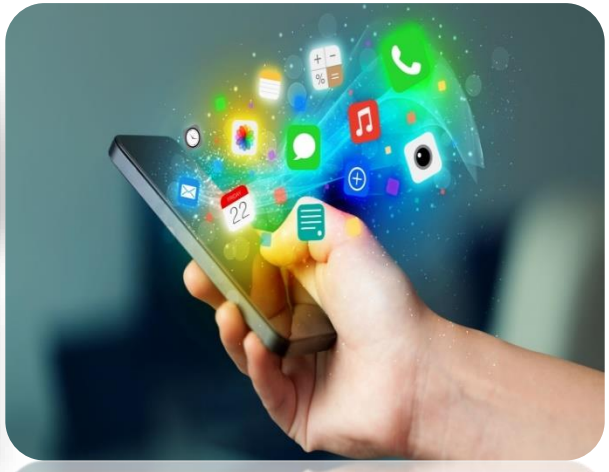
National Vocational Certificate Level 3 for Mobile App, Web and Game Development

"Junior Programmer"



National Vocational and Technical Training Commission (NAVTTC),

Government of Pakistan

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National Vocational and Technical Training Commission (NAVTTC) extends its gratitude and appreciation to representatives of business, industry, academia, government agencies, provincial TEVTAs, sector skill councils and trade associations who spared time and extended their expertise for the development of National Vocational Qualification for the trade of **Mobile App, Web and Game Development**. This work would not have been possible without the technical support of the above personnel.

NAVTTC initiated development of CBT&A based qualifications for 200 traditional / hi-tech trades under the Prime **Minister's Hunarmand Pakistan Program,** focusing on Development & Standardization of 200 Technical & Vocational Education & Training (TVET) Qualifications. NAVTTC efforts have received full support from the Ministry of Federal Education and Professional Training which highly facilitated progress under this initiative.

It may not be out of place to mention here that all the experts of Industry, Academia and TVET experts of TEVTAs, BTEs and PVTC work diligently for making this qualification worthy and error free for which all credit goes to them. However, NAVTTC accepts the responsibility of all the errors and omissions still prevailing in the Qualification document.

It is also noteworthy that development of Skill Standards is a dynamic and ongoing process, and the developed skill standards needs periodic review and updating owing to the constant technological advancements, development in scientific knowledge, and growing experience of implementation at the grass root level as well as the demand of industry. NAVTTC will ensure to keep the qualifications abreast with the changing demands of both national and international job markets.

Executive Director (NAVTTC)

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Introduction

a. Definition/Description of Training Program Mobile App, Web and Game Development

The importance of modern gadgets in our everyday life and activities is undeniably unending. This is so because there is ongoing tremendous transformation in which mobile phones, laptops and other devices are no longer the ordinary device they used to be. They have become the colossal point of attention for individuals and businesses alike, courtesy of the various incredible features and opportunities that they offer. The cumulative progress of technology, the availability and access to high speed internet and the remarkable communicative interface in these devices results into a whole level of new and innovative experience.

Web designing is the computer field which deals with the creation of websites and web application. The person who deals with the creation of websites and web application is known as a web designer or web developer. The best part of being a web developer is that they are employed by almost every organization and they can even work independently as a freelancer.

Mobile phones and devices have become such a ubiquitous part of our everyday lives that it's difficult to imagine going through an entire day without one. This shift to ubiquity has been driven largely in part by the increasing scope of mobile application development. Over just the past few years an explosion in not just the scope but also the depth of utility of these devices has occurred which rivals, if not exceeds that seen in any other discrete class of technology.

Game Development is the art of creating games and describes the design, development and release of a game. It may involve concept generation, design, build, test and release. While you create a game, it is important to think about the game mechanics, rewards, player engagement and level design.

b. Purpose of the Training Program

Being conscious of the emerging trends in the market, National Vocational & Technical Training Commission (NAVTTC) has developed competency standards in consultation with the stakeholders including academia, researchers, industry, chambers and TEVTAs for 'Mobile App, Web & Game Development' under National Vocational Qualifications Framework (NVQF).The competency standards document has been designed in a way that trainees can develop skill in the ability to explore and analyze writing in technical, scholarly and professional contexts. They can consolidate their knowledge and skills through advanced practice in writing, editing, designing and producing texts for professional and technical purposes, with concrete application on industry sourced documents and projects.

c. Objectives of Training Program

The main objectives of the National Vocational Certificate Level 3 for Mobile App, Web and Game Development are as follows:

- Empower the youth with globally required employable skills.
- Produce competitive Web, Mobile App and Game Developers.
- Produce a skilled youth for Mobile App, Web & Game Development Industry.
- Improve the quality and effectiveness of the training and assessment for Mobile App, Web & Game Development Industry.

d. Competencies to be gained after completion of course

At the end of the course, the trainee has attained the following core competencies:

National Vocational Certificate Level 3 for Mobile App, Web and Game Development

1) Operate digital media technology
2) Perform computer operations

3) Use computer applications
4) Create technical documentation
5) Create basic databases
6) Use social media tools for collaboration and engagement
7) Create Environment for javascript programming
8) Develop Logic in javascript programming
9) Implement Logic in Javascript
10) Implement Form Validation in Javascript
11) Fix Error/Bugs in Program
12) Install Content Management System
13) Write/Edit Posts and Pages
14) Perform Basic Administration
15) Customize/Deploy Theme
16) Add Plugins to the Website
17) Manage CMS Website
18) Perform troubleshooting
19) Create environment for Java programming
20) Develop programming logic in java
21) Remove errors/bugs in Java programs
22) Create static webpages.
23) Apply cascading style sheets (CSS)

24) Convert mockups into web pages
25) Convert Designs into mobile application mockups
26) Create mockups for mobile games
27) Apply validations to web forms

e. Possible job opportunities, available immediately and later in the future:

Possible Career Paths

- Jr. programmer (Java)
- JavaScript Programmer
- CMS Professional
- UI/UX developer

f. Trainee Entry Level

The entry requirement for **National Vocational Certificate Level 3 for Mobile App, Web and Game Development** is given below:

Title	Entry requirements
National Vocational Certificate Level 3 for Mobile App, Web and Game Development	National Vocational Certificate Level 2 for Mobile App, Web and Game Development

g. Minimum Qualification of Trainer/Instructor:

- BSCS/BSSE/BSIT/equivalent qualification, having expertise in Web and Mobile Application

OR

- National Vocational Certificate Level 5 for Mobile App, Web and Game Development "Full Stack Developer" with at least one year experience in relevant trade (Jr. Instructor)

a. Recommended Trainer: Trainee Ratio

The recommended maximum trainer: trainee ratio for this program is 1 trainer for 25 trainees.

b. Medium of Instruction i.e. Language of Instruction:

Medium of instruction will be in Urdu / English / Local language

c. Duration of the course (Total time, Theory & Practical time):

