COURSE SYLLABUS

Databasteknik
Database Techniques
7,5 ECTS credit points (7,5 högskolepoäng)

1 Course title and credit points
The course is titled Database Techniques/Databasteknik and awards 7,5 ECTS credits. One credit point (högskolepoäng) corresponds to one credit point in the European Credit Transfer System (ECTS).

2 Decision and approval
This course is established by School of Computing 2013-04-25. The course syllabus was revised by Head of Department of Computer Science and Engineering and applies from 2014-06-09.
Reg.no: BTH 4.1.1-0281-2014

3 Objectives
Within the area of Applied Information Technology, the design and development of data-based applications is a large field. An important component in these applications is the development of the actual database where aspects such as modelling and design, performance and answering times, as well as structured programming and extendibility are important components. In this course the student receives a thorough walk-through of the subject, both theoretically and practically, which aims to render the student capable of independently understanding and learning the process to model and implement a database application.

4 Content
The course comprises the following modules:
• Database Techniques, general orientation/introduction
• Relations model and relation databases
• Database modelling
• Entity Relationship (ER) modelling
• Normalisation
• Relations algebra
• Structured Query Language (SQL); create, modify and use database tables
• Stored Procedures and Triggers (active databases)
• Transactions
• Performance and index
• Client/server database access (SQL database queries from a client application)
• Laborations (individually and in group) comprising solution analysis, database modelling, SQL and database design, implementation of client application, various tools facilitating database work

5 Aims and learning outcomes
On completion of the course the student will:
• synoptically, be able to understand, explain and discuss databases and database systems in general
• be well acquainted with the relation database and possess overall understanding of its use, its advantages and disadvantages
• possess thorough ability, both theoretically and practically, to use relation databases
• in detail, be able to understand and apply the process of developing a database from requirement specification to finished client application
• in a structured and detailed manner, be able to model and document an ER type database
• based on an existing model, create, alter and use a database with SQL
• design and implement a properly working database application with pertaining (client/server) client application

6 Generic skills
The following generic competences are trained in the course:
• Capacity to learn
• Problem solving
• Teamwork
• Information management skills (ability to retrieve and analyse information from different sources)
• Concern for quality

7 Learning and teaching
The course consists of lectures, exercises and laboratory practicals. At the end of the course the students perform a group project assignment. The lectures present theories and contribute to the theoretical awareness required to complete the course. The exercises and practicals bring theory into practice. The exercises are performed in groups and the practicals are individual. The project work allows the student to practically apply acquired knowledge while at the same time further enhancing the theoretical understanding. During the course, it is understood that the student has, or will acquire the ability to seek information independently in order to solve problems and difficulties that may arise.

8 Assessment and grading

Examination of the course

<table>
<thead>
<tr>
<th>Code</th>
<th>Module</th>
<th>Credit</th>
<th>Grade</th>
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<tbody>
<tr>
<td>1310</td>
<td>Modelling</td>
<td>1.5</td>
<td>G-U</td>
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<tr>
<td>1320</td>
<td>Laboratory SQL</td>
<td>1.5</td>
<td>G-U</td>
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<tr>
<td>1330</td>
<td>Project</td>
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<td>G-U</td>
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<td>1340</td>
<td>Written exam[1]</td>
<td>3</td>
<td>A-F</td>
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1 Determines the final grade for the course, which will only be issued when all components have been approved.
The course will be graded A Excellent, B Very good, C Good, D Satisfactory, E Sufficient, FX Insufficient, supplementation required, F Fail.

9 Course evaluation

The course coordinator is responsible for systematically gathering feedback from the students in course evaluations and making sure that the results of these feed back into the development of the course.

10 Prerequisites

The student must have successfully completed 7.5 ECTS in programming

11 Field of education and subject area

The course is part of the field of education and is included in the subject area Computer Science and the subject area Software Engineering. The course can also be included in the subject area Software Engineering.

12 Restrictions regarding degree

The course cannot form part of a degree with another course, the content of which completely or partly corresponds with the contents of this course.

13 Additional information

Replaces DV1219 and DV1220.

14 Course literature and other teaching material

Main literature
Database Techniques
Author: Thomas Padron-McCarthy
Publisher: Tore Risch
Published: Studentlitteratur AB
Utgiven: 2005, Number of pages: 646