Chhattisgarh Swami Vivekanand Technical University, Bhilai

Diploma in Computer Science & Engineering **Semester - V**

A) Course Code : 2022571(022)
B) Course Title : Web script
C) Pre- requisite Course Code and Title : HTML, CSS, C++

D) Rationale :

JavaScript is a lightweight, interpreted programming language. It is designed for creating network-centric applications. It is complimentary to and integrated with Java. JavaScript is very easy to implement because it is integrated with HTML. It is open and cross-platform. jQuery is a fast and concise JavaScript library. jQuery simplifies HTML document traversing, event handling, animating, and Ajax interactions for Rapid Web Development. Java Server Pages (JSP) is a server-side programming technology that enables the creation of dynamic, platform-independent method for building Web-based applications. JSP have access to the entire family of Java APIs, including the JDBC API to access enterprise databases.

E) Course Outcomes: The course content should be taught and implemented with the aim to develop the following outcomes in the students.

CO-1 Designs a dynamic responsive webpage using java script.

CO-2 Designs a dynamic responsive webpage using jQuery.

CO-3 Manipulate content of web pages.

CO-4 Create of dynamic, platform-independent method for building Web-based applications.

CO-5 Design and build robust and maintainable web applications.

F) Scheme of Studies:

Board of Study	Course Code	Course Title	Scheme of Studies (Hours/Week)				
			L	P	T	Total Study Hours (L+T+P)	Total Credits(C) (L+T+P/2)
Computer Science and Engineering	2022571(022)	Web Script	2	2	1	5	4

G) Scheme of Assessment:

Board of Study	Course code	Course Title	Scheme of Examination					
			Theory			Practical		Total Marks
			ESE	CT	TA	ESE	TA	
Computer Science and Engineering	2022571(022)	Web Script	70	30	30	30	50	210

Note: Separate passing is must for Progressive and End Semester Assessment.

H) Course-Curriculum Detailing:

This course curriculum detailing depicts learning outcomes at course level and session level and their attainment by the students through Classroom Instruction (CI), Laboratory Instruction (LI), Sessional Work (SW) and Self Learning (SL). Students are expected to demonstrate the attainment of Session Outcomes (SOs) and finally Course Outcomes (COs) upon the completion of course.
Convert unit of the given physical quantity from one unit system to other.

CO-1 Designs a dynamic responsive webpage using java script.

Session Outcomes (SOs)	Laboratory Instruction (LI)	Class room Instruction (CI)	Self Learning (SL)
SO1 .1 Use operators, variables, arrays, control structures, functions and objects in JavaScript. SO1.2 Create dynamic styles. SO1.3Create animation on a web page.	LE1.1 Write a java script program to print hello world LE1.2 Write a JavaScript function that reverse a number. LE1.3 Write a JavaScript program that accept two integers and display the larger LE1.4 Write a JavaScript conditional statement to find the sign of product of three numbers. Display an alert box with the specified sign. LE1.5 Write a JavaScript program to construct the following pattern, using a nested for loop. * * * * * * * * * * * * * * *	Unit 1. **Introduction to java script** 1.1 Introduction to server pages 1.2 Understanding client server model 1.3 Difference between client side scripting and server side scripting 1.4 Java script Overview, 1.4.1Java script and the WWW 1.4.2 Java script versions 1.5 Functions 1.6 Java script Comments 1.7Variables : its types , casting 1.8operators .9branching statement :If else, while , for, do while 1.10 Java Script Objects : properties and methods	1 Use of Java script string and string methods 2 Inline Java script, Including Java script 3 Java script vs. Java

SW-1 Suggested Sessional Work (SW):

a. Assignments:

1. Write a JavaScript program to calculate multiplication and division of two numbers (input from user).

b. Mini Project:

1. Create a sample form program that collects the first name, last name, email, user id, password and confirms password from the user. All the inputs are mandatory and email address entered should be in

correct format. Also, the values entered in the password and confirm password textboxes should be the same. After validating using JavaScript, In output display proper error messages in red color just next to the textbox where there is an error.

CO-2 Designs a dynamic responsive webpage using jQuery.

Session Outcomes (SOs)	Laboratory Instruction (LI)	Class room Instruction (CI)	Self Learning (SL)
SO2.1 Detect and respond to user actions SO2.2 Add beautiful effects & animations to the sites SO2.3 Handle arbitrary user events such as mouse clicks and keyboard presses.	LE2.1 Test if jQuery is loaded. LE2.2 Blink text using jQuery. LE2.3 Create a Zebra Stripes table effect. LE2.4 Attach a click and double-click event to the <p> element. LE2.5 Attach a function to the blur event. The blur event occurs when the following <input> Field1 loses focus. LE2.6 Animate an element, by changing its height and width LE2.7 Stop an animation.	**Unit 2.Introduction to jquery** 2.1 Introduction 2.1.1Install 2.1.2Syntax 2.2Selectors 2.3Event Methods 2.4 Effects 2.4.1Hide and Show 2.4.2Fading 2.4.3Sliding 2.4.4Animation 2.4.5Stop Animations 2.4.6Callback 2.4.7Chaining	2.1 JQuery filtering-first(), last(), eq(), filter() and not() Methods

SW-2 Suggested Sessional Work (SW) :

a. Assignments:

1. Which is the starting point of code execution in jQuery?
2. What does dollar sign ($) means in jQuery?
3. What is jQuery and how it is different from JavaScript?

b. Mini Project:

1. Designs a dynamic responsive webpage using jQuery.

CO-3 Manipulate content of web pages.

Session Outcomes (SOs)	Laboratory Instruction (LI)	Class room Instruction (CI)	Self Learning (SL)
SO3.1Manipulate HTML elements and attributes. SO3.2Exchange data with a server SO3.3 Update parts of a web page without reloading the whole page. SO3.4 Manipulate the appearance and content of any element on the page SO3.5Check information inputted into a form.	LE3.1Get content with the jQuery text() and html() methods. LE3.2Create a simple XML Http Request, and retrieve data from a TXT file. LE3.3send a request to a server by using get() and post() LE3.4 How to add new elements/contentat the end of the selected html elements.	**UNIT 3- JQuery HTML and AJAX** 3.1jQuery HTML 3.1.1 Get & Set Content and attribute 3.1.2 Add, remove , get , set CSS classes 3.2 jQuery - AJAX 3.2.1 xmlhttp(), load(), get(), post() , noConflict() 3.3 Bootstrap – Forms ,Table, buttons, Images, Grid, Layout component	1.jQuery-Dimensions 2. Input validation 3. Bootstrap plugins

SW-3 Suggested Sessional Work (SW) :

a. Assignments:

1. What is difference between GET and POST method in HTTP protocols?
2. How to get the value of a textbox using jQuery?

b. Mini Project:

1. Add options to a drop-down list using jQuery.

CO- 4 Create of dynamic, platform-independent method for building Web-based applications.

Session Outcomes (SOs)	Laboratory Instruction (LI)	Class room Instruction (CI)	Self Learning (SL)
SO4.1SetupJSP development environment SO4.2 Describe life cycle model of JSP SO4.3provide directions and instructions to the container SO4.4List Implicit	LE 4.1 Write a program to display a "Hello World" message in the Web browser. LE4.2 Write a program to display the multiples of two. LE4.3 Write a program using the request.getParameter () method to enter	**UNIT 4-Introduction to JSP** 4.1Basics of JSP: Life cycle , API , IDE 4.2 Scripting elements :scriptlet ,expression, declaration tag 4.3 Implicit Objects: out , request, response, config, pageContext 4.4Directive Elements	1. JSP – Filters 2. Object application, exception , session

Session Outcomes (SOs)	Laboratory Instruction (LI)	Class room Instruction (CI)	Self Learning (SL)
Objects used in JSP	the Name and Password of a user and display the output on another JSP page.	Page, include, taglib	

Legend: CI: Classroom Instruction (Includes different instructional strategies i.e. Lecture (L) and Tutorial (T) and others) , LI : Laboratory Instruction (Includes Practical performances in Laboratory, Workshop, field or other locations using different instructional strategies) SL: Self Learning

SW-4 Suggested Sessional Work (SW) :

a. Assignments:

1. Write a JSP application to demonstrate the expression tag by using mathematical operation.

b. Mini Project:

1. JSP Program to count no. of visitors on website

CO- 5 Design and build robust and maintainable web applications

Session Outcomes (SOs)	Laboratory Instruction (LI)	Class room Instruction (CI)	Self-Learning (SL)
SO 5.1 control the flow between pages SO 5.2 send request to server for any data SO 5.3 create an object to represent the response to the client. SO5.4 pass some information from your browser to the web server and ultimately to your backend program SO5.6 Maintaining Session Between Web Client And Server SO5.7 upload files to the server.	LE5.1 A JSP that read form input and embed the form data in its output. LE5.2 How to pass parameters to the JSP manually by adding them to the end of the URL. LE5.3 Write an HTML form that includes a checkbox and other HTML form elements. Make the form use the GET and Post request method. Write a JSP handler that returns the values for each element	**UNIT 5- Development in JSP** 5.1Action Elements 5.2 Client Request 5.3Server Response 5.4Form Processing 5.5Cookies Handling 5.6File Uploading 5.7 Reading From Database	1JSP - Handling Date 2 Session Tracking 3 Writing To Database

