Rajiv Gandhi University of Knowledge Technologies – AP

RK Valley Campus

**PRE UNIVERSITY COURSE**

(Academic Year: 2023-24)

COURSE STRUCTURE

&

DETAILED SYLLABUS

W.e.f. the batch admitted in 2023 – 24 onwards

**DEPARTMENT OF**

**INFORMATION TECHNOLOGY**

***Information Technology Course Structure for Pre University Course (PUC)***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Year** | **Semester** | **Course** | **Code** | **Credits** |
| PUC-I |  | Orientation Program |  |  |
| PUC-I | 1 | Basics of Information Technology | I116 | 3 |
| PUC-I | 2 | Open Office Tools & LaTex | I126 | 2 |
| PUC-I | 2 | Lab on Productivity Tools and LaTex | I126 | 1 |
| PUC-II | 1 | Web designing with HTML, PHP and Introduction to Programming Language | I216 | 3 |
| PUC-II | 2 | Advanced Python Programming Language | I226 | 2 |
| PUC-II | 2 | Lab for HTML, PHP and Python Programming Language | I226 | 1 |

s

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Course Code** | **Course Name** | **Course Category** | **L-T-P** | **Credits** |
|  | Orientation Program | PUC-1 |  |  |

Legends: L – Lecture; T –Tutorial/Teacher Guided Theory Practice; P –Practical;

**Course Learning Objectives:**

1. Know about the computer, how to use and what are the parts of computer
2. Student will learn how to connect network to the computer
3. Know about to access the course website and learning process through the internet
4. Know about the Gmail

**Course Content:**

|  |  |  |
| --- | --- | --- |
| **Units** | **Syllabus** | **Contact Hours** |
| Orientation Program | **Introduction to Computer:** What is computer, basic parts of a computer, ports and components inside a computer, understand operation system, exploring the desktop panels, exploring the menus (applications, places and system), changing date and time, shortcut icons and adding new shortcut icons, knowledge on various file extensions, create-save-retrieve and update a file, search for a file, organizing folders and basic system settings. | 5 Hours |
| **Basic Network:** Network manager, types of network connectivity, set up wired connection, set up wifi connection, proxy setup. | 3 Hours |
| **Learning through Internet:** About browsers, browsing basics to lean using the web, common error messages while browsing, downloading materials and videos, filling form with personal details. | 3 Hours |
| **Essentials on email usage:** create an email, compose and send emails, use of cc and bcc, attachments. | 2 Hours |
| **Typing tutor:** Technique to use keys on keyboard. | 2 Hour |

**Learning Resources**

**Text book:**

1. University course content website
2. CBSE XI Standard Computer Science Text book

**Web resources:**

1. [**https://www.tutorialspoint.com/ubuntu/index.htm**](https://www.tutorialspoint.com/ubuntu/index.htm)
2. [**https://help.ubuntu.com/stable/ubuntu-help/net-manual.html.en**](https://help.ubuntu.com/stable/ubuntu-help/net-manual.html.en)
3. [**https://www.techk47.com/gmail-tutorial-for-beginners/**](https://www.techk47.com/gmail-tutorial-for-beginners/)

**Course outcomes:** At the end of the course, the student will be able to

|  |  |
| --- | --- |
| CO 1 | Understand how to use laptop |
| CO 2 | Recognize the different types of Networks and how to accessing Local Area Network |
| CO 3 | Can learn how to use internet to use resources and accessing different websites |
| CO 4 | Understand how to use Gmail |
| CO 5 | Understand about techniques to type |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Course Nature** | | **Theory** | | | |
| **Assessment Method** | | | | | |
| Assessment Tool | Weekly tests | | Monthly tests | End Semester Test | Total |
|  |  | |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Course Code** | **Course name** | **Course**  **Category** | **L-T-P** | **Credits** |
| I116 | Basics in Information Technology | P1Sem1 | 2-1-0 | 3 |

Legends: L – Lecture; T –Tutorial/Teacher Guided Theory Practice; P –Practical;

# Course Learning Objectives:

1. Student will learn the fundamental concepts of computers
2. Student will learn the differentiation between hardware and software devices
3. Student will identify different Number systems and learn conversions
4. Student will know the concepts of Gates.
5. Student will be familiar with different types of Networks after completion of this course.
6. Student will understand what the Internet is, how to access it and what it can be used for.

