Shanghai Jiao Tong University

CS392 Database System

Term:	December 16, 2019- January 7, 2020	Credits:	4 units
Classroom:	TBD	Teaching Assistant(s):	TBD
Class Hours:	Monday through Friday, 160 mins per teaching day		
Discussion Sessions:	2 hours each week, conducted by teaching assistant(s)		
Total Contact Hours:	64 contact hours (1 contact hour = 45 mins, 2880 mins in total)		
Required Texts (with ISBN):	Thomas M. Connolly, Carolyn E. Begg. Database Systems: A practical approach to Design, Implementation, and Management.4th Edition ISBN: 0321210255 Addison-Wesley, 2004 Thomas M. Connolly, Carolyn E. Begg. Database Systems: A Practical Approach to Design, Implementation and Management 5th edition ISBN: 0321523067 Addison-Wesley, 2009		
Prerequisite:	Database Concepts and Algorithms and Analysis		

Course Overview

This course is designed to introduce graduate students to the foundations of database systems, focusing on basics such as the relational algebra and data model, query optimization, query processing, and transactions.

This course trains students to build such systems, by teaching database concepts and then the practical work of database system design and implementation. It draws on previous training in advanced Java, web environments, object-oriented programming, and usability design. Students develop client-server applications in Java and JSP, using database management systems.

Learning Outcomes

Explain data structures and algorithms used to efficiently store and retrieve information in database systems

Evaluate and compare alternative designs for implementation of database systems, including data models, file structures, index schemes, and query evaluation

Analyse techniques for transaction processing, concurrency control, backup and recovery that maintain data integrity in database systems

Design and implement significant software components of a database system (such as file structures and index schemes) according to specified requirements and constraints

Learn to use SQL

Gain exposure to future trends in databases

Grading Policy

Weekly Online Test	10 %
Assignment 1（Problem sets，labs）	10%
Assignment 2（Problem sets，labs）	30%
Exam	50%

Grading Scale is as follows:

Number grade	Letter grade	GPA
90-100	A	4
85-89	A-	3.7
80-84	B+	3.3
75-79	B	3
70-74	B-	2.7
67-69	C+	2.3
65-66	C	2
62-64	C-	1.7
60-61	D	1
≤59	F (Failure)	0

Class Schedule

Date	Content	Readings
Day 1	Transaction Management	Textbook + Readings
Day 2	Improving Query Performance	Textbook + Readings
Day 3	Non-Relational Data Models	Textbook + Readings
Day 4	Web Databases	Textbook + Readings
Day 5	Data Warehousing, OLAP, and Data Mining	Textbook + Readings
Day 6	Transaction Management	Textbook + Readings
Day 7	Improving Query Performance	Textbook + Readings
Day 8	Non-Relational Data Models	Textbook + Readings
Day 9	Web Databases	Textbook + Readings
Day 10	Data Warehousing, OLAP, and Data Mining	Textbook + Readings
Day 11	Transaction Management	Textbook + Readings
Day 12	Improving Query Performance	Textbook + Readings
Day 13	Non-Relational Data Models	Textbook + Readings
Day 14	Web Databases	Textbook + Readings
Day 15	Data Warehousing, OLAP, and Data Mining	Textbook + Readings