SW-5 Suggested Sessional Work (SW) :

a. Assignments:

1 Difference between include directive and include action of JSPRead.

2. How can one JSP Communicate with Java file.

b. Mini Project:

1. JSP Program to validate username and password
2. Write a simple JSP program to print the current date and time.

Note: Performance under Laboratory and Sessional work may appear in more than one COs/SOs

I) Suggested Specification Table (For ESA of Classroom Instruction CI+SW+SL):

Unit Number	Unit Title	Total Marks
I	Introduction to java script	14
II	INTRODUCTION TO jQuery	14
III	JQuery HTML and AJAX	14
IV	Introduction to JSP	14
V	Development in JSP	14
Total		**70**

J) Suggested Specification Table (For ESA of Laboratory Instruction*)

S.No/ Units	List of Practicals	Marks
1	Write a JavaScript program to calculate multiplication and division of two numbers (input from user).	30 Marks are allocated for performance under ESA
2	Create a Zebra Stripes table effect.	
3	Write a JavaScript conditional statement to find the sign of product of three numbers. Display an alert box with the specified sign.	
4	send a request to a server by using get() and post()	
5	Animate an element, by changing its height and width	
6	Write a program using the request.getParameter() method to enter the Name and Password of a user and display the output on another JSP page.	
7	How to add new elements/content at the end of the selected html elements.	
8	How to pass parameters to the JSP manually by adding them to the end of the URL.	
9	Write a JavaScript conditional statement to find the sign of product of three numbers. Display an alert box with the specified sign	
10	send a request to a server by using get() and post()	
11	Animate an element, by changing its height and width	
12	Write a program using the request. getParameter() method to enter the Name and Password of a user and display the output on another JSP page.	

*Assessment rubric, process and product check list with rating scale need to be prepared by the course wise teachers for each experiment for conduction and assessment of laboratory experiments /practicals

Note: Each student at the end of semester examination of **30 Marks**; has to undertake five experiments (one from each Unit)

K) Suggested Instructional/Implementation Strategies:

1. Improved Lecture,Tutorial, Case Method, Group Discussion
2. Industrial visits, Industrial Training, Field Trips, Portfolio Based Learning
3. Role Play, Demonstration, ICT Based Teaching Learning (Video Demonstration, CBT, Blog, Face book, Mobile)
4. Brainstorming
5. Others

L) Suggested Learning Resources:

(a) Books :

S. No.	Title	Author	Publisher	Edition & Year
1	A model introduction to programming	MarijnHaverbeke	William pollock	2nd
2.	JAVA SCRIPT FOR KIDS	Nick Morgan	William pollock	Latest
3.	Learning jQuery	Jonathan Chaffer	PACKT	Fourth Edition
4.	JavaScript & JQuery: The Missing Manual	David Sawyer McFarland	O reilly	3rd or higher
5.	JSP 2.0 Complete Reference	Phil Hanna	TATA McGraw- hil	2nd or higher

(b) Open source software and websiteaddress:

1.https://www.w3schools.com
2.https://www.tutorialspoint.com/html/

M) List of Major Laboratory Equipment, Tools& Software

S. No.	Name of Equipment/Tools/Software	Broad Specifications	Relevant Practical Number
1	Personal Computers	4GB core i7 processors	For all the Programs.
2	Projectors	USB port enabled portable projectors	For all the Programs.
3	operating system	Windows, Mac OS X , Ubuntu operating system	
4	Editor	Sun Microsystems Java, Runtime edition	
5	Web browser	Internet Explorer, Firefox, Chrome, or Safari	

N) Mapping of POs &PSOs with Cos:

Course Outcomes (COs)	Programme Outcomes (POs)										Programme Specific Outcomes (PSOs)	
	PO-1 Basic knowledge	PO-2 Discipline knowledge	PO-3 Experiments and practice	PO-4 Engineering Tools	PO-5 The engineer and society	PO-6 Environment and sustainability	PO-7 Ethics	PO-8 Individual and team work	PO-9 Communication	PO-10 Life-long learning	PSO-1	PSO-2
CO1 Designs a dynamic responsive webpage using java script.	3	3	3	3	3	2	2	1	2	2	3	3
CO-2 Designs a dynamic responsive webpage using jQuery.	3	3	3	3	3	1	2	2	3	2	3	3
CO-3 Manipulate content of web pages.	3	3	3	3	3	1	2	2	3	2	3	3
CO-4 Create of dynamic, platform-independent method for building Web-based applications.	3	3	3	3	3	1	2	2	3	2	3	3
CO-5 Design and build robust and maintainable web applications.	3	3	3	3	3	1	2	2	3	2	3	3

Legend: 0-No correlation,1 – Low, 2 – Medium, 3 – High

O) Course Curriculum Map:

POs &PSOs No.	COs No. & Titles	SOs No.	Laboratory Instruction (LI)	Class room Instruction (CI)	Self-Learning (SL)
PO1,2,3,4, 5,6,7, 8,9,10 PSO1,2	CO-1 Designs a dynamic responsive webpage using java script.	SO1.1-SO1.3	LE1.1 LE1.5	Unit-1.0 Introduction to java script	As mentioned in relevant page number
PO1,2,3,4, 5,6,7, 8,9,10 PSO1,2	CO-2 Designs a dynamic responsive webpage using jQuery.	SO.2.1-SO2.3	LE2.1-LE2.7	Unit-2.0 Introduction to jquery	
PO1,2,3,4, 5,6,7, 8,9,10 PSO1,2	CO- 3 Manipulate content of web pages.	SO.3.1-SO3.5	LE3.1-LE 3.4	Unit-3.0 JQuery HTML and AJAX	
PO1,2,3,4, 5,6,7, 8,9,10 PSO1,2	CO-4 Create of dynamic, platform-independent method for building Web-based applications.	SO4.1-SO4.4	LE4.1-LE4.3	Unit-4.0 Introduction to JSP	
PO1,2,3,4, 5,6,7, 8,9,10 PSO1,2	CO-5 Design and build robust and maintainable web applications.	SO5.1-SO5.7	LE5.1-LE5.4	Unit-5.0 Development in JSP	

Legend: CI: Classroom Instruction (Includes different instructional strategies i.e. Lecture (L) and Tutorial (T) and others), LI: Laboratory Instruction (Includes Practical performances in Laboratory, Workshop, field or other locations using different instructional strategies) SL: Self Learning

A) Course Code : 2022572(022)

B) Course Title : Java Programming

C) Pre- requisite Course Code and Title : Object Oriented Programming using C++

D) Rationale:

This course provides the knowledge necessary to understand fundamental syntax and semantics of JAVA programming. The Student will be able to build multi-threaded application. Student Will be able to built application having interactive Graphical user Interface (GUI) and handle different event generate during use of application. After going through this course student will be able to do Desktop Application Development.

CO-1: Develop a basic Java program to solve real world problem

CO-2: Apply Polymorphism and Inheritance program in real world problem

CO-3: Implement interface, package and Exceptions.

CO-4: Create Application having multiple threads.

CO-5: Develop Graphical User interface application with Java Database Connectivity.

F) Scheme of Studies:

Board of Study	Course Code	Course Title	Scheme of Studies (Hours/Week)				
			L	P	T	Total Study Hours (L+T+P)	Total Credits(C) (L+T+P/2)
Computer Science and Engineering	2022572(022)	Java Programming	2	2	1	5	4

G) Scheme of Assessment:

Board of Study	Course code	Course Title	Scheme of Examination					
			Theory			Practical		Total Marks
			ESE	CT	TA	ESE	TA	
Computer Science and Engineering	2022572(022)	Java Programming	70	30	30	30	50	210

Note: Separate passing is must for Progressive and End Semester Assessment.

H) Course-Curriculum Detailing:

This course curriculum detailing depicts learning outcomes at course level and session level and their attainment by the students through Classroom Instruction (CI), Laboratory Instruction (LI), Sessional Work (SW) and Self Learning (SL). Students are expected to demonstrate the attainment of Session Outcomes (SOs) and finally Course Outcomes (COs) upon the completion of course.
Convert unit of the given physical quantity from one unit system to other.

CO-1 Develop a basic Java program to solve real world problem principle.

