Secure Software Engineering

Course Code	19CS4701C	**Year**	IV	**Semester**	II
Course Category	Program Elective-VI	**Branch**	CSE	**Course Type**	Theory
Credits	3	**L-T-P**	3-0-0	**Prerequisites**	Software Engineering, Information Security
Continuous Internal Evaluation :	30	**Semester End Evaluation:**	70	**Total Marks:**	100

Course Outcomes		
Upon successful completion of the course, the student will be able to		
CO1	Understand the fundamentals of secure software techniques in software development	**L2**
CO2	Apply secure software requirement and architecture models in software development with an effective report.	**L3**
CO3	Apply the Concepts of System Security and Complexity in Software Development Process	**L3**
CO4	Apply suitable framework for providing security to a project	**L3**

Syllabus		
Unit No.	**Contents**	**Mapped CO**
I	**Security a software Issue:** Introduction, the problem, Software Assurance and Software Security, Threats to software security, Sources of software insecurity, Benefits of Detecting Software Security **What Makes Software Secure**: Properties of Secure Software, Influencing the security properties of software, Asserting and specifying the desired security properties?	**CO1**
II	**Requirements Engineering for secure software**: Introduction, the SQUARE process Model, Requirements elicitation and prioritization.	**CO1, CO2**

III	**Secure Software Architecture and Design:** Introduction, software security practices for architecture and design: architectural risk analysis, software security knowledge for architecture and design: security principles, security guidelines and attack patterns **Secure coding and Testing:** Code analysis, Software Security testing, Security testing considerations throughput the SDLC.	**CO1, CO2**
IV	**Security and Complexity:** System Assembly Challenges: Introduction, security failures, functional and attacker perspectives for security analysis, system complexity drivers and security	**CO1, CO3**
V	**Governance and Managing for More Secure Software:** Introduction, Governance and security, Adopting an enterprise software security framework, How much security is enough?, Security and project management, Maturity of Practice	**CO1, CO4**

Learning Recourses
Text Books
1. Software Security Engineering, Julia H. Allen, 2009, Pearson Education.
References
1.Developing Secure Software, Jason Grembi, 2009, Cengage Learning. 2. Software Security, Richard Sinn, 2009, Cengage Learning
e-Resources and other Digital Material
1. https://nptel.ac.in/courses/106/105/106105150/ 2. http://www.nptelvideos.in/2012/11/software-engineering.html