Linnæus University

Jnr: 2021/907-3.1.2.2

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 2019-12-16
Revised 2021-03-08 by Faculty of Health and Life Sciences. Language of instruction changed to Swedish for increased accessibility in the course.
The course syllabus is valid from autumn semester 2021

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 equivalentSwedish 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

- 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).
The course is assessed with the grades Fail (U), Pass (G) or Pass with Distinction (VG).The course is examined individually in a compilation of three result-taking seminars and through an individual written assignment (7.5 credits). Grading is done with U-VG through a weighing of all the parts included in the examination.
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 Swedish, but some parts may 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. 234 pages. 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. (2011). Normal Accidents. Living with High-Risk Technologies. (eBook) Princeton, New Jersey: Princeton University Press. (Chapter 3), 464 pages ISBN: 9781400828494

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. (eBook) CRC Press. (Chapters: 1, 3-4) 292 pages. ISBN: 9781317175537

Woods, D., Hollnagel, E., Leveson, N. G. (2017). Resilience engineering. Concepts and precepts. (eBook) CRC Press. (Chapters:1, 5-6, 11) 416 pages. ISBN: 9781317065296