Title: Introduction to Statistics
Code: ECON1005
Level: I
Semester: Semester 1 2011-12
Credits: 3
Prerequisites: None

Overview:
This course will familiarize students with the rudiments of statistical theory and ready them for effective academic and professional practice in the process of statistical research. Primary topics include Graphing and Summarizing Data, Probability, Estimation, Hypothesis Testing, Regression and Correlation.

These broad topics have been formed into four modules (units) upon which the course is organized. Each unit builds on the last, ushering students along a path from rudimentary exposure to high-level application and analysis, particularly in the area of Economic research.

In its purpose and goals, this course aligns itself with the stated policy of the University of the West Indies and the Department of Economics to produce graduates who are well versed in the practice of their disciplines in the workforce.

Required Skills: Students must know how to work with the summation operator, and must know how to apply the order of operations in mathematical computations. For help with acquiring the requisite skills, see:

- [http://yongyoon.net/econometrics/summation.pdf](http://yongyoon.net/econometrics/summation.pdf)
INSTRUCTOR INFORMATION

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Email  sonja.teelucksingh@sta.uwi.edu
        gregory.wallace.@sta.uwi.edu
        diedron.lewis@sta.uwi.edu
Office Hours  Check for notices on MyElearning
Communication  Students are encouraged to attend office hours to communicate with all lecturers
Lectures

Full Time Students:
Mondays  2:00 pm – 5:00 pm  DAAGA Auditorium
Fridays  3:00 pm – 6:00 pm  FSS 107

Evening University Students:
Tuesdays  6:00 pm – 9:00 pm  DAAGA Auditorium

Tutorials  Visit the course website on MyElearning in the first week of term, 5-12 September 2011 and choose one (1) session from the available list. Tutorials begin on Monday 19 September 2011.

COURSE RATIONALE

This course is the first in a series designed to provide prospective UWI Economics and Management Studies graduates with the skills necessary to generate robust economic reports, analyses and policies based on a study of relevant data. Today’s successful economist and/or management
practitioner require an excellent working knowledge of the process of collecting data and converting it into information that is useful for business management, market analysis and government policymaking at the local, national and world levels. Apart from guaranteeing an easy transition into all Level II Social Science courses, this course provides the set of skills that are most frequently used in the workplace to generate and critically analyze reports.

COURSE GOALS

UNIT 1 - IMPORTANCE OF STATISTICS
To develop within the student an appreciation for the vital and pervasive role of data collection and analysis in almost every facet of 21st century existence and decision-making

UNITS 2 AND 3 - DESCRIPTIVE STATISTICS
To give to the student a clear sense of how data should be sampled, tabulated and graphed in order to arrive at unbiased, scientifically robust summaries, AND how to spot unscientific use of such data

UNIT 4 – INFERENTIAL STATISTICS
To foster the student’s theoretic and practical understanding of the process of estimation, whereby summarized sample data is used to make inferences about a given population

COURSE CONTENT

The course will cover the following:

UNIT 1 – IMPORTANCE OF STATISTICS
• Key Statistical Concepts
• Statistical Applications in Business and Economics
• Statistical Applications in Finance and Marketing

UNIT 2 – DESCRIPTIVE STATISTICS I
• Data Types
• Graphical Techniques
• Frequency Distributions
• Summary Measures (Central Tendency, Dispersion, Skewness, Location)

UNIT 3 - DESCRIPTIVE STATISTICS II
• Probability Theory and Rules
• Random Variables; Expectation and Variance of Random Variables
• Discrete and Continuous Probability Distributions

UNIT 4 – INFERENTIAL STATISTICS
• Estimation; Sample Estimators and Sample Estimates
• Sampling Distributions
• Confidence Intervals
• Hypothesis Testing
• Simple Linear Regression and Correlation
• Introduction to Multiple Regression

