16. MULTIMEDIA AND WEB TECHNOLOGY (Code No. 067)
(For the Academic Year 2018-19 only)

Learning Outcomes:

- Ability to develop proficiency in Webpage Development and website management

- Ability to develop proficiency in creating dynamic Web Interface

- Ability to write server and client sides scripts and manage websites

- Ability to design a web page using Image, Audio and Video editing tools

- Ability to understand the basic concepts of Open Source Standards and Open Source softwares

- Ability to understand the basic concepts of networking

Class XII (Theory)

Duration: 3 hours   **Total Marks: 70**

Unit No.	Unit Name	Periods			
		Theory	Practical	Total	Marks
1	INTRODUCTION TO DATABASE MANAGEMENT	20	15	35	05
2	NETWORKING AND OPEN STANDARDS	25	05	30	10
3	WEBPAGE DEVELOPMENT	60	45	105	40
4	MULTIMEDIA AND AUTHORING TOOLS	40	30	70	15
				240	**70**

Unit 1: Introduction to Database Management

Introduction to database concepts and its need

Database Terminology: Data, Record/Tuple, Table, Database, field/attribute

Concept of Keys: Candidate key, Primary key, Alternate key, and Foreign key

Examples of common Database Management System: MySQL, Ingres, Postgres, Oracle, DB2, MS-SQL Server, Sybase etc.

Database Tool:

Introduction to MySQL: Using MySQL creating Database and table, defining primary key, inserting records, displaying records using SELECT command, WHERE clause, modifying records using UPDATE, deleting records

Unit 2: Networking And Open Standards

Computer Networking: Evolution of Networking: ARPANET, WWW, Internet

Network Topologies: Bus, Star, Tree

Types of Network: PAN, LAN, WAN, MAN

Wired Technologies: Twisted pair cable, coaxial cable, optical fiber

Wireless Technologies: Bluetooth, infrared, radio link, microwave link, radio link and satellite link

Network devices: MODEM, Hub, switch, repeater, gateway – and their functions

Identifying computers and users over a network: Basic concept of domain name, MAC (Media Access Control) and IP Address, domain name resolution

Wireless/Mobile Communication: GSM, CDMA, GPRS, WLL, 3G, 4G

Internet Applications: SMS, Voice mail, e-Mail, Chat and Video conferencing

Network Security Concepts: Cyber law, firewall, cookies, hackers and crackers

Open Source Concepts: Proprietary and open source software(OSS), common FOSS/FLOSS examples (e.g. GNU/Linux, Firefox, OpenOffice, Linux, Mozilla web browser, Apache server, MySQL, Postgres, Pango, Tomcat, PHP, Python)

Indian Language Computing: character encoding, UNICODE, different types of fonts (open type vs true type, static vs dynamic), Entering Indian Language Text – phonetic and key map based

[**Note:** Teacher can introduce the students to these websites www.sourceforge.net, www.openrdf.org, www.opensource.org, www.linux.com, www.linuxindia.net, www.gnu.org.]

Unit 3: Web Page Development

Review of HTML/DHTML, JavaScript covered in Class XI

Installation and Managing WEB-Server: IIS/XAMPP/LAMP;

PHP: Concept of PHP, features of PHP, other equivalent tools – JSP, PHP

Including PHP in web page

Data types: integer, double, string, boolean, null, array, object

Variables: Using variables in PHP

Constants: Using constants in PHP, constant() function

Output data to Screen: echo and print statements

Operators:

Arithmetic operators: +, - (Unary and Binary), *, /, %, **

Assignment operators : =,+=,- =,*=,/=.%=

String operator: . , . =

Comparison operators: <, >, <=, >=, !=, ==,===.!===

Incrementing/Decrementing operators:++,--

Logical operators: !,&&,||;

Array Operators: union(+),equality ==,inequality <>,!=

Operator precedence

Built In Functions:

String Manipulation Functions: strtoupper(), strtolower(), strlen(), ltrim(), substr(), rtrim(), trim() ,strrev(), strcasecmp(),strcmp(),stripslashes(), strchr(), strpos(), stripos()

Time & Date Functions: Date(),getdate(),gettimeofday(),Mktime(),strtotime(), cal_days_in_month()

Arrays: Declaration and use of indexed arrays(1 dimensional), inbuilt functions sort(),rsort()

Conditional statements: if, if else, if...elseif....else, switch

Loops: while, do while , for, for each

Unconditional exit from loop /switch using break

User Defined Functions: Defining a function, calling/invoking a function, Passing parameters/arguments, Pass by value, pass by reference, return value, default value

Global Variables – Superglobals

$GLOBALS,$_SERVER,$_REQUEST,$_POST,$_GET,$_FILES,$_ENV, $_COOKIE,$_SESSION

Elements of $_SERVER : PHP_SELF, SERVER_NAME, HTTP_HOST, HTTP_USER_AGENT

PHP Forms

Form Handling, Form Validation, Form URL/E-mail

Text Files:

Opening a file, Reading a file, Writing a file, Closing a file

Other Features

PHP File Upload, Cookies, Sessions (start, modify and destroy), Error Handling

Working on Database: (Using MySQLi Procedural API)Connecting with Databases, opening and closing databases, Inserting, retrieving, modifying/updation , deleting of records from tables

