Database Technology

Programme course

6 credits

Databasteknik

TDDD12

Valid from: 2017 Spring semester

Determined by
Board of Studies for Industrial Engineering and Logistics

Date determined
2017-01-25

Main field of study
Computer Science and Engineering, Programming

Course level
First cycle

Advancement level
G2X

Course offered for
- Computer Engineering, B Sc in Engineering
- Programming
- Industrial Engineering and Management - International, M Sc in Engineering
- Mathematics
- Mechanical Engineering, M Sc in Engineering
- Applied Physics and Electrical Engineering, M Sc in Engineering
- Mathematics, Master's programme
- Applied Physics and Electrical Engineering - International, M Sc in Engineering

Entry requirements
Note: Admission requirements for non-programme students usually also include admission requirements for the programme and threshold requirements for progression within the programme, or corresponding.

Prerequisites
Basic programming and Data structures and algorithms.

Intended learning outcomes

The aim of this course is to give a thorough introduction to the theoretical and practical issues underlying the design and implementation of modern database systems. After the completion of the course you should be able to:

- explain and use important terminology in text-based information management in a correct way.
- design a data model using EER diagrams.
- design and use a relational database.
- explain the theory behind the relational model and how this affects good design of databases.
- explain which file structures in the database management system can be used to implement a database system.
- explain the basic principles for indexing a database.
- explain which problems can occur when several users use the database and solutions to this.
- explain how a database can guarantee persistence of data.

Course content

Principles for general database management systems: DBMS, Methods for database design and use. Datamodelling with ER, Relational databases, Datastructures for databases, SQL, Relational algebra, query optimization, transactions, serialisation, concurrency.

Teaching and working methods

The course consists of lectures, laboratory work and a project. Lectures are devoted to theory and techniques. Database design and implementation techniques are practised in the laboratory work.

Examination

LAB1	Laboratory work	3 credits	U, G
TEN1	Written examination	3 credits	U, 3, 4, 5

Grades

Four-grade scale, LiU, U, 3, 4, 5

Other information

Supplementary courses:
Advanced Data Models and Databases; data mining

Department
Institutionen för datavetenskap

Director of Studies or equivalent
Patrick Lambrix

Examiner
Jose M. Pena

Education components
Preliminary scheduled hours: 42 h
Recommended self-study hours: 118 h

Course literature
Elmasri, R. and Navathe, S. B. Fundamentals of Database Systems, 3e, 4e, 5e eller 6e upplaga, Addison Wesley. OBS: Den 6e upplagans titel är: Database Systems - Models, Languages, Design, and Application Programming.

Common rules

Regulations (apply to LiU in its entirety)

The university is a government agency whose operations are regulated by legislation and ordinances, which include the Higher Education Act and the Higher Education Ordinance. In addition to legislation and ordinances, operations are subject to several policy documents. The Linköping University rule book collects currently valid decisions of a regulatory nature taken by the university board, the vice-chancellor and faculty/department boards.

LiU's rule book for education at first-cycle and second-cycle levels is available at http://styrdokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva.