NIRMA UNIVERSITY

Institute:	Institute of Technology
Name of Programme:	Master of Computer Application (2-Years Programme)
Course Code:	3MCAD303
Course Title:	Secured Software Engineering
Course Type:	Departmental Elective
Year of Introduction:	2021-22

Credit Scheme

L	T	Practical Component				C
		LPW	PW	W	S	
3	0	0	-	-	-	3

Course Learning Outcomes (CLO):

At the end of the course, students will be able to –

1. summarize the fundamentals of secure software and software vulnerabilities
2. apply practices and principles of secure software development for real-world problems
3. analyse requirement engineering phases for secure software development
4. develop and test the application from security aspect

Syllabus: **Total Teaching hours: 45**

Unit	Syllabus	Teaching hours
Unit-I	**Fundamentals of Secure Software:** Introduction to the software security issue, threats to software security, sources of software insecurity, advantages of making software secure, properties of secure software, software vulnerabilities, Building security into the software development lifecycle	07
Unit-II	**Requirement Engineering for Secure Software:** Introduction to requirement engineering for secure software, the SQUARE process model, requirement elicitation, requirement prioritization for secure software.	10
Unit-III	**Secure Software Architecture and Design:** Introduction to practices for architecture and design of secure software - threat analysis and architectural vulnerability assessment, security principles and guidelines, attack patterns	12
Unit-IV	**Secure Software Construction and Testing:** Code analysis, coding practices, security testing consideration for various phases of SDLC	10
Unit-V	**Security and Complexity:** Security failures, System security drivers and complexity, analysis for some real case studies	06

Self-Study: The self-study contents will be declared at the commencement of semester. Around 10% of the questions will be asked from self-study contents.

Suggested Readings/

1. Julia H. Allen, Sean Barnum, Robert J. Ellison, Gary McGraw,
2. Nancy R. Mead, Software Security Engineering: A Guide for

References:

Project Managers. Pearson
3. Gary McGraw, Software Security: Building Security In, Addison-Wesley
4. C. P. Pfleeger, S. L. Pfleeger, Security in Computing, Prentice Hall
5. Viega, J. and McGraw, G. Building Secure Software: How to Avoid Security Problems the Right Way, Addison-Wesley
6. J. D. Meier and Alex Mackman, Security Engineering Explained – Pattern and Practices, Microsoft
7. Gasser, M. Building a Secure Computer System, Van Nostrand Reinhold

Suggested List of Experiments: -NA-

Suggested Case List: -NA-