

REGULATIONS AND SYLLABUS
FOR
DIPLOMA IN MOBILE & WEB 2.0 APPLICATION
DEVELOPMENT

Offered by

BHARATHIYAR UNIVERSITY, COIMBATORE
FROM 2010-2011

Under the

CENTRE FOR COLLABORATION OF INDUSTRY AND
INSTITUTIONS (CCII)
COLLABORATIVE PROGRAMME

DIPLOMA IN MOBILE & WEB 2.0 APPLICATION DEVELOPMENT

REGULATIONS AND SYLLABUS

REGULATIONS

- **Description of course/objective of the course**

This course is designed to prepare technicians with specialized skills, knowledge and attitude to work in various fields.

- **Eligibility**

+2 or above

- **Duration of the course**

The course shall extend over a period of 12 months.

- **Course and Schema of examination**

Course No	Course Title	University Examination		Credit
		Internal	External	
Paper.1(Theory)	iPhone & iPad Apps Development	50	50	4
Paper.2(Theory)	PHP 5 with My SQL	50	50	4
Paper.3(Theory)	Web Services	50	50	4
Paper.4(Theory)	Web UI Development	50	50	4
Paper.5(Theory)	Cloud Computing	50	50	4

Paper.6(Theory)	Business Communication	50	50	4
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- **Practical Training**

- Being a practical oriented program, the focus will be more on practical training. The candidate shall undergo practical training at the computer laboratory.

- **Requirement to appear for Examination**

Candidate should put in a minimum of 90% attendance to appear for the examination.

- **Passing Minimum**

To Pass:

- A Candidate shall secure a minimum of 50% in the University Examination for practical and overall 50% in each of the paper (Internal/External) to pass the examination.

- **Classification of Successful Candidate**

- A candidate who obtains 75% and above, aggregate in theory and practical examinations, in the first attempt shall be deemed to have passed the examination with distinction.
- A candidate who obtains from 60% to 74% of the aggregate in theory and practical examination, in the first attempt shall be deemed to have passed the examination in the first class.
- Other Successful candidate shall be declared to have passed the examination in the second class.

- **Conferment of degree**

A candidate who has passed all the examination as prescribed shall be eligible to receive the “**DIPLOMA IN MOBILE & WEB 2.0 APPLICATION DEVELOPMENT.**”

- **Course Material**

Course Material will be supplied by HIS Publications

- **Revision of Regulation and syllabus**

The syllabus and regulation of the course are subject to modification by the university whenever necessary.

- **Question Paper pattern**

Theory examination will be for 100 marks with the following components which will be converted into 60 marks.

- Multiple Choice / one word answers: $20 \times 1 = 20$ (no choice)
- Short notes (100 words / one paragraph): $5 \times 6 = 30$ (either or type)
- Descriptive (300 words / one $\frac{1}{2}$ page): $2 \times 10 = 20$ (either or type)

Paper.1(Theory)

iPhone & iPad Apps Development

Overall objective: At the end of the program the students will be able to understand the basics of iPhone and iPad apps development, and will be able to develop a Native iPhone App for internal distribution.

Specific objective: Students will be able to develop applications on iPhone and iPad platforms.

UNIT 1:

- **Introduction to the iPhone/iPad SDK and *DragonFireSDK***
 - iPhone Developer Portal: Setting up your environment (certificates, provisioning profiles)
 - Interface Builder: Creating a user interface for an iPhone App
 - Xcode: Putting code behind your interface, and debugging that code
- **Introduction to Objective-C: the language used to develop all Apps**
 - How are classes defined? How do Objective-C objects interact?
 - What data types are available?
 - Memory-management features available in Objective-C (and iPhone limitations)
 - Objective-C 2.0 features, including properties
 - Key-Value Coding/Key-Value Observing

UNIT 2:

- **Introduction to Cocoa Touch**
 - Architecture of iPhone application interfaces: windows, applications, views/view controllers, navigation bars/navigation controllers, bar buttons
 - Exploration of various user interface controls available for use, from simple text boxes and buttons to more complex controls such as table and web views
 - Interacting with controls: delegates and data sources
- **Interacting with the user's data**
 - Picking people from the address book
 - Picking pictures from the photo library or creating a new picture with the iPhone's camera
 - Picking songs from the iPod library

UNIT 3:

- **Important basic data structures: Foundation framework**
 - Strings
 - Numbers

- Enumeration
- Dates/Times
- Timers/Threads
- Data Streams
- **iPhone/iPad hardware interaction**
 - Detecting device orientation and responding to movement with the accelerator
 - Listening for sound
 - Making sounds
 - Geo-tagging: finding the device's location/orientation in the world (GPS and magnetometer/compass with Core Location) and map it with Map Kit
 - Creating multi-touch interfaces

UNIT 4:

- **Connecting to other iPhones and computers**
 - Discovering local devices
 - Socket programming with Core Foundation Network
 - Using Game Kit to communicate with other iPhones—game and voice data
 - Getting notified of events even when your app isn't running with Push Notification
- **The Media Layer**
 - Playing back audio and video
 - Drawing 2D graphics with Quartz
 - Introduction to 3D graphics programming
 - Animated interfaces with Core Animation

UNIT 5

- **Performance profiling and optimisation: making your App fast and efficient**
- **From iPhone to iPad**
 - Creating an iPad App
 - Converting to a Universal App
 - Split Views and Popovers

Practical: (It will be assessed as part of internal assessment)

1. App displaying timetable for Olympic events
2. Allows you to transfer stuff from one iPhone to another by “flicking” it to the other device.
3. Simple Open Source Notepad.
4. Calculator app based on classic scientific HP-Calculator

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5. A reader app for the popular how to wiki site.
6. Pocket database containing a summary of daily accounts.
7. Calendar app for the conference
8. Hospital finder using GPRS
9. 2D Checker Game
10. Personal to-do list and task manager

Paper.2(Theory)
PHP with MySQL

Overall Objective: At the end of the program the students will have knowledge necessary to design and develop dynamic, database-driven web pages using PHP version 5. Students will also have hands on practice with a MySQL database to create database-driven HTML forms and reports.

Specific Objective: Students will have comprehensive skills to develop competence websites.

UNIT 1:

Overview of PHP

- Overview of Web
- Static vs. Dynamic Web Sites
- Client-Side Scripting vs. Server-Side Scripting
- Overview of PHP Advantages & Capabilities
- Installing & Configuring PHP for Web Servers.

Basic Scripting and Looping Constructs

- PHP Scripting Fundamentals
- Print Statement
- Code Blocks
- Primitive Data Types
- Defining Constants and Variables
- Looping Constructs
- While
- Do While
- For
- Exit & Break

PHP Operators

- Operator Precedence
- Arithmetic Operators
- Assignment Operators
- Bitwise Operators
- Comparison Operators
- Error Control Operators
- Execution Operators
- Incrementing/Decrementing Operators

- Logical Operators
- String Operators
- Array Operators
- Type Operators

UNIT 2

Conditional Constructs

- True and False Expressions
- If, Else and Elseif
- Switch/Case Statement
- The ? : (Ternary) Operator
- Timestamps

Arrays in PHP

- Overview of Arrays
- Types of Arrays
- Array Handling in PHP
- Working with Arrays

PHP Variables & Functions

- Introduction to Functions
- Scope of Functions
- Passing Arguments to Functions
- Returning Values from a Function
- Using Include Files
- Recursive functions
- Built-In Functions
 - Array Handling
 - String Handling
 - Database Handling
 - File System Handling
 - Sending Emails
- Overview of Variables
- Pre-defined Variables

UNIT 3:

Classes and Objects (PHP 5)

- Introduction
- The Basics
- Auto-loading Objects

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- Constructors and Destructors
- Visibility
- Scope Resolution Operator (::)
- Static Keyword
- Class Constants
- Class Abstraction
- Interfaces and Abstract Classes
- Method Overriding
- Object Iteration
- PHP and Design Patterns
- Magic Methods
- Final Keyword
- Object cloning
- Comparing objects
- Reflection
- Type Hinting

File Handling

- Reading content from Files and URL's
- Create, Modify and Deleting Files
- File Uploading
- Handling File Permissions
- File Locking
- Reading Directory Contents
- Creating and Deleting Directories

UNIT 4:

Working with Databases

- Configuring PHP For Database
- Connecting Database from PHP
- Executing SQL Queries via PHP
- Using PDO and ORM.