**Course Content:**

|  |  |  |
| --- | --- | --- |
| **Units** | **Syllabus** | **Contact Hours** |
| **Unit-1** | **Fundamentals of Computer:** Introduction to Computer, History,  Advantages and Disadvantages of computer; Characteristics of  Computer, Computer Generations and Computer Types; Block Diagram; Process of Booting. | **6 Hours** |
| **Unit-2** | **Computer Hardware & Software** : Input Devices and Output Devices; Computer Ports; Memory, Storage Devices and Memory Units; Introduction to software, Types of Software and Utility  Software, Application Software; System Software (OS); | **6 Hours** |
| **Unit-3** | **Basics of Number Systems:** Number Systems Introduction and Language  of Bits (Bit, Byte, KB, MB, TB, PB etc.,); Direct Conversions; Indirect Conversions | **5 Hours** |
| **Unit-4** | **Boolean Logic:** OR, AND, NAND, NOR, XOR, NOT, truth tables; Use of Boolean operators (AND, OR) in search engine queries | **4 Hours** |
| **Unit-5** | **Basics of Networking:** Evolution of Networking: ARPANET,  Bandwidth (Hz, KHz, and MHz) and Data transfer rate (bps, Kbps, Mbps, Gbps, Tbps); Network Types based on Area (LAN, WAN, MAN, PAN) and Connection Type (Wired and wireless); Network Types based on Topologies: Point-to-Point, BUS, Ring, Mesh, Star, Hybrid; Network Types based on Architecture:  Client/Server, Peer-to-Peer, Network Applications; | **9 Hours** |
| **Unit-6** | **Internet:** What is Internet, Internet Evolution, Advantages and  Disadvantages; URL, DNS, Extensions of websites; Web Browser types and Browser errors; | **6 Hours** |

# Learning Resources

# Text book:

1. CBSE XIth Standard Computer Science Text book
2. Fundamentals of Computers by Reema Theraja, Oxford Publications

# Web resources:

1. <http://cbse.nic.in/ePub/webcbse/webcbse/Computer%20Science%20%20(Class-XI)/index.html>
2. <https://www.tutorialspoint.com/computer_fundamentals/index.htm>

**Course outcomes:** At the end of the course, the student will be able to

|  |  |
| --- | --- |
| CO 1 | Identify the basic components of computer like input, output devices |
| CO 2 | Understand the difference between an hardware and software devices and its functionality |
| CO 3 | Recognize the different types of Networks and how to accessing Local Area Network |
| CO 4 | Understand the different types of Number system and how to made conversions. |
| CO 5 | Understand Logic Gates and truth tables |
| CO 5 | Perform to connect Internet and access different websites. |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Course Nature** | | **Theory** | | |
| **Assessment Method** | | | | |
| Assessment  Tool | Weekly tests | Monthly tests | End Semester Test | Total |
| Weightage (%) | 10% | 30% | 60% | 100% |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Course Code** | **Course name** | **Course**  **Category** | **L-T-P** | **Credits** |
| I126 | Open Office & LaTex | P1Sem2 | 1-1-0 | 2 |

Legends: L – Lecture; T –Tutorial/Teacher Guided Theory Practice; P –Practical;

**Course Learning Objectives:**

1. Student will learn basic concepts of Open office writer, Office calc and Office Impression
2. Student will learn how to Download and install a comprehensive LaTex distribution
3. Create basic types of LaTex documents (article, report, letter, book)
4. Student will learn basic mathematical formulas (inline) and centered and numbered equations (display math) and aligning multi- line equations

