
Business Statistics Berenson, Levine, Krehbiel (2002): Basic Business Statistics.
Brealey and Myers (2002): Principles of Corporate Finance, 7th ed.
Bodie, Kane, and Marcus (1996): Investments.

Aanbevolen voorkennis

Core courses Advanced Corporate Finance (4.1) and Asset Pricing (4.1).

Ethics

Vakcode	E_BA_ETH (61432100)
Periode	Periode 3
Credits	3.0
Voertaal	Engels
Faculteit	Fac. der Economische Wet. en Bedrijfsk.
Coördinator	prof. dr. J.F.D.B. Wempe
Examinator	prof. dr. J.F.D.B. Wempe
Docent(en)	prof. dr. ir. H.A. Rijken, dr. O. Bouwmeester, prof. dr. ir. S.L.J.M. de Leeuw, dr. C.M.J. Wickert
Lesmethode(n)	Hoorcollege, Werkcollege
Niveau	400

Doel vak

- To become competent in describing moral problems
- To be able to analyze moral problems of professionals embedded in organizations
- To know how to apply concepts of moral philosophy in describing and solving such problems of embedded professionals

Inhoud vak

Moral philosophy studies responsibilities or duties as conceived by acting individuals in order to justify their acts. Organization ethics is questioning the moral behaviour of organizations as such and of

individuals acting within organizations. Professional ethics is questioning the behaviour of individuals acting in professional capacities. Does the organizational context make a difference here? It seems that classical ethics is a process of observing, questioning, grounding, and deriving rules from earlier established principles and values. The course briefly will explore questions such as these:

- If my profession knows an own professional code of ethics how is compliance with such a code ensured? What types of instruments are available?
- How relevant are concepts about a just society, fairness or justice?
- How should corporations and non-profit organizations be managed in such way that they proceed in a morally acceptable manner?
- What sort of professional (in)dependence professional staff may enjoy within the setting of an organization?
- What are the instruments of enforcing morals (compliance) in professional societies and in organizations?

In this course on Ethics five competences will be considered:

- How to recognize and describe a moral problem
- To know the difference between principles, values, and norms
- To know the main traditional modes of arguing
- To distinguish between the responsibility of individual (and professional) participants or employees within an organization and the responsibility of the organization and its management as such
- To be able to connect the concept of a pluriform society with the need for professional and business ethics

Onderwijsvorm
lecture
lecture per specialization

Toetsvorm
Multiple choice exam
Individual paper

Literatuur
Information will follow

Vereiste voorkennis
No prior knowledge required

Doelgroep
All master students Business Administration

Evolutionary Computing

Vakcode	X_400111 (400111)
Periode	Periode 1
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Exacte Wetenschappen
Coördinator	prof. dr. A.E. Eiben
Examinator	prof. dr. A.E. Eiben
Docent(en)	prof. dr. A.E. Eiben, J.V. Heinerman MSc

Lesmethode(n)	Hoorcollege
Niveau	400

Doel vak

To learn about computational methods based on Darwinian principles of
evolution. To illustrate the usage of such methods as problem solvers
and as simulation tools.To gain hands-on
experience in performing experiments.

Inhoud vak

The course is treating various algorithms based on the Darwinian
evolution theory. Driven by natural selection (survival of the
fittest), an evolution process is being emulated and solutions for a
given problem are being "bred". During this course all "dialects"
within evolutionary computing are treated (genetic algorithms,
evolutiestrategieën, evolutionary programming, genetic programming, and
classifier systems). Applications in optimisation, constraint handling,
machine learning, and robotics are discussed. Specific subjects handled
include:
various genetic structures (representations), selection techniques,
sexual and asexual variation operators, (self-)adaptivity. Special
attention is paid to methodological aspects, such as algorithm design
and tuning. If time
permits, subjects in Artificial Life will be handled. Hands-on-
experience is gained by a
compulsory programming assignment.

Onderwijsvorm

Oral lectures and compulsory programming assignment (in teams of 3).
Highly motivated students can replace the programming assignment by a
special research track under the personal supervision of the lecturer
(s).

Toetsvorm

Written exam and pogramming assignment (weighted average).

Literatuur

Eiben, A.E., Smith, J.E., Introduction to Evolutionary Computing.
Springer, 2015, 2nd edition, ISBN 978-3-662-44873-1.

Vereiste voorkennis

Programming skills are necessary to do the practical assignment.