TEACHING STRATEGIES
To effectively fulfill its stated goals, this course will make use of the following teaching strategies:
• Interactive Lectures
• Guided Tutorials – Students complete set worksheets
• Problem Solving – Students analyze and discuss data collected from among themselves
• Cooperative Controversy – Class discussion on how to infer from sample data collected in class
• Conference on the Economy 2011 – Attendance and Participation in the Department of Economics Annual Conference on the Economy held on October 6th to 8th, 2011.
ASSIGNMENTS

This course will assign the following tasks:

• **Tutorial sheets** – these sheets will be posted online weekly and are due in your chosen tutorial session. The sheets are designed to provide students with the practice needed to successfully navigate the computational aspect of the course.

• **Participation in Tutorials** – students are expected to both attend their tutorials and actively participate in them. At the end of the semester, each student will be assigned a participation mark by their tutor. Tutorial participation will generate a total score of 3% toward the total class grade.

• **Data-set Analysis** – students will be asked to compare two data sets and use the various concepts in the descriptive statistics analysis to compare, contrast and analyze the statistical features of such data-sets. The student would also have to make statements on what their analysis reveals about the data sets and conclusions therein.

• **Graded Online Assignments** – Two graded assignments will be administered online via MyeLearning. Completion of the two assignments will generate a total score of 6% toward the total class grade.

• **Group Project** – this survey exercise will span almost the entire length of the Semester as it involves understanding of several topics in Statistical analysis. The details would be provided on a separate link on the MyeLearning site however this survey involves the formulation of objectives, deciding on a sampling technique, design of a survey instrument, collecting the data, graphical depiction of this data and finally inferential analysis. You would need to submit your work in progress as the semester unfolds by specific dates. Completion of this exercise generates a score of 6% towards the total class grade.
In order to gauge students’ grasp of the computational, theoretic and applicative aspects of the course content, assessments will be applied and credited as follows:

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Due Date</th>
<th>Grade Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Project</td>
<td>To be advised</td>
<td>6%</td>
</tr>
<tr>
<td>Online Assignment</td>
<td>To be advised</td>
<td>6%</td>
</tr>
<tr>
<td>Tutorial Participation</td>
<td>Throughout the semester</td>
<td>3%</td>
</tr>
<tr>
<td>Mid-term</td>
<td>To be advised</td>
<td>15%</td>
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<tr>
<td>Final Exam</td>
<td>See UWI Examinations Timetable (November 2011)</td>
<td>70%</td>
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</tbody>
</table>

COURSE RESOURCES

ESSENTIAL READING

P.S. Mann, *Introductory Statistics*, John Wiley & Sons, 7th edition (5th or 6th edition is also allowed)

