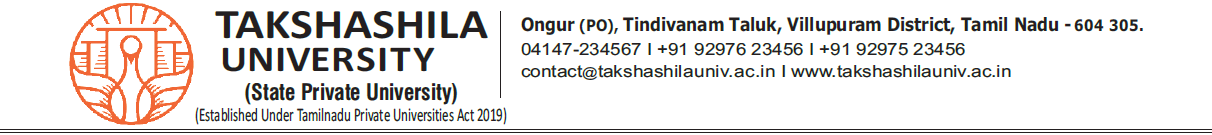
**

**SCHOOL OF COMPUTER SCIENCE**

**LESSON PLAN FOR THEORY COURSE**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | | | | **Regulation** | | **2023** |
| **Name of the Faculty** | Bharathidasan.R | | | | | |
| **Designation** | Assistant Professor | **Department** | Computer Science | | | |
| **Course Name** | Programming in Python | | **Course Code** | | U24CAB301 | |
| **Year / Semester / Section** | II | III | A Section | | | |
| **Course Category** | Theory | **Credits** | 4 | | | |
| **Periods (Hours) per week** | **Lectures** | 3 | | | | |
| **Practical** | 2 | | | | |

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| Evaluation System | **Theory Examination** | |
| **Method Assessment** | **Marks** |
| Internal Assessment Mark | 20 |
| Assignment Mark | 05 |
| Technical Aptitude (MCQ) | 05 |
| Seminar / Presentation | 05 |
| Attendance Mark | 05 |
| End Semester Examination | 60 |
| Internal Assessment Mark Practical | 20 |
|  | End Semester Practical Examination | 30 |
|  | Total Marks | 100 |

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| Time Table | **Day** | **Period** | **Time** |
| I | 1,2  4 | 09.30 am to 11.10 am  12.10 pm to 01.00 pm |
| II | - | --- |
| III | 2  7,8 | 10.20 am to 11.10 am  03.10 pm to 04.40 pm |
| IV | 4 | 12.10 pm to 01.00 pm |
| V | 3  7 | 11.10 pm to 12.10 pm  03.10 pm to 04.00 pm |
| VI | 1 | 09.30 pm to 10.20 pm |

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| **U24CAB301** | **Programming in Python** | **L** | **T** | **P** | **C** | **Hrs** |
| **3** | **0** | **2** | **4** | **75** |

**UNIT I   BASICS OF PYTHON                                                                                       9 Hours**

Installing Python, Simple program using Python, Expressions and Values, Variables and Computer Memory, error detection, Multiple line statements, Designing and using functions, functions provided by Python, tracing function calls in memory model, omitting return statement. Working with Text: Creating Strings of Characters, Using Special Characters in Strings, creating a Multiline String, Printing Information, Getting Information from the Keyboard.

**UNIT II    MODULES AND METHODS                                                                        9 Hours**

A Boolean Type, Choosing Statements to Execute, Nested If Statements, Remembering the Results of a Boolean Expression Evaluation, A Modular Approach to Program Organization, Importing Modules, Defining Your Own Modules, Testing Code Semi Automatically Grouping Functions Using Methods: Modules, Classes, and Methods, Calling Methods the Object-Oriented Way, Exploring String Methods, Underscores.

**UNIT III   LIST                                                                                                              9 Hours**

Storing Collections of Data Using Lists: Storing and Accessing Data in Lists, modifying Lists, Operations on Lists, Slicing Lists, Aliasing, List Methods, Working with a List of Lists. Repeating Code Using Loops: Processing Items in a List, Processing Characters in Strings, Looping Over a Range of Numbers, Processing Lists Using Indices, Nesting Loops in Loops, Looping Until a Condition Is Reached, Repetition Based on User Input, Controlling Loops Using Break and Continue Reading and Writing.

**UNIT IV  FILES HANDLING                                                                                         9 Hours**

Files: Kinds of files, opening a File, Techniques for Reading Files, Files over the Internet, Writing Files, and Writing Algorithms That Use the File-Reading Techniques, Multiline Records. Storing Data Using Other Collection Types: Storing Data Using Sets, Storing Data Using Tuples, Storing Data Using Dictionaries, inverting a Dictionary, Using the In Operator on Tuples, Sets, and Dictionaries, Comparing Collections.