Doelgroep

mBA, mAI, mCS, mPDCS

Financial Sector Regulation

Vakcode	E_BA_FSR ()
Periode	Periode 4
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Economische Wet. en Bedrijfsk.
Coördinator	prof. dr. S.G. van der Lecq
Examinator	prof. dr. S.G. van der Lecq

Docent(en)	prof. dr. S.G. van der Lecq
Lesmethode(n)	Hoorcollege
Niveau	400

Doel vak

The course has 2 goals: (1) provide students with up to date knowledge
on the essence of some financial sector regulations; (2) practice
setting up arguments on the reasons behind regulations, as well as their
impact on the functioning of financial markets. We will focus on
financial markets in Europe.

Inhoud vak

We will start with analytical concepts, which can be applied to all
(financial) markets. Then we will make a tour d'horizon around a few
(European) financial markets, exploring the impact of the financial
crisis and the subsequent regulations. Some lectures will focus on
general topics, like systemic risk and stress testing. We will wrap up
with the implications for your career.

Onderwijsvorm

Classroom lectures by teacher and by senior practitioners in the
respective fields (e.g. supervisors). Indiviual essay aimed to apply the
concepts and set up an argument.

Toetsvorm

individual exam (80%) + individual essay (20%). The essay has to be
submitted before the last lecture (deadline to be announced in time).

Literatuur

Journal articles, research papers from supervisory and policy
institutes, background information.

Vereiste voorkennis

Since the group is blended (FMR + QRM), no particular knowledge is
required.

Aanbevolen voorkennis

Some basics in micro, industrial organisation and macro are helpful.
Reading financial newspapers is highly recommended.

Doelgroep

Students who aim for a career in the financial sector (corporate,
advisory, supervisory).

Overige informatie

This course is qualitative in nature. We will not do any calculus.

Financial Markets and Institutions

Vakcode	E_FIN_FMI (60442080)
Periode	Periode 4
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Economische Wet. en Bedrijfsk.
Coördinator	prof. dr. I.P.P. van Lelyveld

Examinator	prof. dr. I.P.P. van Lelyveld
Docent(en)	prof. dr. I.P.P. van Lelyveld
Lesmethode(n)	Hoorcollege
Niveau	400

Doel vak

The purpose of this course is to develop an understanding of the economics underlying financial intermediation, financial markets and banking, with a particular regard for current market developments and their consequences.

Inhoud vak

We start by discussing the traditional role of commercial banks in the financial system and how banks manage risks. Topics include the major risks faced by banks, lending and asymmetric information, credit rationing, and securitisation. This leads us into a discussion of financial fragility covering, inter alia, liquidity provision, bank runs, deposit insurance and opacity. Then we discuss how various regulations could be helpful or not.

Given the depth of the Great Financial Crisis (2007-2009), there has been a flurry in new regulation. What are the objectives of these regulations, are these or will these be met. Since traditionally regulation has been focussed on solvency will dedicate a lecture on liquidity as well as this has proven to be quite a separate type of risk. In addition we will discuss macroprudential and systemic risk regulations.

The next two lectures cover the plumbing of the system and other large institutional participants. The former lecture will provide us some understanding of how risks in the system not only originate with the actions (i.e., trades) but also with the markets are set up. The latter will discuss how, next to (investment) banks, other large institutional investors are coming to the fore.

In the final part of the course we will turn to three distinct markets: the derivatives market, the interbank and the international banking market. How do these markets operate, particularly in the crisis, and how are they evolving.

Two guest lectures from practitioners will provide more colour: DNB President Klaas Knot will cover central bank policy complemented by a lecture from a practitioner.

Onderwijsvorm

The lectures will be complemented by a writing assignment (see below) All information regarding the timetable of the course can be found at
http://rooster.vu.nl.
To facilitate the Writing Assignment a non-compulsory lecture on writing in English will be organised in the second week.
In the second week there will be an additional non-compulsory lecture to discuss question for those without a banking background
(e.g. econometrics students).
Question should be raised on the Blackboard forum.