Session Outcomes (SOs)	Laboratory Instruction (LI)	Class room Instruction (CI)	Self Learning (SL)
SO1.1 Analyze conversion of java code to Bytecode. SO1.2 Differentiate between break and continue statement SO1.3 List different types of Object Oriented principles SO1.4 Compare different loops supported by java	LE1.1 Develop a program to calculate Highest Common Factor (HCF) LE1.2 Develop a program "Calculator" using switch statement. LE1.3 Develop a simple program to take input from keyboard at runtime LE1.4 Develop a program to generate a Table upto N numbers.	**Unit – I :Introduction of Java & Programming Structure** 1.1 : Introduction to Java 1.1.1History, JVM, JDK, JRE 1.1.2 Java Compilation & Interpretation 1.2 Object Oriented paradigm 1.2.1 Encapsulation 1.2.2 Polymorphism 1.2.3 Inheritance 1.3 Programming Structure 1.4.1 Data Type, Variable, Constant, Operator and its precedence 1.5 Control Structure 1.5.1 if-else, switch, while, for, break & continue 1.6 Input from Key Board, Scanner class, command line argument	1.1 Java Portability 1.2Security in Java 1.3 Just in Time(JIT) 1.4 do {} while()

SW-1 Suggested Sessional Work (SW):

a. Assignments:

1. Differentiate between C++ and Java features
2. Describe need of platform independence.
3. Explain each keyword System.out.println() function

b. Mini Project:

1. Develop a program which takes the input from the user at run time to check type of input.

c. Other Activities (Specify):

1. Seminar on role of Virtual Machine & Just in Time Compiler

CO-2 Apply Polymorphism and Inheritance program in real world problem.

Session Outcomes (SOs)	Laboratory Instruction (LI)	Class room Instruction (CI)	Self Learning (SL)
SO2.1 Identify the role of Class and Object in Java. SO2.2 Implement Polymorphism using Method Overloading SO2.3 Describe the role of reference variable SO2.4 Verify the dynamic binding in Inheritance	LE2.1 Develop a program to set data and get data of a student with member function LE2.2 Develop a program to add 2 complex number using Object as a parameter. LE2.3 Develop a program to calculate the salary of different type of employee using Constructor Overloading LE2.4 Develop a program to multiply MxN Matrix LE2.5Develop a program illustrating all uses of	**Unit – II** **Class, Object & Inheritance** 2.1 Class & Object 2.1.1 Definition, Access modifiers, object declaration, methods with and without parameter, methods with returning value 2.1.2 Method Overloading 2.1.3 Constructor, default, parameterized, overloading 2.1.4 this keyword 2.1.5 Garbage Collector 2.1.6 Object as a Parameter 2.2 Array 1D, 2D 2.3 Wrapper Class 2.4 Inheritance 2.4.1 its types, define subclass,	2.1 Use of Final Keyword 2.2 Inner and Nested Class 2.3 Finalized Function

	super keywords	sub class constructor, super class methods, super keyword 2.4.2 Multilevel Inheritance 2.4.3 Method Overriding 2.4.4 Dynamic Method Dispatch	

SW-2 Suggested Sessional Work (SW):

a. Assignments:

1. Compare Const and final keyword.
2. Compare static binding and Dynamic Binding

b. Mini Project:

1. Justify that array is reference variable.

c. Other Activities (Specify):

1. Seminar on working of garbage Collector.
2. Seminar on Finalized method.

CO- 3 Implement interface, package and Exceptions.

Session Outcomes (SOs)	Laboratory Instruction (LI)	Class room Instruction (CI)	Self Learning (SL)
SO3.1Demonstrate an understanding of exception programming Techniques. SO3.2 Explain the use of package in application development. SO3.3 Implement interface to inherit inbuilt or user defined properties.	LE3.1 Develop a program that uses the package p1 that created by user LE3.2 Develop a program that creates an interface and implements it LE3.3 Develop a program to illustrate Interface Inheritance LE3.4 Develop a program that shows the usage of try, catch, throws and finally LE3.5 Develop a program that shows how to create a user-defined exception LE3.6 Create an abstract class shape. Let rectangle and triangle inherit this shape class. Add necessary functions	**Unit – III** **Packages, Interfaces & Exception Handling:** 3.1 Abstract Class& its Method 3.2 Interface 3.2.1 Define, implement & apply 3.3 Package 3.3.1 Create, access, import 3.4 Exceptional Handing 3.4.1 Try & Catch, finally, multiple catch, throw, throws 3.4.2User defined exception	3.1 Benefits of Exception Handling 3.2 Importance of Package

SW-3 Suggested Sessional Work (SW):

a. Assignments:

1. Compare pure abstract class with interface
2. Draw the tree diagram of package and class

b. Mini Project:

1. Develop a program to handle the empty stack exception

c. Other Activities (Specify):

1. Group Discussion on I/O exception

CO- 4 Create Application having multiple threads.

Session Outcomes (SOs)	Laboratory Instruction (LI)	Class room Instruction (CI)	Self Learning (SL)
SO4.1 Improve performance of an algorithm with help of Thread SO4.2 Analyze Need of thread to solve real life problem SO4.3 Implement inter process communication with help of thread. SO4.4 Implement various operations on string S04.5 Create an Application with graphical user interface (GUI)	LE4.1 Develop an application that executes two threads. One thread displays An‖ every 1000 milliseconds and other displays —B‖ every 3000 milliseconds. LE4.2 Create the threads by extending the Thread class LE4.3 Develop an application that shows thread synchronization. LE4.4 Develop an application that displays deadlock between threads. LE4.5 Develop an application that shows thread priorities LE4.6 Develop an program to check if given String is palindrome or not LE4.7 Design a Graphical User Interface for Scientific Calculator	**Unit – IV** **Multi-Threading , String & Swing** 4.1 Introduction of Thread 4.1.1 Definition, Priority, Name 4.1.2 Create, Extend, Implement Thread , create multiple Thread, Local variable 4.2 Synchronization & its method and statements, Inner Thread Communication 4.3 String 4.3.1 String Constructor, length, concatenation, toString(), , charAt(), toCharArray(), 4.3.2String Operations ,compareTo(), equals(), searching string , indexOf() 4.4 Swing 4.4.1 Introduction, JLabel, JButton, JTextField, Panel	4.1.1 Advantage of threads 4.3.2 Compare equals() Vs == 4.4.1 Advantage of Swing

SW-4 Suggested Sessional Work (SW) :

a. Assignments:

1. Measure performance difference between application with thread and without thread.
2. Develop a program to compare ==, equals() &compareTo()

b. Mini Project:

1. Design Graphical user Interface(GUI) just like IRCTC

c. Other Activities (Specify):

1. PPT on child process and thread.

CO- 5 Develop Graphical User interface application with Java Database Connectivity.

Session Outcomes (SOs)	Laboratory Instruction (LI)	Class room Instruction (CI)	Self Learning (SL)
SO5.1 Create a program to handle events SO5.2. Create an application having database SO5.3. Establish different to data with different type of driver	LE5.1Develop a Program to demonstrate Keyboard event LE5.2Develop a program to design a registration form for creating a new email account LE5.3Develop a program to	**Unit – V: Event Handling & JDBC** 5.1 Event Handling 5.1.1 ActionEvent ,InputEvent, MouseEvent, KeyEvent Class 5.1.2 Event Listener ,ActionListener, ItemListener Interface,	5.1 WindowEvent Class 5.2 WindowListener interface 5.3 Java Database Connectivity with MySQL

SO5.4. Create an application having interactive Graphical user Interface	design the page authenticating user name and password by using SWING LE5.4Develop a program to design a calculator by using Grid Layout LE5.5 Develop a program to establish a connection to MySQL	MouseListener , KeyListener Interface 5.2 JDBC 5.2.1 Introduction, JDBC-ODBC bridge, Native-API,Network Protocol, Thin Driver 5.2.2 Register the driver class 5.2.3forName() ,getConnection(),createStatement(), executeQuery(), closing()	

Legend: CI: Classroom Instruction (Includes different instructional strategies i.e. Lecture (L) and Tutorial (T) and others), LI : Laboratory Instruction (Includes Practical performances in Laboratory, Workshop, field or other locations using different instructional strategies) SL: Self Learning

SW-5 Suggested Sessional Work (SW):

a. Assignments:

1. Compare Driver1, Driver2, Driver3 & Driver4 with Diagram
2. Write a program to read and write data from database

b. Mini Project:

1. Develop a java program to implement mouse events like mouse pressed, mouse released and mouse moved by means of adapter classes
2. Develop a Java project "Library Management" with JDBC

c. Other Activities (Specify):

1. Group discussion on different database for connectivity

Note: Performance under Laboratory and Sessional work may appear in more than one COs/SOs.

I) Suggested Specification Table (For ESA of Classroom Instruction CI+SW+SL):

Unit Number	Unit Title	Total Marks
I	Introduction of Java & Programming Structure	10
II	Class , Object & Inheritance	14
III	Packages , Interfaces & Exception Handling	16
IV	Multi-Threading , String & Swing	16
V	Event Handling & JDBC	14
Total		**70**

Note: The student at the end of semester examination of **30Marks**; has to undertake any one of the listed practicals.

