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|  | **FAST National University of Computer and Emerging Sciences** |
| **Department of Computer Science, Peshawar Campus**  **Course Content, Objectives and Outline**  **(Fall 2022)** |

**PROGRAM:** BS-Computer Science

**SEMESTER:** Fall (2022)

**COURSE:** Data Science (CS4048)

**PRE-REQUISITE:**

**CREDIT HRS:** 3

**INSTRUCTOR:** Musadaq Mansoor

**Email:**

**Course Content:**

Introduction to Data Science, Data Science Life Cycle, Data, Types of Data, Data Acquisition, Extract Transform Load, Data Wrangling, Exploratory data analysis, Data Visualization, Data Analysis, Text Analysis, Machine Learning, Supervised Learning, Unsupervised Learning, Clustering, Data Science success stories.

**Objectives:**

Understanding basic concepts of Data Science

Understanding Data Science Life Cylce

Understanding data

Learning python for Data Science

Understanding basic machine learning concepts

**Reference Books:**

1. Python for Data Analysis, 1st Edition, William McKinney

2. Doing Data Science, 1st Edition, Cathy O'Neil and Rachel Schutt

3. Introduction to Data Science. A Python Approach to Concepts, Techniques and Applications, 1st Edition, Laura Igual.

**Course Evaluation Criteria:**

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| **#** | **Evaluation** | **Weightage %** |
| 1 | Assignments | 10 |
| 2 | Quiz | 10 |
| 3 | Sessional-I | 15 |
| 4 | Sessional-II | 15 |
| 5 | Finals | 50 |
| **Total** | | **100** |

**Weekly Distribution:**

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| **Week No.** | **Topic Description** |
| 1 | * Introduction * Data Science Life cycle & process |
| 2 | * Introduction to Data: * Types of data and datasets |
| 3 | * Python –I * Python - II |
| 4 | * Data Acquisition * BeautifulSoup |
| 5 | * LXML * PyPDF |
| 6 | * ETL * PETL |
| 7 | * Data Wrangling |
| 8 | * Data Analysis |
| 9 | * Pandas – I * Pandas - II |
| 10 | * Exploratory Data Analysis |
| 11 | * Matplotlib * Seaborn |
| 12 | * Introduction to Text Analysis |
| 13 | * Introduction to Machine Learning |
| 14 | * Model Evaluation and Performance Metrics * Introduction to Scikit – Learn |
| 15 | * Data Science case studies |
| 16 | * Presentations |