

Spring 2020

CS 331-102: Database System Design and Management (Revised for Remote Learning)

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CS331 -Database System Design & Management

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Academic Integrity and NJIT Honor Code:

Please familiarize yourself with Code of Student Conduct

<https://www.njit.edu/doss/policies/conductcode/article1.php>

Violations of the Code of Student Conduct will be dealt with seriously and reported immediately to the Dean of Students.

Policy on Collaboration:

Students found cheating, plagiarizing, or collaboration (collaboration is allowed for those working together in approved team projects) will be immediately referred to the Dean of Students and the NJIT Committee on Professional Conduct and subject to Disciplinary Probation, a permanent marking on the record, possible dismissal, and an 'F' grade in the course. All submitted assignments will be checked for similarities, and plagiarism and guilty students identified.

Course Description:

The course focuses on relational databases covering topics needed for designing and implementing a database application. The topics include, relational model, relational algebra, the relational database query language SQL, database design, indexes and database programming. There is no particular preference on one database product; almost all popular RDBMS and non-RDBMS database products will be part of discussion in the class. If you have prior expertise on any particular RDBMS database, you can use that to complete the assignment/projects and maybe enlighten the class and instructor as well.

Lecture Schedule:

- Lec#1 Getting Ready - Essential Concepts (WebEx Live Lec + Recorded Session MP4)
- RAM, ROM, OS File System, HDD, RAID, Table/Row/Column, Data-types, Spreadsheet, Relational Algebra Video, FTP, Networking/IP/Port, Index, Datacenter, Fundamental Software Terms and Concepts
- Assignment #1: Submitted via Email
- Selecting Server Components (newegg.com) for building from barebone
- Lec#2 Database Concepts (WebEx Live Lec + Recorded Session MP4)
- Instance, Database, SQL, Visualizing the complete database environment, Database in Action, Database Networking, ODBC, Introduction to RDBMS & non-RDBMS Database Products in Market
- Lec#3 Database Concepts II (WebEx Live Lec + Recorded Session MP4)
- Lec#4 SQL I – Setting Up Environment (WebEx Live Lec + Recorded Session MP4)
- Lec#5 SQL II – SQL Concepts Part 1 (WebEx Live Lec + Recorded Session MP4)
- Online Midterm Exam (Canvas Based MCQ + ProctorU)
- Lec#6 SQL III – SQL Concepts Part 2 (WebEx Live Lec + Recorded Session MP4)
- Lec#7 Database Analytics & Knowledge Discovery - Getting Ready I
- (WebEx Live Lec + Recorded Session MP4)
- Assignment #2: Submitted via Email

In-class database design on paper and later implementation

Lec#8 Database Analytics & Knowledge Discovery - Getting Ready II

(WebEx Live Lec + Recorded Session MP4)

Visual SQL Design Environment, Writing Complex SQL Statements, Data Import/Export & Various Tools and Formats

Lec#9 Database Analytics & Knowledge Discovery

(WebEx Live Lec + Recorded Session MP4)

From SQL to Reports, Pivot Tables, Cross-tabs, Matching Tables, Finding Duplicates

Lec#10 All Remaining Concepts (WebEx Live Lec + Recorded Session MP4)

Relational Algebra: Selection, Projection, Cross-product, Set-difference, Union, Divide; 1,2,3 Tier Systems Concepts, Concepts and Design of Database Driven Web Applications; Intranet, Extranet, Internet, Firewall

Online Final Exam (Canvas Based MCQ + ProctorU)

Lec#11 Project Live Demo (WebEx Live)

About Grading

- Assignments 10%
- Mid-term 35%
- Final 35%
- Project 20%

300-level classes:

- A <= 20% (e.g. in a 100 students class, top 20 will get A grade)
- B+ <= 20%
- B <= 20%
- C+/C/D/F/W the rest of the class

