

ITB8811 Foundations of Information  
Security Risk Analysis  
Introduction

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# What is this course?

- Introduce risk management process and risk taxonomies
- Common risk terminology
- Provide knowledge of the relevant mathematical background
- Focus on information security risks

# What is this course?

Hands-on experience in:

- Management and treatment of information security risks
- Identification and classification of organizational threats
- Risk computations
- Managing availability risks

# Topics covered by the course

## 1. Mathematical Background

- Set theory: sets, binary relations, combinatorics
- Probability theory: sigma algebra, probability space, probability measure, random variables, event independence, conditional probability, bayesian inference.

## 2. Risk management

- Terminology: threat, vulnerability, asset, impact, risk
- Threat classification
- Risk management process (ISO standard)
- Qualitative approach to risk management
- Risk taxonomies (ISO, The Open Group)
- Economical aspects of risk management

# Topics covered by the course

## 3. Availability risk

- Availability, availability metrics
- Availability measurement and calculation
- Availability risks in redundant systems

## 4. Attack Threats

- Definition of risk in relation to attack treats
- Rational adversaries, rational choice, attacker behavioral model
- Game-theoretic view on risk management
- Quantitative approach to risk management
- Threat models, attack trees, attack tree semantics, existing models

# Topics covered by the course

## 5. Attack Resistance

- Computational complexity
- Complexity and cost of attacking
- Attack resistance, exact security and its application

# About the Course

6 ECTS credits upon completion

1 lecture and 1 practice session weekly

2 individual assignments

Written examination

## Course organization

To pass this course you will need to score:

- at least 51 points out of 100 in **every** individual assignment
- at least 51 points out of 100 in examination work

Individual assignment, as well as the examination work, equally contribute to the final grade.

The final grade is calculated in accordance with the grading policy of Taltech.





THANK YOU  
FOR  
YOUR  
ATTENTION  
ANY QUESTIONS?