SARVAJANIK UNIVERSITY
INCLUSIVE | INTEGRATED | INNOVATIVE

Faculty of Science

Shree Ramkrishna Institute of Computer Education & Applied Sciences, Surat

B. Sc. (Information Technology)
and
B. Sc. (Information Technology Honors)

With Effect From 2024

Evaluation Scheme for Semester 3 and 4:

Semester	Subject group	Continuous Comprehensive Evaluation				Semester End Examination (SEE)	Grand Total
		CE	Attend.	Assign.	Total CEE		
3	Major	30	10	10	50	50	100
	Major	30	10	10	50	50	100
	Major	30	10	10	50	50	100
	SEC	15	05	05	25	25	50
	Multidisciplinary	10	10	30	50	50	100
	Ability Enhancement Course	15	05	05	25	25	50
	Value Added Course	15	05	05	25	25	50
				Total	**275**	**275**	**550**
4	Major	30	10	10	50	50	100
	Major	30	10	10	50	50	100
	Major	30	10	10	50	50	100
	Minor	30	10	10	50	50	100
	SEC	15	05	05	25	25	50
	Ability Enhancement Course	15	05	05	25	25	50
	Value Added Course	15	05	05	25	25	50
Total					**275**	**275**	**550**

Faculty of Science

Shree Ramkrishna Institute of Computer Education & Applied Sciences, Surat

B.Sc. (Information Technology)

SEMESTER- 3

Web Application Development-I (PHP)

Course Code	
Course Title	**Major: Web Application Development-I (PHP)**
Credit	3 (Theory) + 1 (Practical)
Teaching per Week	3hrs (Theory) + 2hrs (Practical)
Minimum weeks per Semester	15 (Including Class work, examination, preparation, holidays etc.)
Last Review / Revision	2021-22
Purpose of Course	The purpose of the course is to make students capable of developing professional applications using the latest tools and technologies in PHP.
Course Objective	For Students: • To Provide the necessary knowledge to design and develop dynamic, database-driven web applications using PHP • Will learn how to use MYSQL database
Pre-requisite	• HTML/XHTML, CSS, JS or equivalent knowledge· • Other web programming languages knowledge will be helpful. • Knowledge of Database & basic SQL is recommended.
Course Outcome	Students will be able to • Carry out Server-side programming using PHP • Develop database-driven web applications • Integrating PHP programs with Client-side scripting
Course Content	**Unit 1: Basic Introduction to PHP [8 Hrs]** 1.1 Important tools and software requirements (like Web Server, Database, Editors etc.) 1.2 Basic Syntax, PHP variables and constants Types of data in PHP, Expressions, scopes of a variable (local, global) 1.3 PHP Operators: Arithmetic, Assignment, Relational, Logical operators, Bitwise, ternary and MOD operators. PHP operator Precedence and associativity 1.4 PHP IF Else conditional statements (Nested IF and Else) 1.5 Switch Case, While, For and Do … While Loop statements 1.6 Goto, Break, Continue and exit PHP Functions **Unit 2: Arrays in PHP [7 Hrs]** 2.1 Introduction to Array, creating index based and Associative array 2.2 Accessing array Looping with Index based array, with associative Array using each() and forEach(). 2.3 Some Useful array functions: implode, explode, count, different sorting functions, array_reverse, array_search, array_push, array_pop, array_keys, Key, sizeof. **Unit 3: String Manipulation and Regular Expression in PHP [6 Hrs]** 3.1 Creating and accessing String 3.2 Searching & Replacing String formatting, joining and splitting String Related Library functions 3.3 Use of preg_match(), preg_replace(), preg_split() functions in Regular Expression for validations.

