**Introductory Econometrics ( Section 1)**

Time: 1 Hour Max Marks-15

1. Consider the simple linear regression model

$$Y\_{i}=B\_{0}+B\_{1}X\_{i}+u\_{i}$$

(a). State the Guass Markov Theorm

(c). Suppose that E(u)≠ 0. Letting $α\_{0}=E\left(u\right)$, show that the model can always be re-written as one with the same slope, but a new intercept and error term where the new error term has a zero expected value.

 (2.5, 2.5)

1. Suppose that a researcher, uses data on class size(CS) and average test scores from 100 third grade classes to estimate the following OLS regression,

$\hat{Test Score}$ = 520.4 - 5.82CS

 (20.4) (2.21) $R^{2}= 0.08$, SER=11.5

1. A classroom has 22 students. What is the regression’s prediction for that classroom’s average test score?
2. Last year a classroom had 19 students and this year it has 23 students. What is the regression’s prediction for the change in the classroom average test score?
3. Construct a 95% confidence interval for the slope coefficient
4. Calculate the p-value for the two sided test of the null hypothesis that the slope coefficient is equal to zero? Do you reject the null hypothesis at the 5% level? At the 1% level?
5. The sample average class size across the 100 classrooms is 21.4. What is the sample average of the test scores across the 100 classrooms?
6. What is the sample standard deviation of test scores across the 100 classrooms?
7. Using the above regression can I compute the elasticity of test scores with respect to class size? Is there a way to get this estimate directly?

 (1, 1, 1, 2, 1, 2, 2)