Structure of Examination and scheme of marking for Second Year B. Voc. Programme

Semester III – B. Voc. In Computer Software Development

Sr. No.	Subject Code	(Vertical Level)	Course / Subject Title	Theory / Practical	Credits	Maximum Internal Marks	Maximum External Marks
1	CSD-301	Major Mandatory (MJM)	Basic PHP	Theory	02	15	35
2	CSD-302	Major Mandatory (MJM)	Practical on basic PHP	Practical	02	15	35
3	CSD-303	Major Mandatory (MJM)	RDBMS	Theory	02	15	35
4	CSD-304	Major Mandatory (MJM)	Software Engineering	Theory	02	15	35
5	CSD-305	Vocational Skill Development Course (VSC)	Computer Networking	Theory	02	15	35
6	CSD-306	Minor(MN)	Data Structure	Theory	02	15	35
7	CSD-307	Minor(MN)	Computer Laboratory based on DS & RDBMS	Practical	02	15	35
8	CSD-308	OJT/FP	Project Based on Web Applications	Practical	02	15	35
9	CSD-309	Co-Curricular Courses (CC)	NSS/NCC/Yoga Education-I	Practical	02	15	35
10	AEC-201-MAR	Ability Enhancement Course (AEC)	Modern Indian Language-I	Theory	02	15	35
11	OE-201-ECO	Open Elective (OE)	Introduction to stock Market (From Humanities Faculty)	Theory	02	15	35
	Total				22		

B.Voc. in Computer Software Development

As per NEP -2020

Subject: - Basic PHP

Semester No.	Programme Name	Subject Code	Type of Course	Course Title	Credits	Lectures per Week
I	B. voc. in Computer Software Development	CSD-301	Major Mandatory	Basic PHP	2	3

Objectives of the Course:

1. Understand how server-side programming works on the web.
2. Using PHP built-in functions and creating custom.
3. Understanding POST and GET in form submission.
4. How to receive and process form submission data.
5. Read and process data in a MySQL database

Course Outcome:

CO 1: Understand the basics of server-side scripting using PHP.

CO 2: Develop dynamic web pages using PHP.

CO3: Work with PHP functions, arrays, and strings effectively.

CO4: Implement file handling and session management.

CO5 : Connect and interact with databases using PHP and MySQL.

Topics and Learning Points

TopicNo	Topic Name	Sub Topic	No. of Periods
1	**PHP Basics & Control structure and loops**	1.1 Setting up a development environment 1.2 Variables, numbers and strings 1.3 Calculations with PHP 1.4 Conditional Statements 1.5 Loops for Repetitive tasks 1.6 Using Arrays 1.7 Combing Loops and Arrays	10
2	**Functions, Objects and Errors**	2.1 PHP's Built-in functions 2.2 Creating Custom functions 2.3 Passing Values by Reference 2.4 Understanding Objects 2.5 Differences between POST and GET 2.6 Preserving User Input 2.7 Working with Forms 2.8 Building a Form 2.9 Processing a Form's Data	08
3	**More with Forms**	3.1 Dealing with checkboxes and radio buttons 3.2 Retrieving values from lists 3.3 Validating and restricting data 3.4 Sticky Forms 3.5 Self processing	06

4	**MySQL Database Overview**	4.1 php MyAdmin Overview 4.2 Using a MySQL Database 4.3 Executing queries from PHP 4.4 Prepared statements and parameter binding for security 4.5 Reading and writing data	06

References:

1. Php: A Beginner's Guide –VikramVaswani
2. Murach's PHP and MySQL -Joel Murach and Ray Harris
3. PHP AND MYSQL WEB DEVELOPMENT-5TH EDN- Luke Welling and Laura Thomson
4. Beginning PHP 5, Apache MYSQL , Web Development- Naramore Elizabeth

Other Learning Material

E- Resource:

1. https://www.w3school.ccom/php/
2. https://www.tutorialspoint.com/php/index.htm
3. e-PGPathshala
4. https://www.geeksforgeeks.org/php/php-tutorial/

B.Voc. in Computer Software Development

As per NEP -2020

Subject: - Practical on Basic PHP

Semester No.	Programme Name	Subject Code	Type of Course	Course Title	Credits	Lectures perWeek
I	B. voc. in Computer Software Development	CSD-302	Major Mandatory (MJM)(P)	Practical on Basic PHP	2 (1 Credit = 30 Hours of Lab Work)	5

Objectives of the Course:

1 PHP is a widely used programming language which works on the principal of server side scripting to produce dynamic Web pages.
2 PHP is a works with html language.
3 To introduce how PHP can be combined with MySQL to integrate database functions into Websites.

Course Outcome:

CO 1 : To implement PHP script using Decisions and Loops.

CO 2 : To develop PHP applications using Strings, Arrays and Functions.

CO 3 : To design object-oriented programming (OOP) principles for PHP and use html Form elements that work with any server-side language.

CO 4 : To display and insert data using PHP and MySQL.

Guidelines for student Journal:

- The laboratory assignments are to be submitted by student in the form of journal.
- Journal consists of Certificate, table of contents, and handwritten write-up for each assignment.
- Write-up shall include Title, Problem Statement, software and Hardware requirements, Date of Completion.
- Program codes with sample output of all performed assignments are to be submitted as softcopy.
- Use of DVD containing students programs maintained by lab In-charge is highly encouraged. For reference one or two journals may be retained with program prints.