J) Suggested Specification Table (For ESA of Laboratory Instruction*):

Laboratory Instruction Number	Short Laboratory Experiment Title	Marks
1.	Develop a program to calculate factorial of a number.	**30 Marks are allocated for performance under ESA**
2.	Develop a program to set data and get data of a student with member function.	
3.	Develop a program to add 2 complex number using Object as a parameter.	
4.	Develop a program to calculate the salary of different type of employee using Constructor Overloading	
5.	Develop a program that uses the package p1 that created by user with super key.	
6.	Develop a program to illustrate Interface Inheritance.	
7.	Develop a program that shows how to create a user-defined exception	
8.	Develop a program illustrating a super class variable a referencing as sub class object	
9.	Create an abstract class shape. Let rectangle and triangle inherit this shape class. Add necessary functions	
10.	Develop an application that shows thread synchronization.	
11.	Develop an application that displays deadlock between threads.	
12.	Design a Graphical User Interface for Scientific Calculator	
13.	Develop a Program to demonstrate Keyboard event	
14.	Develop a program to design the page authenticating user name and password by using SWING	
15.	Develop a program to establish a connection to MySQL	

* Assessment rubric, process and product check list with rating scale need to be prepared by the course wise teachers for each experiment for conduction and assessment of laboratory experiments /practical's

K) Suggested Instructional/Implementation Strategies:

1. Improved Lecture
2. Tutorial
3. Case Method
4. Group Discussion
5. Industrial visits
6. Industrial Training
7. Demonstration
8. ICT Based Teaching Learning (Video Demonstration, CBT, Blog, Face book, Mobile)
9. Brainstorming
10. Others

L) Suggested Learning Resources:

(a) Books :

S. No.	Title	Author	Publisher	Edition & Year
1	The Complete Reference JAVA	Herbert Schildt	Mcgraw Higher Ed	8th, 2011
2	Programming with Java	E Balagurusamy	Mcgraw Higher Ed	5th, 2014
3	Java in a Nutshell	David Flanagan, Benjamin Evans	O'Reilly Media	6th,2014

(b) Open source software and websiteaddress:.

1. Java Basic : http://nptel.ac.in/courses/106106147/.
2. Core Java: https://www.tutorialspoint.com/java/.
3. JDBC: https://www.javatpoint.com/steps-to-connect-to-the-database-in-java.

(c) Others:

1. Learning Packages.
2. Lab Manuals.
3. Manufacturers' Manual
4. Users' Guide

M) List of Major Laboratory Equipment and Tools:

S. No.	Name of Equipment	Broad Specifications	Relevant Experiment Number
1	JDK latest version	Free & Open Source Software or Open source	LE1.1-LE5.5
2	Eclipse IDE	latest	LE1.1-LE5.5
3	Notepad ++	Editor	LE1.1-LE5.5

N) Mapping of POs & PSOs with COs:

Course Outcomes (COs) Titles	Programme Outcomes (POs)										Programme Specific Outcomes (PSOs)	
	Basic knowledge PO-1	**Discipline knowledge PO-2**	**Experiments & Practice PO-3**	**Engineering Tools PO-4**	**The Engineer & Society PO-5**	**Environment & Sustainability PO-6**	**Ethics PO-7**	**Individual & Team work PO-8**	**Communication PO-9**	**Life Long learning PO-10**	**PSO-1 Modern Information Technology Usage**	**PSO-2 Manage Information Technology Process**
CO-1 :Develop a basic Java program to solve real world problem	3	2	1	1	1	1	2	2	1	3	2	1
CO-2 : Apply Polymorphism and Inheritance program in real world problem.	3	2	3	1	1	1	1	2	1	1	2	2
CO-3 : Implement interface, package and Exceptions.	2	2	2	1	1	1	1	2	1	1	2	2
CO-4 : Create Application having multiple threads.	3	2	3	1	2	1	1	2	1	1	2	2
CO-5 : Develop Graphical User interface application with Java Database Connectivity	2	2	3	3	3	1	3	3	2	3	3	3

Legend: 0- No correlation, 1- Low, 2- Medium, 3- High

O) Course Curriculum Map:

POs & PSOs No.	COs No.& Title	SOs No.	Laboratory Instruction (LI)	Classroom Instruction (CI)	Self Learning (SL)
PO1-PO5, PO8-PO10 PSO1-PSO2	CO-1 :Develop a basic Java program to solve real world problem	SO1.1 - SO1.4	LE1.1 - LE1.5	Unit – I: Introduction of Java & Programming Structure	1.1 .2.1 1.1 .2.2 1.1 .2.3
PO1-PO5, ,PO8-PO10 PSO1-PSO2	CO-2 : Apply Polymorphism and Inheritance program in real world problem.	SO.2.1 - SO2.4	LE2.1 - LE2.5	Unit – II: Class , Object & Inheritance	2.1.1 2.1.2 2.4.1
PO1-PO5, PO7-PO10 PSO1-PSO2	CO-3 : Implement interface, package and Exceptions.	SO.3.1 - SO3.3	LE3.1 - LE3.8	Unit – III: Packages , Interfaces & Exception Handling	3.5.1.1 3.4.1
PO1-PO5, PO6, PO8-PO10 PSO1-PSO2	CO-4 : Create Application having multiple threads.	SO4.1 - SO4.5	LE4.1 - LE4.7	Unit – IV: Multi-Threading , String & Swing	4.1.1 4.6.6.2.2 4.7.1
PO2-PO5, PO6-PO9 PSO1-PSO2	CO-5 : Develop Graphical User interface application with Java Database Connectivity	SO5.1 - SO5.4	LE5.1 - LE5.5	Unit – V: Event Handling & JDBC	

Legend: CI: Classroom Instruction (Includes different instructional strategies i.e. Lecture (L) and Tutorial (T) and others) , LI : Laboratory Instruction (Includes Practical performances in Laboratory, Workshop, field or other locations using different instructional strategies) SL: Self Learning

A) Course Code : 2022573(022)

B) Course Title : Software Engineering

C) Pre- requisite Course Code and Title : CFA, Computer Programming

D) Rationale :

This course is aimed at developing organized and methodical approach towards software development. The students should be able to solve real life problems effectively and within timeline. The course will induce a sense of teamwork within students and will help to understand software quality assurance, testing and debugging techniques to ensure efficient software development.

E) Course Outcomes :

CO-1 Perceive the fundamentals of Software Engineering

CO-2 Describe Software Engineering Practices & Requirement Analysis

CO-3 Use software design guidelines for software development

CO-4 Apply various software testing strategies

CO-5 Apply software project management principles

F) Scheme of Studies:

Board of Study	Course Code	Course Title	Scheme of Studies (Hours/Week)				
			L	P	T	Total Study Hours (L+T+P)	Total Credits(C) (L+T+P/2)
Computer Science and Engineering	2022573(022)	Software Engineering	2	0	1	3	3

G) Scheme of Assessment:

Board of Study	Course code	Course Title	Scheme of Examination					
			Theory			Practical		Total Marks
			ESE	CT	TA	ESE	TA	
Computer Science and Engineering	2022573(022)	Software Engineering	70	30	30	0	0	130

Note: Separate passing is must for Progressive and End Semester Assessment.

H) Course-Curriculum Detailing:

This course curriculum detailing depicts learning outcomes at course level and session level and their attainment by the students through Classroom Instruction (CI), Laboratory Instruction (LI), Sessional Work (SW) and Self Learning (SL). Students are expected to demonstrate the attainment of Session Outcomes (SOs) and finally Course Outcomes (COs) upon the completion of course.

Convert unit of the given physical quantity from one unit system to other.

CO-1 Perceive the fundamentals of Software Engineering.

Session Outcomes (SOs)	Laboratory Instruction (LI)	Class room Instruction (CI)	Self Learning (SL)
SO1.1 Explain the significance and application of software engineering SO1.2 Demonstrate the use of different process models		**Unit 1.0 Fundamentals of Software Engineering** 1.1 Software Engineering 1.1 Software Characteristics 1.2 Changing Nature of software 1.3 Role of software engineering in real-time applications 1.4 Software engineering –a layered approach 1.5 Process Framework 1.2 Software life cycle 1.2.1 Waterfall Model 1.2.2 Incremental process models 1.2.3 Evolutionary process models (Spiral, Prototype)	1.1 CMMI 1.2 Personal and team process models 1.3 Concurrent development model

SW-1 Suggested Sessional Work (SW):

a. Assignments:

1. Prepare comparative chart of various types of process models

b. Mini Project:

1. Select and justify the suitable software development model for major Project

c. Other Activities (Specify):

1. Seminar on "Software Engineering –A Roadmap to Software Development"

CO-2 Describe Software Engineering Practices & Requirement Analysis.

