

University of Toledo

Electrical Engineering Technology

Master Syllabus

Course Title: Database Application for Industry

Course Code & Number: EET-4250

Credit Hour Total: 4 Weekly Contact Lecture Hours: 2

Lab Contact Hours: 2

Pre-requisite: EET 3150, C Programming w/Embedded Systems

Text: Microsoft SQL Server 2012 T-SQL Fundamentals, Itzik Ben-Gan, 2012

Software: Visual Studio, Microsoft

Course Coordinator: Evans

A. Course Description

This course covers fundamentals of database architecture, database management systems, and database systems. Principles and methodologies of database design, and techniques for database application development. It provides needed introductory database fundamentals for Microsoft MS-SQL Server. Applications from industry are included.

B. Related Program Outcomes

ABET/Student Outcomes

- a. An understanding of the analytical and laboratory skills associated with electrical engineering technology, as evidenced by the ability to perform:
 - Analysis of complex software problems
- b. An ability to apply current knowledge and adapt to emerging applications of mathematics, science and technology, as evidenced by the ability:
 - To review, digest, and apply the latest technology in the area of software design
- c. An ability to conduct, analyze, and interpret experiments concerning software development, as evidenced by:
 - The ability to perform various lab exercises
 - Written reports for select experiments.
- e. An ability to function as part of a team, as evidenced by:
 - Working with other students in a team of 2 students on a project.
- f. An ability to identify, analyze and solve technical problems associated with microcomputer systems, as evidence by:
 - An ability to solve problems on class quizzes, tests, and final examination.

- An ability to participate in class discussions and solve problems open for discussion during class time.
- g. An ability to communicate effectively, as evidenced by:
 - Written reports of projects.

EET Program Outcomes

None

C. Course Objectives:

1. Database fundamentals for Microsoft SQL Server/Database
 - Schemas, triggers, and Procedures
 - Data Types – strings, dates and Time Stamps
2. SQL Syntax (insert, delete, update, and joins)
3. Transact-SQL functions – String, Mathematical, Logical, and Date/Times
4. Database relationships
5. C# Integration with MS-SQL Database
6. Java Integration with MS-SQL database
7. Integration of PLC's with MS-SQL Database

D. Course Outline – Major Content Areas

- Introduction to Databases
- SQL Syntax – Inserts, Updates, and deletes
- Transact-SQL Functions – String, Mathematical, Logical, and Date/Times
- Database Relationships
- Using C# to connect to MS-SQL Server
- Using Java to connect to MS-SQL Server
- Integration of PLC's with MS_SQL Server

E. Major Laboratory Topics

Lab Experiments to be written as part of first offering, will be described at that time.