Cookies and Sessions

- Overview of Cookies
- Usage of Cookies
- How cookies work
- Reading and Deleting Cookies
- Overview of Sessions.

- Reading and Deleting Session variables
- State maintaining with Session

Miscellaneous PHP Tasks

- Error Logging
- Using Environmental Variables
- Changing Execution by Redirecting to Other URLs
- Embedding JavaScript with PHP
- Using HTTP & FTP Protocols to Pass Data
- Showing Different Content to Different Browsers
- Getting IP Addresses from Visitors
- Running PHP scripts as Command Line Interface.
- Writing PHP scripts for CronTab

UNIT 5:

Introduction to MySQL

- Overview of MySQL
- History of MySQL
- The Main Features of MySQL
- MySQL Storage Engines
- Indexing and Full-Text Search
- MySQL Functions.

Create & Manage Database and tables

- Connecting to and Disconnecting from the Server
- Entering Queries
- Creating and Using a Database
- Creating and Selecting a Database
- Creating a Table
- Loading Data into a Table
- Retrieving Information from a Table
- Getting Information About Databases and Tables

Data Types

Functions and Operators

SQL Statement Syntax

Data Definition Statements

- ALTER DATABASE Syntax
- ALTER TABLE Syntax
- CREATE DATABASE Syntax
- CREATE TABLE Syntax
- DROP DATABASE Syntax
- DROP TABLE Syntax
- RENAME TABLE Syntax

Data Manipulation Statements & Control Statements

- DELETE Syntax
- DO Syntax
- INSERT Syntax
- LOAD DATA INFILE Syntax
- REPLACE Syntax
- SELECT Syntax
- Subquery Syntax
- TRUNCATE Syntax
- UPDATE Syntax

Stored Procedures and Functions

- Stored Routines and the Grant Tables
- Stored Routine Syntax
- Stored Procedures, Functions, Triggers, and LAST_INSERT_ID()

Triggers

- CREATE TRIGGER Syntax
- DROP TRIGGER Syntax
- Using Triggers

Views

- ALTER VIEW Syntax
- CREATE VIEW Syntax
- DROP VIEW Syntax
- Using PHP MyAdmin to configure MySQL Functions and Operators

Introduction to the Apache Web Server

- Configuration Files
- PHP Installation and Configuration
- WWW Sites within Apache
- Website Properties
- RPM Installation vs. Binary Installation

Practical: (It will be assessed as part of internal assessment)

1. Create a web page HTML and execute a PHP file on submission of the HTML form and display the information using PHP.
2. Write a program to implement the concept of if-else and while loop.
3. Write a program to show that array is received on server side during multiple options in SELECT.
4. Write a program to show the concept of cookie.
5. Write a PHP script showing function call.
6. Write a program in PHP to create a file and write the data into it.
7. Create a database of an employee in MySQL.
8. Write a program to connect to the database already created in MySQL.
9. Write a program to read, write, update and delete the database using PHP.
10. Write an application for email registration and login using PHP and MySQL

Paper.3(Theory)

Web Services

Overall Objective: At the end of the program the students will be having firm understanding of the process of defining and planning the implementation of a web service. The student will learn implementing web services, interface considerations, system reusability, interoperability, and security

Specific Objective: To provide the student with thorough knowledge about Web Services.