The distribution of contact hours is given below:

Total - 630 hours

Theory - 141 hours (22.38%)

Practical - 489 hours (77.61%)

d. Sequence of Modules

1) Operate digital media technology
2) Perform computer operations
3) Use computer applications
4) Create technical documentation
5) Create basic databases
6) Use social media tools for collaboration and engagement
7) Create Environment for javascript programming
8) Develop Logic in javascript programming
9) Implement Logic in Javascript
10) Implement Form Validation in Javascript
11) Fix Error/Bugs in Program
12) Install Content Management System
13) Write/Edit Posts and Pages
14) Perform Basic Administration
15) Customize/Deploy Theme
16) Add Plugins to the Website
17) Manage CMS Website

18) Perform troubleshooting
19) Create environment for Java programming
20) Develop programming logic in java
21) Remove errors/bugs in Java programs
22) Create static webpages.
23) Apply cascading style sheets (CSS)
24) Convert mockups into web pages
25) Convert Designs into mobile application mockups
26) Create mockups for mobile games
27) Apply validations to web forms

Summary Template - Overview of the Curriculum

Following is the structure of the course:

Level 3								
1	Operate digital media technology	**Digital Skills**	3	Generic	6	21	27	2.7

2	Perform computer operations		3	Generic	6	21	27	2.7
3	Use computer applications		3	Generic	3	12	15	1.5
4	Create technical documentation		3	Generic	3	21	24	2.4
5	Create basic databases		3	Generic	3	12	15	1.5
6	Use social media tools for collaboration and engagement		3	Generic	3	12	15	1.5
7	Create Environment for javascript programming	**JavaScript Programmer**	3	Technical	3	12	15	1.5
8	Develop Logic in javascript programming		3	Technical	6	24	30	3
9	Implement Logic in Javascript		3	Technical	12	36	48	4.8

10	Implement Form Validation in Javascript		3	Technical	6	24	30	3
11	Fix Error/Bugs in Program		3	Technical	6	15	21	2.1
12	Install Content Management System	**CMS Professional**	3	Technical	6	15	21	2.1
13	Write/Edit Posts and Pages		3	Technical	3	12	15	1.5
14	Perform Basic Administration		3	Technical	6	21	27	2.7
15	Customize/Deploy Theme		3	Technical	6	21	27	2.7
16	Add Plugins to the Website		3	Technical	3	12	15	1.5
17	Manage CMS Website		3	Technical	6	21	27	2.7

18	Perform troubleshooting		3	Technical	6	21	27	2.7
19	Create environment for Java programming	**Jr. programmer (Java)**	3	Technical	3	12	15	1.5
20	Develop programming logic in java		3	Technical	16	45	61	6.1
21	Remove errors/bugs in Java programs		3	Technical	3	12	15	1.5
22	Create static webpages.	**UI/UX developer**	3	Technical	6	24	30	3
23	Apply cascading style sheets (CSS)		3	Technical	3	9	12	1.2
24	Convert mockups into web pages		3	Technical	3	9	12	1.2
25	Convert Designs into mobile application mockups		3	Technical	3	9	12	1.2

26	Create mockups for mobile games		3	Technical	3	9	12	1.2
27	Apply validations to web forms		3	Technical	8	27	35	3.5
	Total				**141**	**489**	**630**	**63**
	Percentage				**22.380 95238**	**77.61 9047 6**		

Proposed Course Duration: 6 Months

Estimated Contact Hours: 600 Hours

Estimated Credit Hours: 60 Hours

JavaScript Programmer

Module - 0613-S&AD&A-1. Create Environment for JavaScript programming

Objective: After the completion of this module the trainee will be able to covers the skills and knowledge required to create java script environment to run program successfully.

Duration: 15 Hours **Theory: 03Hours** **Practice: 12 Hours** **Credit Hours: 1.5**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. **Download Java Script IDE**	**Trainee will be able to:** • Search for suitable IDE • Explore the features of available Java Script IDEs • Download the Java Script IDE	**Knowledge Based questions:-** • Define JavaScript • Describe Integrated Development Environment (IDE) • Enlist the steps to download JavaScript IDE.	**Theory-** **01** Hrs **Practical-** **03** Hrs **Total- 04** Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer lab

		Practical Activity Download JavaScript IDE in your laptop/computer available in computer lab.			
LU2. **Install Java Script IDE**	**Trainee will be able to:** • Choose suitable Java Script IDE e.g. (Komodo, Atom, VS Code) • Install the required IDE	**Knowledge Based questions:-** • Enlist the names of Java Script IDEs. • Describe the use of Java Script • Describe characteristics for java Script • Explain the Requirement of IDE in software • Enlist steps to Install Java Script IDE **Practical Activity:**	**Theory-** **01** Hrs **Practical-** **06** Hrs **Total-07** Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer lab

		Install Java Script IDE in computer system.			
LU3 **Check the Development Environment**	**Trainee will be able to:** • Write first program on installed IDE • Run the Program in browser	**Knowledge Based questions:-** • Enlist the step to add Java Script into the page • Enlist the step to run a program in Java Script IDE. • Describe that JavaScript run in a web-browser • Define basic terms (Source code, Interpreter, and Compiler etc. • Enlist different JavaScript engines	**Theory-** **01** Hrs **Practical-** **03** Hrs **Total- 04** Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer lab

		Practical Activity • Write first program on IDE and then run it.			

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Module- : 0613-S&AD&A-2. Develop Logic in JavaScript programming

Objective: After the completion of this module the trainee will be able to cover the skills and knowledge required to build logic in programming.

Duration: 30 Hours **Theory: 06 Hours** **Practice: 24 Hours** **Credit Hours: 3.0**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. **Visualize the Logic**	**Trainee will be able to:** • Analyse the problem to visualize • Solve problem using flowchart	**Knowledge Based questions:-** • Enlist the key step to problem visualize. • Describe effective visualize. • Define data visualization • Describe benefits of data visualization • Describe flow chart • Enlist symbols use in flow chart	**Theory-03** Hrs **Practical-** **12** Hrs **Total- 15** Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer lab

		• Enlist types of flow charts • Enlist method to draw flow chart • Describe flow charts templates • Describe common mistakes made when drawing flow charts **Practical Activity:** Analyze the problem assigned by the teacher /Instructor and then solve it using flowchart.			
LU2. **Write Generalized Logic**	**Trainee will be able to:** • Select a problem to provide generalized solution	Knowledge Based questions:- • Define Generalization	**Theory-03** Hrs **Practical-** **12** Hrs	• Computers • Internet • Multimedia • White board • Printer	• Class Room • Computer lab

	• Convert the problem into pseudo-code • Convert the pseudo-code to generalize algorithm	• Define problem solving skills • Define pseudo-code. • Enlist the steps to convert problem into pseudo-code. • Enlist the key steps to converting pseudo-code into generalize algorithm **Practical Activity:** Convert the given problem into pseudo-code and then convert it into generalize algorithm.	**Total- 15** Hrs	• Registered Security Software's CD'S • USB's	

National Vocational Certificate Level 3 for Mobile App, Web and Game Development

Module : 0613-S&AD&A-3. Implement logic in JavaScript

Objective: After the completion of this module the trainee will be able to cover the skills and knowledge required to build logic in programming.