OTHER REFERENCE TEXTS

The following are possible alternatives to the main text


<table>
<thead>
<tr>
<th>Session–Date</th>
<th>Topic</th>
<th>Reading (assigned after each class)</th>
<th>Tutorial Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Session 1 – Wk of 05 September</td>
<td>Orientation Introduction Key Statistical Concepts</td>
<td>Read PS Mann- Chapter 1 as a minimum requirement.</td>
<td></td>
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<tr>
<td>Session 2 – Wk of 12 September</td>
<td>Methods of Sampling</td>
<td>Read PS Mann- Appendix A, as a minimum requirement.</td>
<td></td>
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<tr>
<td>Session 3 – Wk of 19 September</td>
<td>Data Types; Graphical Descriptive Techniques</td>
<td>Read PS Mann-Chapter 2 as a minimum requirement.</td>
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</tr>
<tr>
<td>Session 4 – Wk of 26 September</td>
<td>Numerical Descriptive Techniques &amp; Measures</td>
<td>Read PS Mann Chapter 3 as a minimum requirement.</td>
<td>Tutorial Sheets #1 and 2; due this week</td>
</tr>
<tr>
<td>Session 5 – Wk of 03 October</td>
<td>Probability Theory &amp; Rules</td>
<td>Read PS Mann - Chapter 4 as a minimum requirement.</td>
<td>Tutorial Sheet #4; due this week</td>
</tr>
<tr>
<td>Session 6 – Wk of 10 October</td>
<td>Random Variables, Expectation, Variance</td>
<td>Read PS Mann- Chapter 5 as a minimum requirement.</td>
<td>Tutorial Sheet #5; due this week</td>
</tr>
<tr>
<td>Session 7 – Wk of 17 October</td>
<td>Discrete Probability Distributions</td>
<td>Read PS Mann- Chapter 5 as a minimum requirement.</td>
<td>Tutorial Sheet #6; Ques 1-4 due this week</td>
</tr>
<tr>
<td>Session 8 – Wk of 24 October</td>
<td>Continuous Probability Distributions</td>
<td>Read PS Mann - Chapter 6 as a minimum requirement.</td>
<td>Tutorial Sheet #6; Ques 5-7 due this week</td>
</tr>
<tr>
<td>Session 9 – Wk of 31 October</td>
<td>Estimation, Estimators, Estimates, Sampling Distributions, Confidence Intervals</td>
<td>Read PS Mann - Chapter 7, 8 as a minimum requirement.</td>
<td>Tutorial Sheet #6; Ques 8-10 due this week</td>
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<tr>
<td>Session 10 – Wk of 07 November</td>
<td>Hypothesis Testing I - Means - Proportions</td>
<td>Read PS Mann- Chapter 9 as a minimum requirement.</td>
<td>Tutorial Sheet #7; Ques 1-2 due this week</td>
</tr>
<tr>
<td>Session 11 – Wk of 14 November</td>
<td>Hypothesis Testing I - Two Means - Two Proportions - Chi Square</td>
<td>Read PS Mann - Chapter 10, 11 as a minimum requirement.</td>
<td>Tutorial Sheet #7; Ques 3-5 due this week</td>
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<tr>
<td>Session 12 – Wk of 21 November</td>
<td>Hypothesis Testing II Simple Linear Regression and Correlation Introduction to Multiple Regression</td>
<td>Read PS Mann - Chapter 12 as a minimum requirement.</td>
<td>Tutorial Sheet #7 Ques 6-8 due this week</td>
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<tr>
<td>Session 13 – Wk of 24 November</td>
<td>Revision</td>
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A NOTE ON TUTORIAL ATTENDANCE

Please note that UWI Examination Regulation No. 19 states that —Any candidate who has been absent . . . or whose attendance at prescribed lectures, classes, ... tutorials, ... has been unsatisfactory . . . or who has failed to submit essays or other exercises . . . may be debarred by the relevant Academic Board, on the recommendation of the relevant Faculty Board,. . . from taking any University examinations . . . “

Please note that the Department of Economics//Faculty of Social Sciences requires students to attend and participate in at least 75% of tutorials for a course to avoid being debarred from taking the final exam.

Please note the following University regulation on plagiarism:

“97. (i) Cheating shall constitute a major offence under these regulations.

(ii) Cheating is any attempt to benefit one’s self or another by deceit or fraud.

(iii) Plagiarism is a form of cheating.

(iv) Plagiarism is the unauthorized and/ or unacknowledged use of another person’s intellectual effort and creations howsoever recorded, including whether formally published or in manuscript or in typescript or other printed or electronically presented form and includes taking passages, ideas or structures from another work or author without proper and unequivocal attribution of such source(s), using the conventions for attributions or citing used in this University.

103. (i) If any candidate is suspected of cheating, or attempting to cheat, the circumstances shall be reported in writing to the Campus Registrar. The Campus Registrar shall refer the matter to the Chairman of the Campus Committee on Examinations. If the Chairman so decides, the Committee shall invite the candidate for an interview and shall conduct an investigation. If the candidate is found guilty of cheating or attempting to cheat, the Committee shall disqualify the candidate from the examination in the course concerned, and may also disqualify him/her from all examinations taken in that examination session; and may also disqualify him/her from all further examinations of the University........”