UNIT 1:

Getting Started with Web Services

- Overview of Web Services
- Design Considerations
- Physical Constraints
- Authentication and Parameter Passing
- XML Considerations

Web Services Overview

- Web Services Applications
- RPC-style Web Services
- RESTful Web Services
- Implementing XML Standards
- Internationalization
- Security and Authentication
- Interface Versioning

UNIT 2:

Interface Design

- Physical Considerations
- Design methodologies
- Web Services Protocols
- HTTP Review
- Defining Resources
- URL Design
- Query Parameters
- GET and POST

SOAP over HTTP

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- Stateless and Stateful Operations
- Planning for Scalability

Publishing and Discovery

- Knowing Your Audience
- Discovery Protocols
- UDDI
- RDF
- WSDL
- XML Schema
- JSON

UNIT 3:

Basic SOAP

- SOAP Overview
- The SOAP Envelope
- SOAP Over HTTP
- A SOAP Server
- The Deployment Descriptor
- A SOAP Client
- Complex Data Types
- Complex Data Types: Client Code

UNIT 4:

Web Service Development

- Selecting A Platform
- Planning for Reuse
- Security Considerations
- Supporting Transactions
- Staged Development
- Deployment & Ongoing Maintenance

UNIT 5:

Using Web Services

- Client Types
- Software Clients
- Browser Clients
- HTML Interfaces
- Aggregating Web Services

Practical: (It will be assessed as part of internal assessment)

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1. Create a web service for temperature conversion in RPC style.
2. Create a web service for currency conversion in REST.
3. Write an application to fetch the current stock quote from a SOAP web service. Design an UI to get company name and the current date and time. Develop a SOAP web service to provide the current quote of any given company.
4. Create a web service to send SMS to various mobile operators.
5. Create a RSS feed for a news paper.

Paper.4(Theory)
Web UI Development

Overall Objective: At the end of the program the student will be able to understand the basics of web-based user interface. The student will also learn newer implementation utilizing xHTML, CSS, JavaScript, JQuery and AJAX.

Specific Objective: Student will learn to develop web-based User Interface.

UNIT 1:

Introduction

- Introduction to web UI development
- Introduction to xHTML, CSS, JavaScript
- Basics of jQuery
- Basics of AJAX

UNIT 2:

XHTML

- The differences between XHTML and HTML
- Basic XHTML
- Lists
- Images
- Linking
- Tables
- Div
- Frames
- Other frontend objects
- Forms

UNIT 3:

CSS

- Introduction to Cascading Style Sheets (CSS)
- Designing with Style Sheets
- Style Sheet Syntax
- Class Selectors
- The DIV and SPAN Elements
- Linked (External) Style Sheets
- Cascading Order
- Text and Font Properties
- Applying Colors
- Background Techniques
- Formatting with the Box Model

- Borders
- Floating Elements
- Styling Lists
- Positioning Elements Absolutely and Relatively
- Layering Elements with the Z-Index Property
- Applying CSS Wisely
- Dynamically Linked Style Sheets
- Contextual Selectors
- Validating CSS
- The Future of CSS

UNIT 4:

JavaScript

- JavaScript as a Web programming language
- Creating variables in JavaScript
- Using alert and confirm boxes
- Strings and numbers in JavaScript
- Converting strings to numbers - parseInt, parseFloat, and Number
- Using conditional statement - if, else if, and else
- Understanding switch
- Creating for and while loops
- JavaScript functions
- JavaScript objects
- Using the Array object
- Creating single-dimensional arrays
- Understanding the Math object
- Using random numbers
- Understanding the Date object
- Creating a timer
- Using inline event handlers
- Using the String object
- Manipulating string data
- Basic events and event handlers
- Using the traditional event registration model
- Event capturing and event bubbling
- Understanding the Browser Object Model (BOM)
- Browser object detection techniques
- Simple and complex rollovers
- Open, move, and resize new windows
- Understanding the Document Object Model (DOM)
- HTML documents as family trees
- HTML documents as node trees
- Basic DOM objects, methods, and properties
- JavaScript best practices