**Course Content:**

|  |  |  |
| --- | --- | --- |
| **Units** | **Syllabus** | **Contact Hours** |
| **Unit-1** | **Office Writer:** Creating, Explaining about all bars, Formatting  characters and Paragraphs; Bullets and numbers, Find and replace, Hyper linking. Inserting, images, shapes, audio and video; Mathematical Operations, Formula Insertions, Table. Header and Footer; Correcting Grammar, Auto Correct Options, Protecting files,  saving with different extensions and closing; | **5 Hours** |
| **Unit-2** | **Office Calc:** Create Spreadsheet, Rename a sheet, shortcuts, cells, rows and column operations, Hyperlink, Freezing; Format menu, Mathematical operations: Functions, Protect sheet and workbook, Filter; | **5 Hours** |
| **Unit-3** | **Office Impress:** Introducing Impress, Using Slide Masters, Styles, and  Templates, Adding and Formatting Text, Adding and Formatting  Pictures; Animation - manual and automatic slide show - hyper linking | **4 Hours** |
| **Unit-4** | **Introduction to Latex:** Introduction to latex, Advantages of using  Latex, Detailed explanation of latex software, Creating first latex document, Basic typesetting commands, font families ,sizes and styles, explanation of document class options, Packages and its advantages, Functionality of some important packages  (amsmath,geometry,graphix,color, multirow,tikz etc) | **6 Hours** |
| **Unit-5** | **Tables and List:** Lists and its types( ordered , unordered, nested, definition list), Creating a table, Table formatting option (merging rows, columns, table caption etc), Inserting picture into  document, picture formatting options (resize, rotate, alignment etc) | **5 Hours** |
| **Unit-6** | **Math equations and explanation of document classes:** Mathematical  modes, Typesetting math in LaTex (sum, integral, limit, martices etc), Different document classes - 1.Creating a presentation using beamer, 2.creating a letter, 3.creating a simple book, 4.creating a simple article  5.creating a simple report | **5 Hours** |
| **LAB Sessions** | | **15 Hours** |

# Learning Resources:

**Text book:**

1. CBSE XIth Standard Computer Science Tex book
2. LaTex in 24 Hours by Dilip Datta

# Web resources:

1. <https://www.w3schools.com/html/default.asp>
2. <https://www.tutorialspoint.com/tex_commands/latex.htm>

**Course outcomes:** At the end of the course, the student will be able to

|  |  |
| --- | --- |
| CO 1 | Understand how to create documents using Open Office writer |
| CO 2 | Understand how to work on Open Office Calc |
| CO 3 | Understand how to create Power point document using Open Office Impress |
| CO 4 | Successfully install LaTeX and its related components on a home/personal computer |
| CO 5 | Use LaTeX and various templates acquired from the course to compose Mathematical  documents, presentations, and reports; |
| CO 6 | Use the beamer package to create presentations |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Course Nature** | | **Theory** | | |
| **Assessment Method** | | | | |
| Assessment  Tool | Weekly tests | Monthly tests | End Semester Test | Total |
| Weightage (%) | 10% | 30% | 60% | 100% |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Course Code** | **Course name** | **Course**  **Category** | **L-T-P** | **Credits** |
| I126 | Lab for Open Office and LaTex | P1Sem2 | 0-0-1 | 1 |

**Objective:** The objective of this course is to creating documents using Productivity tools including (word processor, spread sheet, presentation) Word, spread sheet Excel, Power Point and LaTeX.

**Learning Outcomes:**

1. Enable to create word document and power point presentation
2. Enable to work on data using excel
3. Enable to create effective document using LaTex

**List of Laboratory Experiments:**

**OpenOfficeWrite and LaTex** Features to be covered:-Formatting Fonts in word, Drop Cap in word, Applying Text effects, Using Character Spacing, Borders and Colors, Inserting Header and Footer, Using Date and Time option in both LaTeX and Word.

