

SARDAR PATEL UNIVERSITY

PGDCA

Course Structure (effective from June 2020)

PGDCA Course Structure for Semester I

SEMESTER-I					
	PAPER CODE & TITLE	CREDITS	EXT.	INT.	TOT.
Core Courses	PS01CDCA31 : PC Software	4	70	30	100
	PS01CDCA32 : Python Programming	4	70	30	100
	PS01CDCA33 : Logical Organization of Computer	4	70	30	100
	PS01CDCA34 : Database Management Systems	4	70	30	100
	PS01CDCA35 : Foundation of Software Development	4	70	30	100
	PS01CDCA36 : Practicals	5	70	30	100
Total Credits		25			

PGDCA Course Structure for Semester II

SEMESTER-II					
	PAPER CODE & TITLE	CREDITS	EXT.	INT.	TOT.
Core Courses	PS02CDCA31 : Multimedia Technology	4	70	30	100
	PS02CDCA32 : Network Fundamentals	4	70	30	100
	PS02CDCA33 : Object Oriented Programming	4	70	30	100
	PS02CDCA34 : .Net Technology	4	70	30	100
	PS02CDCA35 : Web Technology	4	70	30	100
	PS02CDCA36 : Practicals	5	70	30	100
Total Credits		25			

SARDAR PATEL UNIVERSITY
PS01CDCA31: PC SOFTWARE

Three hours + 1 tutorial per week

Internal Marks :30

External Marks :70

Total Marks 100

University Examination duration 3 hrs.

All units carry equal weightage

Unit No.	Topics
1.	Computer Fundamentals & Word processing <ul style="list-style-type: none">- Definition, Functions, Block diagram, components of computer, input and output devices, types of computers and characteristics.- Introduction to Word Processing software, benefits of Word Processing software, examples of word processors- Working with documents – basic operations, formatting text & paragraphs- Using tables, shapes, inserting pictures- Mail merge facility
2	Presentation tool <ul style="list-style-type: none">- Presentation tool – Introduction and basic features- Working with presentation slide – creating, editing, formatting and previewing- Inserting picture, clip art, shapes and chart- Adding header, footer, animations and slide transitions- Printing slide content
3.	Spreadsheet - I <ul style="list-style-type: none">- Introduction to Spreadsheet and Spreadsheet packages- Building Spreadsheets using formulas, conditional calculations- Built in functions- Database Utilities : sorting, filtering, extracting- Creating charts
4.	Spreadsheet – II <ul style="list-style-type: none">- Working with External data- Data analysis using What if analysis, Goal seek and scenario- Pivot table and Pivot chart- Macro facility

MAIN REFERENCE BOOKS:

1. Manuals of PC software.
2. Taxali R K : PC Software made simple for Windows, Tata McGraw-Hill Publishing Co. Ltd., 2000.

SARDAR PATEL UNIVERSITY
PS01CDCA32: PYTHON PROGRAMMING

Three hours + 1 tutorial per week

Internal Marks :30

External Marks :70

Total Marks 100

University Examination duration 3 hrs.

All units carry equal weightage

Unit No.	Topics
1.	Introduction to Computer Programming <ul style="list-style-type: none">– Introduction to computers and computer programming– Problem analysis, flow charts, algorithms– Introduction to the Python programming language and development environment– Variables, literals, data types, Assignment, Input and output, comments
2.	Expressions and Control Structures <ul style="list-style-type: none">– Operators, evaluation of expressions– The range type– The if statement, The while loop, The for loop– The break and continue statements
3.	<i>Functions and Methods</i> <ul style="list-style-type: none">– Concept of functions and methods– Built-in functions– Operations on strings
4	<i>Lists and Dictionaries</i> <ul style="list-style-type: none">– Introduction to lists– Operations on lists– Introduction to dictionaries– Operations on dictionaries– Operations on strings

MAIN REFERENCE BOOKS :

1. Downey Allen: Think Python, O'Reilly, 2012.
2. Lutz Mark: Learning Python, 4th Edition, O'Reilly, 2009.
3. Hetland Magnus: Beginning Python – From Novice to Professional, Apress, 2005.

BOOKS FOR ADDITIONAL REFERENCE :

1. Lutz Mark: Python – Pocket Reference, 4th Edition, O'Reilly, 2009.
2. Python documentation.

SARDAR PATEL UNIVERSITY
PS01CDCA33: LOGICAL ORGANIZATION OF COMPUTER

Three hours + 1 tutorial per week

Internal Marks :30

External Marks :70

Total Marks 100

University Examination duration 3 hrs.