Guidelines for Assessment:

- Continuous assessment of laboratory work is to be carried out based on overall performanceof students.
- For each lab assignment, the instructor will assign grade/marks based on parameters such as timely completion, understanding, neatness etc. with appropriate

Topics and Learning Points

Unit	Title of Assignment	No. of Lectures (Per Lecturein Clock Hours)
1	Assignment 01:- Basics in PHP	12
2	Assignment 02:- **C**ontrol Structure and Loop	12
3	Assignment 03:- Function , Arrays and Strings	12

4	Assignment 04:- Working With Form and form element	12
5	Assignment 05:- Database	12

References:

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As per NEP -2020

Subject: - RDBMS

Semester No.	Programme Name	Subject Code	Type of Course	Course Title	Credits	Lectures per Week
I	B. voc. in Computer Software Development	CSD-303	Minor(T)	RDBMS	2	3

Objectives of the Course:

1. Familiarize the students with a good formal foundation on the relational model.
2. Outline the various systematic database design approaches.
3. Describe the concepts of transactions and transaction processing.

Course Outcome:

By the completion of the course, student will be able to:

CO1: Create and run SQL statements/queries on a RDBMS.

CO2: Identify and use the processes and terminology used in designing a Relational Database Management System (RDBMS).

CO3: Design a Relational Database Management System (RDBMS) from a given scenario.

CO4: Create and run SQL statements/queries on a Relational Database Management System (RDBMS).

Topics and Learning Points

Topi cNo	Topic Name	Sub Topic	No. of Periods
1	**Introduction to RDBMS**	1.1 What is RDBMS 1.2 RDBMS Concepts 1.3 Features of RDBMS 1.4 Popular RDBMS Products 1.5 Difference Between DBMS and RDBMS 1.6 Relationship among Application Programs and RDBMS	10
2	**Relational Database Design Using PLSQL**	2.1 Overview of PLSQL 2.2 Features of PLSQL 2.3 Advantages of PLSQL 2.4 Data Types in PLSQL 2.5 PLSQL Block 2.6 Variables in PLSQL 2.7 Attributes in PLSQL 2.8 PLSQL Operators 2.9 Functions used in PLSQL 2.10 Control Statement 2.11 Exception Handling 2.12 Functions 2.13 Procedure 2.14 Cursor 2.15 Trigger	08

3	**Concepts of Transaction Management**	3.1 Transaction concept 3.2 Operation on Transactions 3.3 Schedules of Transaction 3.4 Transaction properties 3.5 Transaction state 3.6 Concurrent Execution 3.7 Concept of Concurrency 3.8 Concurrency Problems 3.9 Serializability 3.9.1 Conflict Serializability 3.9.2 View Serializability 3.10 Recoverability 3.10.1 Recoverable Schedule 3.10.2 cascadless Schedule	06
4	**Concurrency control**	4.1 Lock based protocol 4.1.1 Types of Locks 4.1.2 Granting of Locks 4.1.3 Two phase Locking Protocol 4.2 Timestamp Based Protocol 4.2.1 Timestamp Ordering Protocol 4.2.1 Thomas Write Rule 4.43Deadlock Handling 4.4.1 Deadlock prevention 4.4.2 Deadlock Detection 4.4.3 Deadlock Recovery	06

References:

1. An Introduction to Database System, Date C. J. - Pearson Education, New Delhi – 2005
2. Relational Database A Complete Guide By Gerardus Blokdyk,2020 Edition

B.Voc. in Computer Software Development

As per NEP -2020

Subject: - Software Engineering

Semester No.	Programme Name	Subject Code	Type of Course	Course Title	Credits	Lectures per Week
I	B. voc. in Computer Software Development	CSD-304	Major Mandatory	Software Engineering	2	3

Objectives of the Course:

1.Understand the basic concepts and the applications of database systems.
2.Master the basics of SQL and construct queries using SQL.
3.Understand the relational database design principles.

Course Outcome:

By the completion of the course, student will be able to:

CO1 : Identify data requirements, analyze and prepare data models.

CO 2 : Understand basic software engineering concepts and Process models.

CO3 : Compare and chose a process model for a software project development.

CO4 : Design different UML Diagrams

Topics and Learning Points

TopicNo	Topic Name	Sub Topic	No. of Periods
1	**Introduction to Software Engineering**	1.1 Definition of Software 1.2 Nature of Software Engineering 1.3 Changing nature of software 1.4 Mc Call's Quality factors 1.5 Software Process 1.6 The Process Framework 1.7 Umbrella Activities	10
2	**Software Development Life Cycle**	2.1 Introduction, Activities of SDLC 2.2 Preliminary Investigation and its activities. 2.3 Requirements engineering tasks (Inception, Elicitation, Elaboration, Negotiation, Specification, Validation, Requirements Management) 2.4 Fact finding techniques (Interview, Questionnaire, Record Review, Observation) 2.5 Determination of system requirements 2.6 Design of a system 2.7 Development of software 2.8 System testing (Unit Testing, Integration Testing, System Testing, Acceptance Testing) 2.9 System Implementation and Evaluation 2.10 System maintenance	08
3	**Process Models**	3.1 Generic Process Model 3.2 Prescriptive Process Models 3.2.1.The Waterfall Model 3.2.2 V-model 3.3 Incremental and Iterative Process Models 3.4 Evolutionary Process Models- Prototyping,	06