Session Outcomes (SOs)	Laboratory Instruction (LI)	Class room Instruction (CI)	Self Learning (SL)
SO2.1 Describe core principles of software engineering practice SO2.2 Describe requirement engineering process SO2.2Design requirement analysis document		**Unit 2.0Software Engineering Practices & Requirement Analysis** 2.1 Essence of software engineering practice 2.2 Core principles 2.3 Requirement Engineering Tasks 2.3.1 Initiating requirements engineering process 2.4 Requirement Analysis 2.4.1 Analysis modeling approaches	2.1 Communication Practices 2.2 Planning Practices 2.3 Modeling Practices 2.4 Construction Practices 2.5 Deployment 2.6 SRS

SW-2 Suggested Sessional Work (SW) :

a. Assignments:

1. Conduct requirement analysis for the major project.

b. Mini Project:
1. Prepare a SRS document for the major project

c. Other Activities (Specify):

CO- 3 Use software design guidelines for software development.

Session Outcomes (SOs)	Laboratory Instruction (LI)	Class room Instruction (CI)	Self Learning (SL)
SO3.1 Apply software design guidelines during software development SO3.2 Map data flow to software architecture		**Unit 3.0 Software design** 3.1 Design within the context of software engineering 3.2 Design process & design Quality 3.3 Design concepts 3.4 Mapping data flow into a software architecture 3.5 Golden rules for interface design	3.1 Cohesion & coupling 3.2 DFD 3.3 Interface design evaluation

SW-3 Suggested Sessional Work (SW) :

a. Assignments:
1. Estimate the level of cohesion & coupling for Major project

b. Mini Project:
1. Prepare DFDs for major project

c. Other Activities (Specify):
1. Prepare interface design for Major project

CO- 4 Apply various software testing strategies.

Session Outcomes (SOs)	Laboratory Instruction (LI)	Class room Instruction (CI)	Self Learning (SL)
SO4.1 Demonstrate use of various testing strategies and their significance in software development SO4.2 Compare different software testing strategies		**Unit 4.0 Software Testing** 4.1 Software testing fundamentals 4.2 A strategic approach to software testing 4.3 Test strategies for conventional software 4.4 Validation testing 4.5 System testing 4.6 Black box & white box testing 4.7 Control structure testing	4.1 The art of debugging & strategies 4.2 Cyclomatic complexity

SW-4 Suggested Sessional Work (SW) :

a. Assignments:
Compare black box & white box testing

b. Mini Project:
Justify which testing strategy is suitable for mini project

c. Other Activities (Specify):
Calculate cyclomatic complexity of mini project.

CO- 5 Apply software project management principles.

Session Outcomes (SOs)	Laboratory Instruction (LI)	Class room Instruction (CI)	Self Learning (SL)
SO5.1Applyproject management principles SO5.2Use W5HH principle in software development SO5.3 comparevarious types of project estimation models		**5.0 Softwareproject management** 5.1 The management Spectrum 5.2 the people 5.3 The product 5.4 The process 5.5 The project 5.6 the W5HH Principle 5.7 metrics in the process & project domains 5.8 Software measurement 5.9 metrics for software quality 5.10 software scope, feasibility & resources 5.11 Software project estimation 5.12 decomposition techniques 5.13Empirical estimation models 5.14 software reliability	5.1 Make or buy decision 5.2 Software quality concepts 5.3 Software quality assurance 5.4 Formal technical review

Legend: CI: Classroom Instruction (Includes different instructional strategies i.e. Lecture (L) and Tutorial (T) and others) , LI : Laboratory Instruction (Includes Practical performances in Laboratory, Workshop, field or other locations using different instructional strategies) SL: Self Learning

SW-5 Suggested Sessional Work (SW) :

a. Assignments:
1. List and identify 4P's of major project

b. Mini Project:
1. Prepare a brief report by applying W5HH principal to major project

c. Other Activities (Specify):
1. Calculate the size of major project using any one of the technique.
2. Apply estimation models for major project.

Note: Performance under Laboratory and Sessional work may appear in more than one COs/SOs.

Workshop, field or other locations using different instructional strategies) SL: Self Learning

I) Suggested Specification Table (For ESA of Classroom Instruction CI+SW+SL):

Unit Number	Unit Title	Total Marks
I	Fundamentals of Software Engineering	14
II	Software Engineering Practices & Requirement Analysis	14
III	Software design	14
IV	Software Testing	14
V	Software project management	14
Total		70

J) Suggested Specification Table (For ESA of Laboratory Instruction*): nil

K) Suggested Instructional/Implementation Strategies:

1. Improved Lecture, Tutorial, Case Method, Group Discussion
2. Industrial visits, Industrial Training, Field Trips
3. Portfolio Based Learning, Role Play
4. Demonstration
5. ICT Based Teaching Learning (Video Demonstration, CBT, Blog, Face book, Mobile)

L) Suggested Learning Resources:

(a) Books :

S. No.	Title	Author	Publisher	Edition & Year
01.	Software Engineering	Roger S. Pressman	McGraw Hill	2014 or latest
02.	An integrated approach to Software Engineering	Pankaj Jalote	Springer	Third Edition
03.	Software Engineering	Ian Sommerville	Addision and Wesley	7th edition

(b) Open source software and website address :

1. E-book for Software Engineering by Roger Pressman- https://downloadnema.com/wp-content/uploads/2017/02/Software%20Engineering%20A%20Practitioner%E2%80%99s%20Approach%20eighth%20edition-(www.downloadnema.com).pdf

2. E-book for software Engineering by Ian Sommerville- https://inspirit.net.in/books/academic/Ian%20Sommerville%20Software%20Engineering,%209th%20Edition%20%20%20%202011.pdf
3. Software Engineering Tutorial - https://www.tutorialspoint.com/software_engineering/index.htm

M) List of Major Laboratory Equipment and Tools:

N) Mapping of POs & PSOs with COs:

Course Outcomes (COs) Titles	Programme Outcomes (POs)										Programme Specific Outcomes (PSOs)	
	Basic knowledge PO-1	**Discipline knowledge PO-2**	**Experiments & Practice PO-3**	**Engineering Tools PO-4**	**The Engineer & Society PO-5**	**Environment & Sustainability PO-6**	**Ethics PO-7**	**Individual & Team work PO-8**	**Communication PO-9**	**Life Long learning PO-10**	PSO-1	PSO-2
CO-1	3	3	0	0	1	0	0	2	1	3	2	1
CO-2	3	3	0	0	0	0	1	2	3	3	3	1
CO-3	3	3	3	3	0	1	3	3	1	3	3	2
CO-4	3	3	3	3	0	1	3	3	0	3	3	3
CO-5	2	2	2	3	0	0	0	0	0	3	2	2

Legend: 0-No correlation, 1 – Low, 2 – Medium, 3 – High

O) Course Curriculum Map:

POs & PSOs No.	COs No. & Title	SOs No.	Laboratory Instruction (LI)	Classroom Instruction (CI)	Self Learning (SL)
PO-1,2,5,8,9,10 PSO-1,2	CO-1 Perceive the fundamentals of Software Engineering	SO1.1 SO1.2		Unit 1.0 Fundamentals of Software Engineering 1.1, 1.2	As mentioned in relevant page number
PO-1,2,7,8,9,10 PSO-1,2	CO-2 Describe Software Engineering Practices & Requirement Analysis	SO2.1 SO2.2		Unit 2.0 Software Engineering Practices & Requirement Analysis 2.1, 2.2, 2.3, 2.4	
PO-1,2,3,4,6,7,8,9,10 PSO-1,2	CO-3 Use software design guidelines for software development	SO3.1 SO3.2		Unit 3.0 Software design 3.1, 3.2,3.3, 3.4, 3.5	
PO-1,2,3,4,6,7,8,10 PSO-1,2	CO-4 Apply various software testing strategies	SO4.1		Unit 4.0 Software Testing 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7	
PO-1,2,3,4,10 PSO-1,2	CO-5 Apply software project management principles	SO5.1 SO5.2 SO5.3		Unit 5.0 Software project management 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8, 5.9, 5.10, 5.11, 5.12, 5.13, 5.14	

Legend: CI: Classroom Instruction (Includes different instructional strategies i.e. Lecture (L) and Tutorial (T) and others) , LI : Laboratory Instruction (Includes Practical performances in Laboratory, Workshop, field or other locations using different instructional strategies) SL: Self Learning.

A) Course Code : **2022574(022)**

B) Course Title : **Web Application Development**

C) Pre- requisite Course Code and Title : **Static Web Programming, DBMS**

D) Rationale :

This course will enable diploma engineers to make dynamic web-based application with database driven type. It will coverconcepts for developing interactive web based applications; including HTML, server side scripting, user interface design considerations, and system integration considerations and PHP with MYSQL database. Students will learn integration of HTML, PHP with MYSQL database to develop web based applications.

E) Course Outcomes

The course content should be taught and implemented with the aim to develop the following outcomes in the students.

CO-1 : Create an attractive web-from with action like get/post.