**UNIT V   OOPs CONCEPT                                                                                              9 Hours**

Collection of New Information Object-Oriented Programming: Understanding a Problem Domain, Function “Isinstance,” Class Object, and Class Book, writing a Method in Class Book, plugging into Python Syntax: More Special Methods, Creating Graphical User interface: Building a Basic GUI, Models, Views, and Controllers, Customizing the Visual Style Introducing few more Widgets, Object-Oriented GUIs, Keeping the Concepts from Being a GUI Mess.

**LAB EXERCISES: 30 Hours**

1. Create a calculator program using Python.
2. Create Python program using different String functions.
3. Implement Selection sort algorithm using Python Program.
4. Implement stack Operation using Python Program.
5. Read and Write into a file using Python Program.
6. Demonstrate use of Dictionaries in Python Program.
7. Create Comma Separate Files (CSV), Load CSV files into internal Data Structure.
8. Write script to work like a SQL SELECT statement for internal Data Structure made in earlier exercise.
9. Write script to work like a SQL Inner Join for an internal Data Structure made in earlier exercise.
10. Demonstrate Exceptions in Python.

**Text Books:**

1. "Python Programming: An Introduction to Computer Science" by John Zelle
2. "Python for Everyone" by Cay S. Horstmann and Rance D. Necaise

**Reference Books:**

1. L. Halterman, “Fundamentals of Python Programming”, Southern Adventist University July 26, 2018, Copyright © 2017 Richard L. Halterman Richard.
2. John V Guttag, ―Introduction to Computation and Programming Using Python‘‘, Revised and expanded Edition, MIT Press , 2013
3. Robert Sedgewick, Kevin Wayne, Robert Dondero, ―Introduction to Programming in Python: An Inter-disciplinary Approach, Pearson India Education Services Pvt. Ltd., 2016.
4. Timothy A. Budd, ―Exploring Python‖, Mc-Graw Hill Education (India) Private Ltd.,, 2015.

**COURSE OBJECTIVES**

The main objectives of this course are to

* + Learn the syntax and semantics of the Python programming language.
  + Illustrate the process of structuring the data using lists, tuples
  + Appraise the need for working with various documents like Excel, PDF, Word and Others.
  + Demonstrate the use of built-in functions to navigate the file system.
  + Implement the Object Oriented Programming concepts in Python.

**COURSE OUTCOMES**

*After completion of the course, the students will be able to*

1. Identify the syntax and semantics of the Python programming language.
2. Demonstrate proficiency in handling loops and creation of functions.
3. Identify the methods to create and manipulate lists, tuples and dictionaries.
4. Develop programs for string processing and file organization.
5. Interpret the concepts of Object-Oriented Programming as used in Python.

**TEACHING METHODS**

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| **BB** – Black Board  **PPT** – Power Point  **Demo** – Demonstration  **MM** – Model Making and Demo | **VL** – Video Lecture  **AN** – Animation  **GL** – Guest Lecture  **PD** – Panel Discussion | **DB** – Debate  **SS** – Student Seminar  **CS** – Case Studies  **QZ** – Quiz |

**BOOKS**

|  |  |  |
| --- | --- | --- |
| **TB1** – Text Book 1 | **RB1** – Reference Book 1  **RB2** – Reference Book 2 | **WR1** – Web Reference 1  **WR2** – Web Reference 2 |

