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| **PROGRAM** | **Master of Business Administration** |
| **SEMESTER** | **IV** |
| **COURSE TITLE** | **Business Analytics using Python Programing** |
| **COURSE CODE** | **04MB0430** |
| **COURSE CREDITS** | **3** |
| **COURSE DURATION** | **42** |

**COURSE OUTCOMES:**

* Apply knowledge of coding and write programs in Python
* Use python coding for string extraction, manipulation and data handling
* Apply different in-built modules such as math, random and Regular Expressions for computation and analysis purpose
* Apply different data analysis modules such as NumPy, Pandas for exploring and analyzing data
* Analyze data using various visual representations and descriptive measures

**COURSE CONTENTS:**

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| **Unit No** | **Unit / Sub Unit** | **Sessions** |
| **I** | **Introduction to Python Programming:** History, Features, Installation of Anaconda platform, The Python Shell , Use of a text editor , Jupyter Notebook, Spyder, Executing Python scripts, Basic Syntax, Variables, Data Types, Operators  **Conditional Statements, Looping, Control Statements**:  Conditional Statements: if, elif, else Nested if-else, catching exceptions “try and except”  Looping: For, While, Nested loops  Control Statements: Break, Continue, Pass | 8 |
| **II** | **File Handling**: Opening files, Reading files, Searching through a file, Writing files  **String Manipulation**: Accessing Strings, Basic Operations, String Slices, looping and counting, String Methods, Parsing strings  **Lists:** Introduction, Accessing Lists, Operations, Working with Lists, Functions and Methods  **Dictionaries:** Introduction, Accessing values in Dictionaries, Working with Dictionaries, Properties, Functions  **Tuples:** Introduction, Accessing tuples, Operations, Working with Tuples, Functions and Methods | 10 |
| **III** | **Functions:** Built-in functions, Defining a function, Calling a function, Function Arguments  **Modules:** Importing a Module, Math Module, Random Module, Regular Expression Module | 6 |
| **IV** | **Programming with NumPy and Pandas Modules**  **NumPy**  Ndarray-Creating Numpy arrays , types of data, the dtype option, intrinsic creation of an array, Operations on NumPy Arrays , arithmetic operators, the matrix product, increment and decrement operators, universal functions (ufunc), aggregate functions, indexing an array, Slicing arrays, iterating an array, shape manipulation, Array manipulation- splitting and joining arrays, Reading and writing array on data files.  **Pandas**  Introduction to Pandas data structures, Creating series, Creating DataFrames, Adding data , Saving DataFrames , Indexing methods , Slicing a DataFrame , Arithmetic methods with DataFrames, Reading and Writing Data, I/O API tools, CSV and Textual files, Reading Data in CSV or Text Files, Writing Data in CSV, Reading and Writing Data on MS-Excel Files | 10 |
| **V** | **Descriptive Analytics using Python**  Loading a dataset into Pandas DataFrame, Displaying records of the DataFrame, Value Counts and Cross Tabulations, Sorting values by columns, Creating New Columns, Filtering Records Based on Conditions, Summary measures  Exploration of data using visualization (Using **Matplotlib** **library**), Bar chart, Histogram, Distribution or Density Plot, Box Plot, scatter plot, pair plot, correlation and heat map | 8 |

**EVALUATION:**

The students will be evaluated on a continuous basis and broadly follow the scheme given below:

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|  | **Component** | **Weightage** |
| A | Continuous Evaluation Component (Assignments / Presentations/ Quizzes / Class Participation/ etc.) | 20% (C.E.C.) |
| B | Internal Assessment (MCQ) | 30% (I.A.) |
| C | End-Semester Practical Examination | 50% (External Assessment) |

**SUGGESTED READINGS:**

**Text Books:**

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| **Sr. No** | **Author/s** | **Name of the Book** | **Publisher** | **Edition and Year** |
| **T-01** | Charles R Severance | Python for Everybody | Creative Commons (creativecommons.org) | 2nd Edition, 2016 |
| **T-02** | Fabio Nelli | Python Data Analytics: With Pandas, NumPy, and Matplotlib | APRESS | 2nd Edition, 2018 |

**Reference Books:**

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| **Sr. No** | **Author/s** | **Name of the Book** | **Publisher** | **Edition and Year** |
| R-01 | Manoranjan Pradhan, U Dinesh Kumar | Machine Learning using Python | Wiley Publications | 1st Edition, 2019 |
| R-02 | Wes McKinney | Python for Data Analysis | O’Reilly Media, Inc., | 2nd Edition,  2017. |
| R-03 | Martin C. Brown | The Complete Reference  Python | McGraw Hill | 1st Edition, 2018. |