Unit 4: Multimedia and Authoring Tools

Movie File Formats: AVI, MPEG, SWF, MOV, DAT

Embedding: Audio/Video on the web page

Multimedia Authoring Using Macromedia Flash: Making of simple movie, setting properties, frame rate, dimensions, and background color

Movie Frames: Concept of frame, frame buffer, and frame rate, creating a key frame, Inserting text into the frame, inserting graphical elements into the frame, converting text/graphics to symbol, inserting symbol into the frame, setting symbol property (graphics/button/movie), inserting blank key frame, selecting all/specific frames of a layer, copying/pasting selected frames

Scene: Concept of scene, duplicate scene, add scene, delete scene, and navigating between scenes

Layers: Concept of layer, layer properties, layer name, show/hide/lock layers, viewing layer as outline, adding/deleting a layer

Types of Layer - normal/guide/mask

Special Effects: Motion Tweening, Shape Tweening, Inserting Sound Layer

Testing a Scene and Movie

Import/Export (Movie/Sound and other multimedia objects)

Publishing:

Publishing a movie, changing publish settings, producing swf(flash movie), html page, gif image, jpeg image (*.jpg), png image, windows projector (*.exe), macintosh projector (*.hqx), quick time (*.mov), real player (*.smil)

Testing with Publish Preview

Multimedia Application: Education (use of CAL tool), entertainment, edutainment, virtual reality, digital libraries, information kiosks, video on demand, video phone, video conferencing and telemedicine.

Class XII (Practical)

Duration: 3 Hours   **Total Marks: 30**
                                                                                              15

1. **Hands on Experience**

   A website based on a particular topic has to be to be developed by each student using various commands covered in HTML and PHP with at least 4 web pages.

   Web page should be designed with following features:

   - HTML basic tags (html/head/title/body/B/I/U/BR/HR)

   - Functions

   - Conditional and control statements

   - Form Handling, Form Validation, E-mail Validation

   - Image editing using Photo Shop /Corel draw/GIMP

   - Merging layers /Moving and copying layers

   - Use of multimedia authoring (like Macromedia Flash)

2. **Practical File**   **05**

   The practical file should be made on a domain specific area (with supported documents and printouts):

   - Make a simple web page containing almost all the tags of HTML and view that web page on the browser.

   - Develop a home page for income tax department (simple and textual) and store it in the directory used for web services on the web-server.

   - Enhance the home page by providing links to other sample pages (e.g. Income Tax Zone).

   - Income Tax Detail form for an individual, Income Tax Notification, Income Tax News etc.).

   - Embed Time and Date on the home page.

   - Further enhance the website by providing User Registration Page. Collect the user details and Display a new web page showing "Thanks For Registration". Also write appropriate functions to validate form inputs.

   - Give a login facility to the user with anonymous name and maintain the session till the user logs out.

   - For user log in attempts, maintain a visitor count.

- Change the login module of the web page and now connect it to the IncomeTax User database on the server. This is to be done to store the registration detail and facilitate login to the user.

- The login page is to be made in a way that it should also provide facility to change password, if user forget password.

- Store some of the created or edited sound files on the web-server and provide links to play it.

- Change the appearance of the web page using pictures at appropriate places (e.g. logo of income tax department, photograph of income tax building etc.)

- Visit websites (State Govt./Local language newspaper) and get 5 different printouts in local language.

(Note: Student can also improve the case study from class XI and enhance it further with database and multimedia support. Also they can create a website on a new topic).

3.   **Project based on case study**   **05**

Case Studies are to be divided into following parts:

Case study Part 1 (collection, editing and creation of website resources):

Create an electronic movie with various pictures, audio clipping, movie clippings, and factual text related to school / organization

- Embedding video and audio in web pages.

- An introduction to interactive walk-through.

- Embedding walk-through into web pages.

Case Study Part 2 (development of web content with resources):

Case studies covered in class XI with database support with Login, Online Registration, Booking and/or ordering facility.

Sample Case Study

(Note: Other similar type of case studies can also be used for the project work)

Mr. Verma is the CEO of *copsi*soft drinks (I) Ltd. His company is having a wide network of distributors for *copsi*branded soft drinks. With the increase in sales and distribution network, it is required to adopt a new technological intervention in the existing system. He wants that the company should have a global presence over the widely popular medium, called world wide web. Assume that you are appointed as the senior person of the development team. You are required to collect the company information and its current requirement. For your easiness we had collected the details of the company which are as follows:

The company Information:

Name of the Company: *copsi*soft drinks (I) Ltd.

Zone: East, West, North and South

Distributors: All over the world.

Mr. Verma said that the web site should be able to reflect company in terms of :

- Home Page

- Product & Promotion Page

- Distributor Login Page / Password Recovery Page

- Distributor Specific Details Page

- Registration Page for Distributor-ship
- Company News and Flashes
- Company Profile

Technical Details:

- Web site Introduction is to be made in movie making software.
- A proper database is to be maintained for the distributor information.

Note:

- For developing the above sites/movies collect the actual information from various sources.
- Teachers can provide alternative case studies also of similar kind.

4. **Viva Voce**   05

During the final practical examination, oral questions will be asked from the syllabus covered and the project developed by the student(s).

KNOW MORE BEYOND SYLLABUS…….

Teacher may also motivate students to search and give group presentations for topics of emerging ICT such as web services, cloud computing, SDK Android.

Web References:

1. Open Source Concepts: www.opensource.org
2. Web Designing and Development: www.w3schools.com