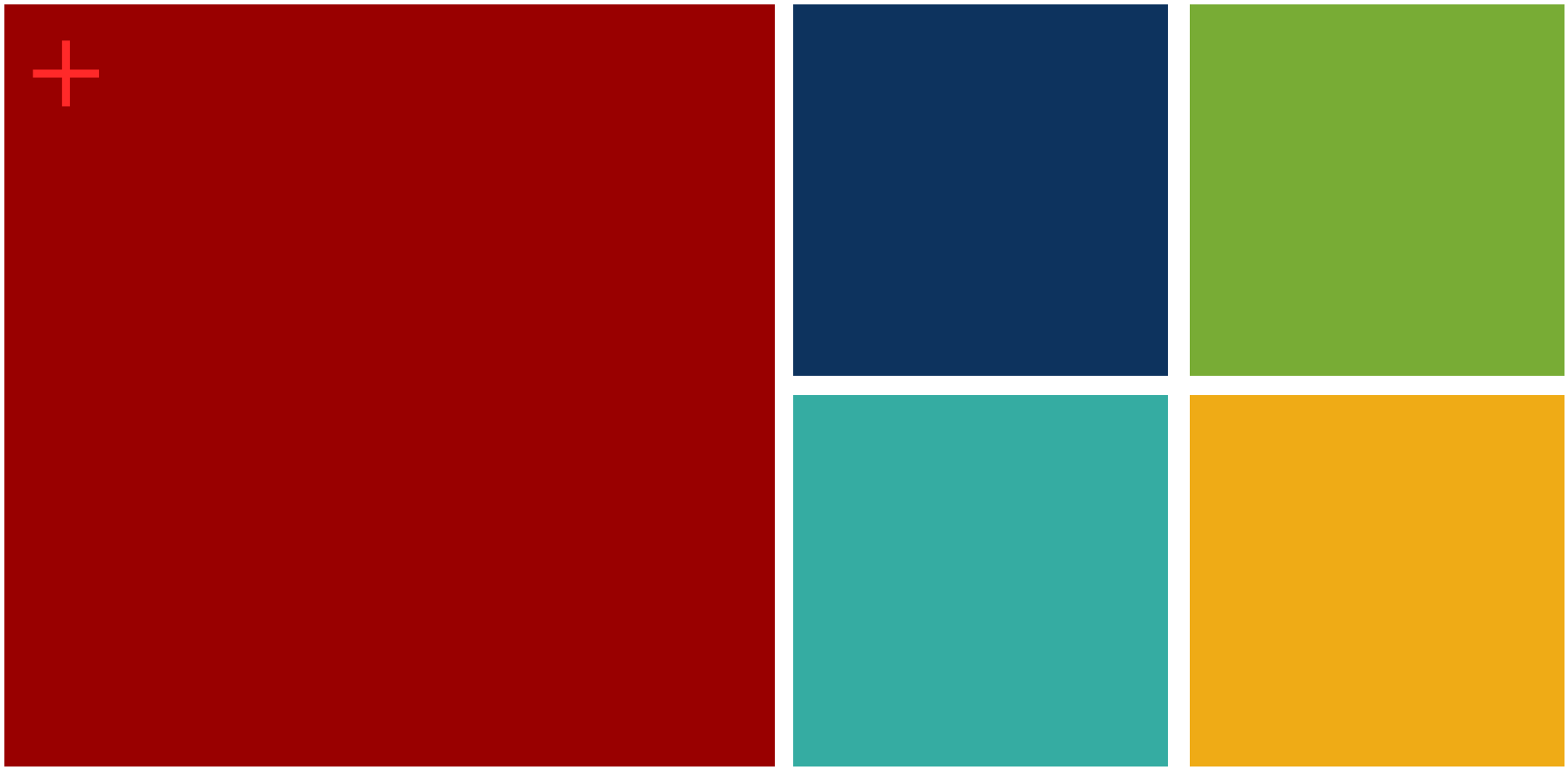


COMP3311 Database Management Systems

Spring 2022

Course Introduction

Prof Xiaofang Zhou

香港科技大學
THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY

The Teaching Team

- Course Coordinator & Lecturer
  - Prof Xiaofang Zhou
  - Email: zxf@ust.hk
  - Room: 3533
  - Phone: 2538 8340
  - Consultation: by appointment
- 6 Teaching Assistants
  - Tutorials
    - Ms XU Yehong (yxudi)
    - Ms ZHAO Jing (jzhaobq)
    - Ms TIAN Yao (ytianbc)
  - Labs
    - Mr TENG Fei (fteng)
    - Mr WANG Yubo (ywangnx)
    - Ms CUI Yue (ycuias)

+ Assumed Background

- Prerequisite:
  - COMP 2011 OR COMP 2012 OR COMP 2012H
- Exclusions:
  - COMP 5311, IEDA 3300, ISOM 3260
- Assumed knowledge
  - Data structures and algorithms
  - Programming (C++ or Java)

+ Course Information

Instructor

Professor Xiaofang ZHOU Homepage: cse.ust.hk/~zxf

Course Schedule

Lecture	We, Fr	4:30PM - 5:50PM
Tutorial	Mo Th x 2	6:00PM - 6:50PM
Lab	Mo x 2 We	4:30PM - 5:20PM

Consultation: by appointment

Course Website

Please visit HKUST Canvas site.

