SARDAR PATEL UNIVERSITY
Bachelor of Vocation (Software Development)
Semester: V
Syllabus with effect from: June 2023

Course Type	New Course Code	TITLE	T/P	Credit	Exam Duration in Hrs	Contact Hrs Per Week	Component of Marks			Evaluation Responsibility
							Internal	External	Total	
							Total/ Passing	Total/ Passing	Total/ Passing	
General Component	US05FBVS51	Software Engineering	T	3	3	3	30/12	70/28	100/40	University/ College
	US05FBVS52	Data Communication and Networking	T	3	3	3	30/12	70/28	100/40	University/ College
	US05FBVS53	Visual Programming	T	3	3	3	30/12	70/28	100/40	University/ College
	US05FBVS54	Introduction to Python Programming	T	3	3	3	30/12	70/28	100/40	University/ College
Skill Component	**Lab/Practical**									
	US05CBVS51	Visual Programming Programming Practical Lab	P	3	3	3	30/12	70/28	100/40	University/ College
	US05CBVS52	Introduction to Python Programming Practical Lab	P	3	3	3	30/12	70/28	100/40	University/ College
	On-Job-Training/Qualification Packs									
	US05CBVS53	Software Development (SSC/Q0501)	P	12	-	400 hours in semester	-	100/40	100/40	SSC

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Paper Code: US05FBVS51	Total Credits:3
Title Of Paper: Software Engineering	

Unit	Description in detail	Weightage (%)
1	Introduction to Software Engineering - Introduction to Software and Software Engineering - The Evolving Role of Software - Software Process characteristics - Software development Phases - Effort and Error Distribution - Process Models (Waterfall, Prototype, Iterative enhancement, spiral) - Software metrics (introduction, product metrics, process metrics)	25%
2	:- Requirement Specification and Project Planning - Software Requirement Specification (SRS) and Needs of SRS - Problem Analysis - Structuring Information - UML Introduction - SRS : Characteristics and Components Specification language (Structured English, Regular Expression and Decision Table) - SRS : Structure and Validation - Introduction: Software Projects, Planning, Categories of Software projects - Overview of Cost estimation, Uncertainty in cost estimation, size estimation, COCOMO Model (with example) - Project Monitoring Plan : Time sheets, Reviews, Cost-schedule milestone and - Earned value method - Software Quality Assurance Plans (SQAP) - Overview of Risk Management	25%

3	Software Designing Concepts
	   - System Design - introduction
	   - Design Objectives and Principles
	   - Design Concepts - Top down and Bottom up approach, Problem Partition, Abstraction, Modularity, Module Level concept, Coupling, Cohesion
	   - Overview of structured design
	   - Function v/s Object Oriented approach
	   - Design Specification, Verification
	   - Introduction: Detailed Design
	   - Module Specification, Desirable properties, functional module specification,
	   - Data abstraction specification
	   - PDL, Logic/ Algorithm Design
	   - Design Verification – Design Walkthrough, Critical
	Design review, Consistency checkers
		25%

4	Coding and Testing
	   – Introduction: Coding, Top Down and Bottom Up approach for coding
	   – Structured programming, Information Hiding
	   – Programming style, Internal documentation
	   – Verification (code reading)
	   – Introduction : Testing, Error, Fault, Failure & Reliability
	   – Testing process, Top down and bottom up approach for testing, Levels of Testing
	   – Functional Testing v/s. Structural testing
		25%

Practical:		
The students are required to do Dictation, Narration, Listening Comprehension, Note Making/Note Taking as given by concerned faculty		

MAIN REFERENCE BOOKS :

1. S. Parthasarthy & B. W. Khalkar : System Analysis & Design, 1st Edition, Master Ed. Cons., Nashik .
2. James A. Senn : Analysis & Design of Information System 2nd Edition, McGraw -Hill International
3. An Integrated Approach to Software Engineering : By Pankaj Jalote, Narosa Publishing House, Second Edition, 1997

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Paper Code: US05FBVS52	Total Credits:3
Title Of Paper: Data Communication and Networking	

Unit	Description in detail	Weightage (%)
1	: Introduction – Computer networks : definition and advantages – Classification of computer networks – Introduction and differences among Local Area Networks (LANs), Metropolitan Area Networks (MANs), Wide Area Networks (WANs) – Uses of Computer Networks – Meaning of the basic terms : topology, data rate, modulation rate, spectrum, bandwidth, server, host	25%
2	Data Communication Fundamentals – Various types of transmission media - guided transmission media magnetic media, twisted pair, coaxial cables, fiber optics – Introduction to the concept of modulation, types of modulation, serial transmission vs. parallel transmission, synchronous transmission vs asynchronous transmission, circuit switching, packet switching – The concept of multiplexing, Frequency Division Multiplexing (FDM) vs. Time Division Multiplexing (TDM)	25%
3	Layered Protocols and Satellite Communication – Protocol significance and hierarchies – Design issues for the layers – The OSI Reference model – Examples of protocols for different layers of the OSI model – Introduction to wireless networks – Communication satellites – Introduction to geosynchronous satellites	25%
4	Local Area Network Technology and Networking Devices – Types and characteristics of Local Area Networks – LAN Topologies : Bus, Star, Ring, Tree, Complete (Mesh) – Introduction to Carrier Sense Multiple Access (CSMA) protocol for LAN functions of various networking components : modems, amplifiers, repeaters, hubs, switches, bridges, routers, gateway	25%
	Practical:	
	The students are required to do Dictation, Narration, Listening Comprehension, Note Making/Note Taking as given by concerned faculty	

