

Fall Term 2011
Master's Program in Quantitative Economics and Finance
University of St. Gallen

Quantitative Risk Management (7,320) **Syllabus**

Instructor:

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Office Bodanstrasse 6, 4th floor, office 28-404.

Time schedule

Course:

Monday 1415-1600, Room 22-104.

Reception:

Please write an email with subject "7,320 Quantitative Risk Management" to fix an appointment.

Course description

The global financial crises that erupted in 2008 has intensified the interest in risk management among financial institutions. It is now generally recognized that poor risk management has been one of the causes of the current financial crises. In particular, credit risk and operational risk, the first being the risk that a counterparty in a financial contract might fail to fulfill its contractual obligations, the second being the risk of losses due to management failures or inadequate systems, are not well understood.

This course focuses on quantitative models for assessing credit and operational risk. We first introduce the notations of risk factors and risk measures. We then discuss the two main approaches for modeling credit risk. Finally, we study extreme value theory, that deals with extreme events (as big losses due to management failures), and apply it to assess operational risk.

Content

1. **Introduction**
 - (a) Need for Risk Management
 - (b) Risk Factors
 - (c) Risk Measures: From Value-at-Risk to Convex Risk Measures

2. **Credit Risk**
 - (a) Structural Credit Models: Merton Model and Extensions
 - (b) Reduced Form Credit Model
 - (c) An Application: Retail Credit Risk Modeling

3. **Operational Risk**
 - (a) Introduction
 - (b) Extreme Value Theory (ETV)
 - (c) Application of EVT to Operational Risk Valuation

Exam

Oral exam, 15 minutes (80%)

Group exercise (max 3 students/group) (20%)

Oral Exam, 15 minutes, will take place on **Wednesday, December 21, 2011**. Registration is required before **December 2, 2011**: write an email to Ms. Fadrina Denoth (fadrina.denoth@unisg.ch) with subject "7,320 Quantitative Risk Management: Exam." The schedule will be made available on StudyNet.

Main References

1. (*) De Giorgi, Enrico (2011): Quantitative Risk Management, Lecture Notes, HSG.
2. Embrechts, Paul, Rüdiger Frey, and Alexander McNeil (2005): *Quantitative Risk Management: Concepts, Techniques and Tools*, Princeton University Press.

(*) Main reference for the oral exam.

Further information and lecture notes are available at <http://studynet20.unisg.ch>.