Program Content

Semester	II		
Course Code:	**IT2406**		
Course Name:	**Web Application Development I**		
Credit Value:	4		
Core/Optional	Core		
Hourly Breakdown	Theory	Practical	Independent Learning
	45	30	125

Course Aim/Intended Learning Outcomes:
At the completion of this course student will be able to

- Design web pages using HTML and CSS
- Use JavaScript to increase the interactivity of the web pages
- Discuss the skills and project-based experience needed for entry into web design and development careers
- Describe the basic concepts behind XML
- Employ CSS and XSL to format XML documents
- Explain different XML Document APIs
- Use a variety of strategies and tools for creating websites
- Introduction to Mean Stack and Bootstrap

	Topic	Theory (Hrs.)	Practical (Hrs.)
1	Web page design with HTML	10	6
2	Cascading Style Sheets (CSS)	8	6
3	Client-side programming with JavaScript	10	6
4	Fundamentals of XML	4	2
5	Introduction to Bootstrap	4	2
6	Introduction to MEAN	9	8
Total		45	30

1. Web page design with HTML (10 hrs) (Ref 1 and Ref 2)

HTML:-

1.1 Overview of HTML (V4 and V5)[Ref 1: pg.1-26]
1.2 Structure of HTML Document
1.3 Displaying Text Data [Ref 1: pg.67-71, pg.71-75, pg.95-111 & Ref 1: pg.524-534 & pg.531-543]
1.4 Lists [Ref 1: pg.624-633]
1.5 Tables [Ref 1: pg.1147-168, pg.636-652]
1.6 Displaying Image Data [Ref 1: pg.176-187 & Ref 2 : CSS layout - Display inline block, Ref 2 : CSS layout - Float and clear]
1.7 Specifying Links [Ref 1: pg.36,3 7, pg.136-1420, Ref 1: pg.626-630]
1.8 Image Map [Ref 1: pg 169, 172, 182, 305-308,310,312-314, 318, 320, 322, 324, 326, 328, 330, 332, 334]
1.9 Using Forms [Ref 1: pg.190,192, 194, 195, 198, 207,208,210-213, 215-217, Ref 1: pg.218-223, 688]
1.10 Frames : Using frames and frame targeting [Ref 1: pg.373,679,680,682-712] [Ref 3.layer tags]
1.11 Inline Frames :iframe[Ref 1: pg.1175,1176], [Ref 3.layer tags]
1.12 Object Function [Ref 1: pg.246-263, [Ref 1: pg.246-252]
1.13 Script Support [Ref 1: pg.38,39,61,63,267,268,285-287,728,758]
1.14 Testing [Ref 1: pg.26-29]
1.15 HTML 5[Ref 1: pg.8-29]

2. Cascading Style Sheets (CSS) (8 hrs) (Ref 3, Ref 4 and Ref 5)

2.1. Defining styles using CSS[Ref 1: pg.466-468]
2.2. Styles and HTML [Ref 1: pg.472-476]
2.3. Selectors and CSS Combinators (ID, Class, Context Group, Element, Combinators: descendant selector (space),child selector (>),adjacent sibling selector (+), general sibling selector (structure and cascade)[Ref 1: pg.469-472]
2.4. Values and units
2.5. Text properties [Ref 1: pg.528-530]
2.6. Fonts [Ref 1: pg.522-527]
2.7. Colors and backgrounds [Ref 1: pg.487-520]
2.8. Visual formatting
2.9. Boxes and borders [Ref 1: pg.546-566]
2.10. Positioning [Ref 1: pg.604-613]
2.11. Table layout [Ref 1: pg.639-649]
2.12. User interface styles[Ref 1: pg.
2.13. Introduction to CSS Preprocessor (LESS and SASS) – Variables, Nested Syntax, Partials & Imports, Mixins, Extend/ Inheritance, Operators, Functions[Ref 1: pg.305-313]

