MSE | MASTER OF SCIENCE IN ENGINEERING

Zürcher Hochschule für Angewandte Wissenschaften
zh aw School of Engineering

Supplementary Course (EVA) at ZHAW School of Engineering

Title: Safety and Dependability
Short Code: rEVA_SaD

ECTS-Credits	3
Profile	Computer Science (CS)
Responsible Institute /Centre	Institute of Applied Mathematics and Physics (IAMP)
Responsible lecturer and contact informtion	Prof. Dr. Monika Reif (reif@zhaw.ch)
Type and duration of examinations	Oral presentation (25%) / case study reports (75 %)
Start date and duration	Semester: Autumn Detail: KW41 - KW49 (Fridays, bi-weekly)
Location	Winterthur
Course type	5 days in class (teaching, in-class activities & group work on case study) plus self-study • Contact hours: 20 (hrs) • Group work: 20 (hrs) • Independent self-study: 50 (hrs)
Language of instruction	English
Short description (max. 300 characters)	The course will provide an in-depth understanding of the principles and techniques used to identify and mitigate potential hazards and risks associated with complex systems.

Contents and Learning Objectives	This course introduces the most important concepts and methods of systems engineering with a special focus on safety related systems.
	
	Contents:
	- various aspects of system development in general and the development of safe systems in particular
	- requirements, standards, laws
	- complete safety life cycle
	  • concept
	  • risk analysis
	  • system Architecture
	  • requirements for system components
	  • implementation (HW/SW)
	  • verification and validation
	  • commissioning, operation and decommissioning
	- verification techniques and analysis methods
	- technical solutions
	- application of what has been learned within a comprehensive case study

Knaa, 21.05.24

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	Learning Objectives: - students can identify the hazards for a socio-technical system and assess the associated risk - students know the role of standards for the approval of systems and can work with them - students know the basics of systems engineering - students know the steps of the safety lifecycle and are familiar with the respective work packages and can work on parts of them - students know different methods and techniques of verification and validation of systems and can apply them - students will learn that safety is a system property that is achieved by an interdisciplinary team during the development phase based on a case study			
Prerequisites	none			
Literature	IEC61508; ISO13849; futher standards			
Special requirements	none			
Offer for profiles	Aviation (Avi)	☒	Business Engineering (BE)	☒
	Computer Science (CS)	☒	Data Science (DS)	☒
	Electrical Engineering (ElE)	☒	Energy & Environment (EnEn)	☐
	Mechanical Engineering (ME)	☒	Mechatronics & Automation (MA	☒
	Medical Engineering (Med)	☒	Photonics and Laser Engineerng (Pho)	☒
	Information and Cyber Security	☒	Civil Engineering (CE)	☒