

HAJEE KARUTHA ROWTHER HOWDIA COLLEGE

(An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai.)

Re-Accredited with A++ Grade by NAAC (3rd Cycle)

Uthamapalayam - 625 533.



DEPARTMENT OF COMPUTER SCIENCE

PART IV - COMPUTER SCIENCE SYLLABUS

Choice Based Credit System – CBCS

(As per TANSICHE)

With

Outcome Based Education (OBE)

(Academic Year 2023 -2026)

Semester-I

Course Category	Course Code	Course Title	Hrs	CIAE	TEE	Max Marks	Credits
Part – IV	23UCSSE11	Fundamentals of Information Technology (NME)	2	25	75	100	2
	23UCSFN11	Problem Solving Techniques	2	25	75	100	2

Semester-II

Course Category	Course Code	Course Title	Hrs	CIAE	TEE	Max Marks	Credits
Part – IV	23UCSSE21	Office Automation (NME)	2	25	75	100	2
	23UCSSE2P	Advanced Excel Lab	2	40	60	100	2

Semester-III

Course Category	Course Code	Course Title	Hrs	CIAE	TEE	Max Marks	Credits
Part – IV	23UCSSE31	Introduction to HTML	1	25	75	100	1
	23UCSSE32	Office Automation	2	25	75	100	2
	23UGEVS41	Environmental Studies	1	-	-	-	-

Semester-IV

Course Category	Course Code	Course Title	Hrs	CIAE	TEE	Max Marks	Credits
Part – IV	23UCSSE41	Web Designing	2	25	75	100	2
	23UCSSE42	Quantitative Aptitude	2	25	75	100	2
	23UGEVS41	Environmental Studies	1	25	75	100	2

Semester-V

Course Category	Course Code	Course Title	Hrs	CIAE	TEE	Max Marks	Credits
Part – IV	23UGVED51	Value Education	2	25	75	100	2
	23UCSIS51	Internship / Industrial Training	-	-	-	-	2

Semester-VI

Course Category	Course Code	Course Title	Hrs	CIAE	TEE	Max Marks	Credits
Part – IV	23UCSSE61	PHP Programming	2	25	75	100	2

Course Code	Course Title	Category	Credits	Hours	Marks		
					CIAE	TEE	Total
23UCSSE11	FUNDAMENTALS OF INFORMATION TECHNOLOGY (NME)	NME	2	2	25	75	100

Learning Objectives		
L1	Understand basic concepts and terminology of information Technology.	
L2	Have a basic understanding of personal computers and their operation	
L3	Be able to identify data storage and its usage	
L4	Get great knowledge of software and its functionalities	
L5	Understand about operating system and their uses	
UNIT	Contents	No. of Hours
I	Introduction to Computers: Introduction, Definition, .Characteristics of computer, Evolution of Computer, Block Diagram Of a computer, Generations of Computer, Classification Of Computers, Applications of Computer, Capabilities and limitations of computer	6
II	Basic Computer Organization: Role of I/O devices in a computer system. Input Units: Keyboard, Terminals and its types. Pointing Devices, Scanners and its types, Voice Recognition Systems, Vision Input System, Touch Screen, Output Units: Monitors and its types. Printers: Impact Printers and its types. Non Impact Printers and its types, Plotters, types of plotters, Sound cards, Speakers.	6
III	Storage Fundamentals: Primary Vs Secondary Storage, Data storage & retrieval methods. Primary Storage: RAM ROM, PROM, EPROM, EEPROM. Secondary Storage: Magnetic Tapes, Magnetic Disks. Cartridgetape, hard disks, Floppy disks Optical Disks, Compact Disks, Zip Drive, Flash Drives	6
IV	Software: Software and its needs, Types of S/W. System Software: Operating System, Utility Programs Programming Language: Machine Language, Assembly Language, High Level Language their advantages & disadvantages. Application S/W and its types: Word Processing, Spread Sheets Presentation, Graphics, DBMS s/w	6
V	Operating System: Functions, Measuring System Performance, Assemblers, Compilers and Interpreters. Batch Processing, Multiprogramming, Multi Tasking, Multiprocessing, Time Sharing, DOS, Windows, Unix/Linux.	6
	Total	30
Course Outcomes		Knowledge Level
CO	On completion of this course, students will	

