Course code	Internet and Web Programming	L	T	P	J	C
CSE3002		2	0	2	4	4
Pre-requisite	CSE2004-Database Management System	Syllabus version				
Preamble	This is an introductory course for internet and web programming. This course deals with developing web applications using HTML, JavaScript, PHP, XML, JSON, AJAX and JQuery	v. xx.xx				

Course Objectives:

- To understand the basic concepts of web programming and internet.
- To understand internet protocols.
- To understand how the client-server model of Internet programming works.
- Learn the use of scripting languages and appreciate their limitations.
- To understand interactive web applications.

Expected Course Outcome:

After successfully completing the course the student should be able to

(1) Differentiate web protocols and web architecture.
(2) Develop client side web application
(3) Implement client side script using JavaScript.
(4) Implement server side script using PHP
(5) Design XML based web applications
(6) Develop application using JavaScript with recent advancements like JSON, AJAX and JQuery

Student Learning Outcomes (SLO):	5,6,17

Module:1	INTRODUCTION TO INTERNET	2hours	SLO: 5

Internet Overview- Networks - Web Protocols — Web Organization and Addressing - Web Browsers and Web Servers -Security and Vulnerability-Web System Architecture – URL - Domain Name –Client-side and server-side scripting.

Module:2	WEB DESIGNING	4 hours	SLO: 5,6

HTML5 – Form elements, Input types and Media elements, CSS3 -Selectors, Box Model, Backgrounds and Borders, Text Effects, Animations, Multiple Column Layout, User Interface

Module:3	CLIENT-SIDE PROCESSING AND SCRIPTING	7 hours	SLO: 5,6

JavaScript Introduction –Functions – Arrays – DOM, Built-in Objects, Regular Expression, Exceptions, Event handling, Validation – AJAX – JQuery

Module:4	SERVER-SIDE PROCESSING AND SCRIPTING – PHP	5 hours	SLO: 5,6

Introduction to PHP – Operators – Conditionals – Looping – Functions – Arrays- Date and Time Functions – String functions - File Handling - File Uploading – Email Basics - Email with attachments

Module:5	PHP SESSION MANAGEMENT and DATABASE CONNECTIVITY	3 hours	SLO: 5,6

Sessions-Cookies-MySQL Basics – Querying single and multiple MySQL Databases with PHP – PHP Data Objects

Module:6	XML	4 hours	SLO: 5,6

XML Basics – XSL, XSLT, XML Schema-JSON

Module:7	APPLICATION DEVELOPMENT USING NODE JS	4 hours	SLO: 17

Introduction to Node.js- Installing Node.js - Using Events, Listeners, Timers, and Callbacks in Node.js – Introduction to Mongo DBAccessing MongoDB from Node.js

Module:8	**Industry Expert Talk**	**1 hour**	
	Total Lecture hours:	**30 hours**	

Text Book(s)	
1.	Paul Deitel, Harvey Deitel, Abbey Deitel, Internet & World Wide Web - How to Program, 5 th edition, Pearson Education, 2012
2.	Kogent Learning Solutions Inc, Web Technologies Black Book, Dream Tech press, 2013.
3.	Brad Dayley, Brendan Dayley, and Caleb Dayley , Node.js, MongoDB and Angular Web Development: The definitive guide to using the MEAN stack to build web applications, 2 nd Edition, Pearson Education, 2018
Reference Books	
1.	Lindsay Bassett, Introduction to JavaScript Object Notation, 1st Edition, O'Reilly Media, 2015
2.	Fritz Schneider, Thomas Powell , JavaScript – The Complete Reference, 3 rd Edition, Mc-Graw Hill, 2017
3.	Steven Holzener , PHP – The Complete Reference, 1st Edition, Mc-Graw Hill, 2017
4.	Sandeep Kumar Patel, Developing Responsive Web Applications with AJAX and JQuery, Packt Publications, 2014

Mode of Evaluation:

