The University of Kansas

Department of Economics

Quiz 3   **Feb/27/2019**
Econ 526 - Introduction to Econometrics   **Instructor: Caio Vigo Pereira**

Name:

<div align="center">SECTION A - MULTIPLE CHOICE</div>

10% 1. If a change in variable x explains a change in a variable y. Then, the variable y is called:
   A. dependent variable
   B. predictor variable
   C. explanatory variable
   D. independent variable

10% 2. Nonexperimental data is also know as:
   A. cross-sectional data
   B. observational data
   C. time series data
   D. panel data

<div align="center">SECTION B - TRUE OR FALSE</div>

10% 1. Depending if we either use the Method of Moments or the Least Squares Method to derive β_0 and β_1 of a simple regression model, we may get different estimators for both parameters.
   ◯ True   ◯ False

10% 2. Regarding the association between the x and the error term in a simple linear regression model such as $y = \beta_0 + \beta_1 x + u$, if x and u are uncorrelated, then we have enough information to derive the estimators.
   ◯ True   ◯ False

10% 3. In a simple linear regression model, the error term is related to the sample, while the residual is related to the population.
   ◯ True   ◯ False

<div align="center">SECTION C - SHORT ANSWER</div>

1. Suppose you want to study the effects of the number of students per classroom in algebra courses and students' performance in algebra courses for high schools in Kansas. You collected a random sample and now you have data for the above two variables. You called them as *number_students* (which refers to the number of students per classroom in algebra courses), and *students_performance* (which refers to the students' performance in algebra courses - measured as their final grade in a scale from 0 to 4). Therefore, you want to know how *number_students* explains *students_performance*.

| 5% | (a) What is the independent variable? [**1 line answer maximum - don't exceed it**]

| 5% | (b) What is the dependent variable? [**1 line answer - don't exceed it**]

| 10% | (c) Using the variables names, write the simple linear regression model. [**1 line answer - don't exceed it**]

| 10% | (d) Knowing that the OLS estimate for the intercept is 3.4, and for the slope is -0.02, write the estimated OLS regression line (or SRF) using the variables names. [**1 line answer - don't exceed it**]

| 10% | (e) What is the predicted value for whichever is your dependent variable for a classroom with 20 students? [**1 line answer - don't exceed it**]

| 10% | (f) What is the predicted effect on your dependent variable for each additional increment (i.e, when you increase one unit) of your independent variable? [**up to 2 lines answer - do not exceed it**]