

IT1305 Web Application Development I (Compulsory)

BIT – 1st YEAR – SEMESTER 1

INTRODUCTION

This is one of four compulsory modules designed for Semester 1 of the Bachelor of Information Technology Degree programme. This module on web application development provides an introduction to the basic concepts, methods and tools needed to develop basic web sites.

CREDITS: 04

LEARNING OUTCOMES

After successful completion of this module students will be able to:

- Describe the fundamental concepts of the Internet and the World Wide Web
- Employ HTML and CSS to create web pages
- Employ client-side programming using JavaScript to add interactivity to web pages
- Describe and employ the fundamental concepts of XML

ONLINE LEARNING MATERIALS AND ACTIVITIES

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 programme. It is important to participate in learning activities provided in the VLE to learn this subject.

ONLINE ASSIGNMENTS

The assignments consist of two quizzes; assignment quiz 1 (covers the first half of the syllabus) and assignment quiz 2 (covers the second half of the syllabus). The maximum marks for a question is 10, while the minimum mark for a question is 0 (irrespective of negative scores). Final mark is calculated considering 40% of assignment quiz 1 and 60% of assignment quiz 2. The pass mark of the online assignment in a course is 50%. You are advised to do online assignments before the final examination of the course. It is compulsory to pass all online assignments to partially qualify to obtain the year 1 certificate.

FINAL EXAMINATION

Final exam of the course will be held at the end of the semester. Each course in the semester 1 is evaluated using a two-hour question paper that consists of 40-60 Multiple Choice Questions.

OUTLINE OF SYLLABUS

Topic	Hours
1. Introduction to the Internet and Word Wide Web	10
2. Fundamentals of Hyper Text Markup Language (HTML)	15
3. Cascading Style Sheets (CSS)	10
4. Client-side programming using JavaScript	15
5. Fundamentals of Extensible Markup Language (XML)	10
TOTAL	60

REQUIRED MATERIALS

Main Reading

Ref 1: HTML5: Black Book, Kogent Learning Solutions Inc., 2011

Ref 2: <http://en.wikipedia.org/wiki/Internet>

Ref 3: [http://en.wikipedia.org/wiki/Internet protocol suite](http://en.wikipedia.org/wiki/Internet_protocol_suite)

Ref 4: <http://en.wikipedia.org/wiki/Routing>

Ref 5: [https://en.wikipedia.org/wiki/Distributed computing](https://en.wikipedia.org/wiki/Distributed_computing)

Ref 6: [http://en.wikipedia.org/wiki/Cloud computing](http://en.wikipedia.org/wiki/Cloud_computing)

Ref 7: [http://en.wikipedia.org/wiki/World Wide Web](http://en.wikipedia.org/wiki/World_Wide_Web)

Ref 8: [http://en.wikipedia.org/wiki/Ip address](http://en.wikipedia.org/wiki/Ip_address)

Ref 9: http://en.wikipedia.org/wiki/Domain_name

Ref 10: Web Application Architecture, Leon Shklar & Rich Rosen, John Wiley & Sons, Ltd 2003.

DETAILED SYLLABUS

1. Introduction to the Internet and World Wide Web (10 hrs.)

Instructional Objectives

- Explain what is referred to as the Internet.
- List and describe different technologies and services of the Internet
- Describe the World Wide Web.
- Describe various aspects of the World Wide Web and how it works.
- Explain how the HTTP protocol works.