Toetsvorm

Final grade is based on a closed-book written final exam (80%)
and the grade on an open-book essay to be written in groups of at most
three students (20%). More details regarding the topics and the
structure of the essay will be provided during the lectures and
tutorials. If no essay was submitted, it will be graded 0 (zero). In the
case of a resit in later periods (i.e., in 2018 or later), the essay
result will be disregarded and the resit grade will be based 100% on the
examination. The exam questions will cover the topics and the exercises
treated in the class. The lecture notes and solutions published on
Blackboard can be used as a faithful guide for the required material and
level of difficulty.
Part of understanding is being able to present your findings. In many
cases, getting the form right is just as important as the actual
content. Findings can be presented in many ways. For example, as an
academic article, a thesis, a Powerpoint or a column. In this writing
assignment we will aim for a contribution to a policy oriented blog such
as VoxEU (www.voxeu.org).
Currently the topic is set to be the split between investment banking
(the casino) from retail banking (the utility). Such a split has been
argued to increase financial stability and reduce moral hazard. However,
if a more interesting policy question arises closer to the course, the
topic might change.
The assignment should be written in groups of at most three. Please use
the appropriate sign up tool on Blackboard. Further details will be
given in the first lecture. Note that a non-compulsory lecture on
writing in English will be planned in the first week.
The deadline for the assignment will be announced in the first lecture.

Literatuur
We will make use of the following non-mandatory textbook:
• Mishkin, F., K. Matthews, and M. Giuliodori, The Economics of
Money, Banking and Finance, European edition. From this book we will
cover all of Chapters 8 through 12.

In addition several mandatory academic papers will posted to Blackboard.
Lecture notes will be available on Blackboard just before each class.
Solutions for all exercises will be available after lectures.
Other non-mandatory (but useful) materials such as academic papers,
press articles or book titles will be posted on Blackboard.

Vereiste voorkennis
Students should have followed a bachelor course in Money and Banking.

Institutional Investments and Asset Liability Management

Vakcode	E_FIN_IIALM ()
Periode	Periode 4
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Economische Wet. en Bedrijfsk.
Coördinator	dr. M. Boes
Examinator	dr. M. Boes
Lesmethode(n)	Hoorcollege, Werkgroep
Niveau	400

Doel vak

Achieve advanced knowledge of the investment process of institutional investors, like pension funds and insurers. The main objective is to fully understand the most important theoretical concepts in the institutional investment process and the way these concepts are used in practice.

After following the course, you:
- Have a good oversight and thorough understanding of the theory of strategic asset allocation (SAA).
- Have insight in the way the theory of strategic asset allocation is (or not) implemented by institutional investors.
- Have insight in the way the most important inputs for SAA, VaR models and assumptions for expected returns and risks, and Asset and Liability Management (ALM) are generated. Have a good oversight and thorough understanding of the ALM process within financial institutions, including the determination of the risk appetite.
- Have a good oversight of the (academic) studies on the debate "Active vs. Passive investing" and a thorough understanding of the main issues in this debate.
- Have a good oversight why pension reform is necessary in almost every country in the world, and gain insight the various pension reform policy measures.
- Are able to apply theoretical concepts in real life cases.

Inhoud vak

The course starts with a description of the investment management process for institutional investors. After this description we focus in the first week on the theory and practice of strategic asset allocation. We first lay down the basic framework of Markowitz and Samuelson/Merton. We then look at the most important violation of the conditions in the basic framework that leads to the concept of life cycle investing. We will focuson how this concept works in practice and will ask ourselves if the practical implementation is in accordance with academic theory?. In the second week we focus on the important inputs we need for SAA and ALM. The main subjects are VAR models and answers to the question "how we get estimations for expected returns, risk and correlations for the main asset classes?".In the thrid week we focus on implementation issues in the institutional investment management process. The main focus is on the debate "active versus passive investing?".

In the fourth, fifth and sixth week of the course the focus is on ALM. In the fourth week we focus on the ALM decision making process, including the determination of the risk profile, and the specification of the policy measures that pension funds and insurance companies have at their disposal. In the fifth week the student work on a case using an ALM model that is also uses by ALM specialists in practice. The course is concluded with the worldwide issues and approaches of pension reform.

Onderwijsvorm

Lectures (2 times 2 hours per week) and working class

Toetsvorm

Written exam (70%) and two cases (30%).

Quantitative Financial Risk Management

Vakcode	E_FIN_QFRM (60422110)
Periode	Periode 5
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Economische Wet. en Bedrijfsk.
Coördinator	dr. S.A. Borovkova
Examinator	dr. S.A. Borovkova
Docent(en)	dr. S.A. Borovkova, dr. A. van Haastrecht
Lesmethode(n)	Hoorcollege
Niveau	400

Doel vak

Deep understanding and ability to implement modern quantitative risk measurement and management techniques, in the areas of market, credit, operational and liquidity risk.

