

Module Description

Quality and Risk Management

General Information
Number of ECTS Credits

3

Abbreviation

CM_QRM

Version

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Responsible for modules

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Language

	Lausanne	Bern	Zürich
Instruction	<input type="checkbox"/> E <input checked="" type="checkbox"/> F	<input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/> F	<input type="checkbox"/> D <input checked="" type="checkbox"/> E
Documentation	<input type="checkbox"/> E <input checked="" type="checkbox"/> F	<input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/> F	<input type="checkbox"/> D <input checked="" type="checkbox"/> E
Examination	<input checked="" type="checkbox"/> E <input checked="" type="checkbox"/> F	<input type="checkbox"/> D <input type="checkbox"/> E <input type="checkbox"/> F	<input type="checkbox"/> D <input checked="" type="checkbox"/> E

Module category

- Fundamental theoretical principles
- Technical/scientific specialization module
- Context module

Lessons

- 2 lecture periods and 1 tutorial period per week

Brief course description of module objectives and content

The CM_QRM addresses the most relevant basics in quality and risk management. Theory is applied and specified by the way of examples. The Module concentrates on current standards and best practices on quality and risk management and introduces the most established assessment approaches.

Aims, content, methods
Learning objectives and acquired competencies

- The students realise that quality and risk management is an integral guiding process which covers quality assurance as well as comprehensive product and system development.

Quality management

- The students know and understand the close relation of integral QRM in enterprises and organisations.
- They understand that this concerns the change management on organisation level as well as on individual level of staff. The internationally recognised EFQM Excellence Model is at the centre of attention.
- They know and understand the principles of how to use quality assurance processes.
- They are able to explain the significant characteristics of most relevant normative quality assurance models.
- They know and understand the most relevant tools and Best Practices in usage, implementation and control of quality assurance processes.
- They are able to analyse the most relevant impacts on quality audits. They understand the pre-conditions of how to achieve and assure a QM certification.

Risk management

- The students know the most relevant national and international Best Practices and standards in risk management and risk engineering.
- They know the most relevant risk assessment approaches, how to use them and to relate them into the context of operational risk management.
- They understand the concept of integrated risk management: They know significant interfaces to other management processes as well as to the areas of environment, society and policy.
- They are able to conduct exemplary case studies (with regard to risk identification, analysis and evaluation).
- They are able to analyse similar problems, to develop solutions and to evaluate them.

Contents of module with emphasis on teaching content**Weighting**

Sub-module: Quality management: 50 %

Sub-module: Risk management: 50 %

Module content**Quality management**

- History of QM since 1950. The seven levels acc. to Sullivan.
- Basics in QM : ISO 9001 and EFQM (European Foundation Quality Management)
- Basics of Best Practice :
- BSC (Balanced Score Card)
- Model acc. to Kano
- Functional analysis and QFD (Qualitx Function Deploiment ; Quality House)
- Problem solving methods and innovation strategies
- FMECA (AMDEC) for process- and product optimisation
- PDCA cycle as tool for quality optimisation
- Introduction into principles of integrated QM and potential tripping stones
- The role of governance on makeup and implementation of comprehensive QM
- Process of EFQM assessments as periodic self-evaluation of an organisation
- Quality Awards and their relevancy

Risk management

- Basic principles of risk management (ISO 31000:2009ONR 49000ff.:2008, among others)
- Reasoning of operational risk management: risk indicators, ALARP principle
- Qualitative, semi-qualitative and quantitative approaches of risk analysis
 - Process and construction FMEA (Failure Mode and Effects Analysis)
 - HAZOP (Hazard and Operability Study)
 - Fault Tree Analysis, Event Tree Analysis and formal basics
 - Screening approaches: Bow Tie Analysis, Fishbone Diagram, Master Logic Diagram, etc.
- Risk representation: risk matrix, FN curves
- Challenges in risk analysis: dependent failures, human factors
- From risk towards safety culture.

Teaching and learning methods

- Frontal theoretical lessons
- Practical excercises
- Case studies

Prerequisites, previous knowledge, entrance competencies

none

References

- ISO 9000, EFQM, ISO 31000:2009, ONR 49000ff.:2008, AS/NZS 4360, et al.)
- Literature on QM und RM (electronically distributed)

Assessment**Certification requirements for final examinations (conditions for attestation)**

Presence at courses and exercises (at least 80 %)

Written module examination

Duration of exam: 120 minutes
Permissible aids: Closed Book exam