		Spiral Model 3.5 Rapid Application Development(RAD) 3.6 Concurrent Models	
4	**Requirements Modeling-UML**	4.1 Introduction to UML 4.2 Structural Modeling 4.2.1 Class Model 4.2.2 Object Model 4.2.3 Deployment Model 4.2.4 Component Model 4.3 Behavioral Modeling 4.3.1 Use case model 4.3.2 Activity model 4.3.3 State Chart Model 4.3.4 Sequence model 4.3.5 ERD Model 4.4 Interaction Model 4.4.1 Sequence Model 4.4.2 Collaboration Model	06

References:

1. Software Engineering: A Practitioner's Approach - Roger S. Pressman, McGraw hill (Eighth Edition) ISBN-13: 978-0-07-802212-8, ISBN-10: 0-07-802212-6 A
2. Concise Introduction to Software Engineering - Pankaj Jalote, Springer ISBN: 978-1-84800-301-9
3. The Unified Modeling Language Reference Manual - James Rambaugh, Ivar Jacobson, Grady Booch ISBN 0-201-30998-X

B.Voc. in Computer Software Development

As per NEP -2020

Subject: - Computer Networking

Semester No.	Programme Name	Subject Code	Type of Course	Course Title	Credits	Lectures per Week
I	B. voc. in Computer Software Development	CSD-305	VSC(T)	Computer Networking	2	3

Objectives of the Course:

- To learn basic concepts and terminology related to computer networks
- To understand cyber security principles and techniques to secure networks.
- To understand and analyze different network devices.

Course Outcome:

CO1: Understand the principles of wireless networking.
CO2: Configure wireless networks.
CO3: Utilize troubleshooting techniques and tools to diagnose and resolve common network issues effectively.
CO4: Identify potential security threats to networks and apply appropriate security measures.

Unit		Topic	No. of Lectures
1	**Introduction to Computer Network**	1.1 Basics of Computer Networks 1.2 Network Topologies 1.3 Types of Networks 1.4 Modes of Communication 1.5 Server Based Lans and Peer-to-Peer lans 1.6 Protocols and Standards 1.7 Network Software	**05**
2	**Network Models**	2.1 ISO-OSI Reference Model 2.2 TCP/IP Reference Model,Comparison of ISO-OSI & TCP/IP Model 2.3 TCP/IP Protocol Suite 2.4 Addressing 2.5 IP Addressing	**6**
3	**Wired and Wireless LAN**	3.1 IEEE Standrads 3.2 Standard Ethernet 3.3 Fast Ethernet 3.4 Backbone Network 3.5 Wireless LAN 3.6 Bluetooth	**10**

4	**Network Devices**	4.1 network Connectivity Devices 4.1.1 Active and Passive Hubs 4.1.2 Repeaters 4.1.3Bridges-Types of Bridges 4.1.4 Switches 4.1.5 Router 4.1.6 Gateways	**7**
5	**Network Security**	5.1 Introduction 5.2 Need for Security 5.3 Types of Attack 5.4 Cryptografy 5.5 Firewalls	**7**
		Total	**30**

Reference Books:

1."Computer Networking: A Top-Down Approach" - James Kurose and Keith Ross.
2."Computer Networks" -Authors: Andrew S. Tanenbaum and David J. Wetherall
3."TCP/IP Illustrated, Volume 1: The Protocols" - W. Richard Stevens
4. "Network Security Essentials: Applications and Standards"- William Stallings
5. "Applied Cryptography: Protocols, Algorithms, and Source Code in C"- Bruce Schneier

B.Voc. in Computer Software Development

As per NEP -2020

Subject: - Data Stucture

Semester No.	Programme Name	Subject Code	Type of Course	Course Title	Credits	Lectures perWeek
I	B. voc. in Computer Software Development	CSD-306	Major Mandatory	Data Structure	2	3

Objectives of the Course:

1. To introduce the fundamental concepts and classifications of data structures.
2. To develop an understanding of linear and non-linear data structures such as arrays, linked lists, stacks, queues.

Course Outcome:

By the completion of the course, student will be able to:

CO 1 : To analyze the time and space complexity of algorithms using asymptotic notations.

CO 2 : To develop the ability to implement various sorting and searching algorithms.

CO 3 : To apply data structure concepts to solve real-world problems through structured programming.

CO 4 : Design and implement linked lists and perform various operations on them.

Topics and Learning Points

Topic No	Topic Name	Sub Topic	No. of Periods
1	**Introduction to Data Structures**	1.1 Array, types of array and its representation 1.2 Self referential structure 1.3 Pointer and dynamic memory allocation 1.4 Data types, Data Objects and Abstract Data Type(ADT) 1.5 Data structure and types of data structure 1.6 Algorithm Analysis: Space complexity, time complexity, Asymptotic Notations(Big O, Omega Ω)	10
2	**Linear Data Structure**	2.1 Introduction to Linear Data Structure Definition, Characteristics, Types of Linear Data Structure 2.2 Sorting algorithms with time complexity Bubble sort, Insertion sort, Merge sort, Quick Sort, Selection Sort 2.3 Searching techniques Linear Search, Binary search	08
3	**Linked List**	3.1 Introduction to Linked List - Definition, Advantages and Disadvantages 3.2 Implementation of Linked List - Static and Dynamic Representation, - Node Structure 3.3 Types of Linked List 3.3.1 Singly Linked list Operations - Create, Printing, Insertion(Begin, Middle,	06