Formatting Styles, Inserting table, Bullets and Numbering, Changing Text Direction, Cell alignment, Footnote, Hyperlink, Symbols, Spell Check , Track Changes, Images from files and clipart, Drawing toolbar and Word Art, Formatting Images, Textboxes and Paragraphs.

**OpenOfficeCalc:** Gridlines, Format Cells, Summation, auto fill, Formatting Text Split cells, freeze panes, group and outline, Sorting, Boolean and logical operators, Conditional formatting, coutif, count, rank, vlookup

**OpenOfficeImpress and LaTexBeamer**

Students will be working on basic power point utilities and tools which help them create basic power point presentation. Topic covered during this week includes :- PPT Orientation, Slide Layouts, Inserting Text, Word Art, Formatting Text, Bullets and Numbering, Auto Shapes, Lines and Arrows, Hyperlinks, Inserting –Images, Clip Art, Tables and Charts in both LaTeX and Powerpoint

Concentrating on the in and out of power point and presentations in LaTeX. Helps them learn best practices in designing and preparing power point presentation. Topic covered during this week includes: - Master Layouts (slide, template, and notes), Types of views (basic, presentation, slide slotter, notes etc), Inserting – Background, textures, Design Templates, Hidden slides.

**Course outcomes:** At the end of the course, the student will be able to

|  |  |
| --- | --- |
| CO 1 | Understand how to create documents using Open Office writer |
| CO 2 | Understand how to work on Open Office Calc |
| CO 3 | Understand how to create Power point document using Open Office Impress |
| CO 4 | Successfully install LaTeX and its related components on a home/personal computer |
| CO 5 | Use LaTeX and various templates acquired from the course to compose Mathematical  documents, presentations, and reports; |
| CO 6 | Use the beamer package to create presentations |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Course Nature** | | **Practical** | | |
| **Assessment Method** | | | | |
| Assessment  Tool | Experiments | Records | Viva-Voice / Quiz/ MCQ/Lab Project | Total |
| Weightage (%) | 20% | 10% | 10% | 40% |
| End Semester Examination Weightage (%) | | | | 60% |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Course Code** | **Course name** | **Course**  **Category** | **L-T-P** | **Credits** |
| I216 | Web design with HTML, PHP and Introduction to Programming | P2Sem1 | 2-1-0 | 2 |

Legends: L – Lecture; T –Tutorial/Teacher Guided Theory Practice; P –Practical;

**Course Learning Objectives:**

1. Student will learn different tags, elements for creating web pages.
2. Student will learn how to apply effective web design principles
3. Students will learn how to insert text formatting, color, graphics, images, and multimedia for webpages.
4. Student will learn basics on PHP
5. Student will learn basic control structures using php

**Course Content:**

|  |  |  |
| --- | --- | --- |
| **Units** | **Syllabus** | **Contact Hours** |
| **Unit-1** | **Introduction to HTML:** Overview of HTML, Elements, Basic tags,  Formatting tags, attributes, bgcolor, color codes, hyperlinks, imagelinks, background, special tags of Multimedia, | **5 Hours** |
| **Unit-2** | **HTML Components:** Lists (Ordered, Unordered and Definition lists), Tables (<table>, <th>, <tr>, <td>, <caption>, <thead>, <tbody>,  <tfoot>, <colgroup>, <col>),  Forms- (<input>, <textarea>, <button>, <select>, <label>), Frames –  Attributes Using, Iframe as the Target | **6 Hours** |
| **Unit 3** | **Introduction to CSS:** Introduction to CSS, CSS Basics, CSS  SELECTORS, Font properties, Various types of styles sheets, Formatting text, fonts, colours and Background, Exploring CSS class and ID attributes | **6 Hours** |
| **Unit-4** | **Introduction to PHP:** What is PHP? Write your first PHP Program, Data Types, Variables and Operators, PHP echo and print Statements, Comments, Include & Require, Arrays in PHP | **6 Hours** |
| **Unit-5** | **PHP Control Structures:** If else, Switch Case, PHP Loop: For, ForEach, While, Do While, How to create PHP strings and why to use strings?, Functions in PHP, PHP Forms | **6 Hours** |
| **Unit-6** | **Basics of Algorithms and Flow charts:** Introduction to Problem solving and algorithms: Qualities of good algorithms, Advantages and Disadvantages of Algorithm, Properties and efficiency of an algorithm and Tracing of an algorithm, Types of Control Structures and Nested Control Structures in Algorithms  **Introduction to Flowchart in Programming:** Symbols Used in Flowchart, General Rules of flowcharting, Advantages and Disadvantages and Examples of Flowcharts in programming, Types of Control Structures and Nested Control Structures in Flowcharts, Difference between Algorithm, Flowchart and Pseudo code | **8 Hours** |
|  | **Lab Sessions** | **8 Hours** |

