

University of Mumbai			
<b>Class:</b> T.E.	<b>Branch:</b> Computer Engineering	<b>Semester:</b> V	
<b>Subject:</b> Web Engineering (Abbreviated as <b>WE</b> )			
Periods per Week (each 60 min)	Lecture	04	
	Practical	02	
	Tutorial	--	
		Hours	Marks
Evaluation System	Theory	03	100
	Practical and Oral	--	25
	Oral	---	--
	Term Work	---	25
	Total	03	150

<b>Objectives:</b> To understand the concepts, principles, strategies, and methodologies of Web applications and development. to apply current Web technologies to understand current Web business models, to understand and apply Web development processes.		
Module	Contents	Hours
1	<b>An Introduction to Web Engineering</b> Motivation, Categories of Web Applications, Characteristics of Web Applications, Product-related Characteristics, Usage-related Characteristics, Development-related Characteristic, Evolution of web engineering.	03
2	<b>Requirements Engineering for Web Applications</b> Introduction, Fundamentals, Where Do Requirements Come From? Requirements Engineering Activities RE Specifics in Web Engineering, Principles for RE of Web Applications, Adapting RE Methods to Web Application Development, Requirement Types, Notations, Tools.	05
3	<b>Technologies for Web Applications</b> Client-side Technologies, ActiveX Controls, Document-specific Technologies, HTML-Hypertext Markup Language, DHTML, SMIL Synchronized Multimedia Integration Language, XML-eXtensible Markup Language, XSL-eXtensible Stylesheet Language, Java Script, Server-side Technologies, Servlet, URI Handlers, Web Service, Middleware Technologies	08
4	<b>Web Application Architectures</b> Introduction, Fundamentals, What is an Architecture? Developing Architectures Categorizing Architectures, Specifics of Web Application Architectures, Components of a Generic Web Application Architecture, Layered Architectures, 2-Layer Architectures, N-Layer Architectures Data-aspect Architectures, Database-centric Architectures, Architectures for Web Document Management, Architectures for Multimedia Data	06
5	<b>Modeling Web Applications</b> Introduction, Fundamental, Modeling Specifics in Web	06

	Engineering, Levels, Aspects, Phases Customization, Modeling Requirements, Hypertext Modeling, Hypertext Structure Modeling Concepts, Access Modeling Concepts, Relation to Content Modeling, Presentation Modeling, Relation to Hypertext Modeling, Customization Modeling, Relation to Content, Hypertext, and Presentation Modeling.	
6	<b>Web Application Design</b> Introduction, Web Design from an Evolutionary Perspective, Information Design, Software Design: A Programming Activity, Merging Information Design and Software Design, Problems and Restrictions in Integrated Web Design, A Proposed Structural Approach, Presentation Design, Presentation of Nodes and Meshes, Device-independent Development, Approaches, Interaction Design, User Interaction User Interface Organization, Navigation Design, Designing a Link Representation, Designing Link Internals, Navigation and Orientation, Structured Dialog for Complex Activities, Interplay with Technology and Architecture, Functional Design.	08
7	<b>Testing Web Applications</b> Introduction, Fundamentals, Terminology, Quality Characteristics, Test Objectives, Test Levels, Role of the Tester, Test Specifics in Web Engineering, Test Approaches, Conventional Approaches, Agile Approaches, Test Scheme, Three Test Dimensions, Applying the Scheme to Web Applications, Test Methods and Techniques, Link Testing, Browser Testing, Usability Testing, Load, Stress, and Continuous Testing, Testing Security, Test-driven Development, Test Automation, Benefits and Drawbacks of Automated Test, Test Tools.	08
8	<b>Web Project Management</b> Understanding Scope, Refining Framework Activities, Building a WebE Team, Managing Risk, Developing a Schedule, Managing Quality, Managing Change, Tracking the Project.	04

## BOOKS

### TEXT BOOKS

1. Gerti Kappel, Birgit Proll, "Web Engineering", John Wiley and Sons Ltd, 2006
2. Roger S. Pressman, David Lowe, "Web Engineering", Tata Mcgraw Hill Publication, 2007
3. Guy W. Lecky-Thompson, "Web Programming", Cengage Learning, 2008

### REFERENCES

1. Moller, "An Introduction to XML and Web Technologies", Pearson Education New Delhi, 2009
2. Chris Bates, "Web Programming : Building Internet Applications", Third Edition, Wiley India Edition, 2007

3. John Paul Mueller, "Web Development with Microsoft Visual Studio 2005", Wiley Dreamtech, 2006.

### **TERM WORK**

1. At least six practical experiments based on above syllabus
2. A mini project is desirable to be completed by a group of three that cover

following tools.

- HTML
- DHTML
- XML
- Java Script
- Servlet

**NOTE:** The above (mini project) would carry a weightage of 10 marks.  
A term work test must be conducted with a weightage of 10 marks.  
Attendance 05 marks.

3. Industrial visit: Prepare and submit the report of Industrial visit in a group. Each group contain not more than five students.