Course Code	Course Title	Credits
PSCS2031	Elective I- Track A: Cloud Computing (Concepts and Design of Web services)	04

Unit I: Web Service as distributed application

The Service Endpoint Interface (SEI) and Service Implementation Bean (SIB), JAX-WS, Publishing Web Service, Calling Web Service from applications developed in different platform, SOAP, Message transport, Service contract, Web Services returning Richer Data types, WSDL structure.

Unit II: SOAP Based Web Services

Structure of SOAP Message (In JAX-WS), SOAP Messaging Architecture, SOAP Header, Client-side SOAP Handler, Generating a Fault, Service-side SOAP Handler, Handler methods, Message Context and Transport Headers, Web Services and Binary Data.

Unit III: REST-style Web Services

What is REST? HTTP methods, Java API for RESTful Web Services (JAX-RS), JAX-RS with Jersey, CRUD RESTful Web Service, SOAP and REST in Harmony, Interoperability between the Java Platform and WCF, WSIT, Web Services Security, Wire-Level Security, WS-Security.

Unit IV: Amazon Web Services (AWS) Essentials

Architecting on AWS, Building complex solutions with Amazon Virtual Private Cloud (Amazon VPC), Leverage bootstrapping and auto configuration in designs, Architect solutions with multiple regions, Employ Auto Scaling design patterns, Amazon CloudFront for caching, Big data services including AWS Data Pipeline, Amazon Redshift and Amazon Elastic MapReduce. AWS OpsWorks.

Text book:

- Java Web Services Up and Running 2nd edition, Martin Kalin, O'Reilly (2013)
- Pro Power Shell for Amazon Web Services, Brian Beach, Apress, 2014.

Reference:

- Programming Amazon EC2, Jurg van Vliet, Flavia Paganelli, O'Reilly Media, 2011.

- JAX-WS Reference Implementation (RI) Project, https://jax-ws.java.net/.
- Java API for RESTful Services (JAX-RS), https://jax-rs-spec.java.net/.
- RESTful Web Services in Java, https://jersey.java.net/.
- AWS Training, http://aws.amazon.com/training.

Course Code	Course Title	Credits
PSCSP2	**Practical Course on Elective I and Elective II**	**04**

Sr No	**List of Practical Experiments on Elective I-Track A:Cloud Computing (Concepts and Design of Web services)**
1	Develop Time Server service that returns current time in Java and call it from clients developed in Java, PHP, Android and .NET.
2	Develop Web service in Java that returns complex data types (e.g. as List of friends).
3	Develop Web service in Java that returns matrix multiplication by Strassen's algorithm. Two matrices will be entered at run time by client. Server does the matrix multiplication and returns answer to client.
4	Demonstrate CRUD operations with suitable database using SOAP or RESTful Web service.
5	Develop Micro-blogger application (like Twitter) using RESTful Web services.
6	Develop application to consume Google's search / Google's Map RESTful Web service.
7	Develop WCF service returning response in JSON type.
8	Develop application to download image/video from server or upload image/video to server using MTOM techniques.
9	Using AWS Flow Framework develop application that includes a simple workflow. Workflow calls an activity to print hello world to the console. It must define the basic usage of AWS Flow Framework, including defining contracts, implementation of activities and workflow coordination logic and worker programs to host them.
10	Using AWS Flow Framework develop application, 'Booking' for making a reservation, including flight and rental car.