Duration: 48 Hours **Theory: 12 Hours** **Practice: 36 Hours** **Credit Hours:4.8**

Learning Unit	• Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. **Use fundamentals of Javascript** .	**Trainee will be able to:** • Declare variables and arrays • Perform some calculation • Display calculation in alert box	**Knowledge Based questions:-** • Define java script • Define structure, content, and styling. • Define primitives, objects and functions • Explore the difference between Primitives vs Objects	**Theory-** **04** Hrs **Practical-** **12** Hrs **Total-16** Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer lab

		• Define Variables. • Define arrays. • Describe alert box. **Practical Activity:** Add two numbers in JavaScript and display the result in alert box.			
LU2. **Solve complex programming problems**	**Trainee will be able to:** • Implement sequential structure • Implement conditional structure • Implement iterative structure • Implement structured programming (Functions)	**Knowledge Based questions:-** • Enlist the key step of sequential structure • Enlist the key step of conditional structure. • Define Iterative structure • Describe tools of iteration • Describe structured programming and Write its types.	**Theory-** **04** Hrs **Practical-** **12** Hrs **Total- 16**Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer lab

		Practical Activity: Write a program to implement structured programming.			
LU3 **Explore JS DOM(Document Object Model) tasks**	**Trainee will be able to:** • Change the content of HTML • Add the styling to HTML element • Remove the HTML element	**Knowledge Based questions:-** • Define DOM • Describe document object model. • Describe DOM interface • Define HTML elements. **Practical Activity:** Create an HTML page, add styling to HTML element and then remove HTML element.	**Theory-** **04** Hrs **Practical- 12** Hrs **Total- 16**Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer lab

Module : 0613-S&AD&A-4. Implement Form Validation in JavaScript

Objective: After the completion of this module the trainee will be able to cover the skills and knowledge required to validate a JavaScript program.

Duration: 30 Hours **Theory: 06 Hours** **Practice: 24 Hours** **Credit Hours: 3.0**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. **Implement Javascript validation**	**Trainee will be able to:** • Write validation functions in javascript • Search different libraries of javascript that provides validation features • Search different javascript frameworks • Select appropriate library/framework to write JS code	**Knowledge Based questions:-** • Enlist the key steps of implementation of Java Script validation • Define JS frameworks. • Enlist the major JS Frameworks. • Explore libraries of JavaScript.	**Theory- 03**Hrs **Practical-** **12** Hrs **Total- 15**Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer lab

		• Enlist the names of major JavaScript libraries. **Practical Activity:** Write a progra7m of JavaScript for validation of given numbers.			
LU2. **Deploy validation into a web form**	**Trainee will be able to:** • Identify elements where to apply validations • Explore validation functions for different purposes like email address, NAN (not a number) etc. • Apply suitable validation functions for required element	**Knowledge Based questions:-** • Describe form validation • Describe Typescript • Explore HTML5 programming. • Describe method to deploy validation into web form **Practical Activity:** Identify elements within your code where you have to apply	**Theory- 03**Hrs **Practical-** **12** Hrs **Total- 15**Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer lab

		validation functions and then apply suitable validation functions for required elements.			

Module : 0613-S&AD&A-5. Fix Error/Bugs in Program

Objective: After the completion of this module the trainee will be able to cover the skills and knowledge required to remove the different types of errors in a program.

Duration: 21 Hours **Theory: 06 Hours** **Practice: 15 Hours** **Credit Hours: 2.1**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. **Identify the error/bug**	**Trainee will be able to:** • Identity the immediate line of code where bug occurs • Identify the line of code where bug actually occurs • Identify the Specie/Type of bug.	**Knowledge Based questions:-** • Define error / bug. • Enlist the method to Identify the error in your code. • Enlist the types of errors. **Practical Activity:**	**Theory-** **02** Hrs **Practical-** **03** Hrs **Total-** **05** Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer lab

		Write a JavaScript code and identify the line of code where bug actually occurs.			
LU2. **Remove the Sytax Error**	**Trainee will be able to:** • Identify the line of code where bug actually occurs. • Correct the error according to Java Script Syntax.	**Knowledge Based questions:-** • Describe Syntax error. • Describe syntax error within specific line of the code. **Practical Activity:** Write a JS code with number of syntax errors and then identify the line of code where bug actually occurs then correct the	**Theory-** **01** Hrs **Practical-04** Hrs **Total- 05**Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer lab

		error according to Java Script Syntax			
LU 3: **Remove the Logical Error**	**Trainee will be able to:** • Identify the error logic • Make a hypothesis without looking at code • Identify key variables and Conditions • Re-check suspicious code • Re-Write the suspicious code	**Knowledge Based questions:-** • Describe logical error. • Enlist the key step to identify the logical error within the code. **Practical Activity:** Write a JS code and then identify logical error then correct the error according.	**Theory-** **02** Hrs **Practical- 04** Hrs **Total- 06**Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer lab

LU 4. **Remove the Runtime Error**	**Trainee will be able to:** • Change the input values • Make sure you have enough memory/storage • Re-start your program/Browser (if required)	**Knowledge Based questions:-** • Describe Runtime error. • Enlist the key step to identify the runtime error within the code. **Practical Activity:** • Write a JS code and then identify Runtime error then correct the error according.	**Theory-** **01** Hrs **Practical- 04** Hrs **Total- 05**Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer lab

CMS Professional

Module:- 0613-S&AD&A-6. Install Content Management System

Objective: After the completion of this module, the Trainee will be covers the skills and knowledge required to install a Content Management System.

Duration: 21Hours **Theory: 6 Hours** **Practice: 15Hours** **Credit Hours: 2.1**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Identify System Requirements for local CMS development	**Trainee will be able to:** • Identify local Requirements (System Requirements) • Enlist Server-Side Requirements • Check for security vulnerabilities for the version to be installed.	**Knowledge based questions** • Define Content management system • Enlist key feature of CMS features • Enlist Categories / types of CMS • Define Web content management systems • Enlist Content management tools • Describe and select the right CMS platform (wordpress.org, Hub Spot CMS Hub, Joomla, Woo Commerce, Drupal, WIX etc.) • Define security vulnerabilities	**Theory-** 3 Hrs **Practical-** 6 Hrs **Total-** 09 Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer Lab

