

ITMS 428 SYLLABUS

ITMS 428 Database Security

Hours: 3 credit hours / 45 contact hours

Instructor: Kevin Vaccaro

Textbook, title, author, and year: *Database Security*, Alfred Basta & Melissa Zgola, 2011.

Specific course information

- a. **Catalog description:** Students will engage in an in-depth examination of topics in data security, including security considerations in applications and systems development, encryption methods, Cryptography and security architecture models, policy, testing, and auditing.
- b. **Prerequisites:** ITMD 321.

Specific goals for the course

- a. **Course Outcomes:** Each student will learn the fundamentals of database security as well as concepts and technologies such as encapsulation (information hiding) and using relational database security management techniques. They will be conversant with database hardening on a variety of platforms, defense against the most common threats and attacks, and the legal and regulatory environment affecting database security.
- b. **Course student outcomes:** At the conclusion of this course, each successful student will be able to:
 - Recall and describe concepts of information security
 - Describe and explain security architectures for protection of database resources
 - Secure and harden database deployments using leading industry-standard database management systems
 - Recall and describe access control approaches, including authentication, authorization, privileges and roles
 - Discuss cryptography and encryption
 - Identify elements of a cryptographic system
 - Describe how crypto can be used, strengths and weaknesses, modes, and issues that must be addressed in an implementation
 - Describe the technical details of SQL injection attacks
 - Explain how to protect against SQL injection attacks
 - Discuss issues and recall techniques and best practices in the protection of Big Data and data in the cloud
 - Describe and discuss the processes of auditing and testing database security
 - Describe and understand NoSQL and different types of NoSQL

Topics to be covered

- a. Security and Information Technology Security and Information Technology Operating System Best Practices and Review / Virtual Machines Database Review
- b. Database Hardening: MySQL Database Hardening: SQL Server
- c. Database Hardening: PostgreSQL
- d. Cloud Databases / NoSQL / Other DB Types
- e. SQL Injection – Identification and Procedure
- f. Passwords, Profiles, Privileges, and Roles Encryption Policy, Documents, and Education Database Security Auditing
- g. Security and System Testing