CO-2 : CreatePHP file to process a request using control statementswith appropriate variables.

CO-3 : UsePHP header, session variable and built in/user defined function.

CO-4 : Createand manipulate database & table with phpMyAdmin

CO-5 : Useof MySQL and PHP together.

F) Scheme of Studies

Board of Study	Course Code	Course Title	Scheme of Studies (Hours/Week)				
			L	P	T	Total Study Hours (L+T+P)	Total Credits(C) (L+T+P/2)
Computer Science and Engineering	2022574 (022)	Web Application Development	2	4	1	7	5

G) Scheme of Assessment

Board of Study	Course code	Course Title	Scheme of Examination					
			Theory			Practical		Total Marks
			ESE	CT	TA	ESE	TA	
Computer Science and Engineering	2022574 (022)	Web Application Development	70	30	30	30	50	210

H) Course-Curriculum Detailing

This course curriculum detailing depicts learning outcomes at course level and session level and their attainment by the students through Classroom Instruction (CI), Laboratory Instruction (LI), Sessional Work (SW) and Self Learning (SL). Students are expected to demonstrate the attainment of Session Outcomes (SOs) and finally Course Outcomes (COs) upon the completion of course.

CO-1 : Create an attractive web-from with action like get/post.

Session Outcomes (SOs)	Laboratory Instruction (LI)	Class room Instruction (CI)	Self-Learning (SL)
SO1.1Describe functions of Web form components and Web Server SO1.2Describe the use of Server Side Scripting Language	LI1.1 Create Web form LI1.2 Demonstrate Install and working of web Server LI1.3 Source Code of html and php after and before it run on browser	**Unit-1.0: Basics of html,php** 1.1 Html form tag 1.1.1 form Attributes: action, method, target 1.1.2 form Elements: input, select, textarea, datalist, button 1.2 Web Server 1.2.1 Overview , working, List of available Web Server 1.3 Server Side Script 1.3.1 Difference between Client and Server Side Script i.e. HTML Vs PHP 1.3.2 Introduction of php, creating phpfile , features of php	SL1.1 Take Data from user SL1.2Use of Web Server and html components SL1.3 Need of Scripting language

SW-1 Suggested Sessional Work (SW):

a. Assignments

i. Create HTML web page with form tag to receive user details

ii. Write difference between client and Server side Script

b. Mini Project

i. Create Web pages to retrieve records from one page and display it on another page like student records or employee records or feedback form etc.

c. Other Activities (Specify)

i. A Seminar on 'Various features of PHP'

CO- 2: Create PHP file to process a request using control statements with appropriate variables.

Session Outcomes (SOs)	Laboratory Instruction (LI)	Class room Instruction (CI)	Self-Learning (SL)
SO2.1Describe the various building blocks of php.	LI2.1 Demonstrate asample web page calculator with applying operators and control statements LI2.2 Demonstrate string operation on array LI2.3 Demonstrateweb page to find the factorial of give number by using loops LI2.4 Demonstrate web page to print the list of employee's name using foreach statements .	**Unit-2.0: Building block of PHP** 2.1 Variable, datatype, operator 2.1.1 Creating& Printing Variables 2.1.2 different datatype: integer, float, string, Boolean,array, object 2.1.3 String library function:strrev(), strlen(), strword_count(), strops(), strreplace(), explode() ,implode() 2.1.3 Type of operator: arithmetic, logical, assignment, increment/decrement, string 2.2 Control Statements 2.2.1 if, if- else, if-elseif statements 2.2.2 Switch statement. 2.3 Loop Statements 2.3.1 while, do while statements 2.3.2 for, foreach statements	SL2.1How to make different type of variable and perform basic operation on it. SL2.2 Searching, concatenating, and replacing particular string. SL2.3Skip block of statement on certain condition SL2.4 Repeat block of statement

SW-2 Suggested Sessional Work (SW)

a) Assignments

i. Make a report file on different operators with their uses.

ii. Describe various features of a loop statement for reducinga block of codes.

b) Mini Project

i. Prepare a web form which prints stored records of student's name, roll no, branch etc.

c) Other Activities (Specify)

i. A Seminar on 'Building block of PHP'.

CO- 3 Use PHP header, session variable and built in/user defined function.

Session Outcomes (SOs)	Laboratory Instruction (LI)	Class room Instruction (CI)	Self-Learning (SL)
SO3.1 Describe the need of global variable and function	LI3.1 Demonstrate function to find of age student to specific date if date not give then calculate it default by today. LI3.2Demonstrate web page which redirect another page. LI3.3 Create a web page which check session variable values.	**Unit-3.0: Function and Data Handling** 3.1 creating user defined function 3.1.1 without arguments 3.1.2arguments with default value 3.1.3 function returning value 3.2 header()function 3.2.1 http redirect 3.2.2 content - disposition 3.3 Data Handing 3.3.1 superglobals in php :$globals, $_server, $_request, $_post, $_get, $_cookie, $_session 3.3.2 need of superglobals	SL3.1 redirect to new webpage, prompt user to save file SL3.2prevent direct access of particular page SL3.3 create your own user defined function

SW-3 Suggested Sessional Work (SW)

a. Assignments

i. Create user defined function with default argument value and return type.

ii. Write the different use of superglobals

b. Mini Project

i. Create a webpage login which create session variable after validate username and page then redirect to homepage.

ii. Create a webpage which store to cookie on client side for webpage language.

CO- 4: Create and manipulate database & table with phpMyAdmin.

Session Outcomes (SOs)	Laboratory Instruction (LI)	Class room Instruction (CI)	Self-Learning (SL)
SO4.1 Describe the creation and maintenance of database in MySQL	LI4.1 Demonstrate the phpMyAdmin GUI and their uses. LI4.2 Create a database and perform CRUD operation on its tables. LI4.3 Demonstrate the backup of database and export to another pc. LI4.4 Create a user and only select operation to some tables. LI4.5creates store routine to find the gross salary of employee by using column basic and grade pay.	**Unit-4.0: MySQL Database** 4.1 Introduction phpMyAdmin 4.1.1 Brief Introduction to phpMyAdmin GUI tools 4.1.2 Create Database, table using phpMyAdmin 4.1.3 SQL Operation on tables i.e. insert, delete, update, drop 4.1.4 Import /Export table or database. 4.2 MySQL Administration 4.2.1 Create MySQL User 4.2.2 Grant and revoke permission 4.3 MySQL Routine 4.3.1 Create and invoke a stored routine 4.3.2 Alter or drop stored routine	SL 4.1 Create and modification of database and backup of database SL4.2 administration in MySQL database SO 4.3 creation of your own routines and call it.

SW-4 Suggested Sessional Work (SW)

a. Assignments:

i. List the administration command on MySQL for database and user create/drop

ii. Create Master and Child table with auto increment field in each table

b. **Mini Project:**

i. A create complete database for student or faculty record of your institution and also use store routine

c. Other Activities (Specify)

i. A Seminar on 'Mini Project presentation Software'

ii. A seminar on Miniproject as mention in section b.

CO- 5 Use of MySQL and PHP together.

Session Outcomes (SOs)	Laboratory Instruction (LI)	Class room Instruction (CI)	Self-Learning (SL)
SO5.1 Describe the use of php to perform CRUD operation on database	LI5.1 Create webpage to connect database using mysqli and pdo LI5.2Create Webpage to insert, update, and delete record in table using pdo LI5.3create webpage to update more than two depended table's record using begintransaction, use try and catch block.	**Unit-5.0: Database Connection and Error handling** 5.1 Connect database 5.1.1 connect usingmysqli(),pdo() 5.1.2 advantage of pdo over mysqli 5.2 Data Read Write using PDO 5.2.1 prepare(),execute() 5.2.2 fetch() with fetchassoc 5.2.3 beginTransaction(), commit(),rollback() 5.3Error handling 5.3.1 try, catch	SL5.1 database connection using php SL5.2 Read, write data of database using webform SO 5.3 Exception handling in php

SW-5 Suggested Sessional Work (SW)

a) Assignments:

i. List the Advantage of PDO over mysqli

ii. Write webpage to perform CRUD on database table using PDO.

b) Mini Project:

i. Create Student/Employee database and perform entry of records by webpage.

c) Other Activities (Specify)

i. A seminar on database connection methods

ii. A seminar on CRUD operation using PDO.

iii. A seminar on Miniproject as mention in section b.

Note: Performance under Laboratory and Sessional work may appear in more than one COs/SOs.