	Unit 4: Handling HTML forms with PHP and Database: **[8 Hrs]** 4.1 Capturing Form Data using GET and POST form methods 4.1.1 Dealing with multiple values including arrays to redirect data on another page. 4.1.2 Image / file upload implementation with PHP. 4.2 Dealing with Sessions & Cookies while handling forms (with Database) 4.3 Introduction to MySQLi and its data types. 4.3.1 Creating database, tables, relationships in database. 4.3.2 Storing images/files in the database. 4.4 MySQLi various supported database engines. **Unit 5: Crud operation using OOP with PHP** **[8 Hrs]** 5.1 Introduction to database connection functions. 5.2 Various database queries functions: mysqli_query, mysqli_fetch_arary / row / object, mysqli_num_rows, mysqli_close, mysqli_select_db, mysqli_debug 5.3 Implementing CRUD operations with OOP concept. 5.4 Error Handling using 'try' and 'catch' **Unit 6: Introduction to Ajax with PHP, Payment Gateway & Website Performance Evaluation** **[8 Hrs]** 6.1 Use of Ajax, it's pros and cons 6.1.1 Basic function of AJAX with PHP 6.1.2 Implementation of AJAX with PHP (with database) 6.2 Payment Gateway Standard 6.3 Page Speed and performance related factors
Practical	List of practical will be prepared at the beginning of each semester
Text and Reference Literature	1. Core PHP Programming; Leon Atkinson; Pearson publishers 2. The Complete Reference PHY; Stever Holzner; McGraw Hill 3. Beginning PHP 5.0 Database; Christopher Scollo, Harish Rawat, Deepak Thomas; Wrox Press 4. PHP – A beginner; Ashok Appu; Wiley 5. PHP 5.0 and MySql Bible; Tim Converse, Joyce Park, Clark Morgan John; Wiley & Sons 6. MySQL Bible; Steve Suehring John; Wiley &Sons 7. PHP Black Book; Peter Moulding 8. PHP 5 and Mysql; Tim converse, Joyce Park and Clark Morgan; Bible Wiley 9. Beginning PHP 5.3; Matt Doyle; Wrox Publication
Teaching Methodology	Discussion, Independent Study, Seminars and Assignment Practical Assignments 80% (Approximately weekly)
Evaluation Method	50% Internal assessment is based on class attendance, participation, class test, quiz, assignment, seminar, internal examination etc. 50% assessment is based on end semester written examination

Advanced Database Management System

Course Code	
Course Title	**Major: Advanced Database Management System**
Credit	3(Theory) + 1(Practical)
Teaching per Week	3 Hrs (Theory) +2 Hrs. (Practical)
Minimum weeks per Semester	15 (Including Class work, examination, preparation, holidays etc.)
Last Review / Revision	---
Purpose of Course	This course imparts the knowledge of Procedural SQL, No SQL and Data Analytics
Course Objective	To give exposure of • PL/SQL for handling data • Transaction Management concepts • Overview of advanced database technologies
Pre-requisite	Understanding of basic Database concepts, DDL, and DML
Course Out come	Students will be able to • Efficiently use PL/SQL for handling data • Create and invoke user defined procedures, functions and triggers • Gain knowledge about various types of NOSQL databases • Get the overview of Bigdata and OLAP
Course Content	**Unit 1: Procedural SQL and Exception Handling** **[10 Hrs]** 1.1. PL/SQL Block Structure 1.1.1. Using Variables, Constants and Data Type 1.1.2. Control Statements: IF…THEN statement, Loop, FOR...Loop, While Loop 1.2. User-Defined RECORD and TABLE data types. 1.3. Exceptions 1.3.1. User defined Exceptions and Pre-defined Exceptions 1.3.2. Handling Exceptions 1.3.3. Raising Exceptions 1.4. Working with Views **Unit 2: Cursors and functions** **[8 Hrs]** 2.1. Concept of cursors, types of cursors 2.2. Functions 2.2.1. Built-in functions 2.2.2. User defined functions **Unit 3: Stored Procedures and Triggers** **[8 Hrs]** 3.1 Cursors: Implicit, Explicit 3.2 User Defined Function with parameters 3.3 Stored Procedure with parameters 3.4 Triggers 3.4.1 Triggers and its benefits 3.4.2 Types of Triggers: Before and After Triggers

	Unit 4 Transaction Management and Packages **[8 Hrs]** 4.1 Transaction and System Concepts 4.2. Desirable Properties of Transactions 4.3 Commit, Savepoint, Rollback 4.4. Packages 4.4.1 Creating and using packages 4.4.2 Package specification and body 4.4.3. Advantages and Limitations of packages **Unit 5: Introduction to NoSQL** **[5 Hrs]** 5.1. Basic concept of NoSQL and Advantages of NoSQL 5.2 Types of NoSQL database 5.2.1 Column based 5.2.2 Graph based 5.2.3 Document based 5.2.4.key-value **Unit 6: Overview of Bigdata and DataAnalytics** **[6 Hrs]** 6.1 Introduction to Bigdata 6.2. Big data Storage Systems 6.2.1 Distributed file systems, 6.2.2 Sharing across multiple databases 6.2.3 Key-value storage systems, 6.2.4 Parallel and distributed databases 6.3. Introduction to OLAP and its operations (pivoting, slicing, rollup, drill down)
Practical	List of practical will be prepared at the beginning of each semester
Text and Reference Literature	1. Silberschatz, Korth, Sudarshan, Database System Concepts, McGraw-Hill computer science series 2. C J Date, An introduction to Database Systems, Addition-Wesley 3. Nilesh Shah, Database System using Oracle, PHI. 4. Ramez Elmasri & Shamkant B. Navathe, Fundamentals of Database Systems, Addison-Wesley 5. Hector Gracia-Molina, Jeffrey D. Ullman, and Jennifer Widom, Database System Implementation, Pearson. 6. Ivan Bayross, SQL, PL/SQL, BPB Publications 7. Scott Urman, Oracle9i PL/SQL programming, McGraw-Hill 8. Big-Data Fundamentals, Authar Thomas Erl
Teaching Methodology	The course is composed of readings, discussion, videos and presentation, code competition activity and assignments of computational problem solving. Practical Assignment (Approximately weekly)
Evaluation Method	50% Internal assessment is based on class attendance, participation, class test, quiz, assignment, seminar, internal examination etc. 50% assessment is based on the end semester written examination.

