**I. COURSE TITLE: Database Security**

 **COURSE NUMBER: 1101 CATALOG PREFIX: CYBR**

**II. PREREQUISITE(S): None**

**III. CREDIT HOURS: 3.0 LECTURE HOURS: 3.0**

 **LABORATORY HOURS: OBSERVATION HOURS:**

**IV. COURSE DESCRIPTION:**  To understand the importance of database security by developing the know-how and skills to protect a company’s technology infrastructure, intellectual property and future prosperity within organizations

**V. GRADING**

Grading will follow the policy in the catalog. The scale is as follows:

A: 90 – 100

 B: 80 – 89

 C: 70 – 79

 D: 60 – 69

 F: 0 - 59

**VI. ADOPTED TEXT(S):**

 *Database Security, 1st Edition*

Authors: Alfred Basta and Melissa Zgola

 ISBN-10: 1435453905

 ISBN-13: 9781435453906

 Using all 10 Chapters

 Pages = 291

**VII. COURSE OBJECTIVES:**

a) Define nature of database and information systems security

 b) Identify three main security objectives when protecting information systems.

 c) Describe the information security life cycle

 d) Review the basic components of a database

 e) Identify the different database management system models and applications

f) Identify and describe the architecture of Oracle, MySQL, and Microsoft SQL Server

g) Identify the considerations that an administrator must take into account prior to installation

h) Download and install the binary distribution of MySQL for the most common operating systems

i) Identify the considerations that an administrator must take into account prior to installation

j) Install the Microsoft SQL Server 2008 for Windows operating systems

 k) Configure Microsoft SQL Server 2008 Services for Windows platforms

l) Secure the installation and configuration of Microsoft SQL Server 2008

j) Identify the considerations that an administrator must take into account prior to installation

k) Install Oracle for Windows and UNIX-based operating systems

l) Configure Oracle 2008 Services for Windows and UNIX-based platforms

m) Secure the installation and configuration of Oracle

n) Define authentication and then implement with SQL Server, MySQL, and Oracle Describe a SQL injection and identify how injections are executed

o) Identify how a Web application works and its role in SQL injections

p) Define how to locate SQL vulnerabilities using error messages

q) Apply inferential testing

r) Identify ways intruders gather information from a network infrastructure

s) Describe common strategies for exploiting database infrastructures

t) Identify common SQL statements and SQL constructs used to exploit weaknesses

u) Describe the different phases of auditing and identify activities within each phase

v) List the goals and objectives of a security audit

w) Provide an overview of database auditing fundamentals

x) Define common techniques that intruders use to gather information

y) Describe common methods used to gain unauthorized access into a system

z) Identify common strategies used to escalate one’s privileges in a system

**VIII. COURSE METHODOLOGY:**

May include but not limited to: Lectures, independent and group projects, in-class and home assignments, tests, quizzes and lab exercises.

**IX. COURSE OUTLINE:**

 **Week 1:** (Chapter 1) Security and Information Technology covering measures to detect and diminish probability of cyber-attacks and natural disasters.

 **Week 2:** (Chapter 2) Database Review discussing layers of security to maintain integrity of a database system: network security, computer security, and database security.

 **Week 3:** (Chapter 3) Database Installation 1 My SQL covering information on downloading, installing and configuring My SQL.

 **Week 4:** (Chapter 3) Database Installation 1 My SQL working with the basic security precautions for My SQL initial setup.

 **Week 5:** (Chapter 4) Database Installation 2 Microsoft SQL Server and introduction to customizable features and installations

 **Week 6:** (Chapter 4) Database Installation 2 Microsoft SQL Server and exploring concerns when considering an installation of Microsoft SQL Server and present step-by-step installation.

 **Week 7:** (Chapter 5) Database Installation 3 Oracle and discussion of different applications and features within the Oracle suite.

 **Week 8:** (Chapter 5) Database Installation 3 Oracle and presentation of step-by- step approach to installing Oracle Database on Windows based systems

 **Week 9:** (Chapter 6) Password, Profiles, Privileges, and Roles and avoiding unauthorized access by ensuring proper authentication.

 **Week 10:** (Chapter 7) SQL Injection I Identification and understanding SQL injections and methods to locate injection vulnerabilities

 **Week 11:** (Chapter 8) SQL Injection Exploitation and Defense and presenting hands-on knowledge of infrastructure exploitation.

 **Week 12:** (Chapter 8) SQL Injection Exploitation and Defense and working with learning about successful techniques intruders use to exploit a system.

 **Week 13:** (Chapter 9) Security Auditing by reviewing the security and database auditing processes.

 **Week 14:** (Chapter 9) Security Auditing and locating vulnerabilities within a database environment.

 **Week 15:** (Chapter 10) Security Testing and identifying weaknesses within a architecture.

 **Week 16:** Final

**X. OTHER REQUIRED TEXTS, SOFTWARE, AND MATERIALS:**

Oracle, MySQL, and Microsoft SQL Server

**XI. EVALUATION:**

Instructor will specify which criteria will apply to a particular assignments. Students will be expected to complete work utilizing course material covered. Other assignments, assessments, projects, presentations, hands-on exercises and reports may be assigned and graded at the discretion of the instructor.

**XII. SPECIFIC MANAGEMENT REQUIREMENTS:**

Assignments will be evaluated according to instructor directives.

**XIII. OTHER INFORMATION:**

**FERPA:** Students need to understand that your work may be seen by others. Others may see your work when being distributed, during group project work, or if it is chosen for demonstration purposes. Students also need to know that there is a strong possibility that your work may be submitted to other entities for the purpose of plagiarism checks.

**DISABILITIES:** Students with disabilities may contact the Disabilities Service Office, Central Campus, at 800-628-7722 or 937-393-3431.