# Learning Resources

# Text book:

1. CBSE XIth Standard Computer Science Text book

**Reference Books**

1. The Joy of PHP Programming: A Beginner’s Guide – by Alan Forbes
2. Python programming using problem solving approach --- REEMA THAREJA

# Web resources:

1. <http://cbse.nic.in/ePub/webcbse/webcbse/Computer%20Science%20%20(Class-XI)/index.html>
2. https://www.w3schools.com/html/
3. <https://www.guru99.com/php-tutorials.html>

**Course outcomes:** At the end of the course, the student will be able to

|  |  |
| --- | --- |
| CO 1 | Recognize and understand HTML web page elements, Understand and apply effective web design principles |
| CO 2 | Enhance web pages using text formatting, color, graphics, images, and multimedia |
| CO 3 | Perform solve problem through algorithm and flowchart |
| CO 4 | Understand the algorithms using tracing methods. |
| CO 5 | Understand the conditional and Loop constructions. |
| CO 6 | Installation python software and running programs in python tool. |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course Nature** | | | **Theory** | | | | | | |
| **Assessment Method** | | | | | | | | | |
| Assessment Tool | | Weekly tests | Monthly tests | | End Semester Test | | Total | | |
| Weightage (%) | | 10% | 30% | | 60% | | 100% | | |
| **Course Code** | **Course name** | | | **Course**  **Category** | | **L-T-P** | | **Credits** |
| I226 | Python Programming | | | P2Sem2 | | 2-1-0 | | 2 |

Legends: L – Lecture; T –Tutorial/Teacher Guided Theory Practice; P –Practical;

# Course Learning Objectives:

1. I/O operations and debugging, calling built- in functions and us redefined functions and modules
2. Student will learn about the control structures.
3. Student will learn string operations and built in functions of string
4. Students can play with in-built data structures like list, tuples and dictionaries
5. Student will learn file operations and how to implement exception handling

