Title (Units): **COMP7700 E-technology Architectures, Tools and Applications (3,2,1)**

Course Aims: To develop students' understanding of recent developments in e-technologies, including XML, Web services, service-oriented architecture, Web-enabled business processes, mobile web and applications, as well as related architectures, tools, and applications.

To develop students' capability to design and develop software systems based on e-technologies and to apply them to some domain applications.

Prerequisite: Nil

Course Intended Learning Outcomes (CILOs):
Upon successful completion of this course, students should be able to:

No.	Course Intended Learning Outcomes (CILOs)
	Knowledge
1	Explain standards and protocols such as XML, WSDL, SOAP and UDDI that are used to develop web services
2	Explain service oriented architecture and how web services can be used in system development and management
3	Explain web-based business process and its enabling tools and technologies
	Professional Skill
4	Analyze, explain and evaluate requirements and specifications in the context of web services
5	Design, develop and evaluate web service systems
	Attitude
6	Reflect that web technologies are continuously evolving and that their impacts on information systems and business process are also continuously evolving.

Calendar Description: This course will develop students' understanding of recent developments in e-technologies, including XML, Web services, service-oriented architecture, Web-enabled business processes, as well as related architectures, tools, and applications. It will also enable students to acquire the capability to design and develop software systems based on e-technologies and to apply them to some domain applications.

Teaching and Learning Activities (TLAs):

CILOs	Type of TLA
1-6	Students will learn the web technology concepts via lectures and assignments.
4-5	Students will acquire hands-on experience via laboratory sections, and/or development projects.

Assessment:

No.	Assessment Methods	Weighting	CILOs to be addressed	Description of Assessment Tasks
1	Continuous Assessment	40%	1-5	Continuous assessment in the forms of assignments, exercises, individual and/or group projects/term papers will be used to evaluate students understanding of the basics of E-technology and to assess students' ability to design and develop web service systems.
2	Examination	60%	1-4	Examination will be used to evaluate students' knowledge of standards and protocols that are used to develop web services, to test students' understanding of web services and web-based

				business process, and the enabling technologies of web services.

Assessment Rubrics:

Criteria	Excellent (A)	Good (B)	Satisfactory (C)	Fail (F)
Use XML and Web Services technologies for service oriented system development	Compare, contrast and design XML related schema based on some requirement of an application so as to support some requested queries on it; Use web services to develop a more sizeable web system with both web services and a client side program to invoke them	Identify the XML related schema based on different xml data files and make queries on it; Use web services to develop a more sizeable web system with both web services and a client side program to invoke them	Identify the XML related schema based on different xml data files and make queries on it; Use web services to develop a simple web system with both web services and a client side program to invoke them	Unable to use XML and web services to develop a simple web system
Describe the key standards, protocols and design principle of the related technologies -- indicating their purposes and interactions among them	Describe the features of various key standards, protocols and design principle on XML schema, queries, Web Services and Web-based Business processes in the context of some applications and how they are related to the better management and strategic development of an enterprise	Describe the features of various key standards, protocols and design principle on XML schema, queries, Web Services and Web-based Business processes in the context of some applications.	Describe the features of various key standards, protocols and design principle on XML schema, queries, Web Services and Web-based Business processes	Unable to clearly identify the purpose and general principle for the current design of XML and Web Services technologies

Course Content and CILOs Mapping:

Content		CILO No.
I	Introduction to emerging computing paradigms	6
II	The World Wide Web and XML	1, 4, 5
III	Web services	1, 2, 4, 5
IV	Web-based business process	3, 4, 5
V	Other advanced topics on web technologies	4, 6
VI	E-technology application case studies	2, 3, 4, 6

References:

- Anders Møller, An Introduction to XML and Web Technologies, Pearson Education, 2009.
- Gustavo Alonso, Fabio Casati, Harumi Kuno, and Vijay Machiraju, Web Services, Concepts, Architectures and Applications, Springer Verlag 2010.
- Sanmay Mukhopadhyay and Cooper Smith, Web-Based Infrastructures: A 4-D Framework, Prentice Hall 2002.
- Alex Nghiem , IT Web Services: A Roadmap for the Enterprise, Prentice Hall 2002.
- Mathias Weske, Business Process Management: Concepts, Languages, Architectures (Chapters 3 & 4), Berlin, Heidelberg: Springer-Verlag, 2nd Edition, 2012.
- Technical reports, standard specification and project documentations published by the World Web Web Consortium (W3C) at http://www.w3.org.

- Dino Esposito, Architecting Mobile Solutions for the Enterprise. Microsoft Press, 2012.
- Relevant research papers published in journals and conference proceedings.

Course Content:

Topic

I. Introduction to emerging computing paradigms

II. The World Wide Web and XML
   A. The evolution of the web technologies
   B. XML language
   C. XML document processing and management: technologies and tools

III. Web services
   A. Service Oriented Computing and Architecture
   B. Web Service Related Technologies, including WSDL, SOAP and UDDI
   C. Web Service Oriented System Development and Management

IV. Web-based business process
   A. Web process modeling and BPEL
   B. Web process management: technologies and tools

V. Other advanced topics on web technologies
   A. Mobile web
   B. Mobile apps

VI. E-technology application case studies