	• Install an open-source cross platform web server solution software • Setup Server & Database environment of server solution software for the CMS based website to be run on it.	• Define open source plate form for web server • Enlist Types of open source plate form for web server • Define IP addresses • Describe the Set Up of Dedicated Web Server **Practical Activity:** Download Ubuntu and Install Ubuntu Server			
LU2. Perform Installation	**Trainee will be able to:** • Download and Extract files • Create the Database and a User • Upload Files in root directory & subdirectory • Setup the configuration	**Knowledge based questions** • Define software installation • Describe different types of software installations • Describe requirements to install application software's • Describe Custom software installation • Enlist ways to acquiring software's • Define Database	**Theory-** 2 Hrs **Practical-** 3 Hrs **Total-** 05 Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S	• Class Room • Computer Lab

	• Run Install script • Troubleshoot common installation problems	• Describe new users and grant permissions in data base • Define root directory and subdirectory • Describe the method for upload a file to a root directory • Describe the procedure to fix the installation problems • Describe installation problems fix Windows **Practical Activity:** Create MySQL database with user name and password		• USB's	
LU3. Install multiple instances	**Trainee will be able to:** • Install Single CMS instance with a single database	**Knowledge based questions** • Describe the procedure to Installing/Configuring multiple CMS instances in a single server machine • Describe the method to Uninstalling CMS Instances	**Theory-** **1 Hrs** **Practical-** **6 Hrs**	• Computers • Internet • Multimedia • White board • Printer • Registered	• Class Room • Computer Lab

	• Install Multiple CMS instances with a single database • Install Multiple instances with multiple databases	• Enlist Multiple independent sites using the same CMS installation • Describe the method to Install Multiple Instances on Multiple Database **Practical Activity:** Installing Multiple WordPress Instances	**Total-** **07 Hrs**	Security Software's CD'S • USB's	

Module: - 0613-S&AD&A-7. Write/Edit posts and pages

Objective: After the completion of this module, the Trainee will covers the skills and knowledge required to write and edit posts and create pages on a CMS.

Duration: 15 Hours **Theory: 03 Hours** **Practice: 12 Hours** **Credit Hours: 1.5**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Write Posts	**Trainee will be able to:** • Check for the tools available on the admin panel for creating a post. • Use block editor for adding contents.	**Knowledge based questions** • Define CMS Websites • Define CMS Blog • Explain needs of CMS for web sites • Define CMS page on website • Enlist Popular CMS platforms	**Theory-** 0.5 Hrs **Practical-** 3Hrs **Total-** 3.5Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer Lab

		• Describe uses of CMS in Word Press • Define Access on Admin Panel • Explain step by step procedure to create post in Word Press • Describe to Get Admin Panel in WordPress • Define admin control panel • Describe the method to Add text in block editor • Describe the Use of block editor **Practical Activity:**			

		Edit block content in word press			
LU2. Create Pages	**Trainee will be able to:** • Login to your CMS, go to the Page section. • Insert Content • Set the page hierarchy • Update URL for your page. • Generate permalink	**Knowledge based questions** • Define Pages in CMS • Define section and folders • Define Omni CMS • Define login CMS • Describe MS pages on Web sites • Describe CMS entries **Practical Activity:** • Creating content in Omni CMS	**Theory-** 0.5 Hrs **Practical-3** Hrs **Total-** 3.5 Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer Lab

		• Configuring Page Hierarchy			
LU3. Adjust Media Library	**Trainee will be able to:** • Upload Images, Videos and Audios to the media library • Set media library views • Delete the unwanted media items from the library	**Knowledge based questions** • Define media library • Explain the methods to Upload , photos, videos and music to the Media Library on the web • Define Grid View. • Define List View • Enlist filter media types by date or search media • Define the Terms (Edit Image, Crop, Rotate,	**Theory-** 01 Hrs **Practical-** 3Hrs **Total-** 4 Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer Lab

		Flip, Resize, Undo and Redo, Restore) **Practical Activity:** upload any file provided in the lab by teacher/instructor			
LU4. Manage Comments on posts/pages	**Trainee will be able to:** • Setup comment rules • Enable comments for the site • Manage incoming comments	**Knowledge based questions** • Define comment on post • Explain Comments on CMS purposed rules • Define public period comments • Explain enable / disable comments and ratings on different sites • Define comment manager	**Theory-** 01 Hrs **Practical-** 3Hrs **Total- 4** Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer Lab

		• Define different Ways to Manage Comments on social media Site • Describe Social media management tools • Explain control comments on sites • Describe reply comments on different social media sites (F.B, Instagram, Twitter etc.) **Practical Activity:** • Enlist 5 Types of Facebook Comments and How to Respond them			

Module: - 0613-S&AD&A-8. Perform Basic Administration

Objective: After the completion of this module, the Trainee will covers the skills and knowledge required perform basic administration of a CMS based website.

Duration: 27 Hours **Theory: 6 Hours** **Practice: 21Hours** **Credit Hours: 2.7**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Navigate in CMS Environment	**Trainee will be able to:** • Use different features available in the CMS • Explore the Dashboard for updating themes and plugins.	**Knowledge based questions** • Define navigation • Define navigate CMS • Explain Methods to access the website • Differentiate between Menus and navigation • Explain template tags for use in the templates that	**Theory- 03** Hrs **Practical-** 09 Hrs **Total-** 12 Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer Lab

		are connected to the menu • Differentiate between themes and plugins • Explain method of update custom themes • Describe plugins in word press dashboard • Define Custom plugins in WordPress **Practical Activity:** • Using menu tags Displays the sub menu of the current page • Create a WordPress Custom Dashboard for Clients			

LU2. Change the look & Feel of the Website	Trainee will be able to: • Use widgets as per requirement • Create Navigational structure/Menu • Insert Header • Insert Footer	**Knowledge based questions** • Define Look and feel of website • Describe the importance of look and feel of website • Describe the Use of "Look and Feel" to Improve Web Design • Define navigation structure • Define Structure of navigation bar • Define navigation menu • Define horizontal navigation bar • Define Top Navigation Bar	**Theory-03** Hrs **Practical-** 12 Hrs **Total-** 15 Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer Lab

		Practical Activity: create a new page, add the elements you want to appear on page, and assign the page as a header and footer in the Site			

Module: - 0613-S&AD&A-9. Customize/Deploy theme

Objective: After the completion of this module, the Trainee will covers the skills and required to customize/ Deploy theme.

