



# SILVER OAK UNIVERSITY

School of Technology, Design and Computer Application  
 Silver Oak College of Computer Application  
 Department of Computer Application  
 Master of Science Cyber Security & Digital Forensics

**Course Name: Mobile Application Security**

**Course Code: 1040147108**

**Semester: 2<sup>nd</sup>**

**Prerequisite:** Fundamentals of Android and iOS architecture. Mobile rooting and Jailbreaking.

**Course Objective:** The objective of Mobile Vulnerability Assessment and Penetration Testing (VAPT) is to find all potential loopholes in the mobile applications, operating system and hardware and explore the severe impact of those loopholes by exploiting them.

### Teaching Scheme:

Teaching Scheme				
L	T	P	Contact Hours	Credit
3	1	0	4	4

### Content:

Unit No.	Course Contents	Teaching Hours	% Weightage
1	<b>Introduction to Android Applications and Mobile App Security:</b> History of Android, Understanding Android Hardware and Software Architecture, Understanding Android Security Model, Understanding Android Permission Model for Application Security, Sandboxing, Codesigning, Encryption, Rooting Devices, Understanding APK Understanding Directories and Files on an APK	12	30
2	<b>Introduction to IOS &amp; IPA Applications:</b> History of iOS, Understanding iOS Hardware and Software Architecture, Understanding iOS Security Model, Understanding iOS Permission Model for Application Security Sandboxing, Codesigning, Keychain and Encryption, Jailbreaking Devices, Understanding IPA, Understanding Directories and Files on an IPA	10	25
3	<b>Mobile Application Attacks 1:</b> Setting up Mobile App Pentesting Environment, Interact with the Devices, Starting with Drozer, Understanding AndroidManifest.xml, Configuring, Burp and Traffic Interception, Traffic Interception Bypass, Weak Server Side Controls, Insecure Data Storage, Insufficient Transport Layer Protection, Unintended Data Leakage, Poor Authentication & Authorization Unintended	12	30

	Data Leakage,Poor Authentication & Authorization		
4	<b>Mobile App Security Testing:</b> Static Analysis,Dynamic Analysis, Penetration Testing: Conducting simulated attacks to find vulnerabilities.Security Testing Tools: Introduction to tools like OWASP ZAP, Burp Suite, and mobile-specific tools like MobSF.	8	15

**Course Outcomes:**

Sr. No.	CO-Statement	Unit No
CO-1	Recall the historical evolution of Android, tracing its development from inception to its current state.	1
CO-2	Compare and contrast the security models of Android and iOS platforms, highlighting their similarities and differences.	2
CO-3	Evaluate the implications of rooting (Android) and jailbreaking (iOS) devices on security and explore potential mitigation strategies.	3
CO-4	Utilize security testing tools to simulate attacks and identify vulnerabilities.	4

**Major Equipment:**

1. Computer System
2. LAN cable

**Teaching & Learning Methodology: -**

1. Projector and Computer
2. Experiments shall be performed in the laboratory related to course contents

**List of Tutorials:**

**Total Hours: 14**

Sr. No.	Tutorials Name
1.	Case Study on A Comparative Analysis of Android and iOS Security Models
2.	Explore the underlying hardware and software architecture of Android and iOS devices.
3.	Discuss about encryption techniques used in Android and iOS applications, as well as the importance of code signing for app integrity.
4.	Discuss the concepts of rooting Android devices and jailbreaking iOS devices, and the implications for security.
5.	Case Study on Investigating the Impact of Rooting and Jailbreaking on Device Security
6.	Case Study on Exploring Real-World Exploits and Their Mitigation Strategies

7.	Setup a simulated industrial mobile application environment.
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**Books Recommended:**

1. FL: Auerbach Publications - Fried, S “Mobile device security: A comprehensive guide to securing your information in a moving world. Boca Raton”
2. IN: Wiley, John & Sons - Stuttard, D. & Pinto, M “The web application hacker’s handbook: Discovering and exploiting security flaws.” Indianapolis
3. Dwivedi, H., Clark, C., & Thiel, D “Mobile application security. New York: McGraw-Hill Companies.

**CO-PO-PSO MATRIX:**

Co.No	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2
CO-1	2	1	1	1		3		1	1
CO-2	1	2	1	1				3	1
CO-3	1	1	3	1	1			1	3
CO-4	2	1	2	1			1	3	3