1	Learn the basics of computer, Construct the structure of the required things in computer, learn how to use it.	K1,K2,K3,K4
2	Develop organizational structure using for the devices present currently under input or output unit.	K1,K2,K3,K4,K5,K6
3	Concept of storing data in computer using two header namely RAM and ROM with different types of ROM with advancement in storage basis.	K1,K2,K3,K4,K5,K6
4	Work with different software, Write program in the software and applications of software.	K1,K2,K3,K4,K5,K6
5	Usage of Operating system in information technology which really acts as an interpreter between software and hardware.	K1,K2,K3,K4,K5
Textbooks		
1.	Anoop Mathew, S. Kavitha Murugesan (2009), "Fundamental of Information Technology", Majestic Books.	
2.	Alexis Leon, Mathews Leon, "Fundamental of Information Technology", 2 nd Edition.	
3.	S. K Bansal, "Fundamental of Information Technology".	
Reference Books		
1.	Bhardwaj Sushil Puneet Kumar, "Fundamental of Information Technology"	
2.	GG WILKINSON, "Fundamentals of Information Technology", Wiley-Blackwell	
3.	A Ravichandran, "Fundamentals of Information Technology", Khanna Book Publishing	
Web Resources		
1.	https://testbook.com/learn/computer-fundamentals	
2.	https://www.tutorialsmate.com/2020/04/computer-fundamentals-tutorial.html	
3.	https://www.javatpoint.com/computer-fundamentals-tutorial	
4.	https://www.tutorialspoint.com/computer_fundamentals/index.htm	
5.	https://www.nios.ac.in/media/documents/sec229new/Lesson1.pdf	

Mapping with Programme Outcomes:

CO / PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	3	3	3	3	3	3
CO 2	3	3	3	3	3	3
CO 3	3	3	3	3	3	3
CO 4	3	3	3	3	2	3
CO 5	3	3	2	3	3	2

Strong-3 Medium-2 Low-1

Level of Correlation between PSO's and CO's

CO / PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	3	3	3	3
CO 2	3	3	3	3	3	3
CO 3	3	3	3	3	3	3
CO 4	3	3	3	3	2	3
CO 5	3	3	2	3	3	2

Strong-3 Medium-2 Low-1

Course Code	Course Title	Category	Credits	Hours	Marks		
					CIAE	TEE	Total
23UCSFN11	PROBLEM SOLVING TECHNIQUES	FC	2	2	25	75	100

Learning Objectives		
L1	Familiarize with writing of algorithms, fundamentals of C and philosophy of problem solving.	
L2	Implement different programming constructs and decomposition of problems into functions.	
L3	Use data flow diagram, Pseudo code to implement solutions.	
L4	Define and use of arrays with simple applications	
L5	Understand about operating system and their uses	
UNIT	Contents	No. of Hours
I	Introduction: History, characteristics and limitations of Computer. Hardware/Anatomy of Computer: CPU, Memory, Secondary storage devices, Input Devices and Output devices. Types of Computers: PC, Workstation, Minicomputer, Main frame and Supercomputer. Software: System software and Application software. Programming Languages: Machine language, Assembly language, High- level language, 4 GL and 5GL-Features of good programming language. Translators: Interpreters and Compilers.	6
II	Data: Data types, Input, Processing of data, Arithmetic Operators, Hierarchy of operations and Output. Different phases in Program Development Cycle (PDC). Structured Programming: Algorithm: Features of good algorithm, Benefits and drawbacks of algorithm. Flowcharts: Advantages and limitations of flowcharts, when to use flowcharts, flowchart symbols and types of flowcharts. Pseudocode: Writing a pseudocode. Coding, documenting and testing a program: Comment lines and types of errors. Program design: Modular Programming.	6
III	Selection Structures: Relational and Logical Operators - Selecting from Several Alternatives – Applications of Selection Structures. Repetition Structures: Counter Controlled Loops –Nested Loops– Applications of Repetition Structures.	6
IV	Data: Numeric Data and Character Based Data. Arrays: One Dimensional Array - Two Dimensional Arrays – Strings as Arrays of Characters.	6
V	Data Flow Diagrams: Definition, DFD symbols and types of DFDs. Program Modules: Subprograms-Value and Reference parameters- Scope of a variable - Functions – Recursion. Files: File Basics-Creating and reading a sequential file- Modifying	6