I) Suggested Specification Table (For ESA of Classroom Instruction)

Unit No.	Unit Title	Marks
1	Basics of html, PHP	14
2	Building block of PHP	14
3	Function and Data Handling	14
4	MySQL Database	14
5	Database Connection and Error handling	14
Total		**70**

J) Suggested Specification Table (For ESA of Laboratory Instruction*)

Short Laboratory Practical Title	Total Marks
1. Write a web page code for login form 2. Write a web page code for getting student's bio data 3. Write a web page code to find factorial of given number 4. Write a web page code to print Fibonacci series 5. Write web page code which store login credentials in session variable and check it on main page. 6. Write a web page code to create user defined function for encode user password 7. Write a web page code to create user defined function for generating six digit number like OTP. 8. Create Student database and its table in phpMyAdmin. 9. Write routine to find the sum of branch wise student. 10. Write a web page to insert, modify and delete student record from database. 11. Write a login web page to check password from database which is encrypted by php functions.	**30 Marks are allocated for performance under ESA**

* Assessment rubric, process and product check list with rating scale need to be prepared by the course wise teachers for each experiment for conduction and assessment of laboratory experiments /practicals,

Legend:PRA: Process Assessment, PDA: Product Assessment

K) Suggested Instructional/Implementation Strategies

1. ImprovedLecture , Tutorial, Case Method, Group Discussion
2. Industrial visits ,Industrial Training, Portfolio Based Learning, Role Play, Demonstration
3. ICT Based Teaching Learning (Video Demonstration, CBT, Blog, Face book, Mobile)
4. Brainstorming
5. Others

L). Suggested Learning Resources

(a) Books

S. No.	Title	Author	Publisher	Edition & Year
1.	Beginning PHP and MySQL from Novice to professional	W. Jason Gilmore	Apress	4th Edition or latest
2.	PHP and MySQL for Dynamic Web Sites	Larry Ullman	Peachpit Press	4th Edition or latest
3.	Modernizing Legacy Applications In PHP	Paul M. Jones	Packt Publishing Ltd.	latest
4.	PHP 7: Real World Application Development	Doug Bierer, Altaf Hussain, BrankoAjzele	Packt Publishing Ltd.	latest
5.	MySQL Cookbook	Paul DuBois	O'Reilly	2nd or latest
6.	MySQL Administrator's	Sheeri K. Cabral, Keit Murphy	Bible	1st Edition

(b) Open source software and website address

1. eBook of Beginning PHP and MySQL from Novice to professional, 4th Edition, W. Jason Gilmore http://minitorn.tlu.ee/~jaagup/kool/java/kursused/14/webpr/beginning_php_and_mysql_from_novice_to_professional_4th_edition.pdf
2. eBook of PHP and MYSQL for Dynamic Web Sits http://personal.graceland.edu/~aallshou/classwork/csit2100/GFX-PHP.and.MySQL.for.Dynamic.Web.Sites.Visual.QuickPro.Guide.4th.Edition.pdf
3. Online tutorial for php- https://www.w3schools.com/php/
4. Online tutorial for MySQL- https://www.w3schools.com/php/php_mysql_intro.asp
5. Online tutorial for HTML https://www.w3schools.com/html/
6. Notepad++ :https://notepad-plus-plus.org/download/v7.3.3.html
7. WAMP for windows o.s.- http://www.wampserver.com/en/
8. XAMP for linux/windows o.s. - https://www.apachefriends.org/index.html
9. Online exercise https://www.w3resource.com/mysql-exercises/

(c) Others

1. Learning Packages.
2. Lab Manuals.
3. Manufacturers' Manual
4. Users' Guide

M) List of Major Laboratory Equipment, Tools& Software

S. No.	Name of Equipment/Tools/Software	Broad Specifications	Relevant Practical Number
1.	Internet Explorer 11 /Chrome 20/ Firefox 17 and above	Web browser	LE1.1 & LE1.2
2.	Notepad++ 7.3.2 or latest	HTML/PHP code editor	LE1.1 & LE1.2
3.	WAMP Server 2.4 or latest Or XAMPP 5.6 or latest	Web Server, PHP, MySQL	LE2.1 to LE4.8

N) Mapping of POs & PSOs with COs

Course Outcomes (COs)	Programme Outcomes (POs)										Programme Specific Outcomes (PSOs)	
	PO-1: Basic knowledge	PO-2: Discipline knowledge	PO-3: Experiments and practice	PO-4: Engineering tools	PO-5: The engineer and society	PO-6: Environment and sustainability	PO-7: Ethics	PO-8: Individual and team work	PO-9 Communication	PO-10: Life-long learning	PSO-1 Modern Information Technology Usage	PSO-2 Manage Information Technology Process
CO-1: Create an attractive web-from with action like get/post.	3	3	3	3	2	0	3	3	3	3	2	3
CO-2: Create PHP file to process a request using control statements with appropriate variables.	3	3	3	3	2	0	3	3	3	3	2	1
CO-3: Use PHP header, session variable and built in/user defined function.	3	3	3	3	2	0	3	3	2	3	3	3
CO-4 : Create and manipulate database & table with phpMyAdmin	3	3	3	3	2	0	3	3	1	3	3	3
CO-5: Use of MySQL and PHP together	3	3	3	3	3	0	3	3	2	3	3	3

O) Course Curriculum Map

POs No.	COs	SOs No.	Laboratory Instruction (LI)	Class room Instruction (CI)	Self-Learning (SL)
PO-1-PO5 PO-7-PO10 PSO1---PSO2	**CO-1**: Create an attractive web-from with action like get/post.	SO1.1 SO1.2	LI1.1 - LI1.3	Unit-1.0Basics of html, PHP	1.1-1.3
PO-1-PO5 PO-7-PO10 PSO1---PSO2	**CO-2**: Create PHP file to process a request using control statements with appropriate variables.	SO2.1	LI2.1 - LI2.4	Unit-2.0: Building block of PHP	2.1-2.4
PO-1-PO5 PO-7-PO10 PSO1---PSO2	**CO-3:**Use PHP header, session variable and built in/user defined function.	SO3.1	LI3.1- LI3.3	Unit-3.0: Function and Data Handling	3.1-3.3
PO-1-PO5 PO-7-PO10 PSO1---PSO2	**CO-4** : Create and manipulate database & table with phpMyAdmin	SO4.1	LI4.1 - LI4.5	Unit-4.0: MySQL Database	4.1- 4.3
PO-1-PO5 PO-7-PO10 PSO1---PSO2	**CO-5:**Use of MySQL and PHP together	SO5.1	LI5.1- LI5.3	Unit-5.0Database Connection and Error handling	5.1 - 5.3

Legend: CI: Classroom Instruction (Includes different instructional strategies i.e. Lecture (L) and Tutorial (T) and others) , LI : Laboratory Instruction (Includes Practical performances in Laboratory, Workshop, field or other locations using different instructional strategies) SL: Self Learning

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A) Course Code : 2022575(022)

B) Course Title : IT Trends and Cyber Security

C) Pre- requisite Course Code and Title : CFA

D) Rationale :

This course is aimed at developing an insight towards the latest technologies in IT, cyber threats and security measures to overcome cybercrimes. After the completion of the course, the students should be able understand the functioning of emerging technologies in IT. This course will help students to predict the cyber threats and take precautionary measures to overcome the same.

E) Course Outcomes :

CO-1 Identify use of IoT and Embedded systems

CO-2 Demonstrate the use of E-governance and E-commerce

CO-3 Demonstrate the concept of machine learning and artificial intelligence

CO-4 Identify different cybercrimes and appropriate laws for it

CO-5 Analyze cyber security concepts and cryptography

F) Scheme of Studies:

Board of Study	Course Code	Course Title	Scheme of Studies (Hours/Week)				
			L	P	T	Total Study Hours (L+T+P)	Total Credits(C) (L+T+P/2)
Computer Science and Engineering	2022575(022)	IT Trends and Cyber Security	2	0	1	3	3

G) Scheme of Assessment:

Board of Study	Course code	Course Title	Scheme of Examination					
			Theory			Practical		Total Marks
			ESE	CT	TA	ESE	TA	
Computer Science and Engineering	2022575(022)	IT Trends and Cyber Security	70	30	30	0	0	130

H) Course-Curriculum Detailing:

This course curriculum detailing depicts learning outcomes at course level and session level and their attainment by the students through Classroom Instruction (CI), Laboratory Instruction (LI), Sessional Work (SW) and Self Learning (SL). Students are expected to demonstrate the attainment of Session Outcomes (SOs) and finally Course Outcomes (COs) upon the completion of course.

Convert unit of the given physical quantity from one unit system to other.

CO-1 Identify the concept of IoT and Embedded systems

Session Outcomes (SOs)	Laboratory Instruction (LI)	Class room Instruction (CI)	Self Learning (SL)
SO1.1 Explain the fundamentals of IoT SO1.2 Explain the fundamentals of Embedded systems		**Unit 1.0 Internet of Things and Embedded Systems** 1.1 Internet of Things 1.1.1 fundamentals of IoT 1.1.2 Design of IoT, characteristics and functional blocks of IoT 1.1.3 Comparison between IoT and M2M 1.1.4 Domain specific applications of IoT 1.2 Embedded Systems 1.2.1 Fundamentals of Embedded system 1.2.2 Functioning of Embedded O.S. 1.2.3 Real time Operating system Applications of embedded systems	1.1 Compare normal O.S. and Embedded O.S.