System Analysis, Modelling, Design and Management

Course Code	
Course Title	**Major: System Analysis, Modelling, Design and Management**
Credit	4
Teaching per Week	4 Hrs
Minimum weeks per Semester	15 (Including Class work, examination, preparation, holidays etc.)
Last Review / Revision	2021-22
Purpose of Course	The purpose of the course is to make students understand software engineering process and capable of applying the principles and techniques of computer science and engineering, to the analysis, design, development, testing, and evaluation of the software and the systems.
Course Objective	• To make students understand how to develop software. • To make students understand various components of software process model and their working. • To make students understand the importance of requirement analysis. • To make students understand various approaches of system design.
Pre-requisite	Basic knowledge of Computer Programming and Application Development
Course Out come	After completion of this course, the student will be capable of understanding software development principles, processes to develop and design software systems.
Course Content	**Unit 1: Introduction to Software Engineering [6 Hrs]** 1.1 Software, Software characteristics, Software Engineering 1.2 Software engineering approach 1.2.1 Introduction to phased development approach 1.2.2 Introduction to effort distribution 1.3 Software process models - Linear sequential / waterfall model, Prototype model, RAD model, Incremental model, Spiral model. 1.4 Various roles and responsibilities in SDLC 1.5 Software quality Assurance **Unit 2: Agile Development [4 Hrs]** 2.1Agility and Agile Process 2.2 Agility principles 2.3 A Tool set for the Agile Process 2.4 Agile Development Models - Scrum and sprint **Unit 3: Software Requirement Analysis & Modelling [8 Hrs]** 3.1 Requirement gathering - formal & informal techniques 3.2 Requirement modelling 3.2.1 Use case modelling 3.2.2 Classification- Classes, Object relationships, attributes and Methods. 3.2.3 Data Flow Diagram 3.3 Class Based Methods 3.3.1 Class Notation-Static Structure 3.3.2 Object Diagram 3.4 Software Requirement Specification

Unit 4: Software Designing **[8 hrs]**

4.1 Introduction to Design - Importance of design, Relationship between analysis & design, Design Principles

4.2 Design Concepts

4.2.1 System level design concepts – Abstraction, Refinement, Modularity, Information hiding, Polymorphism and reusability

4.2.2 Module level design concepts – Coupling, Cohesion

4.2.3 Overview of Designing software architecture

4.2.4 Concept of UI / UX Design

Unit 5: Design Modelling **[8 Hrs]**

5.1 Sequence Diagram - Elements and Guidelines

5.2 Collaboration Diagram - Elements and Guidelines

5.3 Activity Diagram - Elements and Guidelines

5.4 State Chart Diagram - Elements and Guidelines

Unit 6: Software Testing **[10 Hrs]**

6.1 Overview of Software Testing

6.2 Levels of testing - Unit, Integration, System and Acceptance testing

6.3 Types of Testing:

6.3.1 White box testing - Data and code coverage testing techniques

6.3.2 Black box testing - Equivalence partitioning, Boundary value

6.3.3 Overview of testing types - Ad-hoc testing, Gorilla testing, random testing and Systematic testing, Static testing and dynamic Testing, Functional, Nonfunctional and Behavioural Testing, Usability Testing, Configuration Testing and Compatibility Testing

