

## Information Security (E019400)

**Course size** *(nominal values; actual values may depend on programme)*

**Credits 6.0**

**Study time 180 h**

**Course offerings and teaching methods in academic year 2024-2025**

A (semester 2)	Dutch	Gent	
B (semester 2)	English	Gent	practical lecture seminar

**Lecturers in academic year 2024-2025**

Laermans, Eric	TW05	lecturer-in-charge
Deschrijver, Dirk	TW05	co-lecturer

**Offered in the following programmes in 2024-2025**

	<b>crdts</b>	<b>offering</b>
<a href="#">Bachelor of Science in Computer Science</a>	6	B
<a href="#">Master of Science in Teaching in Science and Technology(main subject Computer Science)</a>	6	B
<a href="#">Bridging Programme Master of Science in Bioinformatics(main subject Engineering)</a>	6	B
<a href="#">Bridging Programme Master of Science in Computer Science Engineering</a>	6	B
<a href="#">Master of Science in Bioinformatics(main subject Engineering)</a>	6	B
<a href="#">Master of Science in Computer Science Engineering</a>	6	A
<a href="#">Master of Science in Computer Science Engineering</a>	6	B

**Teaching languages**

English, Dutch

**Keywords**

security, encryption

**Position of the course**

Teaching basic concepts about information security (mathematical base, applications and legal aspects)

Teaching to apply security techniques

**Contents**

- Introduction: security aspects and objectives, possible attacks
- Security techniques: mathematical basis for encryption, cryptographic algorithms and protocols
- Applications: network built-in security, private key/certificate storage, intrusion protection, biometric systems, security project
- Security Standards: standards
- Legal Aspects: computer crime, privacy and protection of personal data, e-documents

**Initial competences**

Discrete mathematics, communication networks

**Final competences**

- 1 Understanding security services (confidentiality, authentication, etc.).
- 2 Understanding the operation of security mechanisms (encryption, Firewall, biometry, etc.).
- 3 Estimating the necessary resources to crack cryptographic security mechanisms.
- 4 Using security mechanisms to achieve security functions.

- 5 Recognising the complexity of achieving good information security.
- 6 Recognising the social and legal aspects of information security.

### **Conditions for credit contract**

Access to this course unit via a credit contract is determined after successful competences assessment

### **Conditions for exam contract**

This course unit cannot be taken via an exam contract

### **Teaching methods**

Group work, Seminar, Lecture, Practical

### **Study material**

Type: Handbook

Name: William Stallings, "Cryptography and Network Security: Principles and Practice" (eighth edition)

Indicative price: € 80

Optional: yes

Language : English

Author : William Stallings

ISBN : 978-1-29243-748-4

Number of Pages : 832

Oldest Usable Edition : 5th edition

Additional information: Members of VTK can buy the course at a discount (sale via VTK-cursusdienst). Purchase is not mandatory.

Type: Slides

Name: -

Indicative price: Free or paid by faculty

Optional: no

Language : English

Available on Ufora : Yes

Additional information: Available free of charge in electronic form

### **References**

- Tel, Gerard, Cryptografie : beveiliging van de digitale maatschappij, Amsterdam : Addison-Wesley, 2002. ISBN: 9043005002
- Bishop, Matt, Computer security: art and science, Boston (Mass.) : Addison-Wesley, 2003. ISBN: 0201440997
- Menezes, Alfred J. and van Oorschot, Paul C. and Vanstone, Scott A., Handbook of applied cryptography, Boca Raton (Fla.) : CRC, 2001. ISBN: 0849385237 (pdf available online for free)

### **Course content-related study coaching**

#### **Assessment moments**

end-of-term and continuous assessment

#### **Examination methods in case of periodic assessment during the first examination period**

Oral assessment open-book

#### **Examination methods in case of periodic assessment during the second examination period**

Oral assessment open-book

#### **Examination methods in case of permanent assessment**

Assignment

#### **Possibilities of retake in case of permanent assessment**

examination during the second examination period is possible in modified form

#### **Extra information on the examination methods**

Evaluation during examination period: oral open-book exam.

Permanent evaluation (which has a 25% weight in the total examination mark):

graded project reports + presentation of proof-of-concept software; second chance:

possible in adapted form; frequency: 1 assignment (in groups of approximately 6 students) with deadline at the end of the course period.

#### **Calculation of the examination mark**

The project evaluation (report + part of oral exam about the project) amounts to

25% of the final examination mark.

A passing condition for this course is that a student must achieve at least an 8/20 mark both for the exam and for the permanent evaluation. If this condition isn't satisfied the highest mark a student can obtain for this course is 9/20.