

CS616 DATABASE SECURITY

Objective of the Course:

- *To learn the security of databases*
- *To learn the design techniques of database security*
- *To learn the secure software design*

UNIT - I

Introduction

Introduction to Databases Security Problems in Databases Security Controls Conclusions

Security Models -1

Introduction Access Matrix Model Take-Grant Model Acten Model PN Model Hartson and Hsiao's Model Fernandez's Model Bussolati and Martella's Model for Distributed databases

UNIT - II

Security Models -2

Bell and LaPadula's Model Biba's Model Dion's Model Sea View Model Jajodia and Sandhu's Model The Lattice Model for the Flow Control conclusion.

Security Mechanisms Introduction User Identification/Authentication Memory Protection Resource Protection Control Flow Mechanisms Isolation Security Functionalities in Some Operating Systems Trusted Computer System Evaluation Criteria

UNIT - III

Security Software Design

Introduction A Methodological Approach to Security Software Design Secure Operating System Design Secure DBMS Design Security Packages Database Security Design

UNIT - IV

Statistical Database Protection & Intrusion Detection Systems

Introduction Statistics Concepts and Definitions Types of Attacks Inference Controls evaluation Criteria for Control Comparison .Introduction IDES System RETISS System ASES System Discovery

UNIT - V

Models For The Protection Of New Generation Database Systems -1

Introduction A Model for the Protection of Frame Based Systems A Model for the Protection of Object-Oriented Systems SORION Model for the Protection of Object-Oriented Databases

Models For The Protection Of New Generation Database Systems -2

A Model for the Protection of New Generation Database Systems: the Orion Model Jajodia and Kogan's Model A Model for the Protection of Active Databases Conclusions

TEXT BOOKS:

1. Database Security and Auditing, *Hassan A. Afyouni*, India Edition, CENGAGE Learning, 2009.
2. Database Security, *Castano*, Second edition, Pearson Education.

REFERENCE BOOK:

1. Database security by *alfred basta, melissa zgola*, CENGAGE learning.