Duration:- 27Hours **Theory: 6 Hours** **Practice: 21 Hours** **Credit Hours: 2.7**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Search for Themes	**Trainee will be able to:** • Explore a variety of CMS themes (ready to use) • Search for a specific theme type from available free theme directory • Use selected theme	**Knowledge based questions** • Define CMS Themes • Define Hub Spot themes • Describe purpose of using themes • Explain to download responsive	**Theory- 02** Hrs **Practical-** 06 Hrs **Total- 08** Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S	• Class Room • Computer Lab

		and Free website themes template • Describe to Apply themes on website or CMS pages • Explain the Change to selected apply themes **Practical Activity:** Apply a new theme on presentation provided by teacher/instructor		• USB's	
LU2. Add Theme	**Trainee will be able to:** • Add new theme using the administration screen • Add new theme using CPanel • Add new theme using FTP	**Knowledge based questions** • Define administration screen • Explain the procedure to install a theme in a Control panel (Panel) • Define activate a theme in Cpanal	**Theory-** 02 Hrs **Practical-** 09 Hrs **Total-** 11Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S	• Class Room • Computer Lab

		• Define change the themes in CPanel • Define FTP • Explain Install theme via FTP • Describe FTP software's for upload and download **Practical Activity:** • Upload a Files to Your provided Site Using FTP • Download a Files from Your WordPress Site Using FTP		• USB's	

LU3. Activate/Update the Theme	**Trainee will be able to:** • Log in to Administration Screen • Go to theme section • Select the desired theme • Generate the live preview • Click Activate	**Knowledge based questions** • Define Administrator and Administration Screen • Define Command prompt • Describe Log in as an administrator • Enlist steps to update themes • Describe Install and activate themes **<u>Practical Activity:</u>** Update the old theme of your site provided by the instructor by replacing the new version	**Theory-** 02 Hrs **Practical-** 06 Hrs **Total-** 08 Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer Lab

Module: - 0613-S&AD&A-10. Add Plugins to Website

Objective: After the completion of this module, the Trainee will covers the skills and required to add plugins to a website

Duration: 15Hours **Theory: 3 Hours** **Practice: 12Hours** **Credit Hours: 1.5**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Manage plugins	**Trainee will be able to:** • Enlist the popular plugins • Search plugin directory for Spam Control, SEO, E-Commerce and Security Plugins	**Knowledge based questions** • Describe manage Plugins interface • Describe install and uninstall a plugin • Enlist type of plug in use for SEO • Describe the use of best plugin for	**Theory- 01** Hrs **Practical-** 03 Hrs **Total-** 04Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer Lab

		E-commerce • Define security plugin • Explain the working of security plugin **Practical Activity:** Disable all plugins When unable to access the administrative menu			
LU2. Install/Update Plugins	**Trainee will be able to:** • Navigate to the Plugins section • Perform search for the desired plugin and add it. • Click the plugin link and view its version • Click update if an update is available • Activate the plugin	**Knowledge based questions** • Describe search plugins in WordPress • Describe activate a plugin in WordPress • Explain the method to Add plugin menu to WordPress	**Theory-** 01Hrs **Practical-** **06** Hrs **Total- 07** Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer Lab

		• Explain the method Add navigation menu to WordPress **Practical Activity:** Creating a WordPress Plugin and add the Admin Page			
LU3. Upload Plugins Manually	**Trainee will be able to:** • Unzip the plugin file • Connect to your CMS server with SFTP client • Copy the plugin folder to your CMS site plugins directory • Go to the plugin admin screen and locate the newly added plugin • Click the plugin's Activate link.	**Knowledge based questions** • Define Zip files • Define extract a file • Enlist the steps to Unzipped a file • Define SFTP • Describe the method of connection with SFTP • Enlist categories of popular plugins directory in the WordPress	**Theory-** 01Hrs **Practical-** 03 Hrs **Total- 04** Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer Lab

		Practical Activity: Install WordPress plugins using the upload option in the admin area.			

Module: - 0613-S&AD&A-11. Manage CMS website

Objective: After the completion of this module, the Trainee will covers the skills and required to maintain & optimize the CMS website.

Duration: 27 Hours **Theory: 6 Hours** **Practice: 21 Hours** **Credit Hours: 2.7**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Create Backups	**Trainee will be able to:** • Create backup for the website • Initialize restoration process • Restore the site from backup using MySQL	**Knowledge based questions** • Define Backup • Enlist the steps of website backup • Describe needs of web site back up • Define restore process	**Theory-** 03 Hrs **Practical-** **06** Hrs **Total-** 09 Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer Lab

		• Define system state restore • Describe Restore the System State to an alternative location • Explain the method of initializing and then restoring a database instance. **Practical Activity:** Restore after initializing a database instance without the option of changing the database parameters and volume configuration			
LU2. Move website to a new server	**Trainee will be able to:** • Move website keeping Domain Names and URLs	**Knowledge based questions** • Define domain name • Define URL	**Theory-** 02Hrs **Practical-**	• Computers • Internet • Multimedia • White board	• Class Room • Computer Lab

	• Change Domain Names and URLs • Move directories from existing server	• Describe manual backup • Describe CPnel backup wizard • Define Manual transfer of files • Describe to move website to a new domain name • Enlist the steps to transfer file from one domain to another • Describe the method redirect an expired domain to new domain **Practical Activity:** Enlist the steps involve moving a website to a different web host	09 Hrs **Total- 11** Hrs	• Printer • Registered Security Software's CD'S • USB's	

LU3. Perform SEO & Caching	**Trainee will be able to:** • Add Keyword, Link, Titles • Insert content in links and images • Perform caching for browser & server	**Knowledge based questions** • Define SEO and its working • Define caching in SEO • Describe Keywords for SEO • Describe to ADD Images **Practical Activity:** Add text, headings, or titles to your site assigned by the teacher/instructor	**Theory-** 01Hrs **Practical-** **06** Hrs **Total-** 07 Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer Lab

Module: - 0613-S&AD&A-12. Perform troubleshooting

Objective: After the completion of this module, the Trainee will covers the skills and required to perform troubleshooting & check for security issues.

Duration: 27 Hours **Theory: 06Hours** **Practice: 21 Hours** **Credit Hours: 2.7**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. Resolve Login Problems	**Trainee will be able to:** • Refresh your browser • Check for the authorization access	**Knowledge based questions** • Describe method to Refresh page only • Describe delete Cache and Refresh page • Enlist the steps to refresh browser in chrome	**Theory-** 1.5 Hrs **Practical-** 03 Hrs **Total-** 4.5 Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer Lab

		• Describe to Refresh browser on phone • Describe to Refresh browser with key board • Define authorization check • Define Authorization access control. • Differentiate between access and authorization • Describe the Person responsible to check the authorization **Practical Activity:** Authorizing Your App with Gmail			

LU2. Manage Content Module	**Trainee will be able to:** • Make sure to use the recommended browser. • Check your file name doesn't contain any special characters • Make sure to resize the image to avoid image upload failure	**Knowledge based questions** • Define manage control module • Describe open source content management systems like (WordPress, Drupal, Magento, Squarespace, Etc.) • Define content types • Define content items • Describe Use the recommended browser. • Describe security browser extension • Describe methods to Disable extensions	**Theory-** 1.5 Hrs **Practical-** 06 Hrs **Total-** 7.5 Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer Lab

		• Describe disable saved passwords • Describe use a strong antivirus • Define use a sandbox • Describe Manage browser cookies **Practical Activity:** Change your browser setting			
LU3. Manage Navigation Module	**Trainee will be able to:** • Clear web browser cache • Click "Publish" after creating a post/page • Check the "Stop Publishing Date", and set it too far in future	**Knowledge based questions** • Describe "classic" Visualforce mechanisms for controlling navigation from one page to another • Explain clear cache for all major browsers	**Theory-** 01 Hrs **Practical-** 06 Hrs **Total-** 07 Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer Lab