**LESSON PLAN**

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| --- | --- | --- | --- | --- | --- |
| **UNIT–I : BASIC OF PYTHON** | | | | | |
| Lecture No | Dates | | Topics Planned to be Covered | Teaching Method | Books covered |
| Scheduled Date | Conducted Date |
| L1 | 21.07.25 |  | Introduction about Python | BB | T1 |
| L2 | 22.07.25 |  | Installing Python | BB | T1 |
| L3 | 23.07.25 |  | Simple program using Python | BB | T1 |
| L4 | 24.07.25 |  | Variables and Computer Memory | BB | T1 |
| L5 | 25.07.25 |  | Multiple line statements | BB | T1 |
| L6 | 26.07.25 |  | Designing and using functions | BB | T1 |
| L7 | 28.07.25 |  | Python String | BB | T1 |
| L8 | 29.07.25 |  | Printing Information | BB | T1 |
| L9 | 30.07.25 |  | Getting Information from the Keyboard | BB | T1 |
| L10 | 01.08.25 |  | Installation of Python | Lab | WR1 |
| L11 | 04.08.25 |  | Simple Program in Python | Lab | WR1 |
| L12 | 06.08.25 |  | Arithmetic Operations | Lab | WR1 |
| L13 | 07.08.25 |  | Arithmetic Operations | Lab | WR1 |
| L14 | 08.08.25 |  | Student Mark List Program | Lab | WR1 |
| L15 | 09.08.25 |  | Student Mark List Program | Lab | WR1 |

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| **UNIT–II : MODULES AND METHODS** | | | | | | | | |
| Lecture No | | Dates | | Topics Planned to be Covered | | Teaching Method | | Books covered |
| Scheduled Date | Conducted Date |
| L16 | | 11.08.25 |  | A Boolean Type | | BB | | T1 |
| L17 | | 12.08.25 |  | Choosing Statements to Execute | | BB | | T1 |
| L18 | | 13.08.25 |  | Nested If Statements | | BB | | T1 |
| L19 | | 14.08.25 |  | A Modular Approach to Program | | BB | | T1 |
| L20 | | 18.08.25 |  | Importing Modules | | PPT | | T1 |
| L21 | | 19.08.25 |  | Defining Your Own Modules | | PPT | | T1 |
| L22 | | 20.08.25 |  | Modules, Classes, and Methods, | | BB | | T1 |
| L23 | | 21.08.25 |  | Calling Methods the Object-Oriented | | BB | | T1 |
| L24 | | 22.08.25 |  | Exploring String Methods, Underscores | | BB | | T1 |
| L25 | | 23.08.25 |  | Function Program | | Lab | | WR1 |
| L26 | | 25.08.25 |  | Function Program | | Lab | | WR1 |
| L27 | | 26.08.25 |  | Predefined Module import | | Lab | | WR1 |
| L28 | | 28.08.25 |  | Predefined Module import | | Lab | | WR1 |
| L29 | | 29.08.25 |  | Create Own Module | | Lab | | WR1 |
| L30 | | 30.08.25 |  | Create Own Module | | Lab | | WR1 |
|  | |  |  |  | |  | |  |
| **UNIT–III : LIST** | | | | | | | | |
| Lecture No | Dates | | | Topics Planned to be Covered | Teaching Method | | Books covered | |
| Scheduled Date | | Conducted Date |
| L31 | 08.09.25 | |  | Storing and Accessing Data in Lists | PPT | | T1 | |
| L32 | 09.09.25 | |  | Modifying Lists, Lists Operations | PPT | | T1 | |
| L33 | 10.09.25 | |  | Slicing Lists, Aliasing | PPT | | T1 | |
| L34 | 11.09.25 | |  | List Methods, Working with a List | BB | | T1 | |
| L35 | 12.09.25 | |  | Processing Items in a List | BB | | T1 | |
| L36 | 13.09.25 | |  | Processing Characters in Strings | BB | | T1 | |
| L37 | 15.09.25 | |  | Looping Over a Range of Numbers | BB | | T1 | |
| L38 | 16.09.25 | |  | Nesting Loops in Loops | BB | | T1 | |
| L39 | 17.09.25 | |  | Looping Until a Condition | Lab | | WR1 | |
| L40 | 18.09.25 | |  | List Program | Lab | | WR1 | |
| L41 | 19.09.25 | |  | List Program | Lab | | WR1 | |
| L42 | 22.09.25 | |  | For Loop Processing | Lab | | WR1 | |
| L43 | 23.09.25 | |  | Table Program | Lab | | WR1 | |
| L44 | 24.09.25 | |  | Logical Program | Lab | | WR1 | |
| L45 | 25.09.25 | |  | Logical Program | Lab | | WR1 | |

