

## Introduction

Welcome to DD1368, *Introduction to Databases for Computer Science Students*. The overall aim of the course is to equip you with the skills to model and implement database solutions. This course is loosely based on *CS145: Introduction to Databases* given at Stanford University and uses the textbook: **H. Garcia-Molina, J. D. Ullman and J. Widom, Database Systems: The Complete Book, 2nd international edition, Pearson, 2009. ISBN 9780131354289.**

The course consists of 9 lectures (each  $2 \times 45$  minutes), 7 recitations (each  $2 \times 45$  minutes), a 3 hour closed book written exam, and three obligatory lab assignments. In addition there is a conceptual modeling assignment which is obligatory for Stockholm University students (1.5 ECTS). All course material will be given in English and the exam must be written in either English or Swedish. Recitations and verbal lab reports may be given in either English or Swedish.

## Course Staff

Name	Role(s)	Email
Michael Minock	Lecturer, recitation leader #1, lab assistant	minock@kth.se
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## Grading System

Practical Moment (LAB1)(3 credits): pass/fail

Theory Moment (TEN1) (3 credits): A,B,C,D,E,FX,F

To pass the practical moment you must pass all three labs. Stockholm University students are in addition required to pass a conceptual modeling assignment. Grades for the theory moment are determined by how many points are amassed on the exam (800pts) plus recitations (198pts) according to the following scale<sup>1</sup>:

A	B	C	D	E	FX	F
$p \geq 850$	$850 > p \geq 700$	$700 > p \geq 600$	$600 > p \geq 502$	$502 > p \geq 501$	$501 > p \geq 500$	$500 > p$

<sup>1</sup>As an openings act of generosity, students will be awarded 2 points for simply enrolling in the course.

## Lectures

Week	Date	Time	Room	Topic	Readings
3	Mon 14-Jan	13.15 - 15	D1	Introduction	ch. 1, §2.1, §2.2-3
4	Mon 21-Jan	13.15 - 15	D1	Formal Query Languages	§2.4, Handout, §2.5
4	Tue 22-Jan	10.15 - 12	D1	Normalization Theory	§3.1-5
5	Mon 28-Jan	13.15 - 15	D1	E-R Modeling	§4.1-6
6	Wed 6-Feb	10.15 - 12	E1	SQL 1	§5.1,5.2, ch 6.
7	Thr 14-Feb	15.15 - 17	D2	SQL 2	ch. 7, ch. 8
8	Mon 18-Feb	13.15 - 15	D1	SQL in Server/Web Environment	§9.1, 9.2,9.4,9.5,9.6
9	Mon 25-Feb	13.15 - 15	D1	Semi-Structured Databases	§11.1, 11.2, 11.3, §12.1, 12.2
10	Mon 4-Mar	13.15 - 15	D1	Catch-up, Conclusions & Review	

## Exam

The final exam will be based solely on the course readings. You will have two chances to pass the final exam. The exam is closed book, however it will be permitted to use an XX-English / English-XX dictionary, where XX is the language of the student's choice.

Week	Date	Time	Room
11	Tue 12-March	09.00 - 12	F1
22	Fri 31-May	14.00 - 19	L42,L43,L44

## Recitations

Students present solutions at the board for problems<sup>2</sup> in the book. Students have a choice; at the beginning of the recitation they will fill out a claim on a piece of paper (provided by the recitation leader) where they mark which problems they claim to be able to perform at the board. These claims will be drawn at random from a hat to select who actually presents solutions to which problems. After recitation, all the claims will be the basis of awarding points. Students will be awarded 11 points per satisfied clause in the problem CNF (presented below) for the recitation.

Students may decide which group to join and may change groups at their own discretion. There is no need to report your group choice. Still, they may only file one claim per week.

<sup>2</sup>The problems are from the 2nd international edition of the textbook, **not the American edition!**