		• Explain short cut keys to clear Cache for Mozilla Fire • Describe publish a post on a page **Practical Activity:** create posts for your Page in Ads Manager			
LU4. Resolve Security Issues	**Trainee will be able to:** • Administer security over SSL • Perform two-step authentication • Demonstrate best password practices • Use an encrypted communication protocol like https	**Knowledge based questions** • Define security issues • Enlist types of Internet security issues or web security problems • Define prevent security problems • Define SSL • Describe working of SSL • Define security protocols	**Theory-** 02 Hrs **Practical-** 06 Hrs **Total-** 08 Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer Lab

		• Describe SSL provide security Protocols used to convey SSL • Differentiate between SSL connection and SSL session • Describe use of two step authentication • Describe characteristics of strong passwords • Explain the use of password manager • Define https • Differentiate between SSL and HTTPS • Describe HTTPS related to SSL **Practical Activity:**			

		Verify that your HTTPS pages can be crawled and indexed by Google			

Jr. Programmer (Java)

Module-: 0613-S&AD&A-13. Create Environment for java programming

Objective: After the completion of this module the trainee will be able to covers the skills and knowledge required to create java environment to run java program successfully.

Duration: 15 Hours **Theory: 03 Hours** **Practice: 12 Hours** **Credit Hours: 1.5**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. **Download Java Development Kit (JDK)**	**Trainee will be able to:** • Find the URL to Download JDK • Check the JDK Version • See the Compatibility of JDK for required Operating System • Download the JDK	**Knowledge based questions** • Define JDK • Define URL • Download JDK from command line. • Enlist the steps to download the java development kit in operating system	**Theory- 01** Hrs **Practical-06** Hrs **Total-07**Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's	Class Room Computer lab

		• Describe JDK version installed in computer system **Practical Activity:** Download development kit in your operating system		CD'S • USB's	
LU2. **Install Java IDE**	**Trainee will be able to:** • Search the different JAVA IDEs • Explore the features of available IDEs • Choose suitable Java IDE e.g. Eclipse, NetBeans, Notepad++ etc. • Install the required IDE	**Knowledge based questions** • Define JAVA IDEs • Enlist some of the major JAVA IDEs • Explore the procedure to install JAVA IDEs. **Practical Activity:** Install JAVA IDE in your operating system	**Theory- 01** Hrs **Practical-03** Hrs **Total-04** Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	Class Room Computer lab

LU3 **Set Up a Development Environment.**	**Trainee will be able to:** • Set the environment variables according to OS • Write first program on installed IDE • Compile the Java Source Code • Run the Byte Code	**Knowledge based questions** • Explore the environment variables according to OS • Explore the Windows Environment Variables • Define Source code • Enlists the steps that follows while writing the code in IDE • Explore the JAVA source code **Practical Activity:** Write a JAVA program, compile it and run it	**Theory- 01** Hrs **Practical- 03** Hrs **Total- 04**Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	Class Room Computer lab

Module : 0613-S&AD&A-14. Develop Java based solutions

Objective: After the completion of this module the trainee will be able to cover the skills and knowledge required to build logic in programming.

Duration: 61 Hours **Theory: 16 Hours** **Practice: 45 Hours** **Credit Hours: 6.1**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. **Learn Java Libraries**	**Trainee will be able to:** • List important Java libraries. • List the library features offering useful functionalities	**Knowledge of:-** • Describe JAVA libraries • Enlist some of the major JAVA libraries. • Enlist the default java libraries. • Define core java libraries. • Explore the java library packages. • Enlist the java library functions.	**Theory- 8-**Hrs **Practical- 22-**Hrs **Total-30** Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	Class Room Computer lab

		• Explore most used java library. **Practical Activity:** Write a code to access different libraries.			
LU2. **Solve the Problem using Java**	**Trainee will be able to:** • Create new java project • Implement sequential structure • Implement conditional structure • Implement iterative structure • Define/write user define functions • Create the classes / interfaces as per program requirement	**Knowledge of:-** • Describe how to Create new project in JAVA IDE • Describe User Define Functions • Enlist key step of sequential structure • Enlist key step conditional structure • Define iterative functions.	**Theory- 8** Hrs **Practical- 23** Hrs **Total- 31** Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	Class Room Computer lab

	• Write java code solving the problem	• Enlist the key steps to develop a java program. • Discover how are sequences used in java programming. • Discover how we create an interface class in Java? • Explore the method to create and implement an interface in Java **Practical Activity:** Create a new project and write a JAVA code for solving a simple problem			

Module : 0613-S&AD&A-15. Fix errors/bugs in Program

Objective: After the completion of this module the trainee will be able to cover the skills and knowledge required to remove the different types of errors in a program

Duration: 60 Hours **Theory: 15 Hours** **Practice: 45 Hours** **Credit Hours: 6**

Learning Unit	• Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. . **Identify the error/bug**	**Trainee will be able to:** • Identity the immediate line of code where bug occurs • Identify the line of code where bug actually occurs • Identify the Specie/Type of bug.	**Knowledge of:** • Define error / bug. • Describe a bug issue. • Identify the error in code. • Enlist the types of errors • Explore key steps to find a bug in a line of code	**Theory-4**Hrs **Practical-06** Hrs **Total- 10** Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's	Class Room Computer lab

		. **Practical Activity:** Write a Java code and identify the line of code where bug actually occurs		CD'S • USB's	
LU2. **Remove the Sytax Error**	**Trainee will be able to:** • Identify the line of code where bug actually occurs. • Correct the error according to Java Syntax.	**Knowledge of:** • Describe Syntax error. • Describe Syntax error within specific line of the code. • Explore the steps to fix Syntax error. **Practical Activity:**	**Theory-4**Hrs **Practical-06** Hrs **Total- 10**Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	Class Room Computer lab

		Write a Java code with number of syntax errors and then identify the line of code where bug actually occurs then correct the error according to Java Script Syntax			
LU3 **Remove the Logical Error**	**Trainee will be able to:** • Understand what you actually trying to accomplish • Understand what your code actually did • Make a hypothesis without looking at code • Identify key variables and Conditions • Concentrate on suspicious code only • Re-Write the suspicious code	**Knowledge of:** • Define logical error. • Describe logical error within the code. • Explore the key steps to create hypothesis without looking at code. • Explore the key steps to identify key variables and conditions. • Define suspicious code. • Explore the key steps to Re-Write suspicious code.	**Theory-3**Hrs **Practical-15** Hrs **Total- 18** Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	Class Room Computer lab

		Practical Activity: Write a Java code and then identify logical error then correct the error according.			
LU4 **Remove the Runtime Error**	**Trainee will be able to:** Change the input values • Make sure you have enough memory/storage • Recompile and run the code.	**Knowledge of:** • Define Runtime error. • Describe logical error within the code • Discover how to Remove the Runtime Error. • Explore the key steps to find enough memory/storage. • Explore the key steps to execute the code. .	**Theory-4**Hrs **Practical- 18** Hrs **Total- 22** Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	Class Room Computer lab

		Practical Activity: • Write a Java code and then identify Runtime error then correct the error according.			

