CIS 3400: Introduction to Database Management Systems

Baruch College

Syllabus for Spring 2024

Course Description:

This course introduces students to the fundamental concepts and principles of database management systems (DBMS). Topics include data modeling, relational databases, SQL (Structured Query Language), database design, normalization, indexing, transaction management, and database security. Emphasis is placed on practical application through hands-on exercises and projects.

Prerequisites:

CIS 2200 or equivalent programming experience.

Instructor:

[Instructor Name]

[Contact Information]

Class Time and Location:

[Day(s) and Time], [Room Number]

Office Hours:

[Day(s) and Time], [Location]

Textbook:

- "Database Systems: Introduction to Databases and Data Warehouses" by Nenad Jukic, Susan Vrbsky, and Svetlozar Nestorov (or a similar textbook)

Additional Resources:

- Online tutorials and articles

- Database management software documentation (e.g., MySQL, Oracle, Microsoft SQL Server)

Grading:

- Exams: 30%
- Assignments: 40%
- Project: 20%
- Participation and Attendance: 10%

Course Schedule:

Week 1-2: Introduction to Databases

- Overview of databases and DBMS
- Introduction to data models
- Entity-relationship diagrams (ERDs)

Week 3-4: Relational Databases and SQL

- Relational model concepts
- SQL basics: SELECT, INSERT, UPDATE, DELETE
- SQL queries for data retrieval and manipulation

Week 5-6: Database Design

- Database design process
- Normalization techniques
- Denormalization and trade-offs

Week 7-8: Indexing and Query Optimization

- Indexing concepts and types
- Query optimization techniques
- Performance tuning

Week 9-10: Transaction Management

- ACID properties
- Concurrency control
- Transaction isolation levels

Week 11-12: Database Security

- Access control and authentication
- Encryption and data protection
- Best practices for securing databases

Week 13-14: Data Warehousing and Big Data

- Introduction to data warehousing
- OLAP (Online Analytical Processing)
- Introduction to big data technologies

Week 15: Review and Project Presentations

- Review of course material
- Final project presentations

Course Policies:

- Attendance is mandatory. Absences should be communicated in advance.
- Late submissions for assignments will incur a penalty unless prior arrangements are made.
- Academic integrity is expected. Plagiarism or cheating will result in disciplinary action.
- Accommodations for students with disabilities will be provided upon request.

Disclaimer:

The schedule and topics are subject to change at the discretion of the instructor.

This version should meet your requirements. Let me know if there's anything else you need!