		End), Deleting(Begin, Middle, End) 3.3.2 Doubly Linked list Operations - Create, Printing, Insertion(Begin, Middle, End), Deleting(Begin, Middle, End) 3.3.3 Circularly Singly Linked list Operations - Create, Printing 3.3.4 Circularly Doubly Linked list Operations - Create, Printing	
4	**Stack And Queue**	4.1 Introduction to Stack - Concept and characteristics (LIFO) 4.2 Stack Implementations - Static representation using arrays - Dynamic representation using linked lists 4.3 Stack Operations - Push, Pop, Peek, isEmpty, isFull 4.4 Applications of Stacks 4.5 Conversion of Infix, prefix, postfix , Evaluation of postfix and prefix 4.6 Introduction to Queue - Advantages and Disadvantages of Queue - Application Queue 4.7 Representation - Static & Dynamic - Queue using LinkedList 4.8 Primitive Operations on Queue (Insert, Delete, Display) 4.9 Circular queue(insert, delete ,display)	06

References:

1. Data Structure Using ‘C’ By Shrivastava & Yashwant Kanetkar, BPB Publications
2. Data Structure Through C By G.S. Baluja
3. Fundamentals of Data Structures in C By Ellis Horowitz, Sartaj Sahni, Susan Anderson-Freed
4. Data Structures Using C By Reema Thareja

B.Voc. in Computer Software Development

As per NEP -2020

Subject: - Computer Laboratory based on DS & RDBMS

Semester No.	Programme Name	Subject Code	Type of Course	Course Title	Credits	Lectures perWeek
I	B. voc. in Computer Software Development	CSD-307	Minor(P)	Computer Laboratory based on DS & RDBMS	2 (1 Credit = 30 Hours of Lab Work)	5

Objectives of the Course:

1. To understand algorithms and analysis of algorithms.
2. To learn static and dynamic data structures.
3. Understand the basic concept of entity-relationship model, relational database design

Course Outcomes:

By the completion of the course, student will be able to:

CO 1 : Apply appropriate data structures to solve the given problem.

CO 2 : Design an efficient algorithm for the given problem and implement.

CO 3 : Learn to implements data structure algorithms practically using C

CO 4 : Understand the basic concept of relational model.

Guidelines for student Journal:

- The laboratory assignments are to be submitted by student in the form of journal.
- Journal consists of Certificate, table of contents, and handwritten write-up for each assignment.
- Write-up shall include Title, Problem Statement, software and Hardware requirements, Date of Completion.
- Program codes with sample output of all performed assignments are to be submitted as softcopy.
- Use of DVD containing students programs maintained by lab In-charge is highly encouraged. For reference one or two journals may be retained with program prints.

Guidelines for Assessment:

- Continuous assessment of laboratory work is to be carried out based on overall performanceof students.
- For each lab assignment, the instructor will assign grade/marks based on parameters such as timely completion, understanding, neatness etc. with appropriate

Topics and Learning Points

Unit	Title of Assignment	No. of Lectures (Per Lecturein Clock Hours)
1	Assignment 01:- Sorting Algorithms	8
2	Assignment 02:- Searching Algorithms	7
3	Assignment 03:- Implementation of Linked List	7
4	Assignment 04:- Implementation of Stack and Queue	8
5	Assignment 5**:** PLSQL Block	8
6	Assignment 6: PLSQL Functions	7

7	Assignment 7: PLSQL Procedures	7
8	Assignment 8 : Cursors,Triggers	8
9	Assignment 9 : Exception Handling	7

B.Voc. in Computer Software Development

As per NEP -2020

Subject: - Stock Marketing

Semester No.	Programme Name	Subject Code	Type of Course	Course Title	Credits	Lectures per Week
I	B. voc. in Computer Software Development	OE 201 ECO	Major Mandatory	Stock Marketing	2	3

Objectives of the Course:

1.To develop the student's ability to deal with practical approach towards stock market operations.
2. To enable the use of study chart plans and candlesticks patterns

Course Outcome:

By the completion of the course, student will be able to:

CO1: Understand the role and importance of Indian Stock Market Operations

CO2: Apply and analyse the concept relevant to Indian stock markets

CO3: Start a stock market trading business.

Topics and Learning Points

Topi cNo	Topic Name	Sub Topic	No. of Periods
1	**Introduction to Stock Markets in India**	1.1 – Origin and History of Indian stock market 1.2 – Structure of Market: Primary and Secondary Market: Meaning 1.3 – Introduction to BSE, NSE 1.4 – Indices of stock market; SENSEX, NIFTY, 1.5 -BANK NIFTY 1.6 – Role of SEBI: CSDL, NSDL	10
2	**Trading in Stock Market**	2.1 – Demat Account: Meaning and Platforms 2.2 – IPO, FPO, NFO - Meaning and Application 2.3 – Types of Trading- Intraday, Delivery, Options, futures, swap 2.4 – Mutual Funds: Meaning, Small Cap, Mid Cap and Large Cap Funds 2.5 – Systematic Investment Plan (SIP) 2.6 - Systematic withdrawal Plan (SWP)	08

References:

1 .Pathak Bharati (2018), 'Indian Financial System'. Pearson Education; Fifth edition.
2. Gomez Clifford (2008), 'Financial Markets, Institutions and Financial Services', Prentice Hall of India,
3. Meir Kohn (2013), 'Financial Institutions and Markets', Oxford University Press

Teaching Methodology

The Teacher can use the following Methods as Teaching Methodology:

1. Class Room Lectures
2. Guest Lectures of Professionals, Industry Experts etc.
3. Teaching with the help of ICT tools
4. Visits to various Professionals Units, Companies and Business / Industry Units
5. Group Discussion / Debates
6. Assignments, Tutorials, Presentations, Role Play etc.
7. YouTube Lectures developed by MHRD, UGC, Government of Maharashtra, University etc.
8. Analysis of Case Studies

Scheme of Examination

Scheme of Examination: 1. Internal Assessment: 30% and 2. External Assessment: 70%

Scheme of Examination	**Exam Format**	**Min. PassingMarks**
Continuous Internal Evaluation (CIE) (15 Marks)	The colleges need to adopt any Two Methods out of the following Methods for Continuous Internal Evaluation: 1) Offline Written Examination 2) Power Point Presentations 3) Assignments / Tutorials 4) Oral Examination 5) Open Book Test 6) Offline MCQ Test 7) Group Discussion 8) Analysis of Case Studies	Min. 06 Marks (40% of Passing)
SEE / ExternalExam (35 Marks) (Total 2 Hours Duration)	***Instructions:*** *1) Question No. 1 is Compulsory.* *2) Attempt any Two Questions from Question No. 2 to 4* Q. 1: Fill in the Blanks = 05 Marks Q. 2: Theory Question on Unit-1 = 10 Marks Q. 3: Theory Question on Unit-2 = 10 Marks Q. 4: Short Notes on all Units (Any 2 out of 4) = 10 Marks	Min. 14 Marks (40% of Passing)
Total 50 Marks **Separate Passing for Internal Assessment (CIE) and External Exam (SEE)**		

Structure of Examination and scheme of marking for Second Year B. Voc. Programme

Semester IV – B. Voc. In Computer Software Development

Sr. No.	Subject Code	(Vertical Level)	Course / Subject Title	Theory / Practical	Credits	Maximum Internal Marks	Maximum External Marks
1	CSD-401	Major Mandatory (MJM)(T)	Advanced PHP	Theory	02	15	35
2	CSD-402	Major Mandatory (MJM)(P)	Practical on Advanced PHP	Practical	02	15	35
3	CSD-403	Major Mandatory (MJM)(T)	Node JS	Theory	02	15	35
4	CSD-404	Major Mandatory (MJM)(T)	Digital Marketing	Theory	02	15	35
5	CSD-405	Minor(MN)(T)	Oops Concept using CPP	Theory	02	15	35
6	CSD-406	Minor(MN)(P)	Practical on CPP &Node JS	Practical	02	15	35
7	CSD-407	Skill Enhancement Course (SEC)(T)	Business Statistic	Theory	02	15	35
8	CSD-408	OJT/FP	On Job Training	Practical	02	15	35
9	CSD-409	Co-Curricular Courses (CC)	NSS/NCC/Yoga Education-I	Theory	02	15	35
10		Ability Enhancement Course (AEC)	Marathi	Theory	02	15	35
11	OE-251ECO	Open Elective (OE)	Analysis of stock Market (From Humanities Faculty)	Theory	02	15	35
	Total				22		

B.Voc. in Computer Software Development

As per NEP -2020

Subject: - Advanced PHP

Semester No.	Programme Name	Subject Code	Type of Course	Course Title	Credits	Lectures per Week
I	B. voc. in Computer Software Development	CSD-301	Major Mandatory	Advance PHP	2	3

Objectives of the Course:

1. To know & understand concept so internet programming.
2. Understand how server-side programming works on the web.
3. Understanding How to use PHP Framework (WordPress).
4. How to work Ajax and xml with php.
5. Read and process data in a MySQL database

Course Outcome:

1. Apply Object Oriented concepts in developing PHP applications.
2. Use various third party APIs and advance concepts of PHP to develop Applications.
3. Develop server side web applications using Ajax and Xml.
4. Implement cookies and session management.
5. Understand PHP MySQL, its Queries and the ability to establish the connection.

Topics and Learning Points

TopicNo	Topic Name	Sub Topic	No. of Periods
1	**Introduction to Object Oriented Programming in PHP**	1.1 Classes 1.2 1.2 Objects 1.3 Introspection and Serialization 1.4 Inheritance 1.5 Interfaces 1.6 Encapsulation	05
2	**Web Techniques**	2.1 Web Variables 2.2 Server Information 2.3 Self Processing Forms 2.4 Setting response headers 2.5 Maintaining State (session and Cookies)	08
3	**Databases**	3.1Using PHP to access a databases 3.2 Mysql Database functions 3.3 Relational databases and SQL 3.4 Advanced database techniques 3.5 Sample application	06
4	**Introduction to XML**	4.1 XML document Structure 4.2 PHP and XML 4.3 The document object model 4.4 The simple XML extension 4.5 Changing a value with simple XML	06

5	**PHP Framework (Word Press)**	5.1 Introduction to WordPress 5.2 Setting up a WordPress Website 5.3 Installing WordPress 5.4 WordPress Dashboard 5.5 Creating and editing posts and pages in WordPress 5.6 Themes and Customization 5.7 Choosing a WordPress theme for a website	05

References:

B.Voc. in Computer Software Development

As per NEP -2020

Subject: - Computer Laboratory based on Advanced PHP

Semester No.	Programme Name	Subject Code	Type of Course	Course Title	Credits	Lectures perWeek
I	B. voc. in Computer Software Development	CSD-302	Major Mandatory (MJM)(P)	Computer Laboratory based on Basic PHP	2 (1 Credit = 30 Hours of Lab Work)	5

Objectives of the Course:

1. To introduce the fundamentals of Internet, and the principles of web design.
2. To develop the concepts on web designing and development using server side scripting language PHP and database as My SQL.
3. To develop modern interactive web applications using PHP, XML And MSQL.

