



COURSE SYLLABUS

Applied Cryptology, 7.5 credits

Tillämpad kryptologi, 7.5 högskolepoäng

Course Code:	T2TKEK	Education Cycle:	Second-cycle level
Confirmed:	Sep 01, 2025	Disciplinary domain:	Technology
Valid From:	Aug 30, 2027	Subject group:	Computer Technology
		Specialised in:	A1N Second cycle, has only first-cycle course/s as entry requirements
		Main field of study:	Computer Science

Intended Learning Outcomes (ILO)

On completion of the course the student shall:

Knowledge and understanding

- display knowledge of basic concepts in cryptography and cryptology
- display knowledge of modern cryptosystems and their security mechanisms

Skills and abilities

- demonstrate skills of basic cryptanalysis
- demonstrate the ability to make design choices for a cryptosystem in function of an application case

Judgement and approach

- demonstrate the ability to analyse a cryptosystem's security

Content

The course gives an overview of cryptographic methods that are key to providing mechanisms for protecting confidentiality and integrity. The course covers cryptographic primitives and concepts such as elliptic curves and blockchain and how such concepts are applied in practice.

The course includes the following elements:

- brief history of cryptology and encryption
- basic concepts such as confidentiality, integrity, authentication, non-repudiation
- asymmetric encryption methods such as RSA, Elliptic Curve
- symmetric encryption methods such as DES, AES
- digital signatures
- key establishment methods
- blockchain data structure and applications
- formal security models
- current best practices

Type of instruction

The course consists of lectures and laboratory work.

Language of instruction is in English.

Entry requirements

The applicant must hold a minimum of a bachelor's degree (i.e., the equivalent of 180 ECTS credits at an accredited university) with at least 90 credits in Computer Science, Informatics, Information Systems, Computer Engineering, or the equivalent. Proof of English proficiency is required.

Examination and grades

The course is graded 5, 4, 3 or U.

Registration of examination:

Name of the Test	Value	Grading
Examination ¹	4.5 credits	5/4/3/U
Laboratory	3 credits	G/U

¹Determines the final grade of the course, which is issued only when all course units have been passed.

Course literature

Please note that changes may be made to the reading list up until eight weeks before the start of the course.

Christof Paar and Jan Pelzl, (2010). Understanding Cryptography. Springer. ISBN: 978-3-642-44649-8