**Group 1 and 2**

Week	Date	Time	Room (G1/G2)	Problems in CNF (11 pts/ satisfied clause)
4	Tue 22-Jan	13.15 - 15	D41/D42	$(2.4.3.a \vee 2.4.3.b) \wedge (2.4.3.c \vee 2.4.3.d \vee 2.4.3.e) \wedge (2.2.3.c \vee 2.4.3.g \vee 2.4.3.i \vee 2.4.10)$
5	Fri 1-Feb	10.15 - 12	D41/D42	tuple calculus: $(2.4.3.a \vee 2.4.3.b) \wedge (2.4.3.c \vee 2.4.3.d \vee 2.4.3.e \vee 2.5.2.b) \wedge (2.4.3.g \vee 2.4.3.i)$
6	Tue 5-Feb	10.15 - 12	D41/D42	$(3.1.3 \vee 3.2.1 \vee 3.2.2.ii) \wedge (3.2.9.c \vee 3.3.1.d \vee 3.4.1.b \vee 3.5.1.e) \wedge (3.2.8 \vee 3.4.2.b)$
7	Thr 14-Feb	13.15 - 15	D34/D35	$(4.1.1 \vee 4.1.3) \wedge (4.1.5 \vee 4.5.1 \vee 4.5.3) \wedge (4.6.2 \vee 4.4.4.b)$
8	Wed 20-Feb	13.15 - 15	D41/D42	$(5.2.1) \wedge (6.4.7.d \vee 6.4.7.e \vee 7.1.3 \vee 7.5.3.c) \wedge (8.4.1)$
9	Thr 28-Feb	13.15 - 15	D34/D35	$(\text{all} :12.1.2.a-e) \wedge (\text{all} :12.2.2.a-e) \wedge (\text{all} :12.1.2.f-g \vee \text{all} :12.2.2.f-g)$
10	Wed 6-Mar	13.15 - 15	D41/D42	Make-up recitation only for those who missed an earlier recitation or wish to upgrade a prior recitation award to the full 33 points. You may only claim or upgrade one earlier missed recitation in Wednesday's recitation. You must make a full 33 point claim. For purposes of fairness, the exam will <u>not</u> be discussed at all! Thus only attend if you missed an earlier recitation or wish to upgrade an earlier score.

**Group 3 and 4**

Week	Date	Time	Room (G3/G4)	Problems
4	Thr 24-Jan	13.15 - 15	D34/D35	see above
5	Fri 1-Feb	13.15 - 15	D41/D42	see above
6	Wed 6-Feb	13.15 - 15	D41/D42	see above
7	Fri 15-Feb	8.15 - 10	D41/D42	see above
8	Thr 21-Feb	13.15 - 15	D41/D42	see above
9	Thr 1-Mar	8.15 - 10	D41/D42	see above
10	Thr 7-Mar	13.15 - 15	D41/D42	Same as above. Note that you may attend both Wednesday and Thursday if you wish to claim for or upgrade two earlier recitations.

## Labs

- **Lab 0** is a simple warm up lab to verify that you can create and connect to a database. Lab 0 is not reported.
- **Lab 1** is an SQL exercise where you solve a series of queries against a provided database.
- **Lab 2** is a more significant application project where you define a conceptual model and database from a written specification and implement a web-based interface.
- **Lab 3** is a XQuery/XPath exercise over a given set of XML documents.
- **Conceptual Modeling Assignment** is only required for Stockholm University students to account for the extra 1.5 ECTS required for DA3003. The actual content of this assignment is 1 ECTS theory, .5 ECTS practice.

Full descriptions of lab assignments will be posted on the course web-site as the course proceeds. You may work in groups of 1-2 students on lab assignments. Lab time is 'drop in' and students are not required to book ahead of time. **All labs are held in Gul/Brun!**

Week	Date	Time	Suggested Activity
5	Tue 29-Jan	15.15 - 17	Lab 0
5	Wed 30-Jan	15.15 - 17	Lab 0
7	Tue 12-Feb	15.15 - 17	Lab 1
7	Wed 13-Feb	15.15 - 17	Lab 1
9	Tue 26-Feb	15.15 - 17	Lab 1,2
9	Wed 27-Feb	15.15 - 17	Lab 1,2
12	Thr 21-Mar	13.15 - 15	Lab 2,3
12	Fri 22-Mar	13.15 - 15	Lab 2,3
13	Thr 28-Mar	13.15 - 15	Lab 2,3
15	Thr 11-Apr	13.15 - 15	Lab 1,2,3
15	Fri 12-Apr	13.15 - 15	Lab 1,2,3
15	Mon 06-May	15.15 - 17	Lab 1,2,3 (Brun)

You get a pass on a lab if you convince a lab grader that you have achieved adequate results on it. This typically can be achieved in a 5-10 minute oral presentation in the computer lab. You must use the queuing system SIMA to alert lab instructors that you are ready to report (or if you simply have questions). If you have not passed all require labs by April 12, 2013, then you may have to wait until lab week (June 6-12) to attempt to pass a lab. If you have not passed a lab by the last session of lab week, then you will have to repeat the corresponding lab of this course in a following year. To be clear, let us say that you leave lab 2 incomplete. If you wait until 2018, you will need to do lab 2 in DD1368 of 2018 to clear lab 2.