Course Outcome:

By the completion of the course, student will be able to:

CO 1	List the major elements of the PHP & MySQL work and explain why PHP is good for web development
CO 2	Learn how to take a static website and turn it into a dynamic website run from a database using PHP and MySQL.
CO 3	Learn how databases work and how to design one, as well as how to use php MyAdmin to work with MySQL.
CO 4	Analyze the basic structure of a PHP web application and be able to install and maintain the web server, compile, and run a simple web application.

Guidelines for student Journal:

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- Write-up shall include Title, Problem Statement, software and Hardware requirements, Date of Completion.
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Topics and Learning Points

Unit	Title of Assignment	No. of Lectures (Per Lecturein Clock Hours)
1	Assignment 01:- Introduction to object oriented Programming in	12

2	Assignment 02:- To Study Web Techniques	12
3	Assignment 03:- Database	12
4	Assignment 04:- XML	12
5	Assignment 05:- Word Press	12

References:

B.Voc. in Computer Software Development

As per NEP -2020

Subject: - Node JS

Semester No.	Programme Name	Subject Code	Type of Course	Course Title	Credits	Lectures per Week
I	B. voc. in Computer Software Development	CSD-403	Major Mandatory	Node JS	2	3

Objectives of the Course:

1.It will give you a fundamental knowledge of Node.js
2 .It is designed for beginners and requires only basic JavaScript knowledge.
3 The content has been carefully made to be bite-sized, simple, and easy to understand.

Course Outcome:

By the completion of the course, student will be able to:

CO1: **Understand Node JS and REPL terminal.**

CO2**: Experiment with Node JS Modules and Node Package Manager.**

CO3**: Develop applications to handle events in Node JS**

CO4**: Make use of Web Server to manage database.**

Topics and Learning Points

Topi cNo	Topic Name	Sub Topic	No. of Periods
1	**Network Models Introduction to Node JS**	1.1 Introduction 1.2 What is Node JS? 1.3 Advantages of Node JS 1.4 Traditional Web Server Model 1.5 Node .js Process Model 1.6 Install Node.js on windows Working in REPL	07
2	**Node JS Modules**	2.1 Functions 2.2 Buffer 2.3 Module 2.4 Module Types 2.5 Core Modules 2.6 Local Modules	10
3	**Node package Manager**	.1 What is NPM? 3.2 Installing Packages Locally 3.3 Adding dependency in package.json 3.4 Installing packages globally	06

4	**Web Server**	1 Creating web Server 4.2 Handling http request 4.3 Sending Request	03
5	**Database Connectivity**	.2 Configuring 5.3 Working with select command 5.4 Updating records 5.5 Deleting records	04

References:

1:Node.js: Novice to Ninja **Author**: Craig Buckler**Publishing**: first edition (July, 2022

2:Node –JS Nirali Prakashan Author: Shivendu Bhushan,Pradip Waghmare

B.Voc. in Computer Software Development

As per NEP -2020

Subject: - Digital Marketing

Semester No.	Programme Name	Subject Code	Type of Course	Course Title	Credits	Lectures per Week
I	B. voc. in Computer Software Development	CSD-301	Major Mandatory	Basic PHP	2	3

Objectives of the Course:

1
2
3
4

Course Outcome:

By the completion of the course, student will be able to:

CO1: The aim of this syllabus is to give knowledge about using digital marketing in and as business. tools.

CO 2: To make SWOT analysis, SEO optimization and use of various digital marketing

CO3: Relate the relevance of Online Marketplace in today's world

CO4: Examine the concept of Digital Media and the benefits to be derived

Topics and Learning Points

Topi cNo	Topic Name	Sub Topic	No. of Periods
1	**E-Commerce**	1.1 Introduction 1.2 Understanding Internet Marketing 1.3 Search Engine Optimization 1.4 Search Engine Marketing 1.5 Email Marketing 1.6 Digital Display Marketing	10
2	**Introduction to New Age Media (Digital) Marketing**	2.1 What is Digital Marketing 2.2 Digital vs. Real Marketing 2.3 Digital Marketing Channels 2.4 Types of Digital Marketing(Overview)-Internet Marketing ,Social Media Marketing, Mobile Marketing	08
3	**Creating Initial Digital Marketing Plan**	3.1 Content management 3.2 SWOT analysis: Strengths, Weaknesses, Opportunities, and Threats 3.3 Target group analysis	06