Inhoud vak

The lecturers are Dr. S. Borovkova, an expert on derivatives, risk management and energy markets, and Dr. A.van Haastrecht, Senior Risk Manager of ING Insurance. In this course we will examine various types of financial risks facing corporations and financial institutions, such as market, credit and operational risks. The course will encompass both theoretical and applied aspects of risk management. This course will give you a solid fundamental for measurement and management of financial risks, knowledge of newest quantitative methods and the ability to apply your knowledge in corporate environment. The lectures are complemented by practical assignments designed to maximally match actual risk management applications in banking environment. For this course you need a strong quantitative focus and affiliation with statistics and probability as well as (some) affiliation with finance, or an intention to learn necessary concepts and vocabulary.

Onderwijsvorm

Lectures (6 hours per week)

Toetsvorm

2 practical assignments and written exam

Literatuur

Embrechts, Frey and McNeal "Quantitative Risk Management"
Counterparty Credit Risk by Brigo, Morini and Palaviccini

Aanbevolen voorkennis

Introductory statistics and probability, implementation skills (Excel, Matlab, Eviews or any other computer package)

RABO Honours Class

Vakcode	E_FIN_RHC ()
Periode	Periode 4+5
Credits	9.0
Voertaal	Engels
Faculteit	Fac. der Economische Wet. en Bedrijfsk.

Coördinator	dr. T.C. Dyakov
Examinator	dr. T.C. Dyakov
Lesmethode(n)	Hoorcollege
Niveau	400

Inhoud vak

The Rabo Honours Class is an extra-curricular programme at the Masters
level for selected students. The programme is primarily intended for
students from the MSc Finance (MFIN) programme and the MSc Business
Administration, specialization Financial Management (MFM) programme, but
students from other fields (Econometrics, Business Analytics,
Stochastics and Financial Mathematics, Law) are also welcome if they
meet the entry requirements.

The aims of the Rabo Honours Class are

• to expose a select group of motivated master students to a range of
current recent research topics in the area of finance (broadly defined)
by means of master class sessions and to enhance their academic skills
in this way;

• to guide students to the frontiers of professional research, to see
where theory meets practice, and to assess where one lags or leads the
other and where opportunities lie for further improvements and
innovation;

• to train students in translating academic research findings in policy
or management advice;

• to provide a stimulating learning experience for students where they
are challenged to push beyond their comfort zone, engage into
stimulating discussions, challenge their instructors, their peers, and
above all, themselves.

The programme is developed in close cooperation with core researchers in
the Finance group at VU University Amsterdam and leading professional
experts at Rabobank. This mix provides students with an ideal exposure
to top-notch academic research on the one hand, and expert professional
guidance and experience on the other hand. It also opens a window of
opportunity to selected students to experience where the challenges lie
in the profession, and to gear their academic profile and job market
search strategy more into that direction.

The programme comprises 9 ects and is extra-curricular. The
extra-curricular character of the programme creates a selective entry
barrier. Students that participate in the programme have to be fully
motivated. The selective character of the programme also ensures that
students meet their equally motivated peers who share their ambition to
push their boundaries, engage into discussion, and think deeper about
the issues facing the world of finance today.

Real Estate Management

Vakcode	E_BA_REM (61452040)
Periode	Periode 5
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Economische Wet. en Bedrijfsk.
Coördinator	prof. dr. J. Rouwendal
Examinator	prof. dr. J. Rouwendal
Docent(en)	prof. dr. J. Rouwendal, dr. F. Hamelink

Lesmethode(n)	Hoorcollege
Niveau	400

Doel vak

The course provides an introduction to the understanding and the analysis of real estate markets and the investment alternatives available to both debt and equity investors. A large part of the focus will be on residential real estate. Students study both the owner occupied and rental markets and pay particular attention to financial aspects, in particular the mortgage market. The secondary market for mortgages, where institutional investors invest in pools of mortgages, is analysed in detail, in particular in light of the recent financial crisis. The last part of the course deals with other forms of real estate that institutional investors may invests in. This part will cover other property types (offices, commercial real estate, etc.) and investment vehicles, such as REITS. Although the course takes an international perspective, special attention is given to the Dutch situation.

