Database Management
Databashantering
7.5 credits
7.5 högskolepoäng

Ladok Code: C3KDH1
Version: 1.0
Established by: Utskottet för utbildningar inom bibliotek, information och IT 2019-02-05
Valid from: Autumn 2019

Education Cycle: First cycle
Main Field of Study (Progressive Specialisation): Information Architecture (G1N), Informatics (G1N)
Disciplinary Domain: Natural sciences
Prerequisites: General entry requirements
Subject Area: Informatics/Computer and Systems Sciences
Grading Scale: Seven-degree grading scale (A-F)

Content
This course covers physical modeling, implementation, optimization, and the practical treatment of databases in a database retrieval system. Further, the course provides a more intensive treatment of how the content of a database can be made accessible through storage procedures and views as well as how the database's integrity can be protected with the help of triggers. Other topics treated in the course are data security, the optimization of database performance with the help of indexes and the handling of transactions according to the principle of ACID (Atomic, Consistent, Isolated, Durable). The course also deals with how databases can be used to aggregate data. The primary focus of the course is obtaining knowledge of and the ability to handle relational databases, as well as the practical handling of NoSQL databases.

Learning Outcomes
After passing the course the student should be able to, concerning,

Knowledge and understanding
1.1 Explain how different data types, collation, and indexing can be implemented for the storage, sorting, and facilitation of access to data in a database.
1.2 Evaluate the qualities of the principle ACID (Atomic, Consistent, Isolated, Durable) and how to ensure that these qualities are present in a database transaction.
1.3 Demonstrate knowledge of how SQL (Structured Query Language) can be used to create, read, update, remove, and aggregate data in a relational database.

Competence and skills
2.1 Produce a physical database model from a given logical database model and implement the physical database model in a specific data retrieval system.
2.2 Implement storage procedures and displays for creating, reading, updating, and removing data from a relational database.
2.3 Protect the content in a database by implementing access control and principles of data integrity.
2.4 Use SQL to extract and aggregate data in a relational database.

Judgment and approach
3.1 Argue for and against the use of specific database retrieval systems as most appropriate for a number of different purposes.

Forms of Teaching
The teaching format includes lectures, exercises and workshops.

The language of instruction is English.
Forms of Examination
The course is graded through the following examinations:

- Examination: home exam
  Learning outcomes: 1.1, 1.2, 3.1
  Credits: 2.5
  Grading scale: pass (G) or fail (U)

- Written assignment: aggregation of data with SQL
  Learning outcomes: 1.3, 2.4
  Credits: 1.0
  Grading scale: pass (G) or fail (U)

- Written assignment: project assignment
  Learning outcomes: 1.3, 2.1, 2.2, 2.3
  Credits: 4.0
  Grading scale: Seven-degree grading scale (A-F)

For the grade E on the entire course, the grade Pass (G) is required on Examination: home exam and Written assignment: aggregation of data with SQL, together with grade E on Written assignment: project assignment. A higher grade on the entire course is thereafter determined by the grade on Written assignment: project assignment.

When the course plan is changed, students who wish to finish the course must do so according to the new plan’s content and assignment requirements. If the course no longer is offered on a regular basis, students who wish to complete the course must take all or part of another, equivalent course.

Student rights and obligations at examination are in accordance with guidelines and rules for the University of Borås.

Literature and Other Teaching Methods
Course literature is in English.


Student Influence and Evaluation
The course is evaluated in accordance with current guidelines for course evaluations at the University of Borås in which students' views are to be gathered. The course evaluation report is published and returned to participating and prospective students in accordance with the above-mentioned guidelines, and will be taken into consideration in the future development of courses and education programmes. Course coordinators are responsible for ensuring that the evaluations are conducted as described above.

Miscellaneous
The course is part of the degree programme Web Content Manager and Designer, 180 credits, and Web Content Manager and Designer, distance education, 180 credits, as well as being offered as a freestanding course.