	Sequential Files.	
	Total	30
Course Outcomes		Knowledge Level
CO	On completion of this course, students will	
1	Study the basic knowledge of Computers.Analyse the programming languages.	K1,K2,K3,K4
2	Study the data types and arithmetic operations. Know about the algorithms. Develop program using flow chart and pseudocode.	K1,K2,K3,K4,K5,K6
3	Determine the various operators. Explain about the structures.Illustrate the concept of Loops	K1,K2,K3,K4,K5,K6
4	Study about Numeric data and character-based data. Analyze about Arrays.	K1,K2,K3,K4,K5,K6
5	Explain about DFD Illustrate program modules. Creating and reading Files	K1,K2,K3,K4,K5
Textbooks		
1.	Stewart Venit , “Introduction to Programming: Concepts and Design”, Fourth Edition,2010, Dream Tech Publishers.	
Web Resources		
1.	https://www.codesansar.com/computer-basics/problem-solving-using-computer.htm	
2.	http://www.nptel.iitm.ac.in/video.php?subjectId=106102067	
3.	http://utubersity.com/?page_id=876	

Mapping with Programme Outcomes:

CO /PO	P01	P02	P03	P04	P05
C01	3	3	3	3	3
C02	3	3	3	3	3
C03	3	2	3	3	3
C04	3	3	2	3	3

S Strong-3 Medium-2 Low-1

Level of Correlation between PSO's and CO's

CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
C01	3	3	3	3	3
C02	3	3	3	3	3
C03	3	2	3	3	3
C04	3	3	2	3	3
C05	3	3	3	3	2

Strong-3 Medium-2 Low-1

Course Code	Course Title	Category	Credits	Hours	Marks		
					CIAE	TEE	Total
23UCSSE21	OFFICE AUTOMATION (NME)	NME	2	2	25	75	100

Learning Objectives		
L1	Understand the basics of computer systems and its components.	
L2	Understand and apply the basic concepts of a word processing package.	
L3	Understand and apply the basic concepts of electronic spreadsheet software.	
L4	Understand and apply the basic concepts of database management system.	
L5	Understand and create a presentation using PowerPoint tool.	
UNIT	Contents	No. of Hours
I	Introductory concepts: Memory unit– CPU-Input Devices: Key board, Mouse and Scanner. Output devices: Monitor, Printer. Introduction to Operating systems & its features: DOS– UNIX– Windows. Introduction to Programming Languages.	6
II	Word Processing: Open, Save and close word document; Editingtext – tools, formatting, bullets; Spell Checker - Document formatting – Paragraph alignment, indentation, headers and footers, numbering; printing–Preview ,options, merge.	6
III	Spreadsheets: Excel– opening, entering text and data, formatting, navigating; Formulas– entering, handling and copying; Charts–creating, formatting and printing, analysis tables, preparation of financial statements, introduction to data analytics.	6
IV	Database Concepts: The concept of data base management system; Data field, records, and files, Sorting and indexing data; Searching records. Designing queries, and reports; Linking of datafiles; Understanding Programming environment in DBMS; Developing menu drive applications inquiry language(MS– Access).	6
V	Power point: Introduction to Power point - Features – Understanding slide typecasting &viewing slides – creating slide shows. Applying special object – including objects & pictures– Slide transition–Animation effects, audio inclusion, timers.	6
	Total	30
Course Outcomes		Knowledge Level
CO	On completion of this course, students will	
1	Possess the knowledge on the basics of computers and its components	K1,K2,K3,K4
2	Gain knowledge on Creating Documents, spreadsheet and presentation.	K1,K2,K3,K4,K5,K6
3	Learn the concepts of Database and implement the Query in Database.	K1,K2,K3,K4,K5,K6
4	Demonstrate the understanding of different automation tools.	K1,K2,K3,K4,K5,K6

5	Utilize the automation tools for documentation, calculation and presentation purpose.	K1,K2,K3,K4,K5
Textbooks		
1.	PeterNorton,“IntroductiontoComputers”-TataMcGraw-Hill.	
Reference Books		
1.	Jennifer Ackerman Kettel, Guy Hat-Davis, Curt Simmons, “Microsoft 2003”, TataMcGrawHill.	
Web Resources		
1.	https://www.udemy.com/course/office-automation-certificate-course/	
2.	https://www.javatpoint.com/automation-tools	

Mapping with Programme Outcomes:

CO /PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	3	2	2	3	3	3
CO 2	3	3	3	3	3	3
CO 3	3	3	3	3	3	3
CO 4	3	3	3	3	3	3
CO 5	3	3	3	3	3	3

Strong-3 Medium-2 Low-1

Level of Correlation between PSO's and CO's

CO /PSO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	3	2	2	3	3	3
CO 2	3	3	3	3	3	3
CO 3	3	3	3	3	3	3
CO 4	3	3	3	3	3	3
CO 5	3	3	3	3	3	3

Strong-3 Medium-2 Low-1

Course Code	Course Title	Category	Credits	Hours	Marks		
					CIAE	TEE	Total
23UCSSE2P	ADVANCED EXCEL LAB	SEC	2	2	40	60	100

Learning Objectives		
L1	Handle large amounts of data	
L2	Aggregate numeric data and summarize into categories and subcategories	
L3	Filtering, sorting, and grouping data or subsets of data	
L4	Create pivot tables to consolidate data from multiple files	
L5	Presenting data in the form of charts and graphs	
UNIT	Contents	No. of Hours
I	Basics of Excel- Customizing common options- Absolute and relative cells- Protecting and un-protecting worksheets and cells- Working with Functions - Writing conditional expressions - logical functions - lookup and reference functions- Vlookup with Exact Match, Approximate Match- Nested Vlookup with Exact Match- Vlookup with Tables, Dynamic Ranges- Nested Vlookup with Exact Match- Using Vlookup to consolidate Data from Multiple Sheets	6
II	Data Validations - Specifying a valid range of values - Specifying a list of valid values- Specifying custom validations based on formula - Working with Templates Designing the structure of a template- templates for standardization of worksheets - Sorting and Filtering Data -Sorting tables- multiple-level sorting- custom sorting- Filtering data for selected view - advanced filter options- Working with Reports Creating subtotals- Multiple-level subtotal.	6
III	Creating Pivot tables Formatting and customizing Pivot tables- advanced options of Pivot tables- Pivot charts- Consolidating data from multiple sheets and files using Pivot tables- external data sources- data consolidation feature to consolidate data- Show Value As % of Row, % of Column, Running Total, Compare with Specific Field- Viewing Subtotal under Pivot- Creating Slicers.	6
IV	More Functions Date and time functions- Text functions- Database functions- Power Functions - Formatting Using auto formatting option for worksheets- Using conditional formatting option for rows, columns and cells- What If Analysis - Goal Seek- Data Tables- Scenario Manager.	6
V	Charts - Formatting Charts- 3D Graphs- Bar and Line Chart together- Secondary Axis in Graphs- Sharing Charts with PowerPoint / MS Word, Dynamically- New Features Of Excel Spark lines, Inline Charts, data Charts- Overview of all the new features.	6
Total		30

Course Outcomes		Knowledge Level
CO	On completion of this course, students will	
1	Work with big data tools and its analysis techniques.	K1,K2,K3,K4
2	Analyze data by utilizing clustering and classification algorithms.	K1,K2,K3,K4,K5,K6
3	Learn and apply different mining algorithms and recommendation systems for large volumes of data.	K1,K2,K3,K4,K5,K6
4	Perform analytics on data streams.	K1,K2,K3,K4,K5,K6
5	Learn No-SQL databases and management.	K1,K2,K3,K4,K5
Textbooks		
1.	Excel 2019 All	
2.	Microsoft Excel 2019 Pivot Table Data Crunching	
Reference Books		
1.	Excel 2019 All-in-One for Dummies, Greg Harvey, 1st edition	
Web Resources		
1.	https://www.simplilearn.com	
2.	https://www.javatpoint.com	
3.	https://www.w3schools.com	

Mapping with Programme Outcomes:

CO /PO	P01	P02	P03	P04	P05
C01	3	3	3	3	3
C02	3	3	1	2	3
C03	3	3	3	2	3
C04	3	3	3	2	3
C05	3	2	3	3	3

Strong-3 Medium-2 Low-1

Level of Correlation between PSO's and CO's

CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
C01	3	3	3	3	3
C02	3	3	1	2	3
C03	3	3	3	2	3
C04	3	3	3	2	3
C05	3	2	3	3	3

Strong-3 Medium-2 Low-1

	CSS3.pdf
2.	https://www.w3schools.com/html/default.asp

Mapping with Programme Outcomes:

CO /PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	3	3	3	3	3	3
CO 2	3	3	2	3	3	3
CO 3	2	3	3	3	3	3
CO 4	3	3	3	3	3	3
CO 5	3	3	3	2	3	3

Strong-3 Medium-2 Low-1

Level of Correlation between PSO's and CO's

CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	3	3	3	3
CO2	3	3	2	3	3
CO3	2	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	2	3

Strong-3 Medium-2 Low-1

Course Code	Course Title	Category	Credits	Hours	Marks		
					CIAE	TEE	Total
23UCSSE32	OFFICE AUTOMATION	SEC	2	2	25	75	100

Learning Objectives		
L1	Understand the basics of computer systems and its components.	
L2	Understand and apply the basic concepts of a word processing package.	
L3	Understand and apply the basic concepts of electronic spreadsheet software.	
L4	Understand and apply the basic concepts of database management system.	
L5	Understand and create a presentation using PowerPoint tool.	
UNIT	Contents	No. of Hours
I	Introductory concepts: Memory unit– CPU-Input Devices: Key board, Mouse and Scanner. Output devices: Monitor, Printer. Introduction to Operating systems & its features: DOS– UNIX– Windows. Introduction to Programming Languages.	6
II	Word Processing: Open, Save and close word document; Editing text – tools, formatting, bullets; Spell Checker - Document formatting – Paragraph alignment, indentation, headers and footers ,numbering ; printing – Preview, options, merge.	6
III	Spread sheets: Excel–opening, entering text and data, formatting, navigating; Formulas–entering, handling and copying; Charts–creating, formatting and printing, analysis tables, preparation off in ancial statements, introduction to data analytics.	6
IV	Database Concepts: The concept of data base management system; Data field, records, and files, Sorting and indexing data; Searching records. Designing queries, and reports; Linking of data files; Understanding Programming environment in DBMS; Developing menu drive applications in query language(MS–Access).	6
V	Power point: Introduction to Power point - Features – Understanding slide typecasting & viewing slides – creating slide shows. Applying special object – including objects & pictures – Slide transition–Animation effects, audio inclusion timers.	6
	Total	30
Course Outcomes		Knowledge Level
CO	On completion of this course, students will	
1	Possess the knowledge on the basics of computers and its components	K1,K2,K3,K4
2	Gain knowledge on Creating Documents, spreadsheet and presentation.	K1,K2,K3,K4,K5,K6
3	Learn the concepts of Database and implement the	K1,K2,K3,K4,K5,K6

	Query in Database.	
4	Demonstrate the understanding of different automation tools.	K1,K2,K3,K4,K5,K6
5	Utilize the automation tools for documentation, calculation and presentation purpose.	K1,K2,K3,K4,K5
Textbooks		
1.	Peter Norton, “Introduction to Computers”–Tata McGraw-Hill.	
Reference Books		
1.	Jennifer Ackerman Kettel, Guy Hat-Davis, Curt Simmons, “Microsoft 2003”, Tata McGrawHill.	
Web Resources		
1.	https://www.udemy.com/course/office-automation-certificate-course/	
2.	https://www.javatpoint.com/automation-tools	

Mapping with Programme Outcomes:

CO /PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	3	2	2	3	3	3
CO 2	3	3	3	3	3	3
CO 3	3	3	3	3	3	3
CO 4	3	3	3	3	3	3
CO 5	3	3	3	3	3	3

Strong-3 Medium-2 Low-1

Level of Correlation between PSO's and CO's

CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	2	2	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3

Strong-3 Medium-2 Low-1

Course Code	Course Title	Category	Credits	Hours	Marks		
					CIAE	TEE	Total
23UCSSE41	WEB DESIGNING	SEC	2	2	25	75	100