Inhoud vak

Students study the characteristics of mortgage loans used by households to finance the purchase of a house, the functioning of the Dutch housing market including the role of policy interventions (notably mortgage interest deductibility and spatial planning), and the role of housing corporations. The secondary market for debt related to this financing is analysed with a focus on the various instruments (such as CDO's and CMO's) that have played on important role in the current financial crisis. Finally, students also look at the other side of the financing of real estate, namely, students take the perspective from an (institutional) investor, such as a pension fund, who considers real estate as one of many available asset classes. Students will study the main characteristics in terms of risk and returns of the different forms of real estate available to the investor (such as investing in mortgage pools, investing in buildings, securitised real estate, etc.), as well as by property type (such as residential versus commercial real estate). After following this course, students should be able to understand:
• the main characteristics of the most popular types of mortgage loans;
• the pros and cons of fixed rate and adjustable rate mortgages;
• the impact of fiscal measures on mortgage payments;
• the role of the housing corporations on the Dutch rental housing market;
• the importance of the secondary market in mortgages, as well as the available instruments for institutional investors such as pension funds;
• the risk and returns characteristics of the main investments vehicles in real estate available to an institution investor.
Real Estate Management is a joint effort of the departments of Spatial Economics and Finance and Financial Sector Management.

Onderwijsvorm

Lectures, including a guest lecture by a real estate specialist.

Toetsvorm

Written examination. Duration 2 h and 45 min. Open questions. No interim results.

Literatuur
• Baum, A.E. & Hartzell, D. (2011). Global Property Investment:
Strategies, Structures, Decisions. Wiley-Blackwell, ISBN: 978-1-4443-
3528-6, Paperback, 576 pages;
• additional course material will be provided on Blackboard.

Overige informatie
This course is organised by the VU. For more information, please go to
http://www.feweb.vu.nl/en/students/study-guide/msc-
entrepreneurship/programme/index.asp

Research Project for Finance

Vakcode	E_FIN_RPFIN (60432010)
Periode	Periode 3
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Economische Wet. en Bedrijfsk.
Coördinator	dr. G. Tumer Alkan
Examinator	dr. G. Tumer Alkan
Docent(en)	prof. dr. A. Lucas, dr. S.A. Borovkova, prof. dr. A.C.F. Vorst, dr. G. Tumer Alkan, dr. M. Millone MSc, dr. T. Artiga Gonzalez
Lesmethode(n)	Werkgroep
Niveau	400

Doel vak
1. Disciplinary knowledge. Students know the main defining principles,
methodological cornerstones, and tools in the discipline and possess
applicable knowledge to analyze complex questions in corporate finance,
investments / asset pricing and institutional finance
2. Analytical thinking
a. Critical reading and judgement. Students are able to search,
identify, read and understand the relevant academic literature in the
area of finance and critically assess academic research.
b. Abstraction in complex settings. Students are able to abstract
complex realistic problems in finance to their core, formulate precise
research questions and hypotheses, and create their own frame of
analysis to address the research question.
3. Quantitative skills. Students possess the quantitative analysis
skills to answer complex research questions in the area of finance; they
are able to select the appropriate quantitative techniques for analysis,
gather empirical data from financial databases, manipulate large data
sets, efficiently use statistical software to perform the analysis and
critically interpret estimation results.
4. Professional skills
a. Professional independence and Communication. They have the ability to
work and plan a demanding project on a tight time-line, both
individually and in teams; they are able to communicate effectively
(report the research set-up and findings clearly, both orally and in
writing) and in a balanced way to a variety of audiences (professionals,
non-experts).
b. Societal awareness. Students possess the skills to identify new
relevant questions in the area of finance; they are able to put these
questions into societal context.

c. Reflection. Students have the ability to self-reflect, to critically assess their own (and others) output and performance, and to improve upon this where needed; formulate issues and/or research questions that lie beyond (or after) the research question at hand and thus contribute to further knowledge creation.

Inhoud vak
Before the end of Period 2, students will be requested to form groups and make a choice from a provided list of projects. This will be communicated via blackboard and VU-email. Each project includes a detailed description, allowing the students to have some understanding of the implications of the topic. The projects will cover various areas in finance; corporate finance, investments / asset pricing and institutional finance. A few projects requiring a strong background in econometrics will also be provided for participants of the Quantitative Finance Track. Starting references from the relevant academic literature will be provided, but students should actively look for additional relevant literature. Between the end of Period 2 and the beginning of this course in January (period 3), students will prepare an initial set-up for their project and carry out a preliminary literature review on their subject. They will present this set-up to the other students in class during the start of period 3. The actual research can then go ahead at full speed during the actual four weeks of period 3. During this initial preparation period, as well as during period 3, individual meetings with the lecturer can be organized. During period 3, each group will be required to:
- make an concise initial, kick-off presentation
- make an intermediate presentation to all other groups
- make a final presentation to all other groups at the end of the period
- write up a research paper (usually around 40 pages), written as a scientific paper, presenting their research, which includes the literature overview and the empirical findings. Writing style and layout should follow those of one of the major academic Finance journals (Journal of Finance, Journal of Financial Economics, Review of Financial Studies).
Students are encouraged to strengthen their applied research outcomes by input from practitioners from the financial industry.

