



Department of Information Technology		LP: IT16605
B-E/B.Tech/M.E/M.Tech : B.Tech Regulation: 2016		Rev. No: 00
PG Specialisation : --		Date: 17/12/2018
Sub. Code / Sub. Name : IT16605-SERVICE ORIENTED ARCHITECTURE		
Unit : I		

**INTRODUCTION TO XML**

**Unit Syllabus:** XML Document Structure-Well formed and valid documents- Namespaces-DTD-

XML Schema-X-Files-Parsing XML-XML Transformation and XSL

**Objective:**

- To provide a foundation upon which all technologies and strategies around XML are based.

Session No *	Topics to be covered	Ref	Teaching Aids
1	XML Document Structure- Declaration, Elements, Attributes, Comments, XML Content	1-Ch.2;Pg 39-50	LCD
2	Well formed and valid documents	1-Ch.2;Pg 56-57	LCD
3	Namespaces – Declaring namespaces, Scope of namespaces	1-Ch.2;Pg 58-61 6-Ch.2;Pg 21-26	LCD
4	DTD- Definition, Examples, Structure, Alternatives	1-Ch.3;Pg.67-105	BB/ LCD
5	XML Schema- Creating Schema - Declaring attributes, elements,	1-Ch.4;Pg 107-168 4-Ch. 2; Pg 43-46	BB/ LCD
6	X-Files	1-Ch.5;Pg 169-221	BB/ LCD
7	Parsing XML with DOM	1-Ch.7;Pg 267-307 4-Ch. 2; Pg 48-49	BB/ LCD
8	Parsing XML with SAX	1-Ch.8;Pg 309-344 4-Ch. 2; Pg 49-50	BB/ LCD
9	XML Transformation and XSL	1-Ch.4;Pg 345-403 4-Ch. 2; Pg 53-57	BB/ LCD
Content beyond syllabus covered (if any):			

- Session duration: 50 minutes



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Unit : II

## SOA BASICS

### Unit Syllabus :

Roots of SOA –Characteristics of SOA –Comparing SOA to client-server and distributed Internet architectures –Anatomy of SOA- How components in an SOA interrelate –Principles of service orientation.

### Objective:

- To gain understanding of the basic concepts of SOA, comparison with older architectures and principles of service orientation and different service layers of SOA.

Session No *	Topics to be covered	Ref	Teaching Aids
10	Roots of SOA	2-Ch.4;Pg.86-107 4-Ch. 4; Pg 109-142	BB/ LCD
11	Roots of SOA	4-Ch. 4; Pg 109-142	BB/ LCD
12	Characteristics of SOA	2-Ch.3;Pg. 40-56 7-Ch.2;Pg 40-61	BB/ LCD
13	Characteristics of SOA	2-Ch.3;Pg. 40-56	BB/ LCD
14	Comparing SOA to client-server architectures Application -Processing, technology, security, administration	2-Ch.4;Pg.88-95	BB/ LCD
15	Comparing SOA to distributed Internet architectures Application -Processing, technology, security, administration	2-Ch.4;Pg.95-103	BB/ LCD
16	Anatomy of SOA- Logical Components of web services framework, automatic logic, SOA	2-Ch.8;Pg.284-288	BB/ LCD
17	How components in an SOA interrelate	2-Ch.4;Pg.289-290	BB/ LCD
18	Principles of service orientation.	2-Ch.8;Pg.290-310	BB/ LCD
Content beyond syllabus covered (if any):			

\* Session duration: 50 mins



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Unit : III

### WEB SERVICES AND SOA

#### Unit Syllabus:

Web services Architecture–Service descriptions –WSDL- Messaging with SOAP –Message exchange Patterns -Coordination –Atomic Transactions –Business activities –Orchestration - Choreography –Service layer abstraction –Application Service Layer –Business Service Layer – Orchestration Service Layer.

#### Objective:

- To learn about web services, messaging with SOAP and to learn about advanced concepts such as Orchestration and Choreography.

Session No *	Topics to be covered	Ref	Teaching Aids
19	Web services Architecture- Framework, roles, Models	2-Ch.5;Pg.111-131	LCD
20	Service descriptions with WSDL- Abstract Description, Concrete Description, Semantic Description	2-Ch.5;Pg.131-142 6-Ch.3;Pg 100-119	LCD
21	Messaging with SOAP –Message exchange Patterns -Primitive MEPs, MEPs and SOAP, WSDL, SOA	2-Ch.5;Pg.142 -152 2-Ch.6;Pg.162-172 4-Ch. 3; Pg 113-117	BB/ LCD
22	Coordination –Activation, Registration, Completion Process,Atomic Transactions- ACID transactions, protocols, Coordinator, Process	2-Ch.6;Pg.177-193	LCD
23	Business activities –protocols, Coordinator, Process,	2-Ch.6;Pg.193-200	LCD
24	Orchestration -protocols, Coordinator, Process, Choreography- Collaboration, Roles	2-Ch.6;Pg.200-212	BB/ LCD
25	Service layer abstraction – Problems solved by layering services	2-Ch.9;Pg.333-337	LCD
26	Application Service Layer	2-Ch.9;Pg 337-341	BB/ LCD
27	Business Service Layer -Orchestration Service Layer.	2-Ch.9;Pg.341-346	LCD

