**BANASTHALI VIDYAPITH**

**Department of Computer Science**

**Course Handout: December 2022 – May 2023**

Date: 21/12/2022

**Course Code: CS 317L Course Name: Artificial Intelligence & Machine Learning Lab**

**Program Name: B.Tech.(IT) VI Semester (Sections A & B)**

**Course Detail: Practical**

**Credit Points: 2 Max. Marks: 100 (CA: 40+ ESA: 60)**

**Course Instructors: Dr. Khandakar F. Rahman**

**Learning Outcomes:**

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

* Understand problem solving in Python.
* Able to handle different kinds of data processing algorithms.
* Implement supervised and unsupervised machine learning algorithms in Python.
* Able to optimize machine learning algorithms.

**Learning Resource:**

https://www.python.org/

https://scikit-learn.org/stable/tutorial/index.html

**Evaluation Scheme:**

|  |  |  |
| --- | --- | --- |
| **Component** | **Marks** | **Date** |
| Continuous Assignment# | 40 | - |
| Final Semester Examination | 60 | 16 April- 4 May, 2023\* |

\* Subject to change

# Continuous assessment marks will be based on written documents, viva-voce, online test, and any other components decided by the instructor on regular basis.

**Laboratory-Wise Schedule (2 hours per laboratory session):**

|  |  |
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| **Lab Assigned** | **Experiment** |
| 1 | Introduction to Python, Console, Input, Output, Understanding Control Structure |
| 2 | List, Tuples, Strings, file handling |
| 3 | Scikit-Learn, Data Preprocessing: Missing Data, Categorical Data, Splitting Data, feature selection |
| 4 | Regression: Simple, Multiple |
| 5 | Support Vector Regression |
| 6 | Decision Tree Regression |
| 7 | Evaluation of Regression Model |
| 8 | SVM Classification |
| 9 | Decision Tree Classification |
| 10 | Naïve Bayes Classification |
| 11 | Evaluation of Classification Model |
| 12 | K-means Clustering |
| 13 | Hierarchical Clustering |
| 14-15 | Upper Confidence Bound |
| 16-17 | Thompson Sampling |
| 18-19 | K-fold Cross Validation |
| 20-21 | XGBoost |
| 22 | Extraction Features from Text |
| 23-24 | Extracting Features from Image |
| 25 | Other Applications of Machine Learning |

**(Dr. Khandakar F. Rahman)**