

**PIS218: WEB SERVICE SECURITY**

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3	0	2	4.0

**Course Objectives:** The course aims to provide an understanding of how web application risks apply in a Web Services world. It also deals with the Web Services security issues including the data security standards and service access control mechanisms

**Introduction to Web Service Technologies:** Security for Web Services and Security Goals, Need of security and Privacy in web services, applications, SOA and Web Services Principles, Web Services Architecture, Web Services Technologies and Standards, SOAP, Web Services Description Language (WSDL), Service Discovery: Universal Description, Discovery, and Integration (UDDI) Considerations Web Services Infrastructure

**Web Services Threats, Vulnerabilities, and Countermeasures :**Threats and Vulnerabilities, Threat Modeling, Vulnerability Categorizations and Catalogues, Threat and Vulnerabilities Metrics

**Standards for Web Services Security:** The Concept of Standard Web Services Security, Standards Framework, An Overview of Current Standards, XML Data Security ,Security Assertions Markup Language (SAML), SOAP Message Security, Key and Trust Management standards, Standards for Policy Specification, Access Control Policy Standards, Implementations of Web Services Security Standards

**Digital Identity Management and Trust Negotiation :** Overview of Digital Identity Management, Overview of Existing Proposals Liberty Alliance, WS-Federation, Comparison of Liberty Alliance and WS-Framework, Other Digital Identity Management Initiatives, Discussion on Security of Identity Management Systems, Business Processes.

**Access Control for Web Services:** Approaches to Enforce Access Control for Web Services, WS-AC: An Adaptive Access Control Model for Stateless, Web Services, The WS-AC Model, WS-AC Identity Attribute Negotiation, WS-AC Parameter Negotiation.

**Laboratory work:** Working with tampered data and various mechanisms of gaining control over web services by tampering with the URL data, XML documents and cross-site scripting. It also includes exploring vulnerability assessment tools like Accunetix, Netspark.

**Recommended Books**

1. Security for Web Services and Service Oriented Architectures, Elisa Bertino, Lorenzo D. Martino, Federica Paci, Anna C. Squicciarini, Springer, Reprint 2010,
2. Web Services Security , Mark O'Neill,MacGraw-Hill,1st Edition, 2003
3. Securing Web Services with WS-Security: Demystifying WS-Security, WS-Policy, SAML, XML Signature, and XML Encryption,Johty Rosenberg and David Remy, Sams Publishing,1<sup>st</sup> Edition,2004