

ENG-430

Risk management

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Cursus	Sem.	Type
Biotechnology minor	E	Opt.
Chimiste	MA2, MA4	Opt.
Ing.-chim.	MA2, MA4	Opt.
UNIL - Sciences forensiques	E	Opt.

Contact language	English
Credits	2
Session	Summer
Semester	Spring
Exam	During the semester
Workload	60h
Weeks	14
Hours	2 weekly
Lecture	2 weekly
Number of positions	

Summary

This course allows students to master the methodology and associated tools for modern risk management with an engineering perspective. It highlights the different actors, resources and objectives to be achieved while remaining economically and socially sustainable.

Content

- Management techniques
- Introduction to risk management
- Hazard and risk evaluation
- Identifying risks and analyzing risks (HAZOP, FMECA, FTA, ...)
- Risk evaluation and treatment
- Event analysis
- Tolerable risk

Modules :

1. Introduction to engineering and managing risks
2. Risk diagnostic
3. Risk reduction/mitigation
4. Accident analysis
5. Crisis Management
6. Human failures and Decision making tools
7. Example of practical implementation

Keywords

Risk management
 Acceptable risk
 Precautionary principle
 Risk matrix
 Risk reduction / mitigation
 Crisis management

Learning Outcomes

By the end of the course, the student must be able to:

- Integrate the parameters influencing an accident
- Synthesize the complex components of a hazardous situation
- Analyze a hazardous situation
- Implement corrective measures
- Investigate processes, procedures or equipments
- Restate an accident evolution
- Assess / Evaluate the level of risk of a situation
- Integrate risk into economics, social and environmental
- Restate an accident evolution/scenario
- Integrate risk with the economy, society and the environment
- Argue the parameters influencing an accident

Transversal skills

- Assess progress against the plan, and adapt the plan as appropriate.
- Set objectives and design an action plan to reach those objectives.
- Plan and carry out activities in a way which makes optimal use of available time and other resources.
- Give feedback (critique) in an appropriate fashion.
- Take responsibility for health and safety of self and others in a working context.
- Take responsibility for environmental impacts of her/ his actions and decisions.
- Make an oral presentation.

Teaching methods

Lectures, exercices, practical examples and real illustrations (movies)

Expected student activities

Small project

Assessment methods

Final project

Supervision

Office hours	No
Assistants	No
Forum	No

Resources

Virtual desktop infrastructure (VDI)

No

Bibliography

Meyer, Thierry and Reniers, Genserik. *Engineering Risk Management*, Berlin, Boston: De Gruyter, 2022.
<https://doi.org/10.1515/9783110665338>

Ressources en bibliothèque

- [Engineering Risk Management / Meyer](#)

Websites

- <https://www.epfl.ch/labs/gscp/>

Moodle Link

- <https://go.epfl.ch/ENG-430>