UI UX Developer

Module - 0613-S&AD&A-16. Create Static Webpages

Objective: After the completion of this module, the Trainee will be able to design static web pages for the application.

Duration: 30 Hours **Theory: 06 Hours** **Practice: 24 Hours** **Credit Hours: 3.0**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. **Set-up environment**	**Trainee will be able to:** • Explore different platforms • Explore their features and compare them • Choose the most suitable platform • Install the selected platform/software	**Knowledge based questions** • Define web page. • Differentiate between static and dynamic web pages • Enlist the major platforms to	**Theory-** **02** Hrs **Practical-** **06**Hrs **Total- 08** Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer Lab

		design the web pages **Practical Activity:** Install web designing software in operating system			
LU2. **Plan to design web page**	**Trainee will be able to:** • Gather requirements of design • Identify important elements • Create basic Skelton	**Knowledge based questions** • Enlist the steps to gather requirements for web page designing • Describe the major elements to design a web page **Practical Activity:**	**Theory-** **02** Hrs **Practical-** **09** Hrs **Total-** **11** Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer Lab

		Gather requirements and identify the major elements and create basic Skelton of the web page			
LU3. **Design Webpage**	**Trainee will be able to:** • Explore HTML tags and their attributes • Code HTML for the web page • Add text to the web page • Add images to the web page • Manage data in tables and divs through HTML or any Web designing software • Apply formatting • Add links(hyperlinks) if needed • Explore and use WYSIWYG to add contents in a web page	**Knowledge based questions** • Define HTML • Enlist any three HTML tags along with their functionalities • Describe add text in a web page with example • Describe the method to add image on a web page with example **Practical Activity**	**Theory-** **02** Hrs **Practical-** **09**Hrs **Total-** **11** Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer Lab

		Design a static web page that includes text, image, tables and hyperlink.			

Module -0613-S&AD&A-17. Apply Cascading stylesheet

Objective: After the completion of this module, the Trainee will be able to define and apply cascading style sheet (CSS) in web site.

Duration: 12 Hours **Theory: 03 Hours** **Practice: 09 Hours** **Credit Hours: 1.2**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. **Explore CSS**	**Trainee will be able to:** • Explore the ways to insert CSS • Identify required way to insert CSS	**Knowledge based questions** • Define CSS • Describe the procedure to include CSS in Webpage **Practical Activity:** Create a simple web page and include CSS	**Theory- 0.5** Hrs **Practical-** **1.5** Hrs **Total- 2.0** Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer Lab

LU2. **Define CSS**	**Trainee will be able to:** • Explore the syntax to define CSS • Explore the properties in CSS • Explore the possible values of different properties • Define/code styles for tags in CSS • Define/code styles for classes in CSS • Define/code styles for IDs in CSS • Explore and use media query for different screen sizes (Responsiveness)	Knowledge based questions • Enlist the advantages of using CSS in webpage. • Enlist the limitations of using CSS. **Practical Activity:** Create a web page and define syntax, properties and styling to CSS.	**Theory- 0.5** Hrs **Practical-** **1.5** Hrs **Total- 2.0** Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer Lab

LU3. **Apply CSS**	**Trainee will be able to:** • Select suitable place where to apply formatting/stylesheet • Call CSS as a class/ID • Use style tags	**Knowledge based questions** • Describe methods of CSS that can apply to HTML or XHTML **(**linked, embedded, and inline) • Describe the way to apply CSS as a class/ID in specific area • Describe correct way to apply styles • Describe format of style sheet • Describe correct CSS syntax • Define class ID in CSS • Describe either class or ID use in CSS together	**Theory-** **01** Hrs **Practical- 03** Hrs **Total- 04** Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer Lab

		• Describe the way to target class ID in CSS • Define style tag • Describe where we use style tag in CSS **Practical Activity:** Call CSS as a class/ID and then add styling using style tags.			
LU.4 **Explore CSS frameworks (Like Bootstrap, SASS, foundation etc.)**	**Trainee will be able to:** • Search available CSS frameworks • Install most suitable framework • Configure framework with IDE and modules • Explore defined classes of framework	**Knowledge based questions** • Enlist the major frame works of CSS • Describe to configure CSS frame work with IDE • Describe the use of classes/ feature in CSS frame work **Practical Activity**	**Theory- 01**Hrs **Practical- 03** Hrs **Total- 04** Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer Lab

	• Use classes/features of framework	Install the suitable framework in computer, configure it with IDE and use the classes in framework.			

Module - 0613-S&AD&A-18. Convert mockups into web pages

Objective: After the completion of this module, the Trainee will be able to convert design mock-ups into web pages.

Duration: 12 Hours **Theory: 03 Hours** **Practice: 09 Hours** **Credit Hours: 1**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. **Create mockups**	**Trainee will be able to:** • Use suitable tool to design a mockup • Design mockups • Save it in appropriate format e.g. PSD	**Knowledge based questions** • Define mockup. • Enlist the advantages of mockup designing. • Enlist some of the major mockup designing tools. **Practical Activity:**	**Theory-** **0.5** Hrs **Practical-** **03** Hrs **Total-** **3.5** Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer Lab

		Design a mockup for your webpage using a tool then save it in PSD format.			
LU2. **Convert design in HTML5 and CSS3**	**Trainee will be able to:** • Slice image/mockup using designing tool • Write HTML against each sliced image • Write CSS against HTML • Use any framework for responsiveness of webpage	**Knowledge based questions** • Describe to slice the mockup. • Enlist the steps to convert the design HTML and CSS • Describe turning A Sliced Image Into An HTML Webpage • Define inline CSS • Describe the method to load CSS file in HTML • Define CSS code • Distinguish between CSS and HTML	**Theory-** **1.5** Hrs **Practical-** **03** Hrs **Total-** **4.5** Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer Lab

		Practical Activity: Slice the mockup using designing tool and write HTML code against each and then add styling using CSS			
LU3. **Make web page interactive**	**Trainee will be able to:** • Add JS if needed for interactive part for slider • Apply JS for interactive web forms if needed	**Knowledge based questions** • Define CSS slider • Define interactive web page • Describe the role of JAVA script for making the web page interactive **Practical Activity:** Create a responsive image slider in CSS	**Theory-** **01** Hrs **Practical-** **03** Hrs **Total- 04** Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer Lab

Module - 0613-S&AD&A-19. Convert Designs into mobile application mockups

Objective: After the completion of this module, the Trainee will be able to convert a design into a mobile application screen/mock-ups.