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| **UNIT–IV : FILES** | | | | | | | | | |
| Lecture No | Dates | | | Topics Planned to be Covered | | | Teaching Method | | Books covered |
| Scheduled Date | | Conducted Date |
| L46 | 26.09.25 | |  | Files: Kinds of files, opening a File | | | BB | | T2 |
| L47 | 27.09.25 | |  | Techniques for Reading Files | | | BB | | T1 |
| L48 | 29.09.25 | |  | Writing Files | | | BB | | T1 |
| L49 | 03.10.25 | |  | Multiline Records | | | PPT | | T1 |
| L50 | 06.10.25 | |  | Storing Data Using Sets | | | BB | | T1 |
| L51 | 07.10.25 | |  | Storing Data Using Tuples | | | BB | | T1 |
| L52 | 13.10.25 | |  | Storing Data Using Dictionaries | | | BB | | T1 |
| L54 | 14.10.25 | |  | Comparing Collections | | | BB | | T1 |
| L55 | 15.10.25 | |  | Python Set Program | | | Lab | | WR1 |
| L56 | 16.10.25 | |  | Python Set Program | | | Lab | | WR1 |
| L57 | 17.10.25 | |  | Python Tuples Program | | | Lab | | WR1 |
| L58 | 22.10.25 | |  | Python Tuples Program | | | Lab | | WR1 |
| L59 | 23.10.25 | |  | Python Dictionary Program | | | Lab | | WR1 |
| L60 | 24.10.25 | |  | Python Dictionary Program | | | Lab | | WR1 |
|  | | | | | | | | | |
|  | | | | | | | | | |
| **UNIT–V : OBJECT ORIENTED CONCEPTS** | | | | | | | | | |
| Lecture No | | Dates | | | Topics Planned to be Covered | Teaching Method | | Books covered | |
| Scheduled Date | Conducted Date | |
| L61 | | 25.10.25 |  | | Collection of New Information Object-Oriented Programming | BB | | T2 | |
| L62 | | 27.10.25 |  | | Class Object | BB | | T2 | |
| L63 | | 28.10.25 |  | | Writing a Method in Class Book | BB | | T2 | |
| L64 | | 29.10.25 |  | | More Special Methods | BB | | T2 | |
| L65 | | 30.10.25 |  | | Creating Graphical User interface: Building a Basic GUI | BB | | T2 | |
| L66 | | 31.10.25 |  | | Models, Views, and Controllers | BB | | T2 | |
| L67 | | 03.11.25 |  | | Customizing the Visual Style Introducing few more Widgets | PPT | | T2 | |
| L68 | | 04.11.25 |  | | Object-Oriented GUIs | PPT | | T2 | |
| L69 | | 05.11.25 |  | | Keeping the Concepts from Being a GUI Mess | PPT | | T2 | |
| L70 | | 06.11.25 |  | | Class and Objects | Lab | | WR1 | |
| L71 | | 07.11.25 |  | | Class and Objects | Lab | | WR1 | |
| L72 | | 08.11.25 |  | | GUI Tkinter Frameworks | Lab | | WR1 | |
| L73 | | 10.11.25 |  | | GUI Tkinter Frameworks | Lab | | WR1 | |
| L74 | | 11.11.25 |  | | GUI Applications Form | Lab | | WR1 | |
| L75 | | 11.11.25 |  | | GUI Applications Form | Lab | | WR1 | |

**Question Paper Pattern**

1. Continuous Internal Assessment

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| **Part A** | **Part B** | **Part C** | **Total Marks** |
| 5 x 2 = 10 | 3x 10 = 30 | 1 x 10 = 10 | 50 |

1. End Semester Examination

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| --- | --- | --- | --- |
| **Part A** | **Part B** | **Part C** | **Total Marks** |
| 10 x 2 = 20 | 6 x 10 = 60 | 2 x 10 = 20 | 100 |

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| --- | --- | --- |
|  | **Faculty Name / Designation** | **Signature** |
| **Prepared by** | Mr. R. BHARATHIDASAN, ASSISTANT PROFESSOR |  |
| **Verified by** | Dr. T.VIJAYAKUMAR, ASSISTANT PROFESSOR |  |
| **Approved by** | Dr. S. DEEPA, DEAN FSC & IC FHSS |  |