Course Syllabus

Concept Development and Systems Engineering

Konceptutveckling och systemarbete

Course Code	2FS024	**Main Field of Study**	Systems Science for Defence and Security
Valid from Semester	Spring 2022	**Department**	Department of Systems Science for Defence and Security
Education Cycle	Advanced level	**Subject**	Systems Science for Defence and Security
Scope	10.5	**Language of Instruction**	The teaching is conducted in English.
Progression	A1N	**Decided by**	The Research and Education Board's Course Syllabus Committee at the Swedish Defence University
Grading Scale	Fail, Pass, Pass with Distinction	**Decision date**	2022-01-01
Revision	1.0		

Entry Requirements

Admitted to the Master's Programme in Defence and Security Systems Development.

Degree of Bachelor of Science in Military Studies or a Bachelor's degree in Engineering with a minimum of 180 credits, or equivalent.

Course Content and Structure

The course builds on and applies systems theory and modelling and simulation methods from previous courses. Its purpose is to take a more in-depth look at concept development and systems engineering for developing capabilities in the defence and security sector. The course centres on the development of the student's understanding of the perspectives of customer organisations, suppliers and specialist disciplines.

The course covers strategies and frameworks for capability analysis, concept development and systems engineering, with key concepts. The emphasis is on practical processes and methods for studying, developing and designing complex technical products in systems for defence and security.

Intended Learning Outcomes

After completed course the student should be able to:

• relate the central concepts, activities and processes of concept development and systems engineering to systems theory;

• compare various strategies for developing and designing complex technical products;

• apply important systems-engineering methods and techniques to complex technical products;

• evaluate the development process from the respective perspectives of user organisations and designer (supplier) organisations;

• present written and oral analyses based on the course's theoretical perspective, with well-developed arguments and critical reasoning and a clear grounding in scientific literature.

Type of Instruction

Seminars

Group Work

Lectures

Independent Study

Assessment

Examination

Scope: 10.5

Grading Scale: Fail, Pass, Pass with Distinction

Examination will be based on active and constructive participation in two labs followed by two laboratory reports, one individual written assignment and on an oral presentation of the individual written assignment.

The examiner may decide that supplementary work is required in order for a pass grade to be achieved. Examination papers submitted late will not be graded, unless there are special reasons, which have been approved by the examiner. Supplementary assignments are to be submitted no later than five working days after the notification of results and the supplementary assignment for the examination in question, unless there are special reasons, which have been approved by the examiner.

Grading

Grades are set according to a three-grade scale: Pass with merit (VG), Pass (G) and Fail (U).

A pass (G) requires a pass for seminars, laboratory reports, the written assignment and the oral presentation.

A pass with merit (VG) requires a pass with merit for the individual written assignment.

Grading criteria are stated at the beginning of the course.

Restrictions in Number of Examinations

The number of examination opportunities is not limited. The number of opportunities is limited to one regular and two re-examinations per two-semester period, unless there are special reasons, which have been approved by the examiner.

Restrictions Concerning Degree

The course cannot be included in a degree with another course whose content fully or partially corresponds to the content of this course.

Transitional Provisions

When a course is no longer provided or when the content of a course has been significantly altered, the student retains the right to be examined in accordance with this course syllabus once per term during a three-term period.

Miscellanous

f the Swedish Defence University has granted a student individual pedagogical support on account of disabilities, the examiner may decide on alternative examination forms for that student.

The course is held as a compulsory element of the Master's Programme in Defence and Security Systems Development.

The course may be held as a freestanding course.

On the completion of the course, an evaluation will be conducted under the auspices of the course director which will form the basis for any changes to the course.

The course will be held in English. If no international students are admitted, parts of the course may be held in Swedish.

This is a modified version of the syllabus, created to transfer the original to the education database Kursinfo. For originals, contact the archive.

Reading List

Concept Development and Systems Engineering

Konceptutveckling och systemarbete

Course Code	2FS024
Revision	1.0
Reading List Valid from Date	2020-12-01
Reading List Decided Date	2020-11-13

Literature Concept Development and Systems Engineering

Alexander Kossiakoff, Steven M. Biemer, Samuel J. Seymour, David A. Flanigan, *Systems Engineering Principles and Practice*, 3, John Wiley & Sons, Inc..

Olivier L. de Weck, Daniel Roos, Christopher L. Magee, (2012), *Engineering Systems : Meeting Human Needs in a Complex Technological World*, Cambridge, Mass : The MIT Press.

Available as EPub via the Anna Lindh library. Selected parts, about 50 pages

Wiley, (2015), *INCOSE Systems Engineering Handbook*, John Wiley & Sons.

Available as ePub via the Anna Lindh library

Other Information

and distributed articles, reports and book excerpts