3. Client-side programming with JavaScript (10 hrs) (Ref 1 and Ref 6)

3.1. Client-side programming languages
3.2. Uses of JavaScript [Ref 1: pg.4,306]
3.3. Incorporating JavaScript in a HTML document [Ref 1: pg.266-268]
3.4. Basic JavaScript syntax [Ref 1: pg.269-280]
3.5. Data types and variables [Ref 1: pg.288-290]
3.6. Expressions and operators [Ref 1: pg.290-291]
3.7. Control structures [Ref 1: pg.291-300]
3.8. Functions and procedures [Ref 1: pg.306-314]
3.9. Arrays and objects [Ref 1: pg.336-362]
3.10. Document object model (DOM) [Ref 1: pg.388-400,419-423]
3.11. Event handling [Ref 1: pg.461-464]
3.12. Using JavaScript for form validation [Ref 1: pg.435-461]

4. Fundamentals of XML (4 hrs) (Ref 1)

4.1. Basic XML [Ref 1: pg. 762 – 768]
4.2. Well-formedness& Validity [Ref 12, Ref 13]
4.3. DTDs and Schemas [Ref 1: pg. 769 – 774]
4.4. Namespace and RDF [Ref 1: pg. 788 – 802, 805 – 807]
4.5. Introduction to XPath, XPointer and XLink [Ref 1: pg. 808 – 887]
4.6. Formatting XML documents
4.7. CSS [Ref 14]
4.8. XSL [Ref 1: pg. 844 – 878]
4.9. XML Document APIs
4.10. DOM [Ref 1: pg. 820, 829 – 831]
4.11. SAX [Ref 1: pg. 821, 831 – 835]

5. Introduction to bootstrap (4 hrs) (Ref 7)

5.1. Bootstrap Introduction
5.2. Setup
5.3. Grid System
5.4. Components

6. Introduction to MEAN (9 hrs) (Ref -8)

(MongoDB, Express, Angular and Node.js)

6.1 Create Nodejs server with Express.js
6.2 Use ES6 with Nodejs
6.3 Create Restful APIS with Nodejs, Express and Mongoose

6.4 CRUD(Create, Read, Update, Delete) Operation in Angular
6.5 Build Angular App with Angular Material, Material Data Table, and Material Dialog
6.6 Learn how to use Angular Material Components in Real world Application
6.7 JSON Web Token Authentication in Angular
6.8 Generate PDF File in Nodejs
6.9 Download PDF File in Angular
6.10 Document RESTFUL APIS with Swagger
6.11 Send Email in Nodejs

Teaching /Learning Methods:

You can access all learning materials and this syllabus in the VLE: http://vle.bit.lk/, if you are a registered student of the BIT degree program. It is important to participate in learning activities given in the VLE to learn this course.

Assessment Strategy:

Continuous Assessments/Assignments:
The assignments consist of two quizzes, assignment quiz 1 (It covers the first half of the syllabus) and assignment quiz 2 (It covers the second half of the syllabus). The maximum mark for a question is 10 and the minimum mark for a question is 0 (irrespective of negative scores). Final assignment mark is calculated considering both assignments, and students will have to obtain at least 40% for each assignment. Students are advised to complete online assignments before the given deadline. It is compulsory to pass all online assignments to qualify to obtain the Level I, Diploma in IT (DIT), certificate.
In the course, case studies/Lab sheets will be introduced, and students have to participate in the learning activities.

Final Exam
Final exam of the course will be held at the end of the semester. Paper consists with 40 MCQs and candidates must answer all the 40 questions within 2 hours.

References/ Reading Materials:

Ref 1. HTML5 Black Book
Ref 2. https://www.w3schools.com/html/, HTML Tutorial, 27 November 2019
Ref 3. https://www.w3schools.com/css/ , CSS Tutorial, 27 November 2019
Ref 4. https://www.tutorialspoint.com/sass/, Tutorialspoint, 27 November 2019, SASS Tutorial
Ref 5. http://www.tutorialspoint.com/less/, Tutorialspoint, 27 November 2019, LESS Tutorial
Ref 6. https://www.tutorialspoint.com/javascript/index.htm, Tutorialspoint, 27 November 2019, Javascript Tutorial
Ref 7. https://bootstrapcreative.com/shop/bootstrap-reference-guide-book/ , BootstrapCreative, 17 May 2017, 27, November 2019, Bootstrap Reference Guide
Ref 8. http://www.webdevelopmenthelp.net/2017/01/learn-mean-stack-development.html, Web Development Tutorial, 12 November 2019, 27 November 2019, MEAN Stack Tutorial