**Title of Subject : Web Engineering (SW-417)**

**Discipline :** Software Engineering (7th Semester)

**Effective :** F16 Batch & onwards

**Pre-requisite :** Computer programming

**Assessment :** Theory**:** 20% Sessional, 80% Written Semester Examination

## (20% Mid, 60% Final)

Practical: 40% Sessional, 60% Final Examination

**Credit Hours :** 03 + 01 **Marks:** 100 +50

 **Minimum Contact Hours:** 45 + 45

# Specific Objectives of course:

* To have an understanding of the basics and fundamentals of WEB TECHNOLOGIES.
* To have hands-on practice on server-side languages to create web applications along with database connectivity

**COURSE LEARNING OUTCOMES:**

Upon successful completion of the course, the student will be able to:

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| --- | --- | --- | --- |
| **CLOs** | **Description** | **Taxonomy level** | **PLO** |
| 1 | Outline fundamentals of Web technologies. Learn HTML, CSS and Javascript for client-side web interfacing. | C2 | 2 |
| 2 | Work with server-side languages to create dynamic web applications. | C4 | 3 |
| 3 | Organize web applications and databases to store and process data proficiently | P5 | 5 |

**PROGRAM LEARNING OUTCOMES (PLOs):**

The course is designed so that students will achieve the following PLOs:

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| --- | --- | --- | --- | --- | --- |
| 1 | Engineering Knowledge: | ☐ | 7 | Environment and Sustainability:  | ☐ |
| 2 | Problem Analysis: | ☑ | 8 | Ethics: | ☐ |
| 3 | Design/Development of Solutions: | ☑ | 9 | Individual and Team Work: | ☐ |
| 4 | Investigation: | ☐ | 10 | Communication: | ☐ |
| 5 | Modern Tool Usage: | ☑ | 11 | Project Management: | ☐ |
| 6 | The Engineer and Society: | ☐ | 12 | Lifelong Learning: | ☐ |

**Course outline:**

* **Client Side Technologies & Responsive Web:**
* **HTML:**

**Text:** headings, paragraphs, bold & italic, superscript & subscript, white space, line breaks & horizontal rules, visual editors & their code views, semantic markup, strong & emphasis, quotations, abbreviations & acronyms, citations & definitions, author details,

**Lists & tables:** ordered lists, unordered lists, definition lists, nested lists, basic table structure, table headings, spanning columns, spanning rows, long tables

**Links:** writing links, linking to other sites, linking to other pages on the same site, directory structure, relative urls, email links, opening links in a new window, linking to a specific part of the same page, linking to a specific part of another page

**Images:** choosing images for website, storing images on site, adding images, height & width of images, where to place images in your code, aligning images, image dimensions, cropping images, image resolution, vector images, animated gifs, transparency

**Forms:** form controls, form structure, text input, password input, text area, radio button, drop down list box, multiple select box, file input box, submit button, image button, html5: form validation

**HTML5:** Semantic elements, multimedia elements, graphic elements, form elements and APIs

* **CSS:** External CSS, Internal CSS, Inline CSS, CSS selectors, Color, Foreground color, Background color, text, Typeface terminology, Size of type, Type scales, Units of type size, Bold, Italic, lowercase, Underline & strike, Letter & word spacing, Alignment, Vertical alignment, Indenting text, Styling links, boxes, Border, margin & padding, White space & vertical margin, Border width, Border style, Border Color, lists, tables and forms, Bullet point styles, Images for bullets, List shorthand, Table properties, images, Controlling sizes of images, Aligning images, Background images, repeating images, CSS selectors, Bootstrap framework.
* **JavaScript:** Variables, Operators, Functions, Document Object Model, Expressions and Control Flow in JavaScript, Looping, JavaScript Events, JavaScript Objects, JavaScript Arrays, Validating User Input with JavaScript, Regular Expressions
* **Server Side Technologies:**
* Introduction to PHP, Expressions and Control Flow in PHP, Operators, Conditionals, Looping, Implicit and Explicit Casting, PHP Functions and Objects, Including and Requiring Files, PHP Objects, PHP Arrays, Multidimensional Arrays, Array Functions, Date and Time Functions, File Handling, Form handling, Cookies, Sessions and Authentication
* **Server Side Databases:** MySQL Basics, Accessing MySQL, Indexes, MySQL Functions, Querying a MySQL Database with PHP
* **Server Side MVC Framework:** MVC Framework, PHP MVC Frameworks, Codeigniter Installation and Configuration, Creating Applications With Custom Codeigniter Controllers, Views and Models.

# Practical Work to be carried out:

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| 1 | To understand HTML basics for developing web applications |
| 2 | To become familiar with HTML5 semantic and multimedia elements |
| 3 | To become familiar with Javascript basics for user interaction |
| 4 | To become familiar with CSS for styling web applications |
| 5 | To become familiar with Bootstrap styling framework |
| 6 | To become familiar with PHP basics and installation of web server |
| 7 | To become familiar with control structures and arrays in PHP |
| 8 | To become familiar with functions and form handling and file handling in PHP |
| 9 | To become familiar with AJAX for data fetching |
| 10 | To become familiar with sessions and cookie management in PHP |
| 11 | To become familiar with database connectivity using PHP |
| 12 | To become familiar with web services using PHP |
| 13 | To become familiar with Codeigniter PHP MVC Framework |
| 14 | To become familiar with Kubernetes environment and understand its basics |
| 15 | To understand basics of dockers for developing web applications |

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# Recommended Books:

1. Jon Duckett, “HTML and CSS: Design and build web sites” (Wiley, Latest Edition)
2. Robin Nixon, “Learning PHP, MySQL & Java Script with jQuery, CSS & HTML5” (O’Rielly, Latest Edition).

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| **Approval:** |  |
| **Board of Studies:** | **Resolution No. 02** | **Dated: 29-08-2019** |
| **Board of Faculty:** | **Resolution No. 01** | **Dated: 07-10-2019** |
| **Academic Council:** | **Resolution No. 96.10** | **Dated: 07-10-2019** |