Content beyond syllabus covered (if any):

\* Session duration: 50 minutes



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Unit : IV

**ENTERPRISE PLATFORMS AND SOA****Unit Syllabus :**

Service Oriented Analysis-Service Oriented Design-Service Modeling-SOA platform basics-SOA support in J2EE-Java API for XML-based web services (JAX-WS) -Java architecture for XML binding (JAXB) -Java API for XML Registries (JAXR) -Java API for XML based RPC (JAX-RPC) ,RESTful web services, Web Services Interoperability Technologies (WSIT), SOA support in .NET -ASP.NET web services.

**Objective:**

- To introduce the concepts of Expert Systems with case studies for various applications.

Session No *	Topics to be covered	Ref	Teaching Aids
28	Service Oriented Analysis -Introduction, Benefits, Deriving business services	2-Ch.11;Pg.377-395	LCD
29	Service Oriented Design- objectives, process, prerequisites	2-Ch.13;Pg.448-453	LCD
30	Service Modeling- Step-by-step process, guidelines, SOA platform basics	2-Ch.12;Pg.397-422 2-Ch.13;Pg.466-471	LCD
31	SOA support in J2EE-Platform overview, Primitive support, Contemporary support , Java API for XML-based web services (JAX-WS)	2-Ch.18;Pg.668-688 4-Ch.6;Pg 186-189	LCD
32	Java architecture for XML binding (JAXB)-Architecture	2-Ch.13;Pg.466-471 7-Ch.13;Pg.545-554	LCD
33	Java API for XML Registries (JAXR) - Registries and repositories, Architecture, Information Model.	2-Ch.18;Pg.668-688 7-Ch.12;Pg.479-491	LCD
34	Java API for XML based RPC (JAX-RPC)-RESTful web services, Web Services Interoperability Technologies (WSIT),	2-Ch.18;Pg.668-688 7-Ch.10;Pg 313-367	LCD
35	SOA support in .NET -Platform overview, Primitive support, Contemporary support	2-Ch.18;Pg.668-702	LCD
36	ASP.NET web services.	Internet	LCD
<b>Content beyond syllabus covered (if any): Deep learning</b>			

\* Session duration: 50 mins



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Unit : V

### RECENT TRENDS IN SOA

#### Unit Syllabus:

SOA business process design - WS-BPEL Language basics – WS-Policy , WS- Security- WS-coordination - Mapping of SOA and Cloud computing, Case Study: Travel Insurance

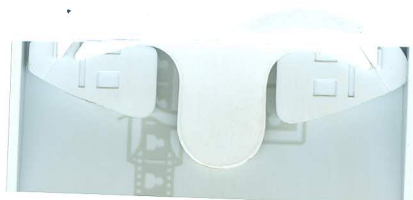
#### Objective:

- To know about various WS-\* specification standards

Session No *	Topics to be covered	Ref	Teaching Aids
37	SOA business process design	2-Ch.16;Pg.585-586	LCD
38	WS-BPEL Language basics - Prerequisites	2-Ch.16;Pg.566-568 5-Ch.6;Pg.248-259	LCD
39	WS-BPEL Language basics - Elements	2-Ch.16;Pg.568-580 5-Ch.6;Pg.248-259	LCD
40	WS-Policy	2-Ch.17;Pg.629-636	LCD
41	WS- Security	2-Ch.17;Pg.642-644 6-Ch.8;Pg 330-342	LCD
42	WS- Security - Elements	2-Ch.17;Pg.644 - 648	
43	WS-coordination	2-Ch.16;Pg 581-584	LCD
44	Mapping of SOA and Cloud computing	Internet	LCD
45	Case Study: Travel Insurance	Internet	LCD

**Content beyond syllabus covered (if any):**

\* Session duration: 50 mins







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**REFERENCES:**

1. Ron Schmelzer et al. — XML and Web Services, Pearson Education, 2002.
2. Thomas Erl, —Service Oriented Architecture: Concepts, Technology, and Design, Pearson Education, 2016.
3. David S.Linthicum, Cloud Computing and SOA Convergence in Your Enterprise, Pearson Addison-Wesley Information Technology Series, 2010.
4. Frank P.Coyle, —XML, Web Services and the Data Revolution, Pearson Education, 2002.
5. Eric Newcomer, Greg Lomow, —Understanding SOA with Web Services, Pearson Education, 2005.
6. Sandeep Chatterjee and James Webber, —Developing Enterprise Web Services: An Architect's Guide, Prentice Hall, 2004.
7. James McGovern, Sameer Tyagi, Michael E.Stevens, Sunil Mathew, Java Web Services Architecture, Morgan Kaufmann Publishers, 2011.

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Date	<b>19.12.2018</b>	<b>19.12.2018</b>

\* If the same lesson plan is followed in the subsequent semester/year it should be mentioned and signed by the Faculty and the HOD