

## 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<br>lecture<br>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**

|  | crdts | offering |
|--|-------|----------|
| <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.