List of Challenging Experiments (Indicative)		**SLO: 14,17**
1.	HTML basic tags, HTML forms, table, list, HTML frames Create a user registration webpage using HTML Form elements (Input types) for a hackathon event registration. The webpage must contain the following input types to get the details of the students Input Types:- Textfields, Textarea, checkbox, radio button, submit button, reset button, drop down box, images (if required). # Apply styles, Formatting tags of HTML for good design. # Use HTML 5 new input types to display additional contents	
2.	HTML Image mapping Consider an image of India with different states. Use image mapping to give the demographics of all the states from data.gov.in.	
3.	CSS – internal, external and inline Apply CSS to a shopping site having two branches with different localized content, the website being hosted on a local web server. Add an unordered list and an image to your web page, Create a html file that contains a heading and a couple of paragraphs, modify a button with which it is possible to change the text that is shown on the screen, add buttons to enlarge or shrink featured images, Modify the CSS style definition so that the initial width of a rectangle border is 6 pixels, Improve the Guess-A-Word game, Object Oriented Programming with JavaScript, Add CSS definitions so that elements that represent days of the previous month will have a different color, improve webpage so that you draw a brick-wall behind the picture shown, draw_on_canvas () function	
4.	JavaScript validation Design a Registration Webpage for an insurance company. The form must contain a minimum of 10 fields. Implement the Java Script to validate the Name, E-Mail and Mobile Number in the registration form. Use regular expression to validate the form fields. Also validate the form for empty field submissions.	
5.	Java Script DOM Design an e- news paper using DOM with following feature: - Add buttons to change the headlines, content and author with respect to the date. - Customize the advertisements page based on the requirement	
6.	AJAX	

	Create a program to change the content of the E-commerce web page using AJAX. Eg. Changing the prize of the product or stock availability values. Use the stylesheet in the page with some rules for classes • Change the background color of the first ordered list • Give all the items in that list blue font. • Append the text " in the list!" to each element in the first ordered list. • Select every link that has a "name" attribute, and change its background color • to #eee. • Insert a button with id "ajax-button" and text "More!", and then a div with id • "ajax" and inner HTML "Hello World!" at the very top of the document.	
7.	JQuery Write a JQuery program to do the following in a web page • Create three buttons with labels red, green, blue, when the mouse is moved over it the background color has to be changed respectively. • Create a HTML page holding a list of items and an [Extract Text] button is given. Implement the extractText function which will be called when the button's onClick event is fired. • Create a HTML page holds a list of towns, a search box and a [Search] button. Implement the search function to bold the items from the list which include the text from the search box.	
8.	PHP: Forms and File handling Write a PHP program to write 100 integers in to a text file. Read 10 numbers at a time from the file using PHP script and find the numbers which occurs odd number of times. Sample Input : 4, 5, 4, 5, 2, 2, 3, 3, 2, 4 Output : 2, 4	
9.	PHP Session Management and Cookies Implement the following cookies using PHP • Create a cookie with a value IWP. • The cookie should expire in 3 days • Check whether the cookie is present in the website. If so display else throw an error • Check whether the cookie is enabled or not. Print the status • Delete the created cookie before an hour • Check whether the cookie is disabled or not. Print the status	
10.	PHP & Databases Create a user profile application for a Job portal using PHP in which user can add, update, delete all user information's in the database. Use PHP MySQL admin.	
11.	XML – Schema Q: Develop a thesaurus tool by creating a schema for thesaurus. When a word is entered the synonyms or antonyms must be displayed based on the user request. XSL – Create an employee information system using XML and display the employee number and name of employees with salary greater than Rs. 100000 p/m. with XSL. c. Develop a thesaurus tool by creating a schema for thesaurus. When a word is entered the synonyms or antonyms must be displayed based on the user request.	
12.	Node JS & Mongo DB Write a NodeJs program to perform debit operation for a bank account. The HTML form should get input for the account no and the amount to be debited. The entered amount has to be reduced from their balance. In the database maintain account number and balance.	
	Total Laboratory Hours	30 hours

Project

Projects may be given as group projects

The following are sample tasks that can be given to students to be implemented using appropriate tools (web server and IDE).

- Develop an application that collates topic based NEWS feeds on a common window.