SW-1 Suggested Sessional Work (SW):

a. **Assignments:**
Prepare a list of devices around you which can function using IoT and classify them into respective application domain.

b. **Mini Project:**
Create an automated bell system at college using IoT by connecting a digital watch and electronic ring(bell)

CO-2 Demonstrate the use of E-governance and E-commerce

Session Outcomes (SOs)	Laboratory Instruction (LI)	Class room Instruction (CI)	Self Learning (SL)
SO2.1 Explain the importance of E-commerce in business solutions SO2.2 List the applications of E-governance		**Unit 2.0 Introduction to E-commerce and E-governance** 2.1 E-Commerce Definition, Emergence, marketing, security issues, legal considerations 2.2 E-Governance 2.2.1 Comparison of conventional governance and E-governance 2.2.2 E-governance initiatives by Government 2.2.3 Challenges in E-governance 2.2.4 Privacy and security issues in E-Commerce	2.2 Prepare user guide for usage of common E-governance initiatives

SW-2 Suggested Sessional Work (SW) :

a. **Assignments:**
   Prepare the blueprint of a business idea using E-commerce
b. **Mini Project:**
   Prepare a case study comparing the business implementation using E-commerce and conventional method.

CO- 3 Demonstrate concept of machine learning and artificial intelligence.

Session Outcomes (SOs)	Laboratory Instruction (LI)	Class room Instruction (CI)	Self-Learning (SL)
SO3.1Explain the basics of Machine learning SO3.2 Explain the basics of Artificial Intelligence		**Unit 3.0Fundamentals of Machine learning and Artificial Intelligence** 3.1Machine Learning Introduction 3.2 Types of machine learning 3.2.1 Supervised and Unsupervised Learning 3.2.2 Applications of machine learning 3.3 Artificial Intelligence Introduction 3.3.1 Propositional and fuzzy logic, Decision trees 3.3.2Applications of Artificial intelligence	3.2 Compare machine Learning and AI

SW-3 Suggested Sessional Work (SW) :

a. **Assignments:**
   Design propositional and fuzzy logics for simple AI applications
b. **Other Activities (Specify):**
   Conduct a seminar on 'Growth of Artificial Intelligence – Boon or Bane?'

CO- 4 Identify different cyber crimes and appropriate laws for it.

Session Outcomes (SOs)	Laboratory Instruction (LI)	Class room Instruction (CI)	Self Learning (SL)
SO4.1Identify the nature and type of cyber crimes SO4.2 Explain the Laws governing Cyberspace and cyber crimes		**Unit 4.0Introduction to Cyber crime and cyber laws** 4.1 Cyber crime Introduction, Types, Hacking cyberspace and criminal behavior, Digital Forensics 4.2Cyber Laws 4.2.1 Indian IT Act 2000 and its amendments	4.2 Prepare a list of common cyber issues along with precautions and resolutions

SW-4 Suggested Sessional Work (SW) :

a. **Assignments:**
   List the cases of cyber crime from daily newspaper and check under which cyber law/ACT they fall.
b. **Mini Project:**
   Implement precautionary measures for institute's website to avoid any cyber crime or hacking issues.
c. **Other Activities (Specify):**
   Plan a visit to cyber cell of your location to experience the real time dealings of cyber crime.

CO- 5 Analyze cyber security concepts and cryptography.

Session Outcomes (SOs)	Laboratory Instruction (LI)	Class room Instruction (CI)	Self Learning (SL)
SO5.1Explain the different recovery techniques and cryptography		**Unit 5.0 Cyber Security and Cryptography** 5.1 Security and recovery techniques against cyber crime 5.1.1 Firewalls and packet filters 5.1.2 Password cracking, spyware 5.1.3 Virus, worms,Trojan 5.1.4 Types of cyber-attacks and recovery techniques 5.2 Cryptography 5.2.1 Types of cryptography - Symmetric - Asymmetric 5.2.2 Classical cryptography techniques 5.2.3 Digital Signature	5.1.3 List the differences between virus, worm and Trojan

SW-5 Suggested Sessional Work (SW) :

Assignments:

a. Prepare a list of password hacking techniques and suggest guidelines for strong password.

b. Other Activities (Specify):
Conduct awareness camp on 'Cyber security and ways to maintain a healthy cyberspace'

I) Suggested Specification Table (For ESA of Classroom Instruction CI+SW+SL):

Unit Number	Unit Title	Total Marks
I	Internet of Things and Embedded Systems	14
II	Introduction to E-commerce and E-Governance	14
III	Fundamentals of Machine learning and Artificial Intelligence	14
IV	Introduction to Cybercrime and cyber laws	14
V	Cyber Security and Cryptography	14
Total		70

K) Suggested Instructional/Implementation Strategies:

1. Improved Lecture, Tutorial, Case Method, Group Discussion
2. Industrial visits, Industrial Training, Field Trips, Portfolio Based Learning
3. Role Play, Demonstration, ICT Based Teaching Learning (Video Demonstration, CBT, Blog, Face book, Mobile)
4. Brainstorming
5. Others

L) Suggested Learning Resources:

(a) Books :

S. No.	Title	Author	Publisher	Edition & Year
01.	From Machine-to-Machine to the Internet of Things	Jan Holler, Vlasios Tsiatsis	Academic Press	1st/2014
02.	E-commerce	Kenneth. C. Laudon and Carol Guercio Traver	Pearson	13th / 2017
03.	The complete E-commerce Book	Janice Reynolds	Focal Press	2nd
04.	Essentials of Cyber Security	Gurpreet Dhillon	Paradigm Books	2nd
05.	Artificial Intelligence	Elaine Rich and Kevin Knight	Tata Mc Graw Hills	3rd

(b) Open source software and website address:

CyberLaw-
https://www.tutorialspoint.com/information_security_cyber_law/information_security_cyber_law_tutorial.pdf

(c) Others:

Artificial Intelligence- https://www.tutorialspoint.com/artificial_intelligence/artificial_intelligence_tutorial.pdf

Machine Learning-https://courses.edx.org/asset-1:ColumbiaX+CSMM.101x +1T2017+type @asset+block@AI_edx_ml_5.1intro.pdf

Machine Learning- http://ciml.info/dl/v0_8/ciml-v0_8-all.pdf

E-Commerce-https://www.slideshare.net/selvagkm24/e-commerce-tutorial-45180083

M) List of Major Laboratory Equipment and Tools:

N) Mapping of POs & PSOs with COs:

Course Outcomes (COs) Titles	Programme Outcomes (POs)							Programme Specific Outcomes (PSOs)	
	PO-1 Basic and Discipline specific knowledge	PO-2 Problem analysis	PO-3 Design/ development of solutions	PO-4 Engineering Tools, Experimentation and Testing	PO-5 Engineering practices for society, sustainability and environment	PO-6 Project Management	PO-7 Life-long learning	PSO-1	PSO-2
CO-1	3	3	0	1	2	1	2	3	2
CO-2	3	3	2	0	3	2	3	2	2
CO-3	3	3	0	1	2	2	3	2	2
CO-4	2	2	1	1	3	0	3	3	2
CO-5	2	2	1	1	2	0	3	3	2

Legend: 0-No correlation, 1 – Low, 2 – Medium, 3 – High

O) Course Curriculum Map:

POs & PSOs No.	COs No.& Title	SOs No.	Laboratory Instruction (LI)	Classroom Instruction (CI)	Self Learning (SL)
PO-1,2,4,5,6,7 PSO-1,2	**CO-1** Identify use of IoT and Embedded systems	SO1.1 SO1.2		Unit 1.0 Internet of Things and Embedded Systems	As mentioned in relevant page number
PO-1,2,3,5,6,7 PSO-1,2	**CO-2** Demonstrate the use of E-governance and E-commerce	SO2.1 SO2.2		Unit 2.0 Introduction to E-commerce and E-governance	
PO-1,2,4,5,6,7 PSO-1,2	**CO-3** Demonstrate the concept of machine learning and artificial intelligence	SO3.1 SO3.2		Unit 3.0 Fundamentals of Machine learning and Artificial Intelligence	
PO-1,2,3,4,5,7PSO-1,2	**CO-4** Identify different cybercrimes and appropriate laws for it	SO4.1 SO4.2		Unit 4.0 Introduction to Cyber crime and cyber laws	
PO-1,2,3,4,5,7 PSO--1,2	**CO-5** Analyze cyber security concepts and cryptography	SO5.1		Unit 5.0 Cyber Security	

Legend: CI: Classroom Instruction (Includes different instructional strategies i.e. Lecture (L) and Tutorial (T) and others) , LI : Laboratory Instruction (Includes Practical performances in Laboratory, Workshop, field or other locations using different instructional strategies) SL: Self Learning