

Branch Name:	CYBER SECURITY
Program Code:	ET207
Course Title:	Web and Database Security
Course Code:	2ET2070304T
Pre-requisite Course:	Database security must guard against human error, excessive employee database privileges, hacker and insider attacks, malware, backup storage media exposure, physical damage to database servers, and vulnerable databases such as unpatched databases or those with too much data in buffers.

Course Objectives:

After successful completion of the course, student will be able to Elements of Criminal Procedure Code related to forensic science and Law.

Teaching and Examination Scheme:

Teaching and Examination Scheme:													
Credit	Teaching Scheme Hours per week				Evaluation Scheme (Marks)								
					Theory (Marks)				Practical (Marks)				Total (Marks)
	L	T	P	Total	SEE		CCA		SEE		CCA		
					Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
3	3	-	-	3	24	60	16	40	-	-	-	-	100

Course Contents:

Unit No	Topics	Total Hours	Weightage (%)
1	Web Application Basics: Introduction, HTTP Protocol, Web Functionality, Encoding Schemes, Enumerating Content and Functionality, Analyzing the Application	03	05
2	Injection Attacks: Injecting into Interpreted Contexts, SQL Injection, NoSQL Injection, XPath Injection, LDAP Injection, XML Injection, Http Injection, Mail Service Injection Cross Site Scripting (XSS): Types of XSS, XSS in Real World, Finding and Exploiting XSS Vulnerabilities, Preventing XSS Attacks	08	20
3	User Attacks: Inducing User Actions, Capturing Cross-Domain Data, Client-Side Injection Attacks, Local Privacy Attacks, ActiveX Control attacks, Browser Attack Vulnerability Analysis of Source Code: Approaches to Code Review, Signatures of Common Vulnerabilities, Analysis of Java platform, Analysis of ASP.NET platform, Analysis of PHP, Analysis of Perl, Analysis of Javascript, Analysis of SQL	11	25
4	Database Security: Fundamental Data Security Requirements, Data Security Concerns, Compliance Mandates, Security Risks, Developing Enterprise Security Policy, Defining a Security Policy, Implementing a Security Policy, Techniques to Enforce Security Database Access Control: User Authentication, Protecting Passwords, Creating Fixed Database Links, Encrypting Database Link Passwords, Using Database Links Without Credentials, Using Database Links And Changing Passwords, Auditing With Database Links, Restricting A Database Link With Views, Trust Management & Negotiation	07	15
5	Database Security Issues: Database Security Basics, Security Checklist, Reducing Administrative Effort, Applying Security Patches, Default Security Settings, Secure Password Support, Enforcing Password Management, Protecting The Data Dictionary, System and Object Privileges, Secure Data Outsourcing, Security in Advanced Database Systems, Managing Enterprise User Security Framework For Database Security: Security for Workflow Systems, Secure Semantic Web Services, Spatial Database Security, Security Reengineering, Strong Authentication, Single Sign-On, Public Key Infrastructure (PKI) Tools, Configuring SSL on the Server, Certificates, Using Kerberos for Authentication	12	30

Reference Books:

1. "The Web Application Hacker's Handbook", Dafydd Stuttard, Wiley India Pvt. Ltd.
2. "Database Security", S.Castano, M. Fugini, G. Martella, P. Samarati, Addison-Wesley
3. "Database Security" Alfred Basta, Melissa Zgola, Cengage Publication, 2012
4. "Database Security and Auditing: Protecting Data Integrity and Accessibility" Authors: Hassan A. Afyouni Publication: Cengage Learning, 1st Edition, 2005
5. "Database Security: What Students and Professionals Should Know" Authors: Sushil Jajodia, Shambhu Upadhyaya, V.S. Subrahmanian Publication: Springer, 1st Edition, 2005

Course Learning Outcomes (CLO):

Course Outcomes	Description	Bloom's Taxonomy Level
COL1	Understand the importance of security of web application and database	Applying (2) / Applying (1)
COL2	Launch cross site scripting attacks, forgery attack, SQL injection attack on vulnerable web applications.	Applying (2) / Applying (3)
COL3	FCarry out vulnerability analysis of source code in different languages and platforms.	Applying (4)
COL4	Implement security policy for a database & Create database links	Applying (5)
COL5	Configure SSL on Server & Use PKI tools for database security.	Applying (1) / Applying (5)

Mapping of CLO with PO and PSO

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1	H	M	H	H	H			L							H	M
CLO2	H	M	H	H	H			L				L			H	M
CLO3	H	M	M	H	H			L							M	M
CLO4	M	M	M	H	H			L				L			M	M
CLO5	M	M	M	H				L				L			M	M

H: High, M: Medium, L: Low