Course: Elective
Web Services

Semester: I	Credits: 4	Subject Code: SMAJEWS123557	Lectures: 60

Course Outcomes:

At the end of this course, the learner will be able to:
- CO1- Understand Web Services technologies and implementation model for SOA
- CO2- Explore Web Service benefits and challenges.
- CO3-Understand the details of web services technologies like WSDL, UDDI, SOAP
- CO4- Learn how to implement and deploy web service client and server
- CO5- Understand architecture of RESTful system.
- CO6- Design the RESTful system using JAX-RS APIs

Unit 1: Web Service and SOA fundamentals	15

- Introduction to Web Services-The definition of web services, basic operational model of web services, tools and technologies enabling web services, benefits, and challenges of using web services.
- Web Services Architecture-Web services Architecture and its characteristics, core building blocks of web services, standards and technologies available for implementing web services, web services communication models, basic steps of implementing web services.

Unit 2:SOAP: Simple Object Access Protocol	15

- SOAP: Simple Object Access Protocol -Inter-application communication and wire protocols, SOAP as a messaging protocol, Structure of a SOAP message, SOAP communication model, Building SOAP Web Services, developing SOAP Web Services using Java, Error handling in SOAP, advantages and disadvantages of SOAP.
- PracticalAssignments

Unit 3: Describing and Discovering Web Services	15

- WSDL-WSDL in the world of Web Services, Web Services life cycle, Anatomy of WSDL definition document, WSDL bindings, WSDL Tools, Limitations of WSDL, Service discovery and role of service discovery in a SOA, Service discovery mechanisms.
- UDDI-UDDI Registries, Uses of UDDI Registry, programming with UDDI,UDDI data structures, Support for categorization in UDDI Registries, publishingAPI, Publishing information to a UDDI Registry, searching information in a UDDI Registry, deleting information in a UDDI Registry, limitations of UDDI
- Practical Assignments

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Unit 4: The REST Architectural style	15

- Introduction to HTTP- The core architectural elements of a RESTful system, Description and discovery of RESTful web services, Java tools and frameworks for building RESTful web services, JSON message format and tools and frameworks around JSON, Build RESTful web services with JAX-RS APIs, description and discovery of RESTful Web Services, Design guidelines for building RESTful web services, Secure RESTful web services.
- Practical Assignments

References Books:

- F.P.Coyle, *XML, Web Services, and the Data Revolution*, Pearson Education
- S. Graham and others,*Building Web Services with Java*,Pearson Edn., 2008,2nd Edition,
- Richard Monson-Haefel ,*J2EE Web Services* ,Pearson Education
- R.Mogha,V.V. Preetham, *JavaWeb Services Programming*,Wiley India Pvt.Ltd.

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