

## **Web Application Development II (compulsory)**

### **INTRODUCTION**

This module on web application development provides an insight to the server side web development technologies along with the advances features, methods and tools needed to add interactivity to rich internet applications.

### **CREDITS: 04**

### **LEARNING OUTCOMES**

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

- Describe the fundamental and advanced concepts of PHP
- Describe the MVC architecture
- Employ PHP frameworks to create web applications
- Employ Advanced features of client-side programming using JavaScript and Ajax to add interactivity to web pages
- Employ JavaScript libraries in web pages

### **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 program. 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 (It covers the first half of the syllabus) and assignment quiz 2 (It covers the second half of the syllabus). Maximum mark for a question is 10, minimum mark for a question is 0 (irrespective of negative scores). Final assignment mark is calculated considering 40% of assignment quiz 1 and 60% of assignment quiz 2. Pass mark for the online assignments in a course is 50. You are advised to do online assignments before the final exam of the course. It is compulsory to pass all online assignments to partially qualify to obtain Year 2 Certificate.

### **FINAL EXAMINATION**

Final examination of the course will be held at the end of the semester. The course is evaluated using a

two hour question paper which consists of 20-25 MCQ and 2-2 structured questions.

### OUTLINE OF SYLLABUS

	<b>Topic</b>	<b>Hours</b>
	Server Side Web Development (PHP & MySql)	30
	Fundamentals of Asynchronous JavaScript and XML (AJAX)	10
	Advanced Client Side Development	15
	Introduction to Information Security	05
	<b>Total</b>	<b>60</b>

### REQUIRED MATERIAL

Ref 1 : PHP, MySQL, JavaScript & HTML5 All-in-One For Dummies , John Wiley & Sons, Inc.

2013 Ref 02: [http://www.w3schools.com/php/php\\_forms.asp](http://www.w3schools.com/php/php_forms.asp)

Ref 03 : [http://www.w3schools.com/php/php\\_mail.asp](http://www.w3schools.com/php/php_mail.asp)

Ref 04: [http://www.w3schools.com/ajax/ajax\\_intro.asp](http://www.w3schools.com/ajax/ajax_intro.asp)

Ref 05: <http://blog.andolasoft.com/2013/07/an-introduction-to-php-frameworks.html>

Ref 06 : <http://oreilly.com/php/archive/mvc-intro.html>

Ref 07:HTML 5 Black Book , Kogent Learning Solutions Inc ,2011

Ref08: <http://www.w3schools.com/ajax/default.asp>

Ref: 09: <http://singlepageappbook.com>

Ref 10 : [http://en.wikipedia.org/wiki/Web\\_bug](http://en.wikipedia.org/wiki/Web_bug)

Ref 11 : <http://www.onguardonline.gov/phishing>

Ref 12: <https://www.globalsign.eu/ssl-information-center/what-is-an-ssl-certificate.html>

Ref 13: <http://www.microsoft.com/security/pc-security/spyware-what-is.aspx>

Ref 14: <http://www.veracode.com/security/man-middle-attack>

Ref 15: <https://www.us-cert.gov/ncas/tips/ST04-015>

Ref 16: [http://en.wikipedia.org/wiki/DNS\\_spoofing](http://en.wikipedia.org/wiki/DNS_spoofing)

## DETAILED SYLLABUS

### 1. Server Side Web Development (PHP & MySql) (30 hrs)

#### Instructional Objectives

- Install PHP in a windows environment
- Install PHP in Linux environment
- Explain basic features of PHP
- Articulate MVC architecture
- Differentiate available PHP frameworks
- Explain MVC
- Use web services with PHP
- Develop a web application with PHP