All units carry equal weightage

Unit No. Topics

- 1. Introduction to Computer Organization**
 - Block Diagram of a simple computer and its different functional units.
 - Representation of Information
 - Number Systems and arithmetic - Introduction of Number System, Conversion, Addition of(B,H,O,D)
 - Integer & Floating Point representation
 - Character codes (ASCII & EBCDIC), Error detection and correction codes.
- 2. Processors, Memory and Input/ Output**
 - Instruction Execution
 - CPU organization
 - Parallel Instruction Execution

 - Memory : Main memory, Secondary memory, Types & Organization
 - Input/ Output: Common types of I/O devices, Controllers
- 3. Instructions and Flow of Control, Gates and Boolean Algebra**
 - Instruction formats
 - Addressing, Instruction types
 - Traps & Interrupt
 - Gates , Boolean Algebra, Truth Tables
 - Circuit Equivalence, De Morgan's Theorems
- 4. Basic Digital Logic Circuits, Memory Elements & Counters**
 - Arithmetic Circuits - Multiplexer , Encoder, Decoder
 - Half Adder , Full Adder , Binary Adder , 2's compliment adder/ subtractor
 - Flip flops(RS , D)
 - Registers, Counters

MAIN REFERENCE BOOKS :

1. V.Rajaraman : Fundamentals of Computers, Prentice Hall Of India Pvt. Ltd.
2. Tanenbauma.S. Structured Computer Organization, Prentice Hall Of India Pvt. Ltd.
3. Malvino A.P.: Digital Computer Electronics, Tata Mcgraw Hill Publication Co. Ltd.

SARDAR PATEL UNIVERSITY
PS01CDCA34: DATABASE MANAGEMENT SYSTEMS

Three hours + 1 tutorial per week

Internal Marks :30

External Marks :70

Total Marks 100

University Examination duration 3 hrs.

All units carry equal weightage

Unit No.	<i>Topics</i>
1.	<ul style="list-style-type: none">– <i>Relational model</i>– Relational model concept– E-R diagram and its conversion to relations– Normalization– Introduction to transactions– Concurrent access to database and related problems– Introduction of Locking techniques
2.	<p>SQL</p> <ul style="list-style-type: none">– Data definition, queries, grouping and ordering– Insert,delete,update– Constraints: Primary key and Foreign key– Built in functions
3.	<p style="text-align: right;"><i>Procedural Language I</i></p> <ul style="list-style-type: none">– Data types, variables and constants, assignment– Conditional control, iterative control and display messages
4.	<p style="text-align: right;"><i>Procedural Language II</i></p> <ul style="list-style-type: none">– Introduction of Implicit and explicit cursors and its attributes– exception handling– Procedures– Functions– Introduction of triggers

MAIN REFERENCE BOOKS:

1. Elmasri And Navathe :Fundamentals of Database Systems, Addison-Wesley Publishing Co. 1994
2. John G. Hughes: Database Technology A Software Engineering Approach, Prentice Hall International Series 1993

BOOK FOR ADDITIONAL READING

1. Ivan Bayross: SQL , PL/SQL BPB Publications
2. System Manuals

SARDAR PATEL UNIVERSITY
PS01CDCA35: Foundation of Software Development

Three hours + 1 tutorial per week

Internal Marks :30

External Marks :70

Total Marks 100

University Examination duration 3 hrs.

All units carry equal weightage

Unit No. Topics

1. Basics of Data Structures

- Introduction to Data Structures, Applications, Operations
- Primitive and Non-primitive Data Structures
- Linear and Non-linear Structures
- Introduction to Array, Stack, Queue, Linked List, Trees and Graphs

2. Fundamentals of Operating Systems

- Operating System - definition, examples
- Services provided by an Operating System
- The concept of a process, process scheduling
- Queuing diagram representation of process scheduling
- Memory management : Paging, Virtual Memory
- Introduction to file management

3. Systems Analysis and Design

- The concept of a System, Basic Components
- Phases of the Classical Systems Development Life Cycle (SDLC) Method
- The Prototype methods
- The structured development approach using Functional Decomposition Diagram (FDD), Data Flow Diagram (DFD)

4. Software Engineering

- Software – meaning, general characteristics and applications
- Software Engineering – meaning, goal and needs
- Software Development Process Models – Waterfall, Iterative, Spiral, etc.
- Software Testing – introduction, needs and levels

REFERENCE BOOKS:

1. Tremblay J. & Sorenson P. G. : An Introduction to Data Structures with Applications, 2nd Edition, McGraw-Hill International Edition, 1987.
2. Silbetschatz, Galvin, Gagne: Operating System Concepts, 9th edition, John Wiley and Sons, Inc.,2013
3. James A Senn : Analysis and Design of Information Systems McGraw Hill Intl. Std. Edn,2003.
4. Rajib Mall : Fundamentals of Software Engineering, 5th Edition, PHI, 2014 (ISBN 978-81-203-4838-1).