4	**Marketing using Web Sites**	4.1 Web design 4.2 Optimization of Web sites 4.3 MS Expression Web 4.4 SEO Optimization 4.5 Writing the SEO content	06
5	**Social Media Marketing**	5.1 Understanding Social Media Marketing 5.2 Social Networking (Facebook, Linkedin, Twitter, etc.) 5.3 Social Media (Blogging, Video Sharing - Youtube, Photosharing – Instagram, Podcasts) 5.4 Web analytics - levels 5.5 Modes of Social Media Marketing- 5.5.1 **Creating a Facebook page** Visual identity of a Facebook page , Types of publications, Facebook Ads , Creating Facebook Ads , Ads Visibility 5.5.2 **Business opportunities and Instagram options** Optimization of Instagram profiles , Integrating Instagram with a Web Site and other social networks ,Keeping up with posts 5.5.3 **Business tools on LinkedIn** Creating campaigns on LinkedIn , Analyzing visitation on LinkedIn 5.5.4 **Creating business accounts on YouTube** YouTube ,Advertising , YouTube Analytics 5.5.5 **E-mail marketing** E-mail marketing plan , E-mail marketing campaign analysis , Keeping up with conversions 5.6 Digital Marketing tools: Google Ads, FaceBook	

References

Digital Marketing for Dummies By Ryan Deiss and Russ Hennesberry

2) Advertising and Promotion: An Integrated Marketing Communications Perspective,

George Belch, San Diego University Michael Belch, San Diego University

3) Advertising Management: Rajeev Batra, John G. Myers, David A. Aaker

4) Belch: Advertising & Promotions (TMH)

5) The Social Media Bible: Tactics, Tools, & Strategies for Business Success by Lon Safko

6) Web Analytics 2.0 – Avinash Kaushik

B.Voc. in Computer Software Development

As per NEP -2020

Subject: - OOPs Concept Using CPP

Semester No.	Programme Name	Subject Code	Type of Course	Course Title	Credits	Lectures per Week
I	B. voc. in Computer Software Development	CSD-301	Major Mandatory	Basic PHP	2	3

Objectives of the Course:

1 To Understand how C++ improves C with object-oriented features.

2. To learn the concept of data abstraction and encapsulation.

3. To learn how inheritance promote code reuse in C++.

4. To learn how to overload and override functions in C++.

Course Outcome:

By the completion of the course, student will be able to:

CO1: Identify potential security threats to networks and apply appropriate security measures. :

CO2: Understand the principles of wireless networking. :

CO3: Configure wireless networks. :

CO4: Utilize troubleshooting techniques and tools to diagnose and resolve common network issues effectively. :

Topics and Learning Points

Topi cNo	Topic Name	Sub Topic	No. of Periods
1	**Introduction and Beginning With CPP**	1.1 Introduction to Oops 1.2 Basic concepts of Oops 1.3 Advantages and Application's of Oops 1.4 Introduction, features and Application's of CPP 1.5 Input and Output Operators in CPP with example 1.6Tokens, Identifiers, Constants, Literals in CPP 1.7 Data Types and Keywords 1.7 Variables, Declaration of variables, Dynamic initialization of variables, Reference variable 1.8 Operator's in CPP 1.8.1 Scope Resolution operator 1.8.2 Memory Management Operators 1.9 Manipulators 1.10 Functions 1.10.1 function Prototyping 1.10.2 Call by value and call by Reference 1.10.3 Default Arguments 1.10.4. Inline Functions	10

2	**Classes and Objects**	2.1 Structure and class 2.2 classes and Objects 2.3 Access specifiers 2.4 defining data members and member functions inside and outside class definition 2.5 simple c++ program using class 2.6 memory Allocation for Objects 2.7 static data members and member functions 2.8 Array of objects, Objects as a function argument 2.9 Friend Function and Friend Class 2.10 Function Returning Objects	04
3	**Constructors and Destructors**	3.1 Constructors 3.2 Types of Constructor : Default, Parameterized ,Copy 3.3 Multiple Constructors in class 3.4 Constructors with default argument 3.5 Dynamic Constructor 3.6 Dynamic initialization of Constructor 3.7 Destructor	06
4	**Inheritance**	4.1 concept of Inheritance 4.2 Defining Base Class and Derived Class 4.3 Types of Inheritance 4.4 Virtual Base Class 4.5 Abstract Class 4.6 Constructors in Derived Classz	06
5	**Polymorphism**	5.1 what is polymorphism 5.2 Compile Time Polymorphism 5.2.1 Introduction,Rules for Operators Overloading 5.2.2 Function Overloading 5.2.3 Operator Overloading: Unary and Binary 5.2.4. Operator Overloading: Using friend function 5.2.5. Operator Overloading: Insertion and Extraction Operators 5.2.5. String manipulation using Operators Overloading 5.3 Runtime Polymorphism 5.3.1. This Pointer 5.3.2. Pointers to Objects 5.3.3. Pointer to Derived Classes 5.3.4. Virtual Functions 5.3.5. Pure virtual Functions	4

References:

1. The C++ Programmong Language(4th Edition) By Bjarne Stroustrup
2. C++ Primer(5th Edition) By Stanley B.Lippman,Josee Lajoie, and Barbara E Moo
3. Programming : Principles and Practice Using C++(2008) By Bjarne Stroustrup

B.Voc. in Computer Software Development

As per NEP -2020

Subject: - Computer Laboratory based on CPP & Node JS

Semester No.	Programme Name	Subject Code	Type of Course	Course Title	Credits	Lectures perWeek
I	B. voc. in Computer Software Development	CSD-302	Major Mandatory (MJM)(P)	Computer Laboratory based on CPP & Node JS	2 (1 Credit = 30 Hours of Lab Work)	5

Objectives of the Course:

1.To achieve Server side JavaScript Execution
2.To develop scalable,high performance network applications.
3.Able to make use of objects and classes for developing programs.
4.Able to use various object oriented concepts to solve different problems.