Duration: 12 Hours **Theory: 03Hours** **Practice: 09 Hours** **Credit Hours: 1.2**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. **Design screens**	**Trainee will be able to:** • Use suitable tool to create wireframe • Use suitable tool to design mobile screens • Design mockups/screens • Save it in appropriate format e.g. XD	**Knowledge based questions** • Define wireframe • Enlist the major tools to create wireframe • Describe methods to create a wire frame • Enlist mobile app design tools • Describe the tool that are best to design UI	**Theory- 01** Hrs **Practical- 03** Hrs **Total- 04** Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer Lab

		• Define MockUP screen • Describe MockUPs in app designing • Describe method to make a screen Mockup • Differentiate between wireframe and Mockup • Describe Mockup in APP designing **Practical Activity:** Create wireframe, design mobile screen, mockup and then save it in XD format.			
LU2. **Create mockups**	**Trainee will be able to:** • Patch different screens with each other in a appropriate sequence	**Knowledge based questions** • Describe the use of multiple monitors in Windows	**Theory-** **02** Hrs **Practical- 06** Hrs	• Computers • Internet • Multimedia • White board • Printer	• Class Room • Computer Lab

	• Add functionalities against different elements like button, menu, forms etc. • Create animations of different elements	• Describe the setup to arrange multiple monitors in appropriate sequence • Describe the method to align two screen with different resolutions • Define mockup. • Describe the purpose of Mockup • Enlist the advantages of mockup designing. • Enlist some of the major mockup designing tools. • Enlist common elements in a Mockup • Describe methods to add design in Mockups • Describe to make product Mockups Look real	**Total- 08** Hrs	• Registered Security Software's CD'S • USB's	

		Practical Activity: Design a mockup for your webpage using a tool then save it in PSD format.			

Module - 0613-S&AD&A-20. Create mockups for mobile game

Objective: After the completion of this module, the Trainee will be able to create designs and convert designs into a game screen mock-up.

Duration: 12 Hours **Theory: 03 Hours** **Practice: 09 Hours** **Credit Hours: 1.2**

Learning Unit	Learning Outcomes		Duration	Materials Required	Learning Place
LU1. **Plan to create mockups**	**Trainee will be able to:** • Select suitable tool/s to design different components • Identify player needs • Identify Game objectives • Wireframe mobile app interface player needs and game objectives	**Knowledge based questions** • Describe to find the selector for the player and then change the size of the player. • Describe Play button selector	**Theory- 01** Hrs **Practical- 03** Hrs **Total- 04** Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer Lab

		• Differentiate between stander and advance code implementation • Describe objectives in a game **Practical Activity:** Create a final app wireframe that represents a solid foundation for the product.			
LU2. **Design UI**	**Trainee will be able to:** • Use suitable tool/s to design	**Knowledge based questions**	**Theory- 01** Hrs **Practical- 03** Hrs	• Computers • Internet • Multimedia • White board	• Class Room • Computer Lab

	• Design characters • Design UI elements like buttons, menus, maps etc. • Create Environment • Add assets in environment • Design infographics like GIFs	• Enlist rules for good UI design • Enlist the steps Design Character • Describe suitable tool/s to design characters • Design UI elements like buttons, menus, maps etc. • Describe method to Create Environment • Describe Add assets in environment • Design infographics like GIFs **Practical Activity:**	**Total- 04** Hrs	• Printer • Registered Security Software's CD'S • USB's	

		Create a character assigned by the instructor			
LU3 **Design UX**	**Trainee will be able to:** • Explore and select the appropriate color schemes for the screens • Inculcate different UI components in game • Finalize the layout • Manage screen flow as per requirements (prototype	**Knowledge based questions** • Describe UI components • Describe color scheme used with monitor • Describe layout • Describe purpose of a prototype **Practical Activity:** Build a Simple Screen Flow with Salesforce Flow Builder	**Theory- 01** Hrs **Practical- 03** Hrs **Total- 04** Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer Lab

Module - 0613-S&AD&A-21. Apply validations to web forms

Objective: After the completion of this module, the Trainee will be able to apply different validations in web forms

Duration: 35 Hours **Theory: 08 Hours** **Practice: 27 Hours** **Credit Hours: 3.5**

Learning Unit	Learning Outcomes	Learning Elements	Duration	Materials Required	Learning Place
LU1. **Explore JavaScript**	**Trainee will be able to:** • Explore how to write validation functions in JavaScript • Search different libraries of JavaScript that provides validation features • Search different JavaScript frameworks • Select appropriate library/framework to write JS code	**Knowledge based questions** • Define validation functions in JavaScripting • Describe Popular JavaScript Libraries • Describe basic strategies for discovering JavaScript libraries	**Theory- 05**Hrs **Practical- 09** Hrs **Total- 14s**Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's CD'S • USB's	• Class Room • Computer Lab

		• Differentiate between frameworks and JavaScript library **<u>Practical Activity:</u>** Create a counter and write conditions that change the color based on positive or negative numbers displayed.			
LU2. **Apply validation into a web form**	**Trainee will be able to:** • Design a web form • Identify elements where to apply validations • Explore validation functions for different purposes like	**Knowledge based questions** • Enlist best practices for designing web forms	**Theory- 03**Hrs **Practical- 18** Hrs **Total- 21** Hrs	• Computers • Internet • Multimedia • White board • Printer • Registered Security Software's	• Class Room • Computer Lab

	email address, NAN (not a number) etc. • Apply suitable validation functions for required element	• Describe a function that use to validate email address **Practical Activity:** Create a form in java script		CD'S • USB's	

Members of Curriculum Development Meeting

S#	Name	Designation
1.	Hamza Nadeem	NAVTTC Coordinator Islamabad
2.	Mr Aijaz Ahmed Zia	DACUM Expert, Lahore
3.	Ms. Tayyaba Amin	Sr. Instructor CIT, PGA, Lahore Representative P-TEVTA
4.	Muhammad Tahir Shafi	Advance Web Instructor KICS-UET Lahore
5.	Mr. Fawad Ali	Android Application Developer Mobi Droid Technologies, Lahore
6.	Syeda Farah Rehman	Sr. Instructor IT, GTTI Gulberg Lahore Representative P-TEVTA

7.	Ms. Anam Yaseen	CBT&A Assessor, GCU Faisalabad
8.	Ms. Javeria Qazi	Web administrator, Representative PBTE
9.	Mr. Shadab Ali	Assistant Professor, KP TEVTA
10.	Mr. Talat Saeed	Instructor Computer Science, Representative S-TEVTA
11.	Mr. Adeel Abbas	Team Lead, Fast University (Research Lab)Islamabad
12.	Mr. Rehan Ahmad	Assistant Professor, UOL Lahore
13.	Dr. Muhammad Hamid	Asstt Professor, IT department UVAS Lahore

14.	Mr. Mubasher Ali	Sr. Software Engineer, ARTICARE Islamabad