• A portal to manage CAL projects of students. • Create a portal for conducting opinion polls with appropriate visual display of results. • Use a dataset from data.gov.in, perform analysis and visual reporting on the dataset. • Develop a complete alternative to an existing website. (e.g. www.vit.ac.in)			
Mode of evaluation:			
Recommended by Board of Studies	DD-MM-YYYY		
Approved by Academic Council	No. xx	Date	DD-MM-YYYY

CO-PO MAPPING:

	PO 2	PO 5	PO 6	PO 14	PO 17
CO1	*				
CO2		*	*	*	
CO3		*	*	*	
CO4		*	*	*	
CO5		*	*	*	*
CO6				*	*
CO7					*

Knowledge Areas that contain topics and learning outcomes covered in the course

Knowledge Area	Total Hours of Coverage
CS: PBD(Platform-Based Development)	13
CS: PL(Programming Languages)	17

Body of Knowledge coverage

[List the Knowledge Units covered in whole or in part in the course. If in part, please indicate which topics and/or learning outcomes are covered. For those not covered, you might want to indicate whether they are covered in another course or not covered in your curriculum at all. This section will likely be the most time-consuming to complete, but is the most valuable for educators planning to adopt the CS2013 guidelines.]

KA	Knowledge Unit	Topics Covered	Hours
CS: PBD	Web Platforms	Internet Overview Networks Web Protocols – HTTP – HTTPS- FTP- TCP/IP, SMTP, POP3, MIME WebOrganization and Addressing - Web Browsers and Web Servers Security and Vulnerability-Web System Architecture – URL - Domain Name	2
CS: PBD	Web Platforms	HTML5, CSS	3
CS: PBD	Web Platforms	JavaScript Introduction - Data Types- Operators and expressions- Control Structures – Functions – Arrays – DOM, Built-in Objects, Regular Expression, Exceptions, Event handling, Validation	5

CS:PL	Object Oriented Programming	An overview of Java: Classes – Objects Inheritance Packages Abstract classes – Interfaces and Inner classes Exception handling Multithreading String handling Streams and I/O Applets.	6
CS: PL	Object Oriented Programming	Java Servlet – Life cycle, Servlet interface, Types of Servlet, ServletConfig interface, ServletRequest, ServletResponse, HTTPServletRequest, HTTPServletResponse, Exceptions, ServletContext, Sessions and Cookies, Database connectivity using JDBC	5
CS: PL	Object Oriented Programming	JSP – Directives – page, include, taglib Scripting elements – declaration, scriptlets, expression, comments –	3

		Standard actions – Implicit objects.	
CS: PBD	Web Platforms	PHP Language basics – Database connectivity, File handling, File uploading, Cookies, e-mail.	3
CS: PL	Object Oriented Programming	XML Basics – XML DTD, XML Schema	2
CS: PL	Object Oriented Programming	Node Js/ Angular Js / JSON/ AJAX	1
		Total hours	**30**

Where does the course fit in the curriculum?

[*In what year do students commonly take the course? Is it compulsory? Does it have pre-requisites, required following courses? How many students take it?*]

This course is a

- Program core.
- Suitable from 5th semester onwards.
- Knowledge of Object Oriented Paradigm and Programming, Computer Networks is essential.

What is covered in the course?

[A short description, and/or a concise list of topics - possibly from your course syllabus.(This is likely to be your longest answer)]

Web protocols

HTML, CSS

JavaScript

Servlet

JSP

PHP

XML

Node Js/ Angular Js

Part 1: Introduction to web protocols

This part introduces internet, Web Protocols – HTTP – HTTPS- FTP- TCP/IP, SMTP, POP3, MIME, Web Organization and Addressing, Web Browsers and Web Servers. It also introduces Security and Vulnerability, Web System Architecture, URL and Domain Name.

Part II: HTML, CSS

This section covers the following using HTML:

- Publish online documents with headings, text, tables, lists, photos, etc.
- Retrieve online information via hypertext links.
- Design forms for conducting transactions with remote services, for use in searching for information, making reservations, ordering products, etc.
- Include spread-sheets, video clips, sound clips, and other applications directly in their documents.

It also covers the following using CSS:

- Describing the presentation of Web pages, including colors, layout, and fonts.
- It allows one to adapt the presentation to different types of devices, such as large screens, small screens, or printers.