BOOK FOR ADDITIONAL READING :

1. Singh Bhagat & Naps Thomas : Introduction to Data Structures, Tata McGraw-Hill Publishing Co. Ltd.,1985
2. Tanenbaum A. S. : Modern Operating Systems, 3rd edition, Prentice-Hall, 2008
3. Sajja, P.S. “Essence of Systems Analysis and Design: A Workbook Approach”, Springer International Publishing, Singapore, 2017
4. Jalote Pankaj : Integrated Approach to Software Engineering, 3rd Edition, Narosa Publishing House, 2005 (ISBN 978-81-7319-702-4).

SARDAR PATEL UNIVERSITY
PS02CDCA31 : Multimedia Technology

Three hours + 1 tutorial per week

Internal Marks :30

External Marks :70

Total Marks 100

University Examination duration 3 hrs.

All units carry equal weightage

**Unit Topics
No.**

1. Multimedia Technology - I

- Introduction to Multimedia with its applications
- Multimedia facets
- Multimedia hardware & software
- Introduction of digital medium
- Digital audio, multimedia texts & hypermedia

2. Multimedia Technology - II

- Graphics
- Animation: two-dimensional and three-dimensional animation
- Digital video and basic concept for color display
- Multimedia project design / development concepts
- Multimedia authoring, characteristics of authoring tools, authoring methodologies and multimedia programming

3. Working with Audio and Video

- Introduction digital audio, characteristic of digital audio, various audio file formats, application of digital audio, popular software for creating digital audio
- Working with digital audio software : components, producing digital audio, various audio effect, mixing multiple audios, etc.
- Introduction digital video, characteristic of digital video, various video file formats, application of digital video, popular software for creating digital video
- Working with digital video software : components, producing digital video, various operations on digital video

4. Animation Software Tool

- Introduction to animation software tool, examples of animation software tools
- Application and features of animation software tool
- Environment of tool : components, menus, canvas, toolbox, drawing facility, shapes, objects, texts, color
- Creating simple animation, creating effective animation using layers, gradients, filters, distortions, transformations

MAIN REFERENCE BOOKS:

1. S. Gokul: Multimedia Magic, BPB Publication, 1998
2. Manuals of Audio & Video Software

ADDITIONAL REFERENCE BOOKS:

1. Tay Vaughan: Multimedia Making it Work , McGrawHill, Eight Edition, 2011
2. Prabhat K. Andeigh, Kiran Thakrar : Mulitmedia Systems Design, Pearson, 2015

SARDAR PATEL UNIVERSITY
PS02CDCA32: NETWORK FUNDAMENTALS

Three hours + 1 tutorial per week

Internal Marks :30

External Marks :70

Total Marks 100

University Examination duration 3 hrs.

All units carry equal weightage

- | Unit No. | Topics |
|-----------------|---|
| 1. | Introduction And Data Communication Fundamentals <ul style="list-style-type: none">– Computer Networks – definition and advantages– Transmission Technology in Broadcast Networks and Point-to-Point Networks– Introduction to Local Area Networks, Metropolitan Area Networks, Wide Area Networks– Transmission Media – Guided and Unguided– The Theoretical basis for data communication |
| 2. | Protocol Hierarchies, Reference Models and Transmission Techniques <ul style="list-style-type: none">– Protocol Hierarchies, Design Issues for the Layers– The OSI Reference Model– The TCP/IP Reference Model– Multiplexing– Circuit Switching, Message Switching, and Packet Switching Techniques |
| 3. | Local Network Technology <ul style="list-style-type: none">– Local Area Network Topologies and Characteristics– Carrier Sense Multiple Access Protocols– The IEEE Standard 802.3 and Ethernet– Network devices |
| 4. | The Internet <ul style="list-style-type: none">– Introduction to World Wide Web– Electronic Mail – Architecture and Services– Domain Name System(DNS), The DNS Name Space, Name Servers, URL– Introduction to Satellite Networks , Geosynchronous Satellites , Medium-orbit satellites, Low-Orbit Satellite |

MAIN REFERENCE BOOKS:

1. Tanenbaum A. S.: Computer Networks, 5th Edition, Prentice-Hall of India Pvt. Ltd., New Delhi, 2016.
2. Forouzan B. A.: Data Communications and Networking, 4th Edition, Tata McGraw-Hill, 2017.

BOOKS FOR ADDITIONAL READING:

1. Stallings W.: Data and Computer Communications, Pearson Education India; 9th Edition (2013)

SARDAR PATEL UNIVERSITY
PS02CDCA33: OBJECT TECHNOLOGY

Three hours + 1 tutorial per week

Internal Marks :30

External Marks :70

Total Marks 100

University Examination duration 3 hrs.

