Subject Description Form

Subject Code	COMP3421
Subject Title	Web Application Design and Development
Credit Value	3
Level	3
Pre-requisite / Co-requisite / Exclusion	**Pre-requisite**: COMP1011/COMP1012/ENG2002
Objectives	The objectives of this subject are to: 1. highlight the impact of Web in facilitating a truly distributed, wide area and highly accessible computing environment; 2. equip students with the ability to analyse, design and implement techniques required to develop for the Web and Internet based business applications; and 3. review state-of-the-art technologies such as distributed client/server computing paradigm, middleware concepts and architecture, web-based client/server computing technologies, XML, wireless and intelligent Internet computing.
Intended Learning Outcomes	Upon completion of the subject, students will be able to: *Professional/academic knowledge and skills* (a) differentiate different components of distributed client/server on Web and Internet computing; (b) utilise the specialised concepts of Web services and related technologies in various Web development tasks; (c) show in-depth understanding of client-side as well as server programming with related Web development tools, such as Ajax and GoogleApps; (d) design, develop and implement innovative interactive Web applications; (e) differentiate different components of XML and its related standards and technologies; (f) understand latest and future Web technology, including wireless and intelligent Internet computing; *Attributes for all-roundedness* (g) communicate effectively in project / system presentation and technical documents / reports;

	(h) demonstrate independent learning skills and apply new knowledge to solve non-routine technical problems; (i) accept responsibility and accountability for determining and achieving personal and group outcomes while exhibiting leadership in a project team; and (j) demonstrate critical thinking and creative mind in applying different computing technologies to interactive Web applications.
Subject Synopsis/ Indicative Syllabus	**Topic** **1. Introduction to Distributed Client/Server Web and Internet Computing** Client/server evolution and its relation to Internet computing; overview of Internet services including file servers, database servers, transaction servers, web servers; concepts of two-tier versus three-tier architectures; network infrastructure and support for Web computing. **2. Web-Based Client/Server Computing** Revolution of Web as the intergalactic client/server Internet computing platform; web model. Web protocols and hypertext technology; HTTP data representation and response; interactive Web-based client/server; Web programming such as JavaScript, ASP, Java Servlets; Servlet, PHP, JSP and others. **3. Extensible Markup Language (XML)** XML introduction: XML data modelling such as DTD and XML Schema; XML related standards, DOM and SAX; XML data management: Querying XML data, XML data storage, and related XML tools and API, such as Ajax and GoogleAPI. **4. Latest and Future Web Computing** Recent advancement of Web technologies, Web 2.0 and Web 3.0; Introduction to wireless Internet; wireless Internet applications; intelligent Internet computing using agent technology.
Teaching/ Learning Methodology	This subject emphasises the design and technical aspects of web application development. It is intended to equip the student with knowledge and practical experience on how to complete a web-based application. The lectures will be used to deliver course material that will be practised/reinforced during the labs and tutorials.

Assessment Methods in Alignment with Intended Learning Outcomes

Specific assessment methods/tasks	% weighting	Intended subject learning outcomes to be assessed									
		a	b	c	d	e	f	g	h	i	j
Continuous Assessment	**55%**										
1. Assignments, Tests & Projects		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Examination	**45%**	✓	✓				✓		✓		
Total	100 %										

Student Study Effort Expected

Class contact:	
▪ Lectures	26 Hrs.
▪ Tutorials/Lab	13 Hrs.
Other student study effort:	
▪ Assignments, Tests, Projects, Exams	80 Hrs.
Total student study effort	119 Hrs.

Reading List and References

Reference Books:

1. Duckett, Jon, *Web Design with HTML, CSS, JavaScript and jQuery Set*, Wiley, 2014.
2. Myers, Mark, *A Smarter Way to Learn JavaScript: The new approach that uses technology to cut your effort in half*, Kindle Edition, 2013.
3. Deitel, Paul J., *Internet & World Wide Web: How to Program*, 4th Edition, Deitel & Associates Inc., Prentice Hall, 2008.
4. Godbole, Achyut S. and Kahate, Atul, *Web Technologies: TCP/IP Architecture, and Java Programming*, McGraw-Hill, 2009.
5. Welling, Luke and Thomson, Laura, *PHP and MySQL Web Development*, Addison-Wesley, 2008.
6. Steelman, Andrea and Murach, Joel, *Murach's Java Servlets and JSP*, Mike Murach & Associates, 2010.