Part III: Client-side scripting using JavaScript

This section deals with basics of JavaScript, functions, arrays, DOM, built-in objects, regular expressions, exception, event handling and validation. It also deals with java applets.

Part IV: Introduction of Java

This section deals with Java classes and objects, inheritance, interface, packages, multithreading, exception handling and applets.

Part V: Servlet

This section deals with types of servlet, life cycle methods, interfaces, session, cookies and database connectivity.

Part VI: JSP

This section deals with basics of JSP, JSP tags, standard actions and implicit objects.

Part VII: PHP and XML

This section deals with database connectivity, file handling, cookies and e-mail using PHP. XML basics, DTD, Schema

This section deals with basics of XML including DTD and schema.

Part VIII: RECENT TRENDS IN INTERNET PROGRAMMING

Introduction to Node Js/ Angular Js / JSON/ AJAX

What is the format of the course?

[*Is it face to face, online or blended? How many contact hours? Does it have lectures, lab sessions, discussion classes?*]

This Course is designed with 100 minutes of in-classroom sessions per week, 60 minutes of video/reading instructional material per week, 100 minutes of lab hours per week, as well as 200 minutes of non-contact time spent on implementing course related project. Generally this course should have the combination of lectures, in-class discussion, case studies, guest-lectures, mandatory off-class reading material, quizzes.

How are students assessed?

[*What type, and number, of assignments are students are expected to do? (papers, problem sets, programming projects, etc.). How long do you expect students to spend on completing assessed work?]*

- Students are assessed on a combination group activities, classroom discussion, projects, and continuous, final assessment tests.
- Additional weightage will be given based on their rank in crowd sourced projects/ Kaggle like competitions.
- Students can earn additional weightage based on certificate of completion of a related MOOC course.

Session wise plan

Class Hour	Lab Hour	Topic Covered	levels of mastery	Reference Book	Remarks
1		Internet Overview- Networks - Web Protocols – HTTP – HTTPS- FTP- TCP/IP, SMTP, POP3, MIME- Web Organization and Addressing - Web Browsers and Web Servers	Familiarity	R1	
1		Security and Vulnerability- Web System Architecture – URL - Domain Name – Client-side and server-side scripting.	Familiarity	R1	
2	2	HTML – basics, hyperlinks, image mapping	Familiarity	R1	LAB component
2	2	HTML – form, frame, table, list	Familiarity	R1	LAB component
2	2	CSS – inline, internal, external	Assessment	R1	LAB component
3		JavaScript Introduction - Data Types- Operators and expressions- Control Structures- Functions – Arrays	Assessment	R1	
3		DOM, Built-in Objects	Assessment	R1	
3		Regular Expression	Usage	R1	

3		Exceptions	Usage	R1	
3	2	Event handling, Validation	Usage	R1	LAB Component
4		Java classes and objects	Usage	T1	
4	2	Packages	Usage	T1	LAB Component
4	2	Inheritance- interface	Assessment	T1	LAB Component
4	2	Multithreading	Usage	T1	LAB Component
4	2	Exception handling	Assessment	T1	LAB component
4	2	Applets	Assessment	T1	LAB Component
5		Types of servlet ServletConfig interface	Usage	T1	
5		ServletRequest, ServletResponse, HTTPServletRequest, HTTPServletResponse, Exceptions	Usage	T1	
5		ServletContext	Usage	T1	

5	2	Sessions and Cookies	Assessment	T1	LAB component
5		Database connectivity using JDBC	Assessment	T1	
6		Scripting elements – declaration, scriptlets, expression, comments	Usage	T2	
6	2	Standard actions	Usage	T2	LAB component
6		Implicit objects	Usage	T2	
7	2	PHP database connectivity	Usage	R1	LAB component
7	2	File handling, File uploading	Familiarity	R1	LAB component

7	2	Cookie, e-mail	Familiarity	R1	LAB component
7		XML Basics – XML DTD	Familiarity	R1	
7	2	XML Schema	Familiarity	R1	LAB component
8		Node Js/ Angular Js / JSON/ AJAX	Familiarity	T2, T3	
30 Hours (2 Credit hours /week ✍ 15 Weeks schedule)	30 Hours (2 Credit hours / week)				