Course Outcome:

By the completion of the course, student will be able to:

CO 1 :Get Practical Knowledge of C++ Programming
CO 2 :Learn how to use Oops Concept practically.
CO 3 :Error Handling and Process Management:
CO 4 :Network Programming Fundamentals

Guidelines for student Journal:

- The laboratory assignments are to be submitted by student in the form of journal.
- Journal consists of Certificate, table of contents, and handwritten write-up for each assignment.
- Write-up shall include Title, Problem Statement, software and Hardware requirements, Date of Completion.
- Program codes with sample output of all performed assignments are to be submitted as softcopy.
- Use of DVD containing students programs maintained by lab In-charge is highly encouraged. For reference one or two journals may be retained with program prints.

Guidelines for Assessment:

- Continuous assessment of laboratory work is to be carried out based on overall performanceof students.
- For each lab assignment, the instructor will assign grade/marks based on parameters such as timely completion, understanding, neatness etc. with appropriate

Topics and Learning Points

Unit	Title of Assignment	No. of Lectures (Per Lecturein Clock Hours)
1	**Assignment 01:-** Introduction and Beginning With CPP	8
2	**Assignment 02:-** Classes and Objects	12
3	**Assignment 03:-** Constructors and Destructors	12
4	**Assignment 04:-** Inheritance	8
5	**Assignment 05:-** Polymorphism	8
6	**Assignment 06**:Node.js web server, modules &npm	12
7	**Assignment 07**: File system	
8	**Assignment 08** :Events in node.js	
9	**Assignment 09**: Node.js with database	

References:

B.Voc. in Computer Software Development

As per NEP -2020

Subject: - Business Statistic

Semester No.	Programme Name	Subject Code	Type of Course	Course Title	Credits	Lectures per Week
I	B. voc. in Computer Software Development	CSD-407	Major Mandatory	Business Statistic	2	3

Objectives of the Course:

1
2
3
4

Course Outcome:

By the completion of the course, student will be able to:

CO1 :

CO 2 :

CO3 :

CO4 :

Topics and Learning Points

TopicNo	Topic Name	Sub Topic	No. of Periods
1			10

2			08
3			06
4			06

References:

B.Voc. in Computer Software Development

As per NEP -2020

Subject: - Marathi

Semester No.	Programme Name	Subject Code	Type of Course	Course Title	Credits	Lectures per Week
I	B. voc. in Computer Software Development	AEC-251-MAR	Major Mandatory	Marathi	2	3

Objectives of the Course:

1
2
3
4

Course Outcome:

By the completion of the course, student will be able to:

CO1 :

CO 2 :

CO3 :

CO4 :

Topics and Learning Points

Topi cNo	Topic Name	Sub Topic	No. of Periods
1			10
2			08
3			06
4			06

References:

B.Voc. in Computer Software Development

As per NEP -2020

Subject: - Analysis of Stock market

Semester No.	Programme Name	Subject Code	Type of Course	Course Title	Credits	Lectures per Week
I	B. voc. in Computer Software Development	OE 251 ECO	Major Mandatory	Analysis of Stock Market	2	3

Objectives of the Course:

1. The scope of stock market is increasing day by day.
2. Students will study stock market analysis to understand the concept of stock market, working of stock market and regulation of stock market etc

Course Outcome:

By the completion of the course, student will be able to:

CO1 : Understand the role and importance of Indian Stock Market Operations

CO 2 : Apply and analyse the concept relevant to Indian stock markets

Topics and Learning Points

Topi cNo	Topic Name	Sub Topic	No. of Periods
1	. Practical Approach to Stock Market	1.1 - Opening Demat Account 1.2- Online Trading Platforms- Upstox, Angel-One, Zerodha, Samco etc. 1.3 - Types of Orders- Intraday and Delivery 1.4 - Stop Loss, Good Till Triggered (GTT) 1.5 – BSE, NSE – Indices & difference	10
2	Portfolio Management	2.1 - Selection of Funds, Selection of stocks 2.2 – Fundamentals of stocks: Analyzing Company's Health – Revenue, Earnings, Debt, Management quality, Price to Earnings ratio, etc. 2.3 – Technical Analysis of Stocks: Analysing historical price and volume data trends with the help of charts 2.4 - Stock analysis- any one company	12
3	**Economic Analysis of Stock Market**	3.1 - Meaning of IPO, Government Securities, Auctions 3.2 - Trade Book: Build a trade report 3.3 - Economic Analysis of Stock Market: Indices (Nifty, Sensex), Gross Domestic Product, Unemployment Rate, Inflation Rate, Consumer Confidence, Purchase Manager's Index 3.4 - Five Step Approach for Stock Picking	8

References:

1. Pathak Bharati (2018), 'Indian Financial System', Pearson Education, Fifth edition.
2. Gomez Clifford (2008), 'Financial Markets, Institutions and Financial Services', Prentice Hall of India,
3. Meir Kohn (2013), 'Financial Institutions and Markets', Oxford University Press