

Specialized Programme on Web Application Development using Open Source Tools

A. NAME OF INSTITUTE	Centre For Development of Advanced Computing
B. NAME/TITLE OF THE COURSE	Specialized Programme on Web Application Development using Open Source Tools
C. COURSE DATES WITH DURATION IN WEEKS	From July 28th, 2014 to October 17th, 2014 In weeks: 12 Weeks
D. ELIGIBILITY CRITERIA FOR PARTICIPANTS: 1. EDUCATIONAL QUALIFICATIONS 2. WORK EXPERIENCE required, if any 3. AGE LIMIT 4. Target Group [<i>Level of participants and target ministries/departments etc. may be indicated</i>]	1) Two years Technical course or Graduate in any Stream after 12 years of schooling. 2) ----- 3) ----- 4) Should meet the above educational requirements and should know English language
E. AIMS AND OBJECTIVES OF THE COURSE	<u>Objective:</u> The purpose of the programme is to introduce to the participants about various Open Source tools (programming tools and database), help them in understanding and customizing an open source application and development of a new web application.
F. MODE OF EVALUATION OF PERFORMANCE OF THE TRAINEE	Lab Work and Project Work

Objective:

At the end of the course, Students will be able to:

- Understand various open source tools (Programming tools and databases)
- Understand and customize an existing open source application
- Develop a web application in open source using either JAVA or PHP and mysql as database

Course Content

HTML and JavaScript

1. Introduction to HTML tags, Title , Text formatting , Heading style, Text Style (Bold, Italic and Underline), List
2. Adding graphics to HTML, Tables.
3. Link documents, Hyper Link, Frames.
4. Java Script in web pages. Conditional checking (if-then-else), Loops, User defined functions, Dialog Boxes.
5. Cascading style sheet – Assigning various styles to HTML pages using external style sheets.

MYSQL

1. Introduction to structured query language, Database concepts Creation and deletion of database. Relationships between various tables. Creation of a table. Select statement, where clause, Constraints in MYSQL.
2. Altering and dropping a table in MYSQL, data types, joining, order by clause in MYSQL, Retrieving data from multiple tables.
3. DML (Insert, Update and Delete) operation in MYSQL, Distinct, Group By, Having clause.
4. Connecting to MYSQL and PHP, Selecting and displaying data, Executing single and multiple queries, MYSQL functions – concat, lower and upper.
5. DML operation (Insert, Update and Delete) on data using MYSQL and PHP.

JAVA

1. **Introduction to OOAD for Java Developers**

2. Fundamental Programming Structures in Java

- The main() method
- Primitive Data Types
- Variables
- Constants
- Assignments
- Initializations
- Operators
- Strings
- Control Flow
- Code Examples & Exercises

3. Classes and Objects in Java

- Classes & Objects
- OOP Principles
 - Instantiation
 - Encapsulation
 - Specialization
- Instance Variables
- Class Variables
- Constructors
- Instance Methods
- Class Methods
- Method Overloading
- The **this** keyword
- Passing and returning objects
- Garbage Collection in Java
- Code Examples & Exercises

4. Object Design and Programming with Java

- Abstraction
- Inheritance
- Polymorphism
- Method Overriding
- Associations
- Delegation

5. Java Interfaces

- Purpose of Interfaces
- When to use them
- Interface Declaration
- Implementing an Interface
- Interface Inheritance

6. Java Exception Handling

- Why Exceptions
- Standard Exception Handling Options
- Exception Class Hierarchy
- Checked vs. Unchecked Exceptions
- Catching an Exception: try and catch blocks
- Methods Which Throw Exceptions: the throws clause
- Handling vs. Declaring Exceptions
- System Exceptions vs. Application Exceptions
- Writing Custom Exceptions

7. Java Collections API

- Arrays
- The Java Collections Framework
- Collections Interfaces
 - `java.util.Collection`
 - `java.util.List`
 - `java.util.Map`
 - `java.util.Set`
- Concrete Collections
 - `java.util.ArrayList`
 - `java.util.HashMap`
 - `java.util.HashSet`
- Iterating through Collections
 - `java.util.Iterator`

8. Java Input/Output API

- Streams & Files
- Input & Output Streams
- File Streams
- Object Streams
- Object Serialization
- Readers & Writers
- The Java New I/O API

9. Building GUI applications using Java. awt package

- Event handling
- Event listeners and Event classes
- GUI controls (Layouts)

10. Java Foundation classes (Swings)

11. JDBC

- Introduction to JDBC
- The Java, SQL Package
- Connecting to the Database
- Working with Connections
- Working with Results
- Working with Statements

12. Java Servlets

- Introduction to Servlets
- Java Web Server / Tomcat / Weblogic
- Servlet Navigation
- Server – side includes

13. JSP

- Introduction to JSP
- Difference Between Servlet & JSP
- Basic tag of JSP
- JSP with JDBC
- JSP with JAVA BEAN

14. Overview of Struts Framework

15. Overview of Hibernate

PHP

1. Installing and configuring of XAMPP server. Working of PHP , PHP script with HTML
2. PHP syntax, PHP data types , Displaying Information
3. Operators, Variable information, Script in PHP
4. Control Statements – if statements, if-else statements, while , do while and for loops
5. Function, defining user-defined functions, variable scope, global statement, calling a function, passing arguments to a function.
6. Arrays – single dimension , associative array, accessing array, looping and sorting of array
7. File handling – reading, writing, creation and deletion of file. Opening file for reading, writing and appending. Writing data to file.
8. Working with forms – forms, super global variable, accessing user input, combining HTML and PHP code. Redirecting user. Uploading a file using form and PHP script.
9. Working with regular expression , Basic regular expression , matching patterns
10. Session – session creation, working with session variable, managing role based access using session, destroying session.

Multimedia Technologies

Moodle

1. Moodle installation in windows using XAMPP server.
2. Course Management by creating categories and courses.
3. Enrolling teachers and students.
4. User management by user authentication and roles & permissions.
5. Backup & Restore.