FEEDBACK TUTORIAL LETTER

1st SEMESTER 2019

ASSIGNMENT 1&2

FOR
Econometrics

ECN712s
Dear Student

Welcome to the course Econometrics (ECM712s) for Semester 1, 2019.

Course Name:  Econometrics
Course Code:  ECN712s
Department:  Accounting, Economics and Finance
Course Duration:  150 HOURS
NQF Level and Credit:  NQF LEVEL 8; 15 CREDITS
Pre-requisite:  None

This First Tutorial Letter was compiled by:
Name and Surname:  MR Pinehas Nangula

Your marker-tutor for ACCOUNTING INFORMATION SYSTEMS
Tel.:  061 207 2492
E-mail:  pnangula@nust.na

Please sms your tutor to arrange a telephonic/WebEx tutorial
COLL ADMINISTRATIVE SUPPORT SERVICES

COLL ANNOUNCEMENTS: http://www.nust.na/?q=centres/coll/coll-announcement

COLL STUDENT SUPPORT: http://www.nust.na/?q=centres/coll/student-support

E-LEARNING: http://elearning.nust.na/elearn/

ASSIGNMENT SUBMISSION: collassignments@nust.na

ASSIGNMENT DUE DATES: Information Manual for Distance Education Students (DE Manual)

http://www.nust.na/?q=centres/coll/about-coll

NUST COLL VACATION SCHOOL: 20 – 24 AUGUST 2018

TIMETABLE: http://www.nust.na/?q=centres/coll/about-coll

FACE TO FACE CLASSES: http://www.nust.na/?q=centres/coll/about-coll

COLL FACEBOOK: https://www.facebook.com/groups/554488671248201/

MOODLE PLATFORM: http://www.nust.na/?q=centres/coll/about-coll

NUST’s Policies and Regulations: http://www.nust.na/?q=download/annual-reports-documents

Examination dates: To be announced on the NUST webpage


Username: nust

Password: 123

COLL STUDENT SUPPORT SERVICES

WebEx: https://vc.uc.nust.na/orion/login

NUST Writing Unit: 061 – 2072383

writingunit@nust.na

NUST Mathematics Tutoring Centre: 061 – 2072523/2072913

http://mathstutoring.nust.na

TURNITIN: www.turnitin.com

TurnItIn - Student Guide.pdf

STATEMENT ABOUT ACADEMIC HONESTY AND INTEGRITY
All staff and students of Namibia University of Science and Technology (NUST), upon signing their employment contracts and registration forms, commit themselves to abide by the policies and rules of the institution. The core activity of NUST is learning and in this respect academic honesty and integrity is very important to ensure that learning is valid, reliable and credible.

NUST therefore does not condone any form of academic dishonesty, including plagiarism and cheating on tests and assessments, amongst other such practices. NUST requires students to always do their own assignments and to produce their own academic work, unless given a group assignment.

Academic Dishonesty includes, but is not limited to:

- Using the ideas, words, works or inventions of someone else as if it is your own work.
- Using the direct words of someone else without quotation marks, even if it is referenced.
- Copying from writings (books, articles, webpages, other students’ assignments, etc.), published or unpublished, without referencing.
- Syndication of a piece of work, all or part of an assignment, by a group of students, unless the assignment was a legitimate group assignment.
- The borrowing and use of another person’s assignment, with or without their knowledge or permission.
- Infringing copyright, including documents copied or cut and pasted from the internet.
- Asking someone else to prepare an assignment for you or to write or sit an assessment for you, whether this is against payment or not.
- Re-submitting work done already for another course or programme as new work, so-called self-plagiarism.
- Bringing notes into an examination or test venue, regardless of whether the notes were used to copy or not.
- Receiving any outside assistance in any form or shape during an examination or test.

All forms of academic dishonesty are viewed as misconduct under NUST Student Rules and Regulations. Students who make themselves guilty of academic dishonesty will be brought before a Disciplinary Committee and may be suspended from studying for a certain time or may be expelled. All students who are found guilty of academic dishonesty shall have an appropriate endorsement on their academic record, which will never be erased.

I, ……………………………………………………………………………………………………………(full name and surname), hereby acknowledge that I have read and understood the Statement about Academic Honesty and Integrity and that I will abide by the rules and regulations as outlined within the statement.

Signature of the student: .................................................. Date: ..................................................
INSTRUCTIONS/REQUIREMENTS FOR ASSIGNMENTS

The instructions for this assignment is:

- Sources must be listed according to the APA or Harvard referencing style, unless otherwise prescribed by the department.
- All assignments should be typed
- Font Style to be used is Calibri, font size 11, line spacing 1.5

ASSESSMENT CRITERIA

- You will be doing (two), each weighing (40 %) towards your CA mark. Due dates are on the COLL website.