Material/Sub Topics

- 1.1 What is the Internet? [Ref 2]
 - 1.1.1 Introduction to protocols and routing [Ref 3, Ref 4]
 - 1.1.2 Some service on the Internet [Ref 2]
 - 1.1.2.1 WWW
 - 1.1.2.2 Data transfer
 - 1.1.2.3 Communication
 - 1.1.2.4 Distributed and Cloud Computing
 - 1.1.3 Social aspects of the Internet [Ref 2]
 - 1.1.3.1 Social Networking
 - 1.1.3.2 e-Learning
 - 1.1.3.3 e-Commerce
 - 1.1.3.4 e-Governance
 - 1.1.3.5 Telecommuting
 - 1.1.3.6 Politics and Activism
 - 1.1.3.7 Censorship
- 1.2 What is the World Wide Web? [Ref 7]
- 1.3 How the Web works?
 - 1.3.1 Web application architecture [Ref 10: pg. 201-205]
 - 1.3.2 IP addresses and Domain Names [Ref 8, Ref 9]
 - 1.3.3 URL and URI [Ref 10: pg. 30-33]
 - 1.3.4 The HTTP protocol and how it works [Ref 10: pg. 32-42]

2. Fundamentals of Hyper Text Markup Language 5(15 hrs.)

Instructional Objectives

- Describe the structure of and HTML document
- Explain different Content models

- Describe what a doctype with reference to the HTML 5 doctype
- Explain the advantages of XHTML over HTML
- Employ HTML elements to create a website with form functionality and embedded multimedia

Material/Sub Topics

- 2.1 Document Object Model (pg.405 - 425)
- 2.2 Basic Structure of an (X)HTML document (pg.20 - 23)
- 2.3 Content models: Blocks and inline elements
- 2.4 Basic HTML elements(pg.31 - 76)
- 2.5 Doctypes, and the HTML 5 doctype
- 2.6 Advantages of XHTML
- 2.7 HTML forms(pg.189 - 231)
 - 2.7.1 How forms work, GET and POST
 - 2.7.2 Form controls and attributes
 - 2.7.3 Form elements
 - 2.7.4 Various input types
- 2.8 Multimedia I HTML(pg.245 - 264)

3. Cascading Style Sheets (10 hrs.)

Instructional Objectives

- Describe the basic concepts of CSS
- Explain what Cascading and Inheritance is in CSS
- Employ various elements of CSS in a website

Material/Sub Topics

- 3.1 Basics
 - 3.1.1 Standards and rules
 - 3.1.2 Validation
 - 3.1.3 How to add CSS (pg. 472 – 475)
 - 3.1.4 CSS selectors (pg. 469-472)
 - 3.1.5 Classes and Ids
http://www.w3schools.com/css/css_id_class.asp
 - 3.1.6 Attribute selectors
 - 3.1.7 Pseudo classes and elements
 - 3.1.8 Combinators
 - 3.1.9 Selector grouping
- 3.2 Cascading and Inheritance
- 3.3 Properties and Values
- 3.4 Fonts, colours and backgrounds
- 3.5 Box Model
- 3.6 Positioning
- 3.7 Table layouts

4. Client-side programming using JavaScript (15 hrs.)

Instructional Objectives

- Describe the basic syntax, variables, operators and primitives in JavaScript
- Explain event handling in JavaScript
- Employ JavaScript in combination with CSS
- Develop a website employing HTML, CSS and JavaScript

Material/Sub Topics

- 4.1 Adding JavaScript to a document
- 4.2 Basic syntax rules
- 4.3 Variables
- 4.4 Operators
- 4.5 Primitives
- 4.6 Events
- 4.7 JavaScript & CSS

5. Fundamentals of XML (10 hrs.)

Instructional Objectives

- Describe the basic concepts behind XML
- Employ CSS and XSL to format XML documents
- Explain different XML Document APIs

Material/Sub Topics

- 5.1 Basic XML
 - 5.1.1 Well-formedness & Validity
 - 5.1.2 DTDs and Schemas
 - 5.1.3 Namespace and RDF
 - 5.1.4 Introduction to XPath, XPointer and XLink (pg.879-888)
- 5.2 Formatting XML documents
 - 5.2.1 CSS
http://www.w3schools.com/xml/xml_display.asp
 - 5.2.2 XSL
http://www.w3schools.com/xml/xml_xsl.asp
- 5.3 XML Document APIs
 - 5.3.1 DOM (pg.820)
http://www.w3schools.com/dom/dom_intro.asp
 - 5.3.2 SAX (pg.821)