6.3.4 Testing practices

Unit 7: Software implementation and Project management **[6 Hrs]**

7.1 Project management

7.1.1 Software estimation - COCOMO Model – II

7.1.2 Project scheduling and tracking - Time line charts and project table.

7.1.3 Software team management - CC, CD, DD team structure

7.1.4 Software project maintenance

7.2 Software Deployment and Advanced Practices

7.2.1 DevOps Practices, Tools, DevOps Lifecycle

Unit 8: Case study of information systems **[8 Hrs]**

8.1 Inventory Control System

8.1.1 Objectives of good inventory control system

8.1.2 Transaction for an inventory system (Purchase, Issue, Purchase Return and Issue Return)

8.1.3 Creation of transaction file, Item master file for purchase, issue, purchase return and sales return.

8.1.4 Consumption analysis, A B C analysis, Year-end processing and Periodic housekeeping

8.2 Payroll System

	8.2.1 Objectives of payroll systems 8.2.2 Classification of employees based on payment of wages 8.2.3 Leave entitlements, Overtime wages, bonus, provident fund contribution and other deductions, Computerizing a Payroll system
Text and Reference Literature	1. Integrated Approach to Software Engineering Pankaj Jalote Narosa Publication. 2. Software Engineering: A Practitioner's Approach 4e/5e, Roger S. Pressmann McGrawHill Publication. 3. Workbook on System Analysis and Design 1e/2e, Garg, Srinivasan PHI. 4. Software Engineering K. K. Aggrawal, Yogesh Singh New Age International Publishers. 5. Fundamentals of Software Engineering Carlo Ghezzi, Mehdi Jazayeri, Dino Mendrilo PHI. 6. Software Engineering Ian Summwerville Addison Wesley- Pearson Education. 7. Software Engineering K. L. James PHI. 8. System Analysis and Design Elias M. Awad Galgotia Publication. 9. System Analysis and Design in a changing world John W. Stazinger, Robert B.Jacobson, Stephen D Burd, Thomson Learning. 10. Effective DevOps: Building a Culture of Collaboration, Affinity, and Tooling at Scale, Jennifer Davis, Katherine Daniels and O'relly
Teaching Methodology	Discussion, Independent Study, Seminars and Assignment
Evaluation Method	50% Internal assessment is based on class attendance, participation, class test, quiz, assignment, seminar, internal examination etc. 50% assessment is based on end semester written examination

Digital Marketing

Course Code	
Course Title	**SEC: Digital Marketing**
Credit	1 (Theory) + 1 (Practical)
Teaching per Week	1 Hrs (Theory) + 2 Hrs (Practical)
Minimum weeks per Semester	15 (Including Class work, examination, preparation, holidays etc.)
Last Review / Revision	–
Purpose of Course	The purpose of the course is to make students aware of current strategies in Digital Marketing.
Course Objective	To provide an in-depth knowledge of most recent digital marketing strategies.
Pre-requisite	Basic understanding of Web, social media.
Course Out come	After completion of this course, the students will be able to implement various techniques and tools for digital marketing.
Course Content	**Unit 1: Fundamentals Of Digital Marketing** **[4 Hrs]** 1.1 Types of Digital Marketing 1.2 Marketing v/s Sales 1.3 Inbound v/s Outbound marketing 1.4 Content marketing 1.5 Understanding Leads 1.6 Tools for Digital Marketing 1.7 WWW, Domain **Unit 2: Designing Fundamentals With Web Designing** **[4 Hrs]** 2.1 Designing Fundamentals 2.1.1 Tools for Designing 2.1.2 Color Theory 2.1.3 Design Logo and Flyer using Canva 2.2 Introduction to WordPress 2.2.1 Installation and Overview (Dashboard, pages, themes, plugin, category, post, tags) 2.2.2 Designing WordPress website. **Unit 3: SEO & SMM Social Media Marketing (Facebook)** **[8 Hrs]** 3.1 Introduction to SEO 3.1.1 Types Of SEO 3.1.2 Google Analytics to Improve SEO Performance 3.2 SMM (Fundamentals of Facebook Marketing) 3.2.1 Creating Facebook Pages, Page Info and Settings, Facebook Page, Custom URL, Invite Page Likes, Featured Video, Scheduling Posts, Facebook Events, Reply and Message, FacebookInsights Reports, Competitor's Facebook Page ,Ban User on Facebook Page

	3.2.2 Facebook Ad Campaigns: Setting Up Facebook Ad Account, Create Ad - Targeting, Create Ad - Budgeting, Create Ad - Creative, Managing and Editing Ads, Ad Reports and Ad Insights ,Billing and Account 3.3 Overview of LINKEDIN **Unit 4: Email Marketing & Affiliate Marketing [4 Hrs]** 4.1 Email Marketing Strategy 4.2 Affiliate Marketing 4.2.1 What is affiliate marketing 4.2.2 How Does Affiliate Marketing Work? 4.2.3 Types of Affiliate Marketing
Practical	List of practical will be prepared at the beginning of each semester
Text and Reference Literature	1. Digital Marketing For Dummies, Russ Henneberry and Ryan Deiss (ISBN-13 : 978-1119235590) 2. Digital Marketing All-In-One for Dummies (ISBN-13 : 978-8126534623) 3. Digital Marketing All-In-One Bundle, 2 in 1 Bundle ,Savanna Payne · Wendell Yanick
Teaching Methodology	Discussion, Independent Study, Seminars and Mini Project
Evaluation Method	50% Internal assessment is based on class attendance, participation, class test, quiz, assignment, seminar, internal examination, etc. 50% assessment is based on end semester written examination