



## **SYMBIOSIS INTERNATIONAL (DEEMED UNIVERSITY)**

(Established under section 3 of the UGC Act 1956)

**Re - accredited by NAAC with 'A' Grade**

**Founder: Prof. Dr. S. B. Mujumdar, M.Sc., Ph.D. (Awarded Padma Bhushan and Padma Shri by President of India)**

(Established under section 3 of the UGC Act 1956, by notification No.F.9-12/2001-U3  
Government of India)

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### **Faculty of Computer Studies (FoCS) Sub Committee for Curriculum Development**

#### **Format to submit syllabus**

**Course Name:** Fundamentals of Data science

**Course Code:** T3440

**(UG/PG):** PG

**Number of Credits:** 3

**Level:** 4

In this course students will be introduced with techniques, procedures and algorithms which are essential for understanding fundamental principles of data science. This helps student for data-analytic thinking.

**Learning Objective(s):** Understand fundamental principles of data science, such as using data to get information about an unknown quantity of interest, calculating and using data similarity, fitting models to data, supervised and unsupervised modeling, overfitting and its avoidance, evaluation and model analytics, visualization  
To explore any open source tool

#### **Pedagogy:**

Lectures  
Class work discussion  
Lab session

#### **Pre-learning:**

Understanding of basic probability or Statistics and also knowledge of linear Algebra will be an added advantage

Experience in programming language is desirable

## Course Outline:

| Sr.No. | Topic                                                                                                             | Hours     |
|--------|-------------------------------------------------------------------------------------------------------------------|-----------|
| 1      | Introduction to Data Science Process and Data Acquisition                                                         | 6         |
| 2      | Data Preparation                                                                                                  | 4         |
| 3      | Tabular Data                                                                                                      | 7         |
| 4      | Data Cleaning and Integration                                                                                     | 6         |
| 5      | Usage of Natural Language Processing                                                                              | 2         |
| 6      | Exploratory Data Analysis                                                                                         | 5         |
| 7      | kNN, Linear Regression, k-Means                                                                                   | 6         |
| 8      | Naive Bayes, Logistic Regression, Trees and Forests                                                               | 1         |
| 9      | Scaling Up Analytics, Charles : MapReduce," "Word Frequency Problem", and "Other Examples of MapReduce" framework | 3         |
| 10     | Visualization                                                                                                     | 5         |
|        | <b>Total</b>                                                                                                      | <b>45</b> |

## Books Recommended:

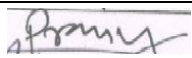
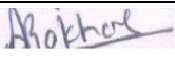
1. **An Introduction to Data Science (e-book)** Jeffrey Stanton, 2013
2. **The Data Science Handbook** Carl Shan, Henry Wang, William Chen, & Max Song, 2015
3. O'Reilly by "Doing Data Science" book

## Suggested Evaluation Methods:

On line Test  
Lab Examination  
Viva  
Mini Project

## Parallel/Similar courses the existing curriculum:

| S.No. | Name of the course | Institute where it was offered |
|-------|--------------------|--------------------------------|
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|----------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|--|--|
| Name of Member | Dr P S Metkewar                                                                   | Anuja Bokhare                                                                     |  |  |  |
| Designation    | Associate Professor                                                               | Assistant Professor                                                               |  |  |  |
| Org. / Inst.   |                                                                                   |                                                                                   |  |  |  |
| Signature      |  |  |  |  |  |

Name of the Expert:

Signature:

Date:

