GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering Syllabus

Subject Code : 3174505

Subject Name : Security Assessment and Risk Analysis

WEF Academic Year :	2021 - 22
Semester :	7
Category of the Course :	Professional Elective

Prerequisite :	Basic understanding of software system and development perspective for the challenges of system design.
Rationale :	This course addresses security assessment critical to producing secure software system as well as deals with the requirements for confidentiality, integrity, and availability for risk assessment to the software development process.

Course Scheme :

Teaching Scheme			Total Credits	Assessment Pattern and Marks				Total Marks
				Theory		Practical		
L	T	PR	C	ESE (E)	PA(M)	ESE (V)	PA (I)	
3	0	2	4	70	30	30	20	150

Course Content :

Sr. No.	Course Content	No. of Hours	% of Weightage
UNIT I	Principles of secure software, trusted computing, threat modeling, advanced techniques for mapping security requirements into design specifications. Secure software implementation, deployment and ongoing management.	8	20
UNIT II	Threats and vulnerabilities of system, major categories of threats Threat impact areas, Threat analysis, Threat assessments and countermeasures.	6	20
UNIT III	Concepts of risk management, project security risks & selecting risk management strategies, Risk management framework, Known security flaws, Architectural risk analysis, Security Testing & Reliability, Risk based security testing.	7	20
UNIT IV	Assessing enterprise security risks using vulnerability scanners, Password analysis and testing, Design patterns for security, Security testing of network protocols.	7	20
UNIT V	Security development frameworks, Security issues associated with the development and deployment of software systems, Security assessment post deployment and continuous assessment.	7	10

UNIT VI	Security testing of web-based systems including e-commerce and payment gateways, OS Security and Exploitation, Architecture and design analysis for Security attack patterns, dynamic analysis for security.	7	10
	Total	**42**	**100**

Reference Book :

1. W. Stallings, Cryptography and network security: Principles and practice, Latest Edition, Prentice Hall.
2. C. Kaufman, R. Perlman, & M. Speciner, Network security: Private communication in a public world, Latest Edition, Prentice Hall.
3. C. P. Pfleeger, S. L. Pfleeger, Security in Computing, Latest Edition, Prentice Hall.

Course Outcome :

After Completion of the Course, Student will able to :

No.	Course Outcomes	RBT Level*
01	Understand various aspects and principles of software security system.	UN
02	Understand various security threats associated with software system.	UN
03	Apply risk management framework for software system design.	AP
04	Apply threat framework to mitigate the security threat associated with systems.	AP
05	Analyze security frameworks for different types of systems use cases.	AN

*RM: Remember, UN: Understand, AP: Apply, AN: Analyze, EL: Evaluate, CR: Create

Suggested Course Practical List :

- The practical work will be carried out based on the content covered during the academic sessions.

List of Laboratory/Learning Resources Required :

- Course-related online MOOCs on NPTEL/SWAYAM platform.

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