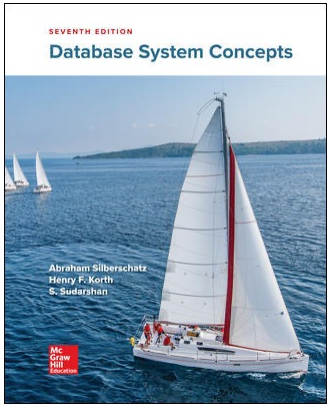
Check frequently for announcements and changes!

+ Course Textbook

Textbook

Database System Concepts, 7th Edition

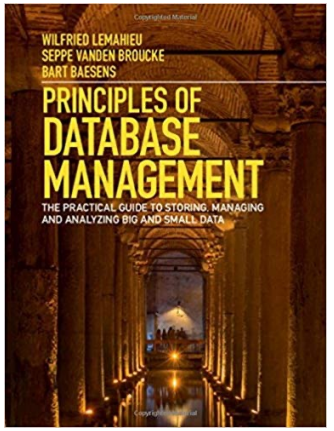
A. Silberschatz, H.F. Korth, and S. Sudarshan, McGraw-Hill, 2020. (OK to use 6th edition)



Reference

Principles of Database Management

W. Lemahieu, S. vanden Broucke and B. Baesens, Cambridge University Press, 2018.



+ Course Requirements

Lecture, Tutorial and Lab Exercises 10%

Project 30%

	Out	*Due*	*Value*
Task 1	11 Feb	5 March	8% of course grade
Task 2	4 March	26 March	6% of course grade
Task 3	25 March	9 April	8% of course grade
Task 4	8 April	7 May	8% of course grade

Midterm Test 25 March, 7:30-9:30 pm 20%

Final Exam 40%

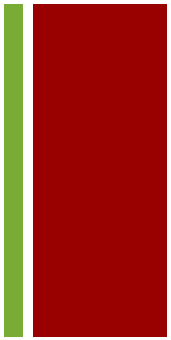
The midterm test and the final exam are open book, but only course material (i.e., textbook, lecture notes, tutorial notes and lab notes) are permitted. The final exam is cumulative with emphasis on the post-midterm material

+ Course Objectives

To understand how a database management system is used to manage data at both the user- and system-level

- An understanding of the concepts and techniques used by a database management system to manage data ⟹ lectures, tutorials
- Familiarity with using a major commercial database management system ⟹ labs
- Experience in designing, implementing and querying a database for a small application ⟹ projects

+ Expected Course Outcomes



- Explain important DBMS concepts including
  - Principles of database systems
  - Data models
  - Logical and physical database design
  - Query languages and query processing
  - Transaction management
- Apply database theories to practical database applications
- Analyze a real-life problem, design a database and implement a computer-based system using a major commercial database management system

+ Modules

- Introduction - Overview
- Logical Database Perspective:
  - Entity-Relationship (E-R) Model and Database Design
  - Relational Model and Relational Database Design
  - Relational Algebra and Structured Query Language (SQL)
  - Functional Dependencies and Database Normalization
- Physical Database Perspective:
  - Storage Management and Indexing
  - Query Processing and Optimization
  - Transaction Management and Concurrency Control
  - Database Connectivity and Security
- Beyond RDBMS

+ Important Notes And Policies

- Instructional approach: learn by listening & applying
- Expected workload: normal
- Project/test dates: firm (mark your calendar!)
- Tutorials: practice exercises
- Labs: learn SQL and work on your projects
- Academic conduct: zero-tolerance!

+ Course Projects

- Project Overview
  - Hands-on ⟹ Designing, implementing and querying a relational database using Oracle
  - Individual-based ⟹ Your own work
  - Schedule-oriented ⟹ Four tasks with strict deadlines!
- Project Description
  - High-level description of application requirements
  - For the first task, you need to decide and justify what data should be included in the database design given the application requirements
- Project Grading
  - Technical ⟹ completeness / correctness of design / implementation
  - Presentation ⟹ for first task, readability (meaningful names, layout, etc.)

+ Download And Install Software

- Pulse Secure (VPN software)
  - http://itsc.ust.hk/apps/vpn/
- Oracle SQL Developer (Windows / MacOS / Linux)
  - https://www.oracle.com/tools/downloads/sqldev-downloads.html
- Help available during lab sessions

+ CSD PC Account

- To access the course web page on the CSE web server you will need a CSD PC account
- If you are a new/exchange student, you first need to activate your CSD PC account by following the instructions on this web page:
  - http://cssystem.cse.ust.hk/UGuides/activation.html

+ Welcome To COMP 3311