

## Databases (C003771)

**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 2023-2024**

A (semester 1)

Dutch

Gent

seminar

lecture

**Lecturers in academic year 2023-2024**

De Tré, Guy

TW07

lecturer-in-charge

**Offered in the following programmes in 2023-2024**

**crdts**

**offering**

[Bachelor of Science in Computer Science](#)

6

A

[Bachelor of Science in Geography and Geomatics](#)

6

A

[Bachelor of Science in Mathematics](#)

6

A

[Master of Science in Teaching in Science and Technology\(main subject Mathematics\)](#)

6

A

[Master of Science in Bioinformatics\(main subject Systems Biology\)](#)

6

A

[Master of Science in Geology](#)

6

A

[Linking Course Master of Science in Geography and Geomatics](#)

6

A

[Preparatory Course Master of Science in Geography and Geomatics](#)

6

A

**Teaching languages**

Dutch

**Keywords**

Database systems, data modelling, database design.

**Position of the course**

The objective of this course is twofold. On the one hand, this course is meant to be a classic basic course studying the fundamental theory about data bases. On the other hand it focuses on the practical use of data bases, privileging the relational model.

**Contents**

- Introduction: Databases and database systems, Data models and database models
- Conceptual database design: The (extended) 'entity relationship' model
- Relational databases: The relational database model, Logical database design, Physical database design and SQL
- Object technology in databases: ODMG 3.0 and SQL:2011
- Accessibility for applications: APIs
- NoSQL database systems
- Working with database systems: Security, Failure and recovery, Concurrency control

**Initial competences**

None

**Final competences**

- 1 Being familiar with the basic concepts of database systems and databases.
- 2 Designing, setting up and maintaining databases.
- 3 Manipulating and querying databases.
- 4 Understanding how object technology and API's can be used.
- 5 Understanding how database systems work.

**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**

Seminar, Lecture

**Extra information on the teaching methods**

Because of COVID19, changed working methods can be rolled out if this proves necessary.

Online supervised exercises: SQL, EER-modelling and database design.

**Learning materials and price**

- Handbook: G. De Tré, Principes van databanken, Pearson Education Benelux, Amsterdam, 2017 (ISBN:978-90-430-3580-4); indicative price: 50 EURO (in Dutch). Additional course material is available on Ufora.

**References**

- R. Elmasri, S.B. Navathe, Fundamentals of Database Systems, Seventh Edition, Pearson Addison-Wesley, Boston USA, 2016 (ISBN: 9780133971330)

**Course content-related study coaching**

All exercise courses are supported by assistants.

**Assessment moments**

end-of-term and continuous assessment

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

Written assessment

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

Written assessment

**Examination methods in case of permanent assessment**

Skills test, Assignment

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

examination during the second examination period is possible

**Extra information on the examination methods**

Periodic evaluation:

- Open questions on theory
- Exercises

Non-periodic evaluation:

- SQL database querying
- Database design project

**Calculation of the examination mark**

First and second exam period:

Periodic evaluation: 65%; Non-periodic evaluation: 35%

The score of the non-periodic evaluation is the weighted mean obtained from 60% SQL database querying and 40% database design project.

The end score is the weighted mean of the periodic and non-periodic evaluation.

Students can only pass this course if they obtain a minimum score of 10/20 for both parts of the evaluation.

If students obtain less than 10/20 for at least one of the parts, the following rules apply:

- If one obtains an 8/20 or 9/20 for at least one part of the evaluation, one cannot pass the whole of the course. If the final score would nevertheless be a mark of 10 or more out of 20, this will be reduced to the highest unsuccessful mark, namely 9/20.
- If one obtains less than 8/20 for at least one part of the evaluation, one cannot pass the whole of the course. If the final score would nevertheless be a figure of 8 or more out of 20, this will be reduced to the highest non-deliberable mark, namely 7/20.

For a score of 10/20 or more on one of the parts, there is a mark transfer to the second exam period.

New assignments are provided for those who have to retake the non-periodical evaluation in the second examination period

#### **Facilities for Working Students**

This course has an online exercise system for SQL.