All units carry equal weightage

1. Object Modeling

Key concepts of Object Modeling

Introduction to UML, Types of UML diagrams - structural and behavioral

Structural UML Diagrams - Class diagram, Object diagram

Behavioral UML Diagrams – Use case diagram, Activity diagram, Sequence diagram

2. Basic Java Programming Concepts:

Structure of Java Program

Concept of Bytecodes and platform independence

Primitive Data Types, Variable Names, Scope, Operators, Expressions,

Control Flow Statements

Arrays

3. Classes, Objects and Methods:

Class, Object, Object reference, Constructor, Constructor Overloading,

Method Overloading, Passing and Returning object form

Method, new operator, this and static keyword, finalize() method, Access

Control Modifiers, Nested class, Inner class

4. Inheritance, Interfaces and Exception handling

Use of Inheritance, Inheriting Data members and Methods, constructor in inheritance, Multilevel Inheritance

Creation and Implementation of an interface, Interface reference

Introduction to the Concept of Exception Handling

Reference Books :

1. Patrick Naughton and Herbert Schildt, The Complete Reference Java 2, Seventh, Tata McGraw Hill Pub., 2007
2. Ram Baugh J., etc., Object Oriented Modeling and Design, Prentice Hall of India, 1996.
3. Mary Campione, Kathy Walrath and Alison Huml, Java Tutorial, third edition, Addison Wesley Pub., 1998.

SARDAR PATEL UNIVERSITY

PS02CDCA34: .NET Technology

Three hours + 1 tutorial per week

Internal Marks :30

External Marks :70

Total Marks 100

University Examination duration 3 hrs.

All units carry equal weightage

Unit Topics

No.

1. The .NET Technology

- Introduction to .NET Framework
- Architecture of .NET framework – BCL (Base Class Library), CLR (Common Language Runtime), etc.
- Types of applications supported by .NET Technology
- .NET Languages - introduction

2. C#.NET-I

- C#.NET – Introduction and features
- General structure of C#.NET program
- User interface development using Windows Forms
- C#.NET – basic data types, variable, constant
- C#.NET – statements (conditional and looping)
- Type conversion - Boxing and Unboxing

3. C#.NET-II

- Class fundamentals, OOPS concepts
- Arrays, Lists, Collections and iterating over them, Exception handling,
- Database programming – ADO.NET (architecture, connected and disconnected mode)
- Generating reports

4. ASP.NET

- Introduction to ASP.NET
- ASP.NET Web Application Project – introduction, creation
- ASP.NET Web form - introduction, creating web forms
- ASP.NET Page – layout, lifecycle
- ASP.NET Controls - adding server controls to a Web Form, adding event procedures to Web Server Controls, Implementing code-behind pages
- Creating Master Pages, themes and skins,

MAIN REFERENCE BOOKS:

1. C# 2010 Programming covers .NET 4.0, Black Book, Dreamtech Press.
2. Beginning Microsoft Visual C# 2008, Wrox Publication.
3. C# 4.0 in a Nutshell, Authors: Joseph Alabari & Ben Alabari, O'Reilly.
4. Documentation of relevant software packages

SARDAR PATEL UNIVERSITY
PS02CDCA35: WEB TECHNOLOGY

Three hours + 1 tutorial per week

Internal Marks :30

External Marks :70

Total Marks 100

University Examination duration 3 hrs.

All units carry equal weightage

Unit No. Topics

1. Web Browsers and HTML Editors

- Introduction to web browsers, Client server technology
- Basics of HTTP, HTML, URL and IP Addresses.
- HTML editors (Macromedia Dreamviewer, Microsoft Visual studio, Net beans etc.) with their different styling tools and uses.
- Creation of sample HTML document using different HTML editors.

2. Web Page Designing-I

- HTML Generator,
- HTML Documentation, Tag, Links and Examples
- Manipulating Header, footer, Colours, Comments, Alignment, Paragraph, Tab, Images and Pictures
- Order and Unordered Lists, Nested Lists

3. Web Page Designing-II

- Tables Formatting and Editing Features
- Defining different Styles, In-line, Internal, External Style Sheets, Linking of Sheets in HTML Documents, Working with Multiple Styles.
- Definition of Frames, Framesets, Nested Framesets
- Action, Method, Enctype attributes of Forms, Drop down lists and examples.

4. JavaScript

- Introduction to JavaScript, uses and applications
- Syntax, functions, comments, variables, operators with examples
- Dates, string and array with example.
- Case study (Creation of sample web site with JavaScript and DHTML)

MAIN REFERENCE BOOKS:

1. Xavier C : World Wide Web Design With HTML, Tata McGraw Hill Publication, 2000
2. Beginning JavaScript Fifth Edition by Jeremy McPeak and Paul Wilton, Wrox Publication, 2017.

BOOKS FOR ADDITIONAL READING:

1. Douglas E Commerce: The Internet, PHI, Second Edition, May 2000
2. Manuals of Suitable Packages