

BOROUGH OF MANHATTAN COMMUNITY COLLEGE

City University of New York

**Department of Computer Information Systems
Office S150/Phone: 212-220-1476**

**Title of Course: Database Systems I
CIS 395
Spring 2013
Credits:4**

**Class hours: 2
Lab hours: 2**

Course Description:

This course discusses the background of designing, implementing and operating database management systems. It covers conceptual data modeling and the entity relational data model in the beginning. Then, the relational data model is the focus in this course. Students learn abstract languages such as relational algebra and their commercial implementations such as Structured Query Language (SQL). Database design technique, concepts of data integrity, relational normalization theory, security, privacy, and concurrence control are introduced.

Prerequisites/Co-requisite: CSC 110 or Departmental approval; Basic Skills: ENG 088, ESL 062, ACR 094, MAT 012 or 051

Student Learning Outcomes:

After completing this course, students will be able to:

- **Outcome:** Define database concepts and terms
- **Assessment:** Short essay questions in exams, SQL programming questions in exams and data application project.
- **Outcome:** Explain the physical data organization and the indexing of a database
- **Assessment:** Short essay questions in exams.
- **Outcome:** Apply the principle of system analysis in the real world for database design
- **Assessment:** Database application project with documentation.
- **Outcome:** Analyze the database system specification
- **Assessment:** Database application project with documentation
- **Outcome:** Construct the database for a major application project
- **Assessment:** Database application projects with documentation
- **Outcome:** Evaluate and refine the designs of conceptual data modeling
- **Assessment:** Short essay questions in exams and database application project.

General Education Outcomes and Assessment

- **Quantitative Skills** – Students will use quantitative skills and concepts and methods of mathematics to solve problems
Assessment: Use formulas and concepts of mathematics to solve problems in SQL programming assignments
- **Information and Technology Literacy** – Students will collect, evaluate and interpret information and effectively use information technologies
Assessment: Use a high-level computer SQL programming language to create database application software

Required Text & Readings:

Textbook: **Database Systems: A practical Approach to Design, Implementation and Management 5th ed**
Author: **Thomas Connolly and Carolyn Begg**
Publisher: Addison Wesley, 2005
ISBN-10: **0321523067**
ISBN-13: **9780321523068**

Supplementary text (optional):

- Michael Kifer, Arthur Bernstein, Philip Lewis. Database Systems, Addison Wesley, 2005. ISBN: 0-321-22838-3.

Other Resources: Flash/USB drive is recommended.

Use of Technology (if applicable):

Evaluation & Requirements of Students:

Test(s)	25%
Final exam	25%
Project	30%
Homework	10%
<u>Instruction's Evaluation</u>	10%
	100%

Outline of Topics:

Week 1: **Background**

Introduction to Databases
Database Environment

Week 2 – 6: **The Relational Model and Language**

The Relational Model
The Relational Algebra
SQL: Data Manipulation
SQL: Data Definition
Commercial Database Management Systems

Week 7: **Review and Midterm**

Week 8 – 11: **Database Analysis and Design**

Database Planning, Design and administration
Fact-Finding Technique
Entity-Relation Modeling
Enhanced Entity-Relation Modeling
Normalization
Advance Normalization

Week 12 – 13: **Methodology**

Conceptual Database Design
Logical Database Design for Relational Model
Physical Database Design for Relational Databases

Week 14 – 15: **Selected Database Topics**

Security
Web Technology and Database Management Systems

Week 16: **Review and Final**

College Attendance Policy:

At BMCC, the maximum number of absences is limited to one more hour than the number of hours a class meets in one week. For example, you may be enrolled in a four-hour class. In that class, you would be allowed 5 hours of absence (not 5 days). In the case of excessive absences, the instructor has the option to lower the grade or assign an F or WU grade.

Academic Adjustments for Students with Disabilities:

Students with disabilities who require reasonable accommodations or academic adjustments for this course must contact the Office of Services for Students with Disabilities. BMCC is committed to providing equal access to all programs and curricula to all students.

BMCC Policy on Plagiarism and Academic Integrity Statement:

Plagiarism is the presentation of someone else's ideas, words or artistic, scientific, or technical work as one's own creation. Using the idea or work of another is permissible only when the original author is identified. Paraphrasing and summarizing, as well as direct quotations, require citations to the original source. Plagiarism may be intentional or unintentional. Lack of dishonest intent does not necessarily absolve a student of responsibility for plagiarism.

Students who are unsure how and when to provide documentation are advised to consult with their instructors. The library has guides designed to help students to appropriately identify a cited work. The full policy can be found on BMCC's web site, www.bmcc.cuny.edu. For further information on integrity and behavior, please consult the college bulletin (also available online).