MET CS 669 A1 – Spring 2018: DATABASE SECURITY

SYLLABUS

Boston University Metropolitan College

Boston Campus and eLive

Schedule	Monday 18:00-21:00 US Eastern Time
Location	Room B06B College of Arts and Sciences 725 Commonwealth Ave
Instructor	Andrew D. Wolfe, Jr., M.S.C.S. 808 Commonwealth Avenue, Rm 225 617-358-1984 781-405-9118
Email	awolfe@bu.edu
Office hours	3:30-5:30 pm Wednesdays at my office or by prior arrangement Zoom or other webconferencing by arrangement

COURSE DESCRIPTION

This course uses the latest database tools and techniques for persistent data and object-modeling and management. Students gain extensive hands-on experience with exercises and a term project using Oracle, SQL Server, and other leading database management systems. Students learn to model persistent data using the standard Entity-Relationship model (ERM) and how to diagram those models using Entity-Relationship Diagrams (ERDs), Extended Entity-Relationship Diagrams (EERDs), and UML diagrams. Students learn the standards-based Structured Query Language (SQL) and the extensions to the SQL standards implemented in Oracle and SQL Server. Students learn the basics of database programming, and write simple stored procedures and triggers.

FORMAT

This course is presented in the conventional on-campus, "Face-to-Face" format.

OBJECTIVES

The objective we share in this course is that each student understand the application of security concepts to database technology and demonstrate the ability to work hands-on.

Specific topic objectives are:

- Explain database concepts, particularly the concepts of relational databases
- Design and implement SQL databases of ordinary complexity
- Explain and use top-down database design with bottom-up techniques
- Understand and use basic object-oriented design techniques and the EERD notation.
- Understand and use the Structured Query Language—DDL, DML and DCL.
- Write simple stored procedures and triggers using PL/SQL or Transact-SQL
- Use and develop application databases.

LEARNING OUTCOMES

By reading the lectures and completing the assignments in this course, you will be able to:

- Understand and explain the roles that databases play in organizations.
- Normalize database tables so that you can design and implement correct database systems.
- Understand and use the Structured Query Language (SQL) in depth and obtain ample hands-on practice.
- Understand and use database transactions and concurrency.
- Create a Term Project that covers all aspects of designing a database and the SQL requests that run against that database.
- Understand the basics of advanced topics such as database performance tuning, distributed databases, and the data warehouse.

PREREQUISITES

There are no explicit prerequisites for MET CS 669

COURSE TEXTS

Coronel, C. M., & Morris, S. (2017) Database Systems: Design, Implementation, & Management (12th ed). Boston: Cengage Learning.

ISBN: 9781305627482

Please consult the course web site on Blackboard for additional resource materials.

GRADING RUBRIC

Subject mastery and evident hard work are the key things I am seeking in student performance. Each assignment has listed the criteria for various grades. Note that a grade of 100 is reserved for exceptional understanding, mastery, and clarity.

Overall Grade

The following is the weighting of grading criteria for this course.

Grading Rubric

Category	Weighting
Concepts Assignments	15%
SQL Labs	15%
Quizzes	20%
Term Project	20%
Final Exam	30%
	100%

Late or Missed Work

In case of personal emergency or other circumstances that prevent you from fulfilling an assignment, taking a quiz or test, or attending class, please contact me before it is due.

Grade penalties for late submission may be waived if you provide this level of notice along with a reasonable and credible explanation.

Course grade will be penalized 10 points for each assignment that has not been submitted as of the final exam.

ACADEMIC INTEGRITY

- *WRITE IT, OR CITE IT!*

Please download and review the Policy on Academic Conduct from the following page:

> http://www.bu.edu/met/for-students/met-policies-procedures-resources/academic-conduct-code/

Neither the University, nor I, nor your classmates can tolerate plagiarism in any formal submission for this class. Please show appropriate respect for all by expressing your own mastery of the material in your own words, diagrams, programming, etc. When you include quotations, mark and attribute them clearly and in appropriate academic style. Contact your instructor with any questions.

SCHEDULE *(subject to revision)*

CS 669 Schedule for Spring 2018

Session	Date		Module	Session Title
01	01-22 Mon		1	Introduction to Course and to Database Design and Implementation for Business
02	01-29 Mon		1	Database, Data Models, and Normalization
03	02-05 Mon		2	SQL and Database Practicum
04	02-12 Mon		2	SQL Expressions and Joins Workshop
05	02-19 Mon		3	Normalization in Depth
06	02-26 Mon		3	SQL Aggregation and Analytics
Z	03-05 Mon			Spring Recess + 2
07	03-12 Mon		4	Concurrency and Transaction Management
08	03-19 Mon		4	Database Programming
09	03-26 Mon		4	Database Programming - Conclusion
10	04-02 Mon		5	Tuning and Distributed Databases
11	04-09 Mon		5	Subqueries and Query Composition in Depth
Z	04-16 Mon			Patriots' Day
12	04-18 Wed		6	Introduction to Data Warehousing
13	04-23 Mon		6	Introduction to Big Data
14	04-30 Mon		6	Course Review for Final Exam
F	05-07 Mon			Final Exam