#### Material/ Sub Topics

- 1.1. Introduction to PHP (Ref 01 Pg:271-278)
- 1.2. Configuring the environment (Ref 01 Pg : 76-85)
- 1.3. PHP Syntax and Semantics
  - 1.3.1. Variables (Ref 01 Pg:281-287)
  - 1.3.2. Constants (Ref 01 pg:287-296)
  - 1.3.3. Conditional Statements (Ref 01 pg:320-335)
  - 1.3.4. Loops (Ref 01 Pg:335-346)
  - 1.3.5. Functions (Ref 01 Pg: 346-357)
- 1.4. Arrays and data processing with arrays (Ref 01 Pg: 296-307)
- 1.5. Form processing with PHP (Ref 02)
- 1.6. Session control and Cookies (Ref 01 Pg:437-446)
- 1.7. File system management (Ref 01 Pg: 366-389)
- 1.8. Email sending using PHP (Ref 03)
- 1.9. Object Orientation with PHP (Ref 01 pg :397-423)
- 1.10. Working with MySQL database (Ref 01 PG:515-528)
- 1.11. Introduction to PHP frameworks (Ref 5)
- 1.12. Fundamentals of MVC (Ref 6)
- 1.13. How to call web service using PHP (Ref 01 pg:541-553)

### 2. Fundamentals of Asynchronous JavaScript and XML (AJAX) (10 hrs)

#### Instructional Objectives

- Explain and differentiate the traditional technologies used in web Application development.
- Describe problems with technologies
- Creating a Simple Ajax application
- Differentiate between AJAX and Non-Ajax Applications
- Develop a webpage employing PHP, and AJAX

**Material/ Sub Topics**

- 2.1. Introduction to AJAX (Ref 07 Pg :912 -952) (Ref 08)
- 2.2. Exploring different web technologies
  - 2.2.1. Common Gateway Interface (CGI)
  - 2.2.2. Applet
  - 2.2.3. Servlet
  - 2.2.4. Java Server Pages
  - 2.2.5. Active server pages
  - 2.2.6. PHP
  - 2.2.7. XML
  - 2.2.8. Dynamic Hypertext Markup Language (DHTML)
- 2.3. Basic AJAX functionalities
  - 2.3.1. AJAX XMLHttpRequest
  - 2.3.2. AJAX Request
  - 2.3.3. AJAX Response
  - 2.3.4. AJAX Events
- 2.4. Ajax with PHP (Ref 08)(Ref 07: Pg:1051-1068)

**3. Advanced Client Side Development (15 hrs)****Instructional Objectives**

- Use JavaScript to add new features and a richer, more compelling user interface on web pages
- Use JavaScript libraries to Manipulate Document Object Model
- Employ AJAX and JavaScript together in a website
- Understand Single Page Application development

**Material/ Sub Topics**

- 3.1. Revise the basic features of JavaScripts (Ref 01 Pg:187-214)
- 3.2. Understanding Document Object Model (Ref 01 pg:208-217)(Ref 07:389-427)
  - 3.2.1. What is the DOM?
  - 3.2.2. Working with nodes and elements
  - 3.2.3. Working with the Document Object Model
- 3.3. JavaScript Libraries (Ref 01 pg:219-240)
  - 3.3.1. Introduction to JavaScript libraries
  - 3.3.2. jQuery fundamentals(Ref 01 219-240)
  - 3.3.3. Working with Events and Event Listeners (Ref 01 Pg:241-254)
  - 3.3.4. Understanding events
  - 3.3.5. Working with Forms
  - 3.3.6. Keyboard events
- 3.4. Introduction to Single page web application development (Ref 09)

## **4. Introduction to Information Security (5 hrs)**

### Instructional Objectives

- Explain the web vulnerabilities
- Differentiate client security and server security

### Material/ Sub Topics

#### 4.1. Client Security

4.1.1. Web beacons (Ref

10) 4.1.2. Phishing (Ref 11)

4.1.3. Transaction security- certificates and secure connections (Ref

12) 4.1.4. Spyware(Ref 13)

4.1.5. Man in the middle attacks(Ref

14) 4.2. Server Security

4.2.1. Denial of services attacks(Ref

15) 4.3. DNS poisoning(Ref 16)