

<b>Savitribai Phule Pune University</b> <b>Third Year of Artificial Intelligence and Data Science (2019 Course)</b> <b>310252: Web Technology</b>		
<b>Teaching Scheme:</b> <b>Theory :03 Hours/Week</b>	<b>Credit: 03</b>	<b>Examination Scheme:</b> <b>Mid-Sem (TH) : 30 Marks</b> <b>End-Sem (TH): 70 Marks</b>
<b>Prerequisites Courses:</b>		
<b>Companion Course:</b> Database Management Systems (310241), Computer Networks (317521)		
<b>Course Objectives:</b> <ul style="list-style-type: none"> <li>To learn the fundamentals of web essentials and markup languages</li> <li>To use the Client side technologies in web development</li> <li>To use the Server side technologies in web development</li> <li>To understand the web services and frameworks</li> </ul>		
<b>Course Outcomes:</b> On completion of the course, learners should be able to <b>CO1:</b> Implement and analyze behavior of web pages using HTML and CSS <b>CO2:</b> Apply the client side technologies for web development <b>CO3:</b> Analyze the concepts of Servlet and JSP <b>CO4:</b> Analyze the Web services and frameworks <b>CO5:</b> Apply the server side technologies for web development <b>CO6:</b> Create the effective web applications for business functionalities using latest web development platforms		
Course Contents		
Unit I	Web Essentials and Mark-up language- HTML	07 Hours
The Internet, basic internet protocols, the World Wide Web, HTTP Request message, HTTP response message, web clients, web servers. <b>HTML:</b> Introduction, history and versions. <b>HTML elements:</b> headings, paragraphs, line break, colors and fonts, links, frames, lists, tables, images and forms, Difference between HTML and HTML5. <b>CSS:</b> Introduction to Style Sheet, CSS features, CSS core syntax, Style sheets and HTML, Style rule cascading and inheritance, text properties. Bootstrap.		
#Exemplar/Case Studies	Create a style sheet suitable for blogging application using HTML and using style sheet	
*Mapping of Course Outcomes for Unit I	CO1	
Unit II	Client Side Technologies: JavaScript and DOM	07 Hours
<b>JavaScript:</b> Introduction to JavaScript, JavaScript in perspective, basic syntax, variables and data types, statements, operators, literals, functions, objects, arrays, built in objects, JavaScript debuggers. <b>DOM:</b> Introduction to Document Object Model, DOM history and levels, intrinsic event handling, modifying element style, the document tree, DOM event handling, jQuery, Overview of Angular JS.		
#Exemplar/Case Studies	Enhancement in created blogging application using JavaScript (Add Entry feature)	
*Mapping of Course Outcomes for Unit II	CO2	
Unit III	Java Servlets and XML	07 Hours

**Servlet:** Servlet architecture overview, A “Hello World” servlet, Servlets generating dynamic content, Servlet life cycle, parameter data, sessions, cookies, URL rewriting, other Servlet capabilities, data storage, Servlets concurrency, databases (MySQL) and Java Servlets. **XML:** XML documents and vocabularies, XML declaration, XML Namespaces, DOM based XML processing, transforming XML documents, DTD: Schema, elements, attributes. **AJAX:** Introduction, Working of AJAX.

#Exemplar/Case Studies	Develop server-side code for blogging application
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*Mapping of Course Outcomes for Unit III	CO3
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Unit IV	JSP and Web Services	07 Hours
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**JSP:** Introduction to Java Server Pages, JSP and Servlets, running JSP applications, Basic JSP, JavaBeans classes and JSP, Support for the Model-View-Controller paradigm, JSP related technologies. **Web Services:** Web Service concepts, Writing a Java Web Service, Writing a Java web service client, Describing Web Services: WSDL, Communicating Object data: SOAP. **Struts:** Overview, architecture, configuration, actions, interceptors, result types, validations, localization, exception handling, annotations.

#Exemplar/Case Studies	Transform the blogging application from a loose collection of various resources (servlets, HTML documents, etc.) to an integrated web application that follows the MVC paradigm
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*Mapping of Course Outcomes for Unit IV	CO3, CO4
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Unit V	Server Side Scripting Languages	07 Hours
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**PHP:** Introduction to PHP, uses of PHP, general syntactic characteristics, Primitives, operations and expressions, output, control statements, arrays, functions, pattern matching, form handling, files, cookies, session tracking, using MySQL with PHP, WAP and WML. **Introduction to ASP.NET:** Overview of the .NET Framework, Overview of C#, Introduction to ASP.NET, ASP.NET Controls, Web Services. Overview of Node JS.

#Exemplar/Case Studies	Use of PHP in developing blogging application.
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*Mapping of Course Outcomes for Unit V	CO5, CO6
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Unit VI	Ruby and Rails	07 Hours
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**Introduction to Ruby:** Origins & uses of Ruby, scalar types and their operations, simple input and output, control statements, fundamentals of arrays, hashes, methods, classes, code blocks and iterators, pattern matching. **Introduction to Rails:** Overview of Rails, Document Requests, Processing Forms, Rails Applications and Databases, Layouts, Rails with Ajax. Introduction to EJB.

#Exemplar/Case Studies	Study of dynamic web product development using ruby and rails
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*Mapping of Course Outcomes for Unit VI	CO6
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### Learning Resources

#### Text Books:

1. Jeffrey C.Jackson, "Web Technologies: A Computer Science Perspective", Second Edition, Pearson Education, 2007, ISBN 978-0131856035
2. Robert W. Sebesta, "Programming the World Wide Web", 4th Edition, Pearson education, 2008

**Reference Books :**

1. Marty Hall, Larry Brown, "Core Web Programming", Second Edition, Pearson Education, 2001, ISBN 978-0130897930.
2. H.M. Deitel, P.J. Deitel and A.B. Goldberg, "Internet & World Wide Web How To Program", Third Edition, Pearson Education, 2006, ISBN 978-0131752429.
3. Chris Bates, "Web Programming Building Internet Applications", 3rd Edition, Wiley India, 2006.
4. Xue Bai et al, "The web Warrior Guide to Web Programming", Thomson, 2003.

**e-Books :**

- <https://www.w3.org/html/>
- HTML, The Complete Reference <http://www.htmlref.com/>
- <http://w3schools.org/>
- <http://php.net/>
- <https://jquery.com/>
- <https://developer.mozilla.org/en-US/docs/AJAX>
- <http://www.tutorialspoint.com/css/>

**MOOCs Courses link:**

- <http://www.nptelvideos.in/2012/11/internet-technologies.html>
- <https://freevideolectures.com/course/2308/internet-technology/25video> lecture by Prof. Indranil Sengupta, IIT, Kharagpur
- <https://www.digimat.in/nptel/courses/video/106105191/L01.html>
- [http://www.nptelvideos.com/php/php\\_video\\_tutorials.php](http://www.nptelvideos.com/php/php_video_tutorials.php)

**@ The CO-PO Mapping Matrix**

CO/ PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO 10	PO 11	PO12
CO1	1	1	2	1	1	-	-	-	-	-	-	-
CO2	-	2	1	3	1	-	-	-	1	-	-	-
CO3	2	-	2	1	-	1	-	-	-	-	1	-
CO4	1	3	1	2	2	1	-	1	-	-	-	1
CO5	1	1	2	-	3	-	1	1	-	1	-	-
CO6	2	1	-	2	1	1	-	1	-	-	-	-