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| **COURSE CODE& TITLE**  CT-175  Programming Fundamentals | **SEMESTER**  🞏 SPRING ▀. FALL | **CREDIT HOURS**  TH ▀.3 🞏2 🞏1 🞏0 PR ▀.3 🞏2 🞏1 🞏0 |
| **PREREQUISITE COURSE(S)**  Fundamentals of Information Technology | **DATE OF APPROVAL** | **BATCH**  2019-20 |
| **COURSE OBJECTIVE**  1. Understand fundamentals of programming such as variables, conditional and iterative execution, methods, Arrays, File handling etc.  2. Be aware of the principles of software development. Have the ability to write computer program to solve specified problems  3To develop the skill of designing Graphical user Interfaces in Python | | |
| **TEACHING TOOLS**   |  |  |  | | --- | --- | --- | | ▀. Problem-based learning | ▀ Mini-project | ▀ Case studies | | 🞏. Innovative solution | 🞏 Group activity | 🞏 Entrepreneurial activities | | 🞏 Industrial visit | 🞏 Student presentation | 🞏 Other \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |   **COURSE PLAN**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Week No.** | **Topic** | **Contents** | **Teaching Tools** | **Reading/Article/Chapter No./Case Study or Book** | | ***1*** | Introduction to Computer Science, Software Engineering, Programming Languages | Introduction to programming languages,  Introduction to Course outline and importance of learning Python for Software Engineering Students | Lecture Slides | Book1   * Chapter1 * 1.1,1.2,1.3 | | ***2*** | Basic Programming Constructs of Python | Comparison of different programing languages, Short history of Python, Development environments, Sample Problem, Abstraction and modeling | Lecture Slides and Dry running of Programs | Book1   * Chapter1 * 1.4 | | ***3*** | Python Data Types and Structures | Algorithm, Data types, Assignment and execution control structures(For Loop, While Loop | Lecture Slides and Dry running of Programs | Book1   * Chapter 2   2.1,2.2 | | ***4*** |  | Python data types, Boolean and algebraic expressions, variables and assignments | Lecture Slides and Dry running of Programs | * Chapter 3   3.1,3.2 | | ***5*** | Imperative Programming | Variable Names, Variable Scope and Lifetime, Strings, Indexing , Decision Making or Conditional Structures(If –Else) | Lecture Slides and Dry running of Programs | Book1   * Chapter 3 * Chapter 4 | | ***6*** | Python Lists | Python List ,Python Tuples ,Python Sets and Python Dictionaries, | Lecture Slides and Dry running of Programs | Book1   * Chapter 2   Book2   * Chapter 6 | | ***7*** | Python Modules | Python Modules,  Function in Python, Built-In Function ,User Defined Functions, Lambda Function, Interactive Input with input() | Lecture Slides and Dry running of Programs  Case Study | Book1   * Chapter 3   3.3 | | ***8*** | **Mid Term Exam** |  |  |  | | ***9*** | Control Structures in Python | Recursion, Arrays and Nesting of Control Structures | Lecture Slides and Dry running of Programs | Book2   * Chapter 8 | | ***10*** | Parameter Passing in Python | Mutable and Immutable Types, Assignments and Mutability, Swapping, Parameter Passing, Immutable Parameter Passing, Mutable Parameter | Lecture Slides and Dry running of Programs | Book1  Chapter 3 | | ***11*** | Working with Dates and Strings in Python | Python Dates, Python String Formatting | Lecture Slides and Dry running of Programs | Book2 | | ***12*** | File handling in Python | Python File Handling, Reading a File, Writing a File, Deleting a File | Lecture Slides and Dry running of Programs | Book2   * Chapter 10 | | ***13*** | Exception Handling | Errors and Exceptions, Syntax Errors, Built-In Exceptions | Lecture Slides and Dry running of Programs | Book2   * Chapter 10 | | ***14*** | **Data Sciences with Python** | Introduction with Pandas, Numpy and Matplotlib libraries in Python, Slicing and plotting data | Lecture Slides Case Studies | Book2   * Chapter 14   Data Visualization | | ***15*** | **Data Visualization** | Application of Python Libraries in Data Science Projects | Lecture Slides Case Studies | Book2   * Chapter 14   Data Visualization | | ***16*** | **Graphical User Interface** | Introduction to Python GUI Tkinter, Tkinter widgets | Lecture Slides Case Studies | Book1  Chapter 9 | |  | **Total No. of sessions** | |  |  | | | |
| **TEXTBOOKS (Book Name, Authors, edition, Publisher, Year)**  1. Introduction to Computing using Python, 2nd Edition, Ljubomir Perkovic. Wiley Publishers, January 13, 2016.  2. Python Crash Course: A hands on Project based Introduction to Programming, 1 st Edition, Eric Matthes, No Starch press, November 1, 2015. | | |
| **COURSE LEARNING OUTCOME AND ITS MAPPING WITH PROGRAMME LEARNING OUTCOME**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Sr. No.** | **CLOs** | **Taxonomy level** | **Programme learning outcome (PLO)** | **Assessment Tool** | | At the end of the course, the student will be able to: | | | | | | **1** | **Demonstrate** knowledge of basic concepts, syntax and control structures in programming. | **C2** | **PLO1** | Test, Mid-term & Final Exam | | **2** | **Apply** the devised solutions into computer programs and test the programs on a computer. | **C3** | **PLO5** | Assignment, Mid-term & Final Exam | | **3** | **Practice** programming techniques and methods | **P3** | **PLO3** | Design Project | |  |  |  |  |  |   **Taught by: Teacher Name, Office Address, e-mail and other contact for students.**  **Engr.Asma Khan**  **Assistant Professor(Software Engineering Department)**  **asmakhan@neduet.edu.pk**  **REMARKS (if any):** | | |

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| Prepared by: |  |  | Reviewed & Approved by: |  |
|  | Course Instructor |  |  | Chairperson |
| Date |  |  | Date |  |