Onderwijsvorm
- individual meetings with each group
- three plenary sessions for presentations of research set-up and (intermediate) results

Toetsvorm
The course grade is based on the final report, the presentation of the results, and the student's discussion participation (as a discussant of one of the presented projects, as well as for his/her contribution to the discussion in the plenary sessions).

Literatuur
A literature review is required for each project. Starting references from the relevant academic literature are provided by the supervisor.

Vereiste voorkennis
For Finance students, the material of Empirical Finance. For Quantitative Finance Track students, we require knowledge of Advanced Econometrics. All projects require students to work with real life data, for which students may choose an appropriate software package of their liking (Excel, or more sophisticated econometric / statistical software)

and appropriate available databases (Datastream, SDC, CRSP, Compustat, ...) or proprietary data sources.

Simulation and Stochastic Systems

Vakcode	E_EORM_SSS (64412010)
Periode	Periode 4
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Economische Wet. en Bedrijfsk.
Coördinator	dr. A.A.N. Ridder
Examinator	dr. A.A.N. Ridder
Docent(en)	dr. A.A.N. Ridder
Lesmethode(n)	Hoorcollege
Niveau	400

Doel vak
The main objective of this course is to learn how to develop and execute a simulation study of a stochastic system. This incorporates all aspects of an operations research study: data collecting, modeling, analyzing, programming, writing a report and presenting the results. A second goal is to learn advanced simulation techniques in financial and oprational systems.

Inhoud vak
The course gives a broad treatment of the important aspects of stochastic simulation and its applications to queuing, reliability, manufacturing, risk analysis, and financial models. The topics covered include random number generators, generating random variates, generating sample paths of diffusion processes, statistical output analysis, steady-state simulation, variance reduction techniques, importance sampling, quasi-Monte Carlo methods, and stochastic optimization. The emphasis is on the mathematical analysis and properties of these simulation methods. There will be assignments in which the students apply simulation issues to problems either by theoretical analysis, or by programming. The simulation programs are written in a software language (allowed are C, C++, Java, Julia, Matlab, Ox, Python and R) and not by using a simulation package. Towards the end of the course the student studies a scientific paper on a simulation topic and gives a presentation of it.

Onderwijsvorm
lecture and tutorial

Toetsvorm
1. Written exam (50%)
2. homework problems (30%)
3. Paper presentation (20%)

Literatuur
Paul Glasserman, Monte Carlo Methods in Financial Engineering, Springer 2003 (paperback version 2010)

Vereiste voorkennis

Probability and Statistics, Stochastic models, Programming experience.

Doelgroep
graduate students in econometrics, operations research, applied
mathematics, quantitative finance

Stochastic Proces for Finance

Vakcode	E_FIN_SPF ()
Periode	Periode 1+2
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Economische Wet. en Bedrijfsk.
Coördinator	dr. S.A. Borovkova
Examinator	dr. S.A. Borovkova
Lesmethode(n)	Hoorcollege, Werkcollege
Niveau	400

Thesis

Vakcode	E_FIN_THS ()
Periode	Ac. Jaar (september)
Credits	18.0
Voertaal	Engels
Faculteit	Fac. der Economische Wet. en Bedrijfsk.
Coördinator	prof. dr. A.C.F. Vorst
Examinator	prof. dr. A.C.F. Vorst
Lesmethode(n)	Hoorcollege
Niveau	500

Doel vak
The thesis is an important part of your academic training where all the
previous elements come together: knowledge, skills, attitude, and
creativity. The thesis gives you the opportunity to engage in your own
independent academic research and to give your distinctive `signature'
of what you are up to in a relatively short period of time. This can be
a valuable signal towards the labor market.