MAIN REFERENCE BOOKS :
1. Behrouz Forouzan, Introduction to Data Communications and Networking, Tata McGraw-Hill Publishing Co. Ltd., New Delhi, 1998.
2. Tanenbaum A. S., Computer Networks, Prentice-Hall of India Pvt. Ltd., New Delhi, 1997.
3. Stallings W., Data and Computer Communications, 3rd Edition, Macmillan Pub. Company, New York, 1991.

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Paper Code: US05FBVS53

Title Of Paper: Visual Programming

Total Credits:3

Unit	Description in detail	Weightage (%)
1	Introduction to .NET Framework and VB.NET – .NET Architecture, .NET Languages, Microsoft Intermediate Language (MSIL), The Just-In-Time (JIT) compiler, Working with Assemblies, The .NET framework class library – VB.NET - introduction, applications and types of project – Introduction to Visual Studio IDE – Creating simple Windows Application using VB.NET – Variables, data types, constants and operators – Type casting, Boxing and Unboxing, – Working with arrays and strings – Creating simple Windows Application using VB.NET	25%
2	VB.NET Basics – Use of conditional statement (if), multibranaching statement (select) and With…EndWith statement, – Looping Statement: DO, FOR, FOR EACH..NEXT and WHILE, Working with EXIT, CONTINUE and WITH statements – Working with procedures –introduction, types, use of parameters, parameter passing, calling procedures – OOP concepts - Encapsulation, Inheritance, Interfaces and Polymorphism – Working with modules, classes (partial) and namespaces – Working with Windows Forms –introduction, life cycle, basic properties, methods and events, use of simple windows forms control. – Working with SDI and MDI forms	25%
3	Developing Windows Forms, Exception Handling Working with basic controls – Button, CheckBox, CheckedListBox, ComboBox DateTimePicker, GroupBox, HScrollBar, RadioButton, VscrollBar, Label, ListBox PictureBox, TextBox and Time controls. Working with advanced controls – LinkLabel, RichTextBox, ColorDiolog, FontDialog, TreeView, Working with modules, classes (partial) and namespaces Error Handling: exception, structured exception using try…catch and final statement	25%

4	Persisting Data Using Databases and Files
	   – ADO.NET – introduction and applications
	   – ADO.NET – architecture (connected and disconnected)
	   – Database connectivity using ADO.NET
	   – Use of Data sources, Server Explorer and working with DataSet
	   – Populating data in a DataGridView,
	   – Working with files
		25%

	Practical:	
	The students are required to do Dictation, Narration, Listening Comprehension, Note Making/Note Taking as given by concerned faculty	

MAIN REFERENCE BOOKS :
1. Steven Holzner; VB.NET Black Book by Dreamtech publication
2. Francesco Balena : Programming Microsoft Visual Basic.NET, Microsoft Press
3. Bill Evjen, Billy Hollis, Bill Sheldon, Kent Sharkey and Tim McCarthy : Professional VB 2005 with .NET 3.0

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Paper Code: US05FBVS54	Total Credits:3
Title Of Paper: Introduction to Python Programming	

Unit	Description in detail	Weightage (%)
1	Basics of Python programming And Programming in Python:- Introduction to Python, Unique features of Python Python-2 and Python-3 differences, First Python Program, Python Identifiers, Keywords and Indentation, Comments, command line arguments	25%
2	Data Types and Operators And Conditional statements:- Declaring and using Numeric data types: int, float, complex Using string data type and string operations Defining list and list slicing Use of Tuple data type, Python basic Operators, Conditional blocks using if, else and elif, Programming using Python conditional statements.	25%
3	Python String and List Manipulation:- Building blocks of python programs, Understanding string in build methods , List manipulation using in build methods.	25%
4	Python Dictionaries & Functions:- Introduction, Python Dictionaries implementation. Introduction to functions, calling the function, anonymous function.	25%

MAIN REFERENCE BOOKS :

Name of Authors	Title of the Book	Publisher
Jeeva Jose	Introduction to Computing and Problem Solving With Python	Khanna Publishing House
Jeeva Jose	Taming Python by Programming	Khanna Publishing House

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Paper Code: Code: US05CBVS51	Total Credits:3
Title Of Paper: Visual Programming Practical Lab	

Part	Description in detail	Weightage (%)
1	• Practical based on Visual Programming Practical Lab	100%

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Paper Code: Code: US05CBVS52	Total Credits:3
Title Of Paper: Introduction to Python Programming Practical Lab	

Part	Description in detail	Weightage (%)
1	• Practical based on Introduction to Python Programming Practical Lab	100%