Learning Objectives		
L1	Understand the basics of HTML and its components	
L2	To study about the Graphics in HTML	
L3	Understand and apply the concepts of XML and DHTML	
L4	Understand the concept of JavaScript	
L5	To identify and understand the goals and objectives of the Ajax	
UNIT	Contents	No. of Hours
I	HTML: HTML-Introduction-tag basics- page structure-adding comments working with texts, paragraphs and line break. Emphasizing test- heading and horizontal rules-list-font size, face and color-alignment links-tables-frames.	6
II	Forms & Images Using Html: Graphics: Introduction-How to work efficiently with images in web pages, image maps, GIF animation, adding multimedia, data collection with html forms textbox, password, list box, combo box, text area, tools for building web page front page.	6
III	XML & DHTML: Cascading style sheet (CSS)-what is CSS-Why we use CSS-adding CSS to your web pages-Grouping styles-extensible markup language (XML).	6
IV	Dynamic HTML: Document object model (DCOM)-Accessing HTML & CSS through DCOM Dynamic content styles & positioning-Event bubbling-data binding. JavaScript: Client-side scripting, What is JavaScript, How to develop JavaScript, simple JavaScript, variables, functions, conditions, loops and repetition,	6
V	Advance script, JavaScript and objects, JavaScript own objects, the DOM and web browser environments, forms and validations.	6
	Total	30
Course Outcomes		Knowledge Level
CO	On completion of this course, students will	
1	Develop working knowledge of HTML	K1,K2,K3,K4
2	Ability to Develop and publish Web pages using Hypertext Markup Language (HTML).	K1,K2,K3,K4,K5,K6
3	Ability to optimize page styles and layout with Cascading Style Sheets (CSS).	K1,K2,K3,K4,K5,K6
4	Ability to develop a java script	K1,K2,K3,K4,K5,K6
5	An ability to develop web application using Ajax.	K1,K2,K3,K4,K5
Textbooks		
1.	Pankaj Sharma, "Web Technology", SkKataria& Sons Bangalore 2011.	
2.	Mike Mcgrath, "Java Script", Dream Tech Press 2006, 1st Edition.	
3.	Achyut S Godbole & AtulKahate, "Web Technologies", 2002, 2nd Edition.	

Reference Books	
1.	Laura Lemay, Rafe Colburn, Jennifer Kyrnin, “Mastering HTML, CSS & Javascript Web Publishing”, 2016.
2.	DT Editorial Services (Author), “HTML 5 Black Book (Covers CSS3, JavaScript, XML, XHTML, AJAX, PHP, jQuery)”, Paperback 2016, 2nd Edition.
Web Resources	
1.	NPTEL & MOOC courses titled Web Design and Development.
2.	https://www.geeksforgeeks.org

Mapping with Programme Outcomes:

CO /PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	3	2	1	2	1	2
CO 2	3	3	2	2	3	3
CO 3	3	3	2	3	3	2
CO 4	3	2	3	2	2	3
CO 5	3	2	2	2	3	3
Strong-3	Medium-2	Low-1				

Level of Correlation between PSO's and CO's

CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	2	1	2	1
CO2	3	3	2	2	3
CO3	3	3	2	3	3
CO4	3	2	3	2	2
CO5	3	2	2	2	3
Strong-3	Medium-2	Low-1			

Mapping with Programme Outcomes:

CO /PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6
CO 1	3	2	1	2	2	2
CO 2	2	3	1	3	2	2
CO 3	1	3	1	1	3	1
CO 4	1	2	1	1	3	1
CO 5	1	2	1	1	3	3

Strong-3 Medium-2 Low-1

Level of Correlation between PSO's and CO's

CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	2	1	2	2
CO2	2	3	1	3	2
CO3	1	3	1	1	3
CO4	1	2	1	1	3
CO5	1	2	1	1	3

Strong-3 Medium-2 Low-1

2.	The Joy of PHP: A Beginner's Guide to Programming Interactive Web Applications with PHP and MySQL- Alan Forbes
Reference Books	
1.	PHP: The Complete Reference-Sтивен Holzner.
2.	DT Editorial Services (Author), " <i>HTML 5 Black Book (Covers CSS3, JavaScript, XML, XHTML, AJAX, PHP, jQuery)</i> ", Paperback 2016, 2 nd Edition.
Web Resources	
1.	Opensource digital libraries: PHP Programming
2.	https://www.w3schools.com/php/default.asp

Mapping with Programme Outcomes:

CO /PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8
CO 1	3	2	1	2	1	3	2	1
CO 2	3	3	2	2	3	3	3	2
CO 3	3	3	2	3	3	3	3	2
CO 4	3	2	3	2	2	3	2	3
CO 5	3	2	2	2	3	3	2	2

Strong-3 Medium-2 Low-1

Level of Correlation between PSO's and CO's

CO /PSO	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	2	1	2	1
CO2	3	3	2	2	3
CO3	3	3	2	3	3
CO4	3	2	3	2	2
CO5	3	2	2	2	3

Strong-3 Medium-2 Low-1