Inhoud vak
You are going to define your own research project and subsequently go
through all necessary steps like: gathering literature, getting a sharp
research question, gathering and manipulating data, choosing the right
empirical methodology and getting results, interpreting them, doing
robustness checks and writing down everything crisply and concisely, and
being able to communicate effectively about your results.

Onderwijsvorm
You will work on your own and will be supervised by one of the members
of the department of Finance. You will have regular meetings with your
supervisor

Toetsvorm
Your thesis will be assessed by your supervisor and a second reader

Literatuur
Academic papers from the top academic finance journals, dependent on
your research question

Vereiste voorkennis
At least two core courses and the Research Project should be passed

Intekenprocedure
Students should sign up in time according to the manual, which is
available on BlackBoard

Overige informatie
You can write your thesis in two periods: either in Spring or in Fall.
There are entry requirements: two core courses passed and the Research
Project.

Thesis

Vakcode	E_FIN_THSQFD ()
Periode	Ac. Jaar (september)
Credits	21.0
Voertaal	Engels
Faculteit	Fac. der Economische Wet. en Bedrijfsk.
Coördinator	prof. dr. A.C.F. Vorst
Examinator	prof. dr. A.C.F. Vorst
Niveau	500

Doel vak
The thesis is an important part of your academic training where all the
previous elements come together: knowledge, skills, attitude, and
creativity. The thesis gives you the opportunity to engage in your own
independent academic research and to give your distinctive `signature'
of what you are up to in a relatively short period of time. This can be
a valuable signal towards the labor market.

Inhoud vak
You are going to define your own research project and subsequently go
through all necessary steps like: gathering literature, getting a sharp
research question, gathering and manipulating data, choosing the right
empirical methodology and getting results, interpreting them, doing
robustness checks and writing down everything crisply and concisely, and
being able to communicate effectively about your results.

Onderwijsvorm
You will work on your own and will be supervised by one of the members
of the department of Finance. You will have regular meetings with your
supervisor

Toetsvorm
Your thesis will be assessed by your supervisor and a second reader

Literatuur
Academic papers from the top academic finance journals, dependent on
your research question

Vereiste voorkennis
To be able to start with your thesis in Spring in the DHPQRM you need to
have passed by mid January two out of the four core courses from the
Fall semester (Stochastic Processes for Finance, Asset Pricing,
Econometrics for QRM or Advanced Econometrics, Derivatives). In
addition, you need to pass the Research Project 4.3 with a grade of at
least 6.0. To start in Fall of the next academic year, you should have
passed the Research Project 4.3 (with grade 6.0 or higher) and two out
of the six core courses.

Intekenprocedure
Students should sign up in time according to the manual, which is
available on BlackBoard

Overige informatie
To be able to start with your thesis in Spring in the DHPQRM you need to
have passed by mid January two out of the four core courses from the
Fall semester (Stochastic Processes for Finance, Asset Pricing,
Econometrics for QRM or Advanced Econometrics, Derivatives). In
addition, you need to pass the Research Project 4.3 with a grade of at
least 6.0. To start in Fall of the next academic year, you should have
passed the Research Project 4.3 (with grade 6.0 or higher) and two out
of the six core courses.

Time Series Econometrics

Vakcode	E_EORM_TSE (64432000)
Periode	Periode 4
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Economische Wet. en Bedrijfsk.
Coördinator	prof. dr. S.J. Koopman
Examinator	prof. dr. S.J. Koopman
Lesmethode(n)	Hoorcollege
Niveau	400

Doel vak
To gain insights in economic time series modelling with a focus on
theory, methods and computations.

Inhoud vak
This course focuses on the advances of theory and computational methods
for time series econometrics. A methodology of econometric programming
is explored for a number of selected topics in time series analysis. In
particular, time series properties in time and frequency domains,
different modeling strategies, likelihood evaluations, filtering methods
and Monte Carlo simulation methods are studied. Theory and methods are
studied thoroughly while some computer programs need to be developed for
the implementation of the methods.

Onderwijsvorm
lecture
tutorial

Toetsvorm
written interim examination
50 percent
written assignments
50 percent

Literatuur
Selection of literature:
- Brockwell, P.J. & R.A. Davis, Time Series: Theory and Methods.
Springer-Verlag, 1991,2nd edition.
- Durbin, J. & S.J. Koopman, Time Series Analysis by State Space
Methods. Oxford University Press, 2001.
- Kim, C-J & C.R. Nelson, State-Space Models with Regime Switching. The
MIT Press, 1999.