

# Functional Safety and System Dependability

(Old title: Safety and reliability of software-controlled systems)

## Content

Software-controlled, embedded systems are ubiquitous. In cases where their behaviour and interaction with people, assets or the physical environment can lead to hazardous situations they are also safety critical: power steering and Electronic stability programs (ESP) in vehicles, the braking system of trains, medical devices, in-flight control of airplanes, to name just a few.

There are numerous examples where wrong or unforeseen software behaviour has put lives or values at risk and even damaged them. According to the Bundesinstitut für Arzneimittel und Medizinprodukte (Federal institute for drugs and medical devices), in the years 2005-06 software faults were responsible for more risk incidence reports (22 %) than any other causal category such as design faults, physical faults, compatibility problems etc.

This lecture gives an introduction to dependability theory and to methods used in research and industry to assure, improve and assess the dependability and safety of software-controlled systems:

- Design and analysis methods supporting the dependability and safety of embedded systems
- Dependability/safety modelling
- Dependability/safety measures and analyses
- Software faults, software failure
- Mechanisms of HW/SW fault tolerance
- Risk analysis, risk acceptance criteria
- Safety norms

## Dates

- Tuesdays 14:15-15:45 hrs (AH III)
- Wednesdays 10:15-11:45 hrs (AH III)
- Written examination: 22 July, retake: 12 August

**The first lecture of the semester takes place on Wednesday, 8 April 2015.**

## Announcements and Course Material

Announcements, slides, videos and other material can be found at [the L2P site of this course](#).

## Campus

The Campus page of this course is at

<https://www.campus.rwth-aachen.de/rwth/all/event.asp?gguid=0x8DC1FC0A6866944FA30D113BD3818A89&tguid=0xBA76F399D1893541BF7CF7CBC6BAFE455> (in German).

## Tutor

- [Paul Chomicz, M.Sc.](#)

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