SARDAR PATEL UNIVERSITY

PGDCA

(Under Choice Based Credit Scheme)

Semester - I

(Syllabus with effect from June 2020)

COURSE NO: PS01CDCA31 ***w.e.f. June 2020***

PC SOFTWARE

(3 Lectures & 1 Seminar/Tutorial per Week Total Marks: 100)

COURSE CONTENT:

1. Computer Fundamentals & Word processing

- 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

- 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

- 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

- 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.

COURSE NO: PS01CDCA32 ***w.e.f. June 2020***

PYTHON PROGRAMMING

(3 Lectures & 1 Seminar/Tutorial per Week Total Marks: 100)

COURSE CONTENT:

1. **Introduction to Computer Programming**
   - 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**
   - Operators, evaluation of expressions
   - The range type
   - The if statement, The while loop, The for loop
   - The break and continue statements
3. **Functions and Methods**
   - Concept of functions and methods
   - Built-in functions
   - Operations on strings
4. **Lists and Dictionaries**
   - 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.

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LOGICAL ORGANIZATION OF COMPUTER

(3 Lectures & 1 Seminar/Tutorial per Week Total Marks: 100)

COURSE CONTENT:

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.

COURSE NO: PS01CDCA34 ***w.e.f. June 2020***

DATABASE MANAGEMENT SYSTEMS

(3 Lectures & 1 Seminar/Tutorial per Week Total Marks: 100)

COURSE CONTENT:

1. **Relational model**
   - 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. **SQL**
   - Data definition, queries, grouping and ordering
   - Insert,delete,update
   - Constraints: Primary key and Foreign key
   - Built in functions
3. **Procedural Language I**
   - Data types, variables and constants, assignment
   - Conditional control, iterative control and display messages
4. **Procedural Language II**
   - 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

COURSE NO: PS01CDCA35 ***w.e.f. June 2020***

FOUNDATION OF SOFTWARE DEVELOPMENT

(3 Lectures & 1 Seminar/Tutorial per Week Total Marks: 100)

COURSE CONTENT:

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. **System 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

MAIN 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. Sajja, P.S. "Essence of Systems Analysis and Design: A Workbook Approach", Springer International Publishing, Singapore, 2017
4. Rajib Mall : Fundamentals of Software Engineering, 5th Edition, PHI, 2014 (ISBN 978-81-203-4838-1).

BOOK FOR ADDITIONAL READING :

1. James A Senn : Analysis and Design of Information Systems McGraw Hill Intl. Stdt. Edn,2003.
2. Tanenbaum A. S. : Modern Operating Systems, 3rd edition, Prentice-Hall, 2008

3. Jalote Pankaj : Integrated Approach to Software Engineering, 3rd Edition, Narosa Publishing House, 2005 (ISBN 978-81-7319-702-4).
4. Singh Bhagat & Naps Thomas : Introduction to Data Structures, Tata McGraw-Hill Publishing Co. Ltd.,1985.

COURSE NO: PS01CDCA36 *w.e.f. June 2020*

Practicals