



Course syllabus

Faculty of Health and Life Sciences

Department of Health and Caring Sciences

4VÅ650 Introduktion till systemsäkerhet, 7.5 credits
Introduction to system safety

Main field of study

Caring Science

Subject Group

Leadership, Organisation and Management

Level of classification

Second Level

Progression

A1N

Date of Ratification

Approved 2019-12-16

Revised 2022-06-27 by Faculty of Health and Life Sciences. Revision of course literature.

The course syllabus is valid from autumn semester 2022

Prerequisites

General entry requirements for university studies. General entry requirements for studies on advanced level as well as specific entry requirements: English B/ English 6 or equivalent Swedish B/ Swedish 3 or equivalent

Objectives

Proficiency and comprehension

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

- A.1 Describe and explain of relevant theories and methods in system safety and how they have developed over time.
- A.2 Explain the epistemological and ontological roots of different methods.

Skills and abilities

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

- B.1 Describe, give examples and reflect on different analytical methods to improve the safety of high-risk domains.
- B.2 Independently and based on scientific knowledge, identify, analyze and

recommend solutions to a safety problem.

Evaluation skills and Approach

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

- C.1 critically evaluate and systematically integrate safety knowledge in complex everyday work situations.

Content

The course contents are divided into the following areas:

- System perspective on safety in high-risk domains, such as healthcare, IT systems, traffic management, the nuclear power industry and energy supply.
- The development of the subject area system safety and its concepts as well as the theoretical basis that has driven the development.
- The emergence of safety I and safety II and the relationship between safety, risk and accident models.
- Attitudes, values and approaches to safety and work environment within an organization, team collaboration and leadership.
- Methodological approaches for risk and safety analyzes in complex organizations as well as proactive safety work.

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. Absence from a seminar will be supplemented by an additional assignment in consultation with the course coordinator.

Examination

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

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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 Swedish, but some parts may be held in English.

Required Reading and Additional Study Material

Dekker, S. (2019). *Foundations of safety science. A century of understanding accidents*

and disasters (Ebok). CRC Press. ISBN 9781351059770. 449 pages (part of book 291 pages).

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

Hollnagel, E. (2012). Coping with complexity: past, present and future. *Cognition, Technology & Work*, 14:199-205. DOI 10.1007/s10111-011-0202-7

Hollnagel, E. Hounsgaard, J. & Coligan, L. (2014). *FRAM The functional Resonance Analysis Method A Handbook for the practical use of the method* (1 uppl.). Centre for Quality. ISBN: 978-87-997477-0-2. 76 pages.

Hollnagel, E., Wears, R. L. & Braithwhite, J. *Från Säkerhet -I till säkerhet -II en vitbok*. Centre for Quality. 30 pages. Available at the course homepage.

Kecklund, L. & Sandblad, B. (2021). *Den (o)mänskliga faktorn. MTO, digitalisering och automatisering för säkerhet och hållbarhet* (1 uppl.). Studentlitteratur. 394 pages (part of book 132 pages).

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(10), 1297-1311. <https://doi-org.proxy.lnu.se/10.1016/j.ssci.2009.01.004>

Perrow, C. (2011). *Normal Accidents. Living with High Risk Technologies* (Updated ed.). (Ebok) Princeton University Press. ISBN: 9781400828494. 464 pages. (part of book 102 pages).

Weick, K. E. (1987). Organization culture as a source of high reliability. *California Management Review*, 29(2), 112–127. DOI 10.2307/41165243

Wilson, J. R. (2014). Fundamentals of systems ergonomics/human factors. *Applied Ergonomics*, 45(1), 5-13. doi: 10.1016/j.apergo.2013.03.021

Woods, D., Hollnagel, E. & Leveson, N. G. (2017). *Resilience engineering. Concepts and precepts*. (Ebok) CRC Press. ISBN: 9781317065296. 416pages. (part of book 88 pages).