

COURSE SPECIFICATION

The course information as follows may be subject to change, either during the session because of unforeseen circumstances, or following review of the course at the end of the session. Queries about the course should be directed to the course instructor.

1.	Course Title	Database Principle (The formal title of this course should be Principles of Database Systems)
2.	Originating Department	Department of Computer Science and Technology
3.	Course Code	CS307
4.	Credit Value	3
5.	Course Type	Major Foundational Courses
6.	Semester	Spring
7.	Teaching Language	English English & Chinese
8.	Instructor(s), Affiliation & Contact For team teaching, please list all instructors	chengjd@sustech.edu.cn Jingde Cheng, Teaching Professor, Department of Computer Science and Technology, chengjd@sustech.edu.cn
9.	/ Tutor/TA(s), Contact	zhuyum@sustech.edu.cn Yuming Zhu, Teaching laboratory technician, Department of Computer Science and Technology, zhuyum@sustech.edu.cn
10.	() Maximum Enrolment Optional	

11.			/ /	/	()	
	Delivery Method	Lectures	Tutorials	Lab/Practical	Other Please specify	Total
	Credit Hours	32		32		64
12.	Pre-requisites or Other Academic Requirements	CS102A A Introduction to Computer Programming A CS203 Data Structures and Algorithm Analysis				
13.	Courses for which this course is a pre-requisite					
14.	Cross-listing Dept.					

SYLLABUS

15. Course Objectives

<p> $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ </p> <p>The formal title of this course should be Pinciples of Database Systems. The teaching objectives of the course are: to teach students the basic concepts and principles of database systems, so that they can understand the purpose, basic working principles, system architecture, use and maintenance, application fields of database systems.</p>

16. Learning Outcomes

<p> $\frac{1}{2}$ $\frac{1}{2}$ </p> <p>The learning outcomes of the course are: students can master the project establishment for a database application system, system requirement analysis and definition, data requirement analysis and definition, data model design, database conceptual (logic) schema design, database view (external) schema design, database physical (internal) schema design, database development, database application development, and actual operation and maintenance of the developed database application system.</p>
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17. Course Contents (in Parts/Chapters/Sections/Weeks. Please notify name of instructor for course section(s), if this is a team teaching or module course.)

1. Database System: What Is It
2. Database System: Why Study It?
3. Database System Concepts
4. Database System Architecture
5. Relational Databases and the Relational Model
6. Relational Algebra
7. Relational Calculus
8. SQL: Data-Definition Language
SQL
9. SQL: Data-Manipulation Language
SQL
10. SQL: Advanced Topics
SQL
11. Database Design Methodology
12. The Entity-Relationship Model
13. Relational Database Design
14. Database Application Design
15. Database Application Development
16. Review

- 2.
3. Database design
4. SQL
5. SQL
6. SQL
- 7.
- 8.
- 9.
- 10.
- 11.
- 12.
- 13.
14. ER
15. JDBC
- 16.

Syllabus of Lab

- Lab 1. Software Installing (Mysql, Mysql workbench, psql, datagrip)
- Lab 2. Database and File
- Lab 3. Database Design
- Lab 4. Simple Queries in single table
- Lab 5. Complex Queries from multiple tables 1
- Lab 6. Complex Queries from multiple tables 2
- Lab 7. Window Function
- Lab 8. Guidance of Project in Mid-term
- Lab 9. Procedure in database
- Lab 10. Trigger in database
- Lab 11. Index
- Lab 12. Information schema
- Lab 13. Transaction and Isolation Levels
- Lab 14. ER-diagram Design
- Lab 15. JDBC
- Lab 16. Guidance of Project and Presentation

18. **Textbook and Supplementary Readings**

A. Silberschatz, H. F. Korth, and S. Sudarshan, *Database System Concepts*, 12th McGraw-Hill, 2010 (6th Edition).
 J. D. Ullman & J. Widom, *First Course in Database Systems*, 12th Pearson, 2008 (3rd Edition).
 T. M. Connolly & C. E. Begg, *Database Systems: A Practical Approach to Design, Implementation, and Management*, Pearson, 2015 (6th Edition).
 R. Elmasri and S. B. Navathe, *Fundamentals of Database Systems*, 12th Pearson, 2016 (7th Edition).
 D. M. Kroenke & D. J. Auer, *Database Processing: Fundamentals Design, and Implementation*, 12th Pearson, 2012 (12th Edition).
 C. J. Date, *An Introduction to Database Systems*, 12th Pearson, 2000 (7th Edition), 2004 (8th Edition).

ASSESSMENT

Type of Assessment	Time	% of final score	Penalty	Notes
Attendance		10%		
Class Performance		10%		
Quiz				
Projects		30%		
Assignments		20%		
Mid-Term Test				
Final Exam		30%		
Final Presentation				
Others (The above may be modified as necessary)				

20. **GRADING SYSTEM**

A.	Letter Grading
B.	/ Pass/Fail Grading

REVIEW AND APPROVAL

21. /
 This Course has been approved by the following person or committee of authority

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