**Course Content:**

|  |  |  |
| --- | --- | --- |
| **Units** | **Syllabus** | **Contact Hours** |
| **Unit-1** | **Introduction to Python programming:** Introduction and classification of the  Programming Languages, Interpreter and Compiler, What is Python Programming Language, History (including 1 or 3 versions), Application and Features of Python Programming. Install and Run Python in Windows and Ubuntu, Type of Modes , IDE tools and sample program in Python, Reserved key words, Identifiers ,Variables ,Constants, Statements & Comments, Operators and Operands in Python |  |
| **Unit-2** | **Data types, I/O, Types of Errors and Control Structures in Python Programming):** Data types, Conversions between data types, Mutable and Immutable types, Input and Output Operations and Formats, Types of Errors in python, Types of Control Structures, Conditional Control Structures, Looping Control Structures, Unconditional Control Structures: break, continue, pass, **Conditional Control Structures**– if, if-else, if-elif- else, Nested statements, Single Statement Suites - Compound Boolean Expressions– Nested Conditionals - Multi-way Decision Statements - Conditional Expressions | **6 Hours** |
| **Unit-3** | **Loop Control statements** – While, for, Netsted loops – The Infinite Loop -Using else Statement with Loops - Single Statement Suites  - For Loop Iterating by Sequence Index - Using else Statement with Loops Loop Control Statements: Break Statement - Continue Statement - Pass Statement | **8 Hours** |
| **Unit-4** | **Strings:** Introduction to Strings, indexing, accessing characters of string, slice operator, string operations, escape sequence characters, format() method, string built-in functions, to Create a String and String Indexing (Positive or Negative), to access characters in a given string and Slicing Operations with range |Slicing Operator, String Modifications | Updates (To change, delete ,insert ,add, remove, concatenate and repeat),list of all the escape sequence, The format() Method for Formatting Strings | **5 Hours** |
| **Unit-5** | **List:** Definition and accessing of Lists, Tuple and Dictionaries, Creation and Indexing (Positive and Negative | Key - Values) Modifications | Updates (To change, delete, insert, add, remove, concatenate, repeat) of the Lists, List Comprehensions Nested Lists, Tuple and Dictionary Slicing Operations with range/Slicing Operator, Built – In Methods or Functions in List  **Tuples:** What is Tuple, Advantages of Tuples over Lists, Creating a Tuple, Accessing Python Tuple Elements, Indexing of Tuples, Reveres Indexing of Tuples, Slicing Operator of Tuples, Performing Operations in Tuples, Modifying Elements in a Python Tuple, Deleting Python Tuple Elements | **6 Hours** |
| **Unit-6** | **Dictionary:** Create a Dictionary, Access Items in Dictionary, Operations in Dictionary, Loop Through a Dictionary, Add Items to a Dictionary, Remove Items from a Dictionary and Delete the Whole Dictionary, Common Python Dictionary Methods.  **Exception Handling Exception:** Exception Handling – Except clause - Try? finally clause  **File and Exception Handling:** Introduction to File System in Python, Types of files (text & binary), different File Operations (open, close) and Access Modes (read, write, append), read (), readline () | **6 Hours** |
|  | **Lab Sessions** | **8 Hours** |

# Learning Resources

# Text book:

1. Course References from CBSE http://cbseacademic.nic.in/curriculum.html Computer Science (New) CLASS-XII Code No. 083

**Reference Books:**

1. Python programming using problem solving approach --- REEMA THAREJA
2. Introduction to programming using Python Y.DANIEL LIANG

**Web Resources:**

1. https://www.python.org/
2. https://www.udacity.com/wiki/cs101
3. <https://docs.python.org/3/tutorial/>
4. <https://www.tutorialspoint.com/python/index.htm>

**Course outcomes:** At the end of the course, the student will be able to

|  |  |
| --- | --- |
| CO 1 | Understand all data types and operators with its precedence and conditional statements |
| CO 2 | Choose correct usage of conditional constructions and Loop constructions. |
| CO 3 | Applying string operations and string built in functions |
| CO 4 | Analyzing basic operations of List, Tuple and Dictionary |
| CO 5 | Able to write file programs using python programming |
| CO 6 | Able to use exception handling concepts in python programming |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Course Nature** | | **Theory** | | |
| **Assessment Method** | | | | |
| Assessment Tool | Weekly tests | Monthly tests | End Semester Test | Total |
| Weightage (%) | 10% | 30% | 60% | 100% |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Course Code** | **Course name** | **Course**  **Category** | **L-T-P** | **Credits** |
| I226 | Lab for HTML, PHP  and  Python Programming Language | P2Sem2 | 0-0-1 | 1 |

**Objective:** The objective of this course is to develop logical abilities of students using Python language as a vehicle. Students will be exposed to Python programming language with an emphasis on semantics and problem solving.