- You will write a final examination at the end of the semester, (3) hour paper.

Your final mark: 40 % CA and 60 % Examination

Examination Admission
Apart from the regulations hereunder, you should also study your COLL Yearbook 2018, which contains important information and regulations about admission to the examination.

- You need at least a (40 % ) semester mark to write the examination
- The final mark is made up of a (40:60 ratio) (40 % of the semester mark and 60 % of the examination mark)
- A final mark of at least (50 %) (calculated from the semester mark and examination) has to be obtained to pass the course

Student Notice:

- Please ensure that COLL has your correct cell phone number, in order to avoid delays in receiving critical information that is communicated via sms. Please ensure that you log onto Moodle regularly!!
- For information pertaining to your Student Support Officer, kindly consult the DE Pocket Guide on the COLL website (COLL Announcements – COLL Manuals).
- Assignment submission dates can be found in the Distance Education Information Manual with Assignment due dates, which is available on the COLL Website (COLL Announcements – COLL Manuals)
ASSIGNMENT 01

My due date for this assignment is: …………………………………………………………………………………

Submission of Assignments

Students may send assignments via e-mail. Students should download the Electronic Assignment Book available in MSWord format from http://www.nust.na/?q=centres/coll/about-coll to complete assignments. Ensure that all information as requested on the assignment cover is completed and correct. Incorrect or incomplete information will prevent it from being accepted for marking.

After completion of the assignment, email the Electronic Assignment Book as an attachment to:

collassignments@nust.na

Further note that students are allowed to submit late assignments, based on valid documentary evidence as per rule DE12 (b) of the COLL Yearbook 2019, provided late assignments are submitted within 7 days (including public holidays and weekends) after the due date of the assignment.
ASSIGNMENT 01

Question 1

[20 marks]

The data in the table below refer to a total population of 24 families in a hypothetical community and their weekly income (I) and weekly consumption expenditure (C), both in dollars. The 24 families are divided into 5 income groups (from N$200 to N$1000) and the weekly expenditures of each family in the various groups are as shown in the table below.

<table>
<thead>
<tr>
<th>Income (Xi)</th>
<th>200</th>
<th>400</th>
<th>600</th>
<th>800</th>
<th>1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumption</td>
<td>145</td>
<td>260</td>
<td>560</td>
<td>650</td>
<td>986</td>
</tr>
<tr>
<td>150</td>
<td>300</td>
<td>573</td>
<td>698</td>
<td>890</td>
<td></td>
</tr>
<tr>
<td>189</td>
<td>350</td>
<td>450</td>
<td>798</td>
<td>850</td>
<td></td>
</tr>
<tr>
<td>123</td>
<td>287</td>
<td>470</td>
<td></td>
<td>950</td>
<td></td>
</tr>
<tr>
<td>190</td>
<td>390</td>
<td></td>
<td>560</td>
<td></td>
<td></td>
</tr>
<tr>
<td>189</td>
<td></td>
<td>589</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>123</td>
<td></td>
<td>498</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. Given the table above compute the following
   a) The conditional mean
      [5 marks]
      159  317  529  715  919
   b) The unconditional mean
      [3 marks]
      496

2. With proper examples draw a distinction between mathematical and econometrics model
   [5 marks]

3. State what the abbreviation TSS stands for and briefly explain what message does it convey about regression analysis?
   [2 marks]
4. Describe the various components of the function \( Y_i = E(Y|X_i) + u_i \) [5 marks]

Question Two [25 marks]
Given \( Y_i = \hat{\beta}_1 + \hat{\beta}_2 X_i + \hat{u}_i \), derive normal equations and eventually the estimation equation for \( \hat{\beta}_1 \) and \( \hat{\beta}_2 \).

Question Three [24 marks]
State with reason whether the following statements are true, false, or uncertain. Be precise.

a) True, the t test is based on variables with a normal distribution. Since the estimators of \( \beta_1 \) and \( \beta_2 \) are linear combinations of the error which is assumed to normally distributed under CLRM, these estimators are also normally distributed [3 marks]

b) True, So long as \( E(u_i) = 0 \), the OLS estimators are unbiased. No probabilistic assumptions are required to establish unbiasedness [3 marks]

c) True, the p value is the smallest level of significance at which the null hypothesis can be rejected. The terms level of significance and size of the test are synonymous

d) True,

e) False. All we can say is that the data at hand does not permit us to reject the null hypothesis

f) False, the conditional mean of a random depends on the values taken by another (conditioning) variable. Only if the two variables are independent, the conditional and unconditional means can be the same

g) True,

TOTAL MARKS FOR ASSIGNMENT 01: 75

END OF ASSIGNMENT 01
ASSIGNMENT 02

My due date for this assignment is: .................................................................

