CS 638
Principles of Database Management & Use

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CS 638

- This is an online course that will be run on the flipped classroom model – course lecture videos will be online and we will have regular online meetings
- Weekly meeting times – may change so chack announcements
  - Fridays 11:00AM-12:00noon Eastern time
- You cannot get by just by listening to the lectures; the book material is an important component – you need to read the relevant parts of the book.
- Please make sure you do not fall behind; you will need to pace yourself.
  - The weekly schedule that you should follow and the reading material is on the course site and later in these slides

Getting help

- We use LEARN
  - When you register and get into LEARN, you should see CS638 in your list of courses
  - https://learn.uwaterloo.ca
- Messaging forum
  - Ask public questions here
  - Assignments and solutions posted
  - Announcements posted
  - Quizzes and exams through LEARN as well
    - They will be open for a few days
    - Once you start, you will have to finish in a given period of time (exams usually 2-3 hours; quizzes in about half hour)

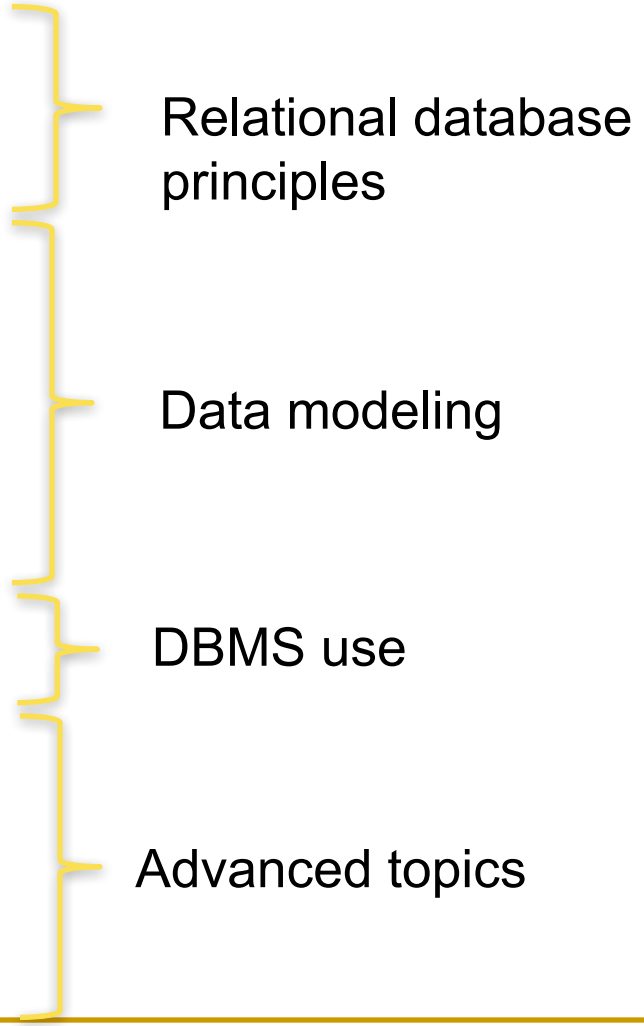
Course objectives

"A user-oriented approach to the management of large collections of data. Relational database technology, relational algebra, SQL, database views, transactions, data modelling methodology, entity-relationship models. Introduction to several current topics in database research, such as warehousing, data mining, managing data streams, data cleaning, data integration, and distributed/parallel databases. Master of Health Informatics students only."

- Use database terminology knowledgeably
- Understand DB concepts that arise in the workplace
- Interact with (direct, understand) IT personnel
- Understand technical articles involving DB technology

Course Content

- Introduction to database systems
- Relational data model
- SQL (ad hoc queries)
- Relational algebra
- Entity-Relationship (ER) model
- Extended ER model
- Mapping ER models to relational
- Design theory: normalization
- Transactions
- Database security and privacy
- Distributed databases
- Parallel databases
- Data warehouses
- NoSQL systems
- Streaming data management



Course Schedule

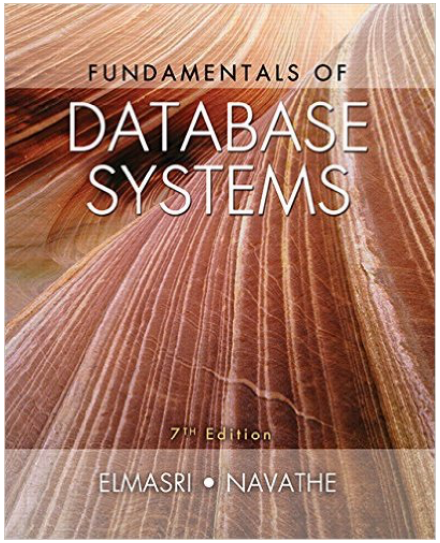
Week	Module	Topic	Readings (7e)	Readings (6e)
1 (8 Sep)	0	Introduction to the Course		
2 (12 Sep)	1	Introduction to Database Man.	1,2	1,2
3 (19 Sep)	2	Relational Data Model	5	3
	3	Relational Algebra	8 (8.1-8.5)	6 (6.1-6.5)
4 (26 Sep)	4	Basic SQL	6	4
5 (3 Oct)	4a	Advanced SQL	7	5
6 (10 Oct)	5	Conceptual Modeling: ER Model	3	7
	5a	Conceptual Modeling: Enhanced ER Model	4	8
7 (17 Oct)	6	Logical Modeling: ER-to-Relational Mapping	9	9
	7	Design Theory: Normalization	14 (14.1-14.3,14.5)	15 (15.1-15.3,15.5)
8 (24 Oct)		Exam 1		

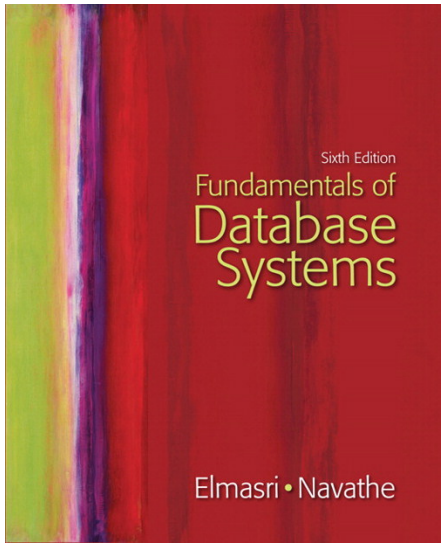
Course Schedule (cont'd)

Week	Module	Topic	Readings (7e)	Readings (6e)
9 (31Oct)	8	Transactions and Transaction Support in SQL	20	21
10 (7 Nov)	9	Database Security & Privacy	30	24
	10	Data Warehouses & Decision Support	29	29
11 (14 Nov)	11	Distributed Database Systems	23	25
	12	Parallel Database Systems		
12 (21 Nov)	13	NoSQL Systems	22&23	
	14	Streaming Data Management		
13 (28 Nov)		Free for review and catchup		
9-10 Dec		Final Exam		

Textbook (Recommended)

- R. Elmasri and S. Navathe, Fundamentals of Database Systems, 7/E, Pearson, 2016, or
- 6/E, Addison Wesley, 2010.





- Note: Course notes adapted from authors' book slides

Marking

- Assignments (4) 20%
- Quizzes 15%
- Exam 1 25%
- Final Exam 40%
  - comprehensive