



Course syllabus

Faculty of Health and Life Sciences

Department of Health and Caring Sciences

4VÅ650 Introduktion till systemsäkerhet, 7,5 högskolepoäng

Introduction to system safety, 7.5 credits

Main field of study

Caring Science

Subject Group

Leadership, Organisation and Management

Level of classification

Second Level

Progression

A1N

Date of Ratification

Approved by Faculty of Health and Life Sciences 2019-12-16

The course syllabus is valid from autumn semester 2020

Prerequisites

Graduated from a Swedish Institute of Higher Education (at least 3 years on first cycle level) Bachelor's degree, Bachelor's degree in Fine Arts, Professional degree – at least 180 ECTS credits or equivalent degree from a foreign Institute of Higher Education)

English 6

Objectives

Proficiency and comprehension

By the end of this course, students will be able to:

- Describe and explain of relevant theories and methods in system security and how they have developed over time.
- Explain the epistemological and ontological roots of different methods.

Skills and abilities

By the end of this course, students will be able to:

- Describe, give examples and reflect on different analytical methods to improve the security of high-risk domains.
- Independently and based on scientific knowledge, identify, apply and recommend solutions to a security problem.

Evaluation skills and Approach

By the end of this course, students will be able to:

- critically evaluate and systematically integrate safety knowledge in complex
everyday work situations

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Content

The course contents are divided into the following areas:

- A systems perspective on safety in high-risk domains.
- Theoretical basis, concepts, and development, of the subject system safety.
- Development of theories and the relationship between safety, risk and accident models.
- Safety culture, team collaboration and leadership.
- Methodological approaches for risk and safety analyses in complex systems and safety management.

Type of Instruction

The teaching consists of self-study at distance, online lectures and result-writing seminars. The student is expected to have read and reviewed the work of course mates for the seminars and is expected to participate in discussion forums on the e-platform MyMoodle.

Examination

The course is assessed with the grades Fail (U), Pass (G) or Pass with Distinction (VG).

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If the university has decided that a student has the right to special educational support due to a disability, the examiner has the right to give a customized test or that the student performs the test in an alternative way.

Repeated examination is offered in accordance with Local regulations for courses and examination at the first and second cycle level at Linnaeus University.

Course Evaluation

During the course or in close connection with the course, a course evaluation is conducted. Results and analysis of the completed course evaluation should be promptly feed back to the students who completed the course. Students who participate at the next course opportunity receive feedback at the start of the course. The course evaluation is carried out anonymously.

Other

The course will be held in English.

Required Reading and Additional Study Material

Ackoff, R. L. (1971). Towards a System of Systems Concepts. *Management Science*, 17(11):661-671.

Dekker, S. (2011). *Drift into failure*. Burlington: Ashgate Publishing Company. ISBN: 9781409422211

Flach, J. M. (2012). Complexity: learning to muddle through. *Cognition, Technology & Work*, 14(3), 187-197. doi:10.1007/s10111-011-0201-8

Haavik, T. K. (2014). On the ontology of safety. *Safety Science*, 67(0), 37-43. doi.org/10.1016/j.ssci.2013.09.004

Hollnagel (2012). Coping with complexity: past, present and future. *Cognition, Technology & Work*. 14:199-205.

Hollnagel, Hounsgaard & Coligan (2014) FRAM - The functional Resonance Analysis Method - A Handbook for the practical use of the method. Available from:http://functionalresonance.com/onewebmedia/FRAM_handbook_web-2.pdf

Lundberg, J., Rollenhagen, C., & Hollnagel, E. (2009). What-You-Look-For-Is-What-You-Find – The consequences of underlying accident models in eight accident investigation manuals. *Safety Science*, 47, 1297-1311.

Perrow, C. (1999). *Normal Accidents. Living with High-Risk Technologies* Princeton, New Jersey: Princeton University Press. (Chapter 3) ISBN: 9780691004129

Roberts, K. H. (1990). Some Characteristics of One Type of High Reliability Organization. *Organization Science*, 1(2), 160-176.

Weick, K. E. (1987). Organization culture as a source of high reliability. *California Management Review*, 29(2), 112–127.

Wilson, J. R. (2014). Fundamentals of systems ergonomics/human factors. *Applied Ergonomics*, 45, 5-13.

Woods, D.D., Dekker, S., Cook, I.R., Johannesen, L. and Sarter, N. (2017). *Behind human error*. CRC Press. (Chapters: 1, 3-4) (eBook). ISBN: 9781317175537

Woods, D., Hollnagel, E., Leveson, N. G. (2017). *Resilience engineering. Concepts and precepts*. CRC Press. (Chapters:1, 5-6, 11)(eBook). ISBN: 9781317065296