GANPAT UNIVERSITY									
FACULTY OF ENGINEERING AND TECHNOLOGY									
Programme	Bachelor of Technology					Branch/Spec.	Computer Science & Engineering		
Semester	VII					Version	1.0.0.0		
Effective from Academic Year			2025-26			Effective for the batch Admitted in			June 2022
Subject code	2CSE715		Subject Name			Web Services & Rest API			
Teaching scheme						Examination scheme (Marks)			
(Per week)	Lecture(D)		Practical (Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	3	0	2	0	5	Theory	40	60	100
Hours	3	0	4	0	7	Practical	60	40	100

Pre-requisites:

Basics of Artificial Intelligence - Knowledge based Agent, Basics of Machine learning and Neural Network

Learning Outcome:

Upon Completion of the course, the students will be able to:

- Explain about Web Services and its importance.
- Design & Develop SOAP based Web Services
- Access REST API using JAVA client
- Understand about the security of web services

Theory syllabus

Unit	Content	Hrs
1	**Webservices Overview** Webservices and its fundamental, WSDL, UDDI, SOAP, REST, HTML and XML, difference between SOAP and REST	02
2	**JAXB Introduction** overview and annotations of JAXB, marshalling and unmarshalling, implementation of JAXB.	03
3	**Introduction to SOAP** SOAP messages, exchange model, Data Types, Data Encoding, Data Transport	03
4	**Creating Web Services in Java with Apache SOAP** Installing and configuring Apache SOAP, implement Server Program, Deployment descriptor and client program.	03
5	**Describing SOAP Web Services: WSDL** Anatomy of a WSDL file, define data types and structures within an XSD, Web Service interface and implementation and understand messaging patterns.	04
6	**Writing SOAP based Web Services** Design SOAP based Web Service using Spring Framework, develop SOAP based Web Service using Contract first approach, Handle exception and implement SOAP Web Service Security	04
7	**UDDI** UDDI, UDDI Technical Architecture, Interfaces, UDDI and WSDL examples	03

8	**Java API for RESTful Services** REST and how it got developed from HTTP, Resources & Collection URIs, Method Idempotence, REST Response and JAX-RS Specifications.	**06**
9	**Dispatching Requests to Methods** create resources as XML return response, install REST API client, to build service stubs and access the paths, Implement POST methods, Implement Pagination and filtering	**06**
10	**Parameter and Return Types** Param annotations, status codes and location headers, handle exceptions using WebApplication, content Negotiations,	**05**
11	**JAX-RS Client** Understanding Java client using JAX-RS, sending GET/POST requests using Java client, setup REST client.	**03**
12	**Securing Web Services and future of web services** Transport Level Security and Application level security, future of web services	**03**

Self learning:

Practical content

Practicals will be based on the contents covered in the classroom.

Text Books

1	REST API Design Rulebook: Designing Consistent RESTful Web Service Interfaces by Mark Masse

Reference Books

1	RESTful Java Web Services by Bogunuva Mohanram Balachandar
2	Automating and Testing a REST API by Alan Richardson

Course Outcome

Cos	Description
CO1	Explain about Web Services and its importance.
CO2	Design & Develop SOAP based Web Services
CO3	Access REST API using JAVA client
CO4	Understand about the security of web services

Mapping of CO and PO:

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	3	2	3	1	3	1	2	1	1	1	1
CO2	2	3	2	2	2	3	1	1	1	1	1	1
CO3	2	2	2	1	2	1	2	1	1	1	2	2
CO4	0	3	3	1	3	1	2	3	1	1	3	2