School of Computer Science Engineering and Technology

Course- BTech
Course Code- **CSET211**
Year- Second
Date- 09/08/2022

Type- AI Core-1
Course Name- **Statistical Machine Learning**
Semester- ODD
Batch- CSE 3rd Semester

Lab Assignment (29st Aug – 2nd Sep 2022)

Lab 3 Set 2– (Least Square Method)

CO-Mapping:

Exp. No.	Name	CO1	CO2	CO3
03	Least Square Methods		✓	✓

Objective: Apply least square methods on dataset for finding Line of best fit and accuracy of model.

Total: 2 Marks

Question -1: Consider the time series data given below: 0.5 Marks

X_i	8	3	2	10	11	3	6	5
Y_i	4	12	1	12	9	4	6	1

i. Use the least square method to determine the equation of line of best fit for the data. Then plot the line.

Question -2: Consider the example below where someone named Sam found how many hours of sunshine vs how many ice creams were sold at his shop from Monday to Friday: 0.5 Marks

Hours of sunshine	2	3	5	7	9
Ice cream sold	4	5	7	10	15

i. Use the least square method to determine the equation of line of best fit for the data.
ii. Plot the best fit line. and estimate if there is a 8 hours of sunshine how many ice cream would be sold tomorrow.

Question -3: Consider the following example: working years of faculty and their performance rating is given out of 10. **0.5 Marks**

Exp.	16	12	18	4	3	10	5	12
Performance	8	8	9	6	6	8	7	83

i. Find out the slope and intercept by least square method.
ii. Estimate the performance for a faculty with 25 years of experience.

Question -4: Consider the following 10 randomly generated data point pairs. **0.5 Marks**

X	10	12	14	16	18	20	22	24	25	28
Y	1	5	10	15	20	25	30	35	40	45

i. Write a python program using Scikit-learn module to find out the Intercept and Slope by Least Square regression.
ii. Plot the Data and Regression Line