

COMP 430: Introduction to Database Systems

Spring 2016



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COMP 430 meets MWF 2:00pm–2:50am in Duncan Hall 1070. While class notes will be posted here, class attendance and participation is expected. Assignment deadlines will be posted here, but refer to OWL-Space for assignment details.

The following schedule is tentative and will be updated as needed.

Overview

M 11 Jan Course overview ([PPTX](#), [PDF](#)) Activity: [01a-introduction](#)
Database: [rainfall](#)

SQL Basics

W 13 Jan Schemas & simple queries ([PPTX](#), [PDF](#)) Activities: [02a-table](#), [02b-queries](#)
Solutions: [02a-table](#), [02b-queries](#)

F 15 Jan Schemas & simple queries (continued)

W 30 Jan Multiple tables & simple multi-table queries ([PPTX](#), [PDF](#)) Activities: [03a-multiple-tables](#), [03b-sets-multisets](#)
Solutions: [03a-multiple-tables](#), [03b-sets-multisets](#)

F 22 Jan Multiple tables & simple multi-table queries (continued)

M 25 Jan Multiple tables & simple multi-table queries (continued)
Grouping & aggregation ([PPTX](#), [PDF](#)) Activity: [04a-aggregation](#)
Solutions: See slides.

W 27 Jan Grouping & aggregation (continued)

Due: Assignment 1, Basic concepts & simple queries

Relational database design

F 29 Jan Design process ([PPTX](#), [PDF](#))

M 1 Feb Design process (continued)
Entity-Relationship Diagram Basics ([PPTX](#), [PDF](#)) Activity: ERD drawing —
See slides.
Solution: See slides.

W 3 Feb ER Design ([PPTX](#), [PDF](#)) Activity: ERD drawing —

		See slides. Solution: See slides.	
F 5 Feb	ER Design (continued)	Activity: ERD drawing — See slides. Solution: See slides.	Due: Assignment 2, Grouping & aggregation
M 8 Feb	ER Implementation as tables (PPTX , PDF)	Activity: Schema drawing Solution: In class	
W 10 Feb	ER Implementation as tables (continued)	Activity: Schema drawing Solution: In class	
F 12 Feb	Common design patterns (PPTX , PDF) Normal forms (PPTX , PDF)	Activities: 10a-keys , 10b-bcnf Solutions: 10a-keys , 10b-bcnf	
M 15 Feb	Normal forms (continued)		Due: Assignment 3, ER design & implementation
W 17 Feb	Normal forms (continued)		
F 19 Feb	Normal forms (continued)		
M 22 Feb	Exam 1 review — covers material up to "Common design patterns"		
More SQL			
W 24 Feb	Quantification (PPTX , PDF)	Activity: 11a-exists Solution: 11a-exists	
F 26 Feb	Joins (PPTX , PDF)		
M 7 Mar	Constraints (PPTX , PDF)		
Imperative SQL; Integration of application & DB			
W 9 Mar	Modifying table data & schemas (PPTX , PDF)		
F 11 Mar	Functions, Procedures, and Triggers (PPTX , PDF)		Due: Assignment 4, Normal forms, joins
M 14 Mar	Functions, Procedures, and Triggers (continued) Accessing SQL via application code, ORM, Dynamic SQL (PPTX , PDF)		
W 16 Mar	Accessing SQL via application code, ORM, Dynamic SQL		Installing & Connecting with SQL Server
F 18 Mar	(class canceled)		
Efficiency & implementation issues			
M 21 Mar	Indexing (PPTX , PDF)		
W 23 Mar	Indexing (continued)		
F 25 Mar	(class canceled)		
M 28 Mar	Query optimization (PPTX , PDF)		

F 30 Mar	Query optimization (continued)
M 4 Apr	Query optimization (continued)
W 6 Apr	Query optimization (continued) Denormalization & dimensional modeling (PPTX , PDF)
F 8 Apr	Denormalization & dimensional modeling (continued) Transactions & Concurrency (PPTX , PDF)

Other database models

M 11 Apr	MapReduce (PPTX , PDF)	Due: Assignment 5, Procedures, triggers
W 13 Apr	(class canceled)	
F 15 Apr	Spark (PPTX , PDF)	
M 18 Apr	Rice closed — no class	
W 20 Apr	MongoDB (PPTX , PDF)	Due: Assignment 6
F 22 Apr	Exam 3 review	