JQuery

- Introducing jQuery
- jQuery Basics
- DOM Manipulations with jQuery
- Ajax Requests with jQuery
- The jQuery User Interface (UI) Library

UNIT 5:

AJAX

- What Is AJAX?
- Basic AJAX Techniques
- Using AJAX Effectively
- JavaScript Way Beyond "on" Methods
- Specific - And Reusable - AJAX Techniques
- It is Not Just "Pages" Anymore
- You Don't Need to Invent It All
- Building A Multi-User AJAX Application
- Production-Ready AJAX
- Overview of Frameworks Supporting Ajax

Practical: (It will be assessed as part of internal assessment)

- 1) Please make a web page of your choosing. Name the web page file "index.html". It can be on any topic, but must contain:
 - a) The correct structure (header and body)
 - b) A title
 - c) At least two different headings, with separate content following each heading
 - d) An unnumbered list with at least 3 items
 - e) A numbered list with at least 3 items
 - f) At least 4 links to other web pages
 - g) At least 1 picture
- 2) Apply css to the index.html file by specifying separate .css file.
- 3) Create an Email registration form and perform the client side form validations in JavaScript.
- 4) Create a HTML Home page with the slide show using JQuery.
- 5) Create a chat application using AJAX

Paper.5(Theory)

Cloud Computing

Overall Objective: At the end of the program the students will learn about the concepts on Cloud Computing. They will become familiar with Application Deployment on Cloud, and using Amazon Web Services for Storage and Application Deployment.

Specific Objective: Students will have an excellent understanding about cloud computing concepts and deployment of applications on cloud with knowledge on Amazon Web Services.

UNIT 1:

Introductions to Cloud Computing

- Cloud Computing: An Introduction
- Key Concepts
- Benefits of Cloud Computing
- Leading Cloud Computing Providers: Offerings and Architectures
- When Cloud Computing Isn't a Good Fit

UNIT 2:

Cloud Computing Requirements and Challenges

- Application Design
- System Management
- Storage
- Security
- Maintaining IT Control

UNIT 3:

Moving to Cloud Computing

- Integrating Cloud Principles into System Architecture, Design and Implementation
- Migrating Existing Applications
- Deployment on Cloud

UNIT 4:

Using Amazon Web Services (AWS)

- AWS Overview
- Billing & Credential Management
- Identity Management
- Monitoring & Reporting

UNIT 5:

Using Amazon Web Services (S3)

- S3 Overview
- EC2 Overview

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- Priority Queues with Amazon SQS
- REST with Amazon S3

Practical: (It will be assessed as part of internal assessment)

1. Create an Amazon Web Services account, signed up for the EC2 and S3 services and sign up to the GigaSpaces Cloud program.
2. Invoking the service using http GET request getting the exchange rate from Euros to Rupees. You are free to choose the currency you are more interesting on. In the inbound is also specified a polling-connector for http. This connector makes frequency request to the service, you can increase or decrease the polling frequency by changing the value on pollingFrequency.

Paper.6(Theory)
BUSINESS COMMUNICATION

Overall Objective: This Program designed to give students a comprehensive view of communication, its scope and importance in business specific to IT Industry, and the role of communication in establishing a favorable outside the firm environment, as well as an effective internal communications program. The various types of business communication media are covered. This course also develops an awareness of the importance of succinct written expression to modern business communication.

Specific Objective: To provide a thorough knowledge about business related communication.

UNIT 1:

- Introduction to Business Communication
- Basic Skills
- Persuasion
- Style, and tone
- Principles of Correspondence

UNIT 2:

- Letter-Writing Strategies
- Inquiry/Request Letters
 - Response Letters
 - Business Email Etiquettes

UNIT 3:

- Customer Relations and Sales Letters
- Customer Relations Letters
 - Sales Letters

UNIT 4:

- Résumés and Covering Letters
- Layout and Design
 - Résumés
 - Covering Letters

UNIT 5:

- Reports and Proposals
- Reports
 - Proposals
 - Preparing for your Assignment

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