



## Course and Examination Fact Sheet: Spring Semester 2019

### 8,156: Financial Risk Management

ECTS credits: 4

#### Overview examination/s

(binding regulations see below)

Decentral - Written examination (50%, 60 mins.)

Decentral - Group examination paper (all given the same grades) (50%)

#### Attached courses

Timetable -- Language -- Lecturer

[8,156,1.00 Financial Risk Management](#) -- Englisch -- [Aymanns Christoph](#)

#### Course information

##### Course prerequisites

The objective of this course is to provide students with an introduction to financial risk management. Students are expected to be interested in modeling and managing financial risk. Having completed this course, students will be able to apply the main concepts of financial risk management and to solve challenging tasks in this area independently. We recommend taking the MBF compulsory courses on "Financial Markets" (7,150) and "Quantitative Methods" (7,160) before this course.

##### Course content

Students who will successfully complete this course will gain a solid background in financial risk management. Students will learn the main principles to measure, model, and manage financial risks. By working in groups, students will learn how to apply these concepts to financial data using the R software package. The course is organized in five parts: First, an introduction to financial risk management and to R programming (tutorial). Second, we will learn how to measure and model financial risk, including the Value-at-Risk (VaR), Expected Shortfall, and the time-series modelling of Autoregressive Conditional Heteroskedasticity (ARCH) processes. Third, we will go beyond financial volatility and we will survey the extreme value theory (EVT) and the dependence structures. Fourth, we will analyze other forms of financial risk that have proved to be highly relevant during the recent financial crisis, in particular credit risk and liquidity risk. Finally, we will review the main hedging instruments and methods including the option theory and Black-Scholes-Merton approach.

##### Course structure

1. Introduction
2. Measuring and Modeling Risk
3. R Tutorial
4. Beyond Financial Volatility: Extreme Value Theory and Dependence Structure
5. Liquidity Risk and Credit Risk
6. Applied Session: Solving Exercises with R
7. Managing and Hedging Risk: Derivatives
8. Guest Lecture
9. Exam



## Course literature

Selected chapters from:

- Hull, J. C. (2012). Options, Futures, and other Derivatives (8th ed.). New Jersey: Prentice Hall.
- Hull, J. C. (2012). Risk Management and Financial Institutions, 3rd Edition, New Jersey, John Wiley & Sons Ltd.
- McNeil, A. J., Frey, R., and P. Embrechts, (2005). Quantitative Risk Management: Concepts, Techniques, and Tools. New Jersey, Princeton University Press.
- Danielsson, J. (2011). Financial Risk Forecasting: The Theory and Practice of Forecasting Market Risk, with Implementation in R and MATLAB, Chichester, John Wiley & Sons Ltd.
- Some papers will be introduced during the lectures.

## Additional course information

Students will apply the concepts learned in class to financial data. In groups of 2-4 students, they will solve some assignments based on Danielson (2011).

## Examination information

### Examination sub part/s

#### 1. Examination sub part (1/2)

##### Examination time and form

Decentral - Written examination (50%, 60 mins.)

##### Remark

60 mins

##### Examination-aid rule

Extended Closed Book

The use of aids is limited; any additional aids permitted are exhaustively listed under "Supplementary aids". Basically, the following is applicable:

- At such examinations, all the pocket calculators of the Texas Instruments TI-30 series and mono- or bilingual dictionaries (no subject-specific dictionaries) without hand-written notes are admissible. Any other pocket calculator models and any electronic dictionaries are inadmissible.
- In addition, any type of communication, as well as any electronic devices that can be programmed and are capable of communication such as notebooks, tablets, PDAs, mobile telephones and others, are inadmissible.
- Students are themselves responsible for the procurement of examination aids.

##### Supplementary aids

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##### Examination languages

Question language: English

Answer language: English

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#### 2. Examination sub part (2/2)

##### Examination time and form

Decentral - Group examination paper (all given the same grades) (50%)

##### Remark

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##### Examination-aid rule

Term papers



- Term papers must be written without anyone else's help and in accordance with the known quotation standards, and they must contain a declaration of authorship.
- The documentation of sources (quotations, bibliography) has to be done throughout and consistently in accordance with the APA or MLA standards. The indications of the sources of information taken over verbatim or in paraphrase (quotations) must be integrated into the text in accordance with the precepts of the applicable quotation standard, while informative and bibliographical notes must be added as footnotes (recommendations and standards can be found, for example, in METZGER, C. (2017), *Lern- und Arbeitsstrategien* (12th ed., Cornelsen Schweiz).
- For any work written at the HSG, the indication of the page numbers both according to the MLA and the APA standard is never optional.
- Where there are no page numbers in sources, precise references must be provided in a different way: titles of chapters or sections, section numbers, acts, scenes, verses, etc.
- For papers in law, the legal standard is recommended (by way of example, cf. FORSTMOSER, P., OGOREK R. et SCHINDLER B. (2018, *Juristisches Arbeiten: Eine Anleitung für Studierende* (6. Auflage), Zürich: Schulthess, or the recommendations of the Law School).

## Supplementary aids

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## Examination languages

Question language: English

Answer language: English

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## Examination content

The assessment will be composed of two parts:

- A term paper collecting the solutions of some assignments: Small groups of students will work together at home and solve some assignments taken from Danielson (2011). The main objective of these assignments is to apply the main methods learned in class using real financial data. The term paper collecting the solutions of the assignments will count for 50% of the final grade.
- A written closed-book exam: At the end of the series of lectures, students will take an individual written exam that counts for 50% of the final grade. The questions of the exam will be based on the assignments (group work) and the slides of the previous lectures.

## Examination relevant literature

To prepare for the exam, students will work on the slides used during the course and selected chapters of these books:

- Hull, J. C. (2012). *Options, Futures, and other Derivatives* (8th ed.). New Jersey: Prentice Hall.
- Hull, J. C. (2012). *Risk Management and Financial Institutions*, 3rd Edition, Chichester, John Wiley & Sons Ltd.
- McNeil, A. J., Frey, R., & Embrechts, P. (2005). *Quantitative Risk Management: Concepts, Techniques, and Tools*. New Jersey: Princeton University Press.
- Danielson, J. (2011). *Financial Risk Forecasting: The Theory and Practice of Forecasting Market Risk, with Implementation in R and MATLAB*, Chichester, John Wiley & Sons Ltd.

The assignments will be taken from Danielson, J. (2011). *Financial Risk Forecasting: The Theory and Practice of Forecasting Market Risk, with Implementation in R and MATLAB*, Chichester, John Wiley & Sons Ltd.



### Please note

We would like to point out to you that this fact sheet has absolute priority over other information such as StudyNet, faculty members' personal databases, information provided in lectures, etc. When will the fact sheets become binding?

- Information about courses and examination time (central/decentral and grading form): from the start of the bidding process on 24 January 2019
- Information about decentral examinations (examination-aid rule, examination content, examination relevant literature): after the 4th semester week on 18 March 2019
- Information about central examinations (examination-aid rule, examination content, examination relevant literature): from the start of the enrolment period for the examinations on 08 April 2019

Please look at the fact sheet once more after these deadlines have expired.