

**Business Analytics (BUS 509)
Assignment 3; Total Marks: 10
School of Business and Economics
United International University**

1. Consider the following time series data:

Week	1	2	3	4	5	6
Value	18	13	16	11	17	14

Using the naïve method (most recent value) as the forecast for the next week, compute the following measures of forecast accuracy:

- Mean absolute error
- Mean squared error
- Mean absolute percentage error
- What is the forecast for week 7?

Refer to the time series data in Problem 1. Using the average of all the historical data as a forecast for the next period, compute the following measures of forecast accuracy:

- Mean absolute error
- Mean squared error
- Mean absolute percentage error
- What is the forecast for week 7?

Explain your conclusion on both naïve method and using average on historical data method. And what results do you come up with?

2.

Consider the following time series data:

Week	1	2	3	4	5	6
Value	18	13	16	11	17	14

- Construct a time series plot. What type of pattern exists in the data?
- Develop a three-week moving average for this time series. Compute MSE and a forecast for week 7.
- Use $\alpha = 0.2$ to compute the exponential smoothing values for the time series. Compute MSE and a forecast for week 7.
- Compare the three-week moving average forecast with the exponential smoothing forecast using $\alpha = 0.2$. Which appears to provide the better forecast based on MSE? Explain.

3.

MILES TRAVELED AND TRAVEL TIME (IN HOURS) FOR TEN BUTLER TRUCKING COMPANY DRIVING ASSIGNMENTS

Driving Assignment i	$x =$ Miles Traveled	$y =$ Travel Time (hours)
1	100	9.3
2	50	4.8
3	100	8.9
4	100	6.5
5	50	4.2
6	80	6.2
7	75	7.4
8	65	6.0
9	90	7.6
10	90	6.1

- Based on the table calculate the mean of x , y and also calculate the standard deviation of x , y :
- Based on the table calculate the value of r , slope b , a (y -intercept).
- Based on the above results, write down the least squared regression equation for the chart.
- Now, find out the estimated travel time in hours, if the driving assignments has new added miles traveled. They are 156, 189, 124, 193.

Instructions:

- Please make a zip file of excel sheet and answer sheet and send it to my email address.
- Please submit a hard-copy to me on 7/04/2019.
- Copying from each other is strictly discouraged. It may reduce significant amount of scores.
- Question 1 and 2 carries 2.5 marks each; question 3 carries 5 marks. Assignment 3 carries 10 marks in total. BEST OF LUCK!!