

Active Fire Protection I: Detection and Suppression (E051482)

Course size (nominal values; actual values may depend on programme)

Credits	6.0	Study time	180 h	Contact hrs	60.0 h
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Course offerings and teaching methods in academic year 2018-2019

A (semester 1)	English	project	18.75 h
		seminar	11.25 h
		lecture	30.0 h

Lecturers in academic year 2018-2019

Gryspeert, Christian	TW03	lecturer-in-charge
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Offered in the following programmes in 2018-2019

	crdts	offering
International Master of Science in Fire Safety Engineering	6	A
Master of Science in Fire Safety Engineering	6	A

Teaching languages

English

Keywords

fire detection, fire suppression

Position of the course

During the classes in this course the students obtain an in-depth and well-founded insight into the possibilities of fire detection and suppression. During the working classes the students apply this insight as a team to an existing design and report hereon to the colleague students and the lecturer.

Contents

Physical and chemical phenomena that are the basis for detection (smoke, material properties, radiation,...)
 Different types of detection (point-line-3D) and commonly used apparatuses.
 Calculations of reaction times and simulations of different detection techniques.
 Design and analysis of a detection system, based on standards and regulation.
 Physical and chemical phenomena that are the basis for suppression
 Correlation between detection and possibilities for suppression
 Manual systems for suppression : fire blanket, portable fire extinguishers, fixed systems, fire services
 Automatic systems : water based systems, inert gas systems, chemical systems

Initial competences

Insight into the basic concepts of physics, chemistry, fluid mechanics, thermodynamics, heat and mass transfer.
 Gather, look up, interpret, integrate and present relevant information in a systematic manner.

Final competences

- 1 Make a critical assessment, by means of calculations and technical considerations, of different fire detection methods.
- 2 Design, together with colleagues, a fire detection installation for a building.
- 3 Make a critical assessment of the different manual suppression systems and automatic suppression methods for different incident types, by means of calculations and technical considerations.
- 4 Design, together with colleagues, a fire suppression installation that is not only based on water extinguishment.
- 5 Write a report and present it orally to colleagues, with respect to the design of an

automatic fire protection installation.

Conditions for credit contract

This course unit cannot be taken via a credit contract

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Lecture, project, seminar

Extra information on the teaching methods

Theory is taught during hearing classes.

For the exercises, the students are guided during work classes.

The students must complete projects with calculations of detection and suppression systems.

Learning materials and price

Slides (English)

References

Course content-related study coaching

Evaluation methods

end-of-term evaluation and continuous assessment

Examination methods in case of periodic evaluation during the first examination period

Written examination, open book examination, oral examination

Examination methods in case of periodic evaluation during the second examination period

Written examination, open book examination

Examination methods in case of permanent evaluation

Oral examination, report

Possibilities of retake in case of permanent evaluation

not applicable

Extra information on the examination methods

Permanent evaluation : each student belongs to a group and each group hands in a report of a fire safety installation (detection and suppression). Each group presents the result to the other students and the lecturer.

Periodic evaluation: oral exam with written preparation. Questions are asked on the course as well as on the report, mentioned above.

In the second examination period, no new reports can be handed. In the second examination period the exam is a written exam.

Calculation of the examination mark

The end score (S) is calculated as : $S = 0.25 \cdot V + 0.75 \cdot M$, with V = the score on the handed report and the presentation, M = the score on the oral exam.