This assignment covers the following chapters:
5 - 6

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TABLE below gives data on average public teacher pay (annual salary in Namibia dollars) and spending on public schools per pupil (Namibia dollars) in 1985 for 50 states and the District of Columbia.

**AVERAGE SALARY AND PER PUPIL SPENDING (DOLLARS), 1985**

<table>
<thead>
<tr>
<th>Observation</th>
<th>Salary</th>
<th>Spending</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>19,583</td>
<td>3346</td>
</tr>
<tr>
<td>2</td>
<td>20,263</td>
<td>3114</td>
</tr>
<tr>
<td>3</td>
<td>20,325</td>
<td>3554</td>
</tr>
<tr>
<td>4</td>
<td>26,800</td>
<td>4642</td>
</tr>
<tr>
<td>5</td>
<td>29,470</td>
<td>4669</td>
</tr>
<tr>
<td>6</td>
<td>26,610</td>
<td>4888</td>
</tr>
<tr>
<td>7</td>
<td>30,678</td>
<td>5710</td>
</tr>
<tr>
<td>8</td>
<td>27,170</td>
<td>5536</td>
</tr>
<tr>
<td>9</td>
<td>25,853</td>
<td>4168</td>
</tr>
<tr>
<td>10</td>
<td>24,500</td>
<td>3547</td>
</tr>
<tr>
<td>11</td>
<td>24,274</td>
<td>3159</td>
</tr>
<tr>
<td>12</td>
<td>27,170</td>
<td>3621</td>
</tr>
<tr>
<td>13</td>
<td>30,168</td>
<td>3782</td>
</tr>
<tr>
<td>14</td>
<td>26,525</td>
<td>4247</td>
</tr>
<tr>
<td>15</td>
<td>27,360</td>
<td>3982</td>
</tr>
<tr>
<td>16</td>
<td>21,690</td>
<td>3568</td>
</tr>
<tr>
<td>17</td>
<td>21,974</td>
<td>3155</td>
</tr>
<tr>
<td>18</td>
<td>20,816</td>
<td>3059</td>
</tr>
</tbody>
</table>
To find out if there is any relationship between teacher’s pay and per pupil expenditure in public schools, the following model was suggested: \( Pay_i = \beta_1 + \beta_2 Spend_i + u_i \), where Pay stands for teacher’s salary and Spend stands for per pupil expenditure.

a) Plot the data and eyeball a regression line. [5 marks]

b) Suppose on the basis of a) you decide to estimate the above regression model. Obtain the estimates of the parameters, their standard errors, \( r^2 \), RSS, and ESS. [10 marks]

c) Interpret the regression. Does it make economic sense? [5 marks]

d) Establish a 95% confidence interval for \( \beta_2 \). Would you reject the hypothesis that the true slope coefficient is 3.0? [5 marks]

e) Obtain the mean and individual forecast value of Pay if per pupil spending is $5000. Also establish 95% confidence intervals for the true mean and individual values of Pay for the given spending figure. [10 marks]
The following regression results were based on monthly data over the period January 1978 to December 1987:

\[ \hat{Y}_t = 0.00681 + 0.75815X_t \]

\[ se = (0.02596) \quad (0.27009) \]

\[ t = (0.26229) \quad (2.80700) \]

\[ p\ value = (0.7984) \quad (0.0186) \quad r^2 = 0.4406 \]

\[ \hat{Y}_t = 0.76214X_t \]

\[ se = (0.265799) \]

\[ t = (2.95408) \]

\[ p\ value = (0.0131) \quad r^2 = 0.43684 \]

where \( Y \) = monthly rate of return on common stock, %, and \( X \) = monthly market rate of return, %.

a) What is the difference between the two regression models? [2 marks]

b) Given the preceding results, would you retain the intercept term in the first model? Why or why not? [5 marks]

c) How would you interpret the slope coefficients in the two models? [10 marks]

d) Can you compare the \( r^2 \) terms of the two models? Why or why not? [3 marks]

e) The \( t \) value of the slope coefficient in the zero-intercept model is about 2.95, whereas that with the intercept present is about 2.81. Can you rationalize this result? [5 marks]

Question Three [15 marks]
Consider the following regression model:

\[
\frac{1}{Y_i} = \beta_1 + \beta_2 \frac{1}{X_i} + u_i
\]

Note: Neither Y nor X assumes zero value.

a) Is this a linear regression model? \[5 \text{ marks}\]

b) How would you estimate this model? \[5 \text{ marks}\]

c) What is the behavior of Y as X tends to infinity? \[5 \text{ marks}\]