**Learning Outcomes:**

1. Provide foundation for programming
2. Enable the students to analyze and efficiently solve the problems using Python Programming language

**List of Laboratory Experiments:**

Following is the list of problems expected to be solved using Python Programming. As this list represents example problems; the problems discussed and given to solve are not restricts only to this.

|  |  |
| --- | --- |
| **Topic** | **Programs** |
| **Basic HTML** | Pages Creation with basic HTML Tags  Pages creation using CSS  Pages creation using PHP |
| **Basic Programs and Operators** | 1. Write a program to display “Welcome to Rajiv Gandhi University of Knowledge Technologies" 2. Write a program to calculate simple interest and compound interest 3. Write a program to calculate electricity-bill for a customer, where unit details are entered through the keyboard. 4. Write a program to compute distance between two points taking input from the user 5. Write a program add.py that takes 2 numbers as command line arguments and prints its sum. 6. Python Program to find the average of three numbers 7. Evaluate the given expression (ax+b) / (ax-b) 8. Python program for swapping of a two numbers using third variable 9. Python program for swapping of a two numbers without using third variable 10. Python program that takes three coefficients (a, b, and c) of a Quadratic equation (ax2+bx+c=0) as input and compute all possible roots |
| **Control Flow** | 1. Python Program to find largest value from three numbers 2. Write a Program for checking whether the given number is a even number or not. 3. Python Program to find smallest value from three numbers 4. Python Program to Check Whether a Given Year is a Leap Year 5. Python program to check whether a number is Palindrome or not 6. Using a for loop, write a program that prints out the decimal equivalents of 1/2, 1/3, 1/4, . . . ,1/10 7. Write a program using a for loop that loops over a sequence. What is sequence? 8. Write a program using a while loop that asks the user for a number, and prints a countdown from that number to zero. |
| **Data Structures** | 1. Python program to check whether a string is Palindrome or not 2. Python program to create list with n elements and find the average 3. Python program to store n elements into a list, find the Average of the list excluding zero elements 4. Python program to create list with n elements and find the largest number without using built-in functions 5. Python program to count the numbers of characters in the string and store them in a dictionary data structure. 6. Python program to create Tuple with n elements and find the largest number without using built-in functions 7. Python program to create Tuple with n elements and find the smallest number without using built-in functions 8. Python program to create dictionary with key as unique element from Tuple and value as factors of the element 9. Python Program to print a dictionary where the keys are numbers between 1 and 15 (both included) and the values are factorial of keys. 10. Python program to create dictionary with key as unique element from Tuple and value as factors of the element |
| **Files** | 1. Python program to find the longest word from the file 2. Write a program to print each line of a file in reverse order. 3. Python Program to find to calculate digit sum of line by line number from file and store it into another file with number and its digit sum 4. Write a program to compute the number of characters, words and lines in a file. |
| **Functions** | 1. Python Program to define function with primedigitproduct() to find prime digits product of a given number 2. Write a function ball\_collide that takes two balls as parameters and computes if they are colliding. Your function should return a Boolean representing whether or not the balls are colliding.   Hint: Represent a ball on a plane as a tuple of (x, y, r), r being the radius If (distance between two balls centers) <= (sum of their radii) then (they are colliding)   1. Find mean, median, mode for the given set of numbers in a list 2. Write a function dups to find all duplicates in the list 3. Write a function unique to find all the unique elements of a list. 4. Write a function cumulative\_product to compute cumulative product of a list of numbers. 5. Write a function reverse to reverse a list. Without using the reverse function. 6. Write function to compute gcd, lcm of two numbers |

**Course outcomes:** At the end of the course, the student will be able to

|  |  |
| --- | --- |
| CO 1 | Practically student can understand all data types and operators with its precedence and conditional statements |
| CO 2 | Choose correct usage of conditional constructions and Loop constructions. |
| CO 3 | Applying string operations and string built in functions |
| CO 4 | Analyzing basic operations of List, Tuple and Dictionary |
| CO 5 | Able to write file programs using python programming |
| CO 6 | Able to use exception handling concepts in python programming |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Course Nature** | | **Practical** | | |
| **Assessment Method** | | | | |
| Assessment  Tool | Experiments | Records | Viva-Voice / Quiz/ MCQ/Lab Project | Total |
| Weightage (%) | 20% | 10% | 10% | 40% |
| End Semester Examination Weightage (%) | | | | 60% |