

IWSP: Internet and Web Security Protocols (3rd Semester MS-CLIS)

No. Of Credit: 3

Lecture Hour: 45 Hrs

Unit I: Web Services Introduction (7 Hrs)

Introduction: URI, URN, URL, IRI, Client-Server Communication, RPC, RMI, Distributed Computing, Distributed Processing across the Web, Web Server, Web Service – Advantages and Disadvantages, Web service applications with multiple tiers.

Unit II: Web Service Security (10 Hrs)

XML and SOAP: HTML, Extensible Mark-up Language(XML) Introduction and Supporting Concepts with Syntax, CSS, XSLT, DOM, SOAP Introduction, SOAP Message Processing, Message Format, SOAP Features, HTTP Binding, SOAP Usage Scenarios, XML Security.

SAML: Introduction, Security Problems Solved by SAML, SAML Assertions, SAML Protocols, SAML Request/Response, Bindings, Profiles, Privacy, Federation, Single Sign-on.

Unit III: Internet Protocols and Vulnerabilities (8 Hrs)

Transmission Control Protocol (TCP), User Datagram Protocol (UDP), IPv4, IPv6, Internet Control Message Protocol (ICMP), Border Gateway Protocol (BGP) and all its security issues/vulnerabilities.

Unit IV: Internet Security Protocols (12 Hrs)

Secure Socket Layer (SSL), Transport Layer Security (TLS), IP Security (IPSec) Secure Shell (SSH), HTTPS, Secure FTP (SFTP), Virtual Private Network (VPN).

Unit V: Web Hacking Solutions (8 Hrs)

Research Oriented : Validation of Input and Output in web applications, Cookies, Direct data access (and theft), Data Poisoning, Malicious File Execution, Authentication and Session Management, System Architecture and Configuration, Phishing, Denial of Service, System Information Leakage and Error Handling

References

1. Bret Hartman, Donald J. Flinn, Konstantin Beznosov and Shirley Kawamoto, Mastering Web Services Security, Wiley Publishers, 2003.
2. Stuart McClure, Saumil Shah, Shreeraj Shah, Web Hacking: Attacks and Defense, Addison-Wesley Professional ISBN-10: 0201761769 • ISBN-13: 9780201761764.
3. Eric Rescorla, SSL and TLS: Designing and Building Secure Systems, Addison Wesley Professional, 2001.
4. Andrew S. Tanenbaum, Computer Networks, Fourth Edition, Prentice Hall.
5. Websites: W3School for XML, SOAP, DOM, CSS and XSLT.