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## CLASS PRESENTATION

# Vulnerability Analysis and Risk Management for Water-Related Hazards

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# CLASS PRESENTATION

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## Examination Methods

- Final **written exam** (100%)
- The final written exam will consist of:
  - ✓ **three open questions**, one for each Module of the course (8 pts each, tot 24 pts)
  - ✓ **six multiple choice questions** (1 pt each, tot 6 pts)

## Course Page

Course page (STEM - INQ1095731) access key: VARM2425

## Course Content

1. Module 1: Introduction
  2. Module 2: Socio-economic valuation of risk perception
  3. Module 3: Data-driven decision-making approaches
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# COURSE OUTLINE

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## **Module 1: Introduction**

- Equation of risk (risk, hazard, vulnerability, element at risk)
- Fundamentals of economics and welfare economics
- Demand, supply and market equilibrium
- Price vs value
- Private vs public goods
- Externalities and public goods

### **Module 2: Socio-economic valuation of risk perception**

- Economic evaluation as a tool for informed decision-making
- Economic evaluation of attitudes and preferences towards risk mitigation strategies
- Risk perception and its determinants

### **Module 3: Data-driven decision-making approaches**

- Fundamentals of Financial Mathematics
- Decision Making in risk management through CBA and Sensitivity
- Risk assessment and multicriteria valuation
- Multicriteria decision aiding (MCDA) vs multicriteria decision making (MCDM)
- Methods and tools for the valuation of risk mitigation policies

# COURSE MATERIALS

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## Course materials

- Materials for the final exam preparation include: course slides, course materials, your personal notes taken in class, and suggested readings
- Course slides are uploaded in the course Moodle page
- Course materials will be uploaded in the course Moodle page *in itinere*
- Course materials, slides, and readings are mandatory exam materials (slides/notes do not replace readings)

### Course materials – Main References

- Bouyssou D., Marchant T., Pirlot M., Perny P., Tsoukiàs A., Vincke P., Evaluation and Decision Models: a critical perspective. Berlin: Springer Verlag, 2000
- Champ P.A., Boyle K.J., Brown T.C, A Primer on Nonmarket Valuation. Dordrecht: Kluwer Academic Publishers, 2017