This unit introduces data analysis and decision-making tools that students are able to use to manage their own day-to-day work. Students are able to identify situations in which quantitative analysis can support problem solving and decision making. They also gain practical experience in applying statistical and decision analysis techniques and statistical packages (generally Excel) in management contexts. Topics covered include introduction to modelling of organisations and business problems; measurement; variability; uncertainty; statistical tests and quantitative approaches to decision making. The unit provides a foundation for quantitative techniques used in other Master of Business Administration units.
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**Contact details**

<table>
<thead>
<tr>
<th>Unit Web Site URL</th>
<th>Patrick Dennis L. Solosa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecturer</td>
<td></td>
</tr>
<tr>
<td>Email:</td>
<td><a href="mailto:pslsolosa@globetel.com.ph">pslsolosa@globetel.com.ph</a></td>
</tr>
<tr>
<td></td>
<td><a href="mailto:patrick_solosa@yahoo.com">patrick_solosa@yahoo.com</a></td>
</tr>
<tr>
<td>Phone:</td>
<td>(63 2) 730-2347</td>
</tr>
<tr>
<td>Fax:</td>
<td>(63 2) 739-3018</td>
</tr>
</tbody>
</table>

**Your lecturer**

*Patrick Dennis L. Solosa*

BS Statistics (School of Statistics, UP Diliman), MS Statistics (KUL – Katholieke Universiteit Leuven, in Belgium).

Patrick Solosa is the Head of Modeling and concurrently Head of CRM Support for the Wireless-CRM (Customer Relationship Management) group of Globe Telecom.

**UNIT DESCRIPTION**

**Introduction**

Information Technology (IT) has been a continuously growing force these past few years. It has been such a useful tool in growing businesses through data mining and analytics—being capable of large-scale data collection and complex statistical analysis which, in turn, drive management’s thinking machinery. It is due to this that Managers nowadays are required to develop the ability to understand and read from the data any meaningful information critical to business need and decision-making.

This course aims to provide a basic understanding of statistical and data-analytic methods relevant to business and management. The emphasis is on recognition and interpretation of the appropriate methods and techniques rather than on theory.

**The unit description**

This unit introduces data analysis and decision-making tools that students are able to use to manage their own day-to-day work. Students are able to identify situations in which quantitative analysis can support problem solving and decision making. They also gain practical experience in applying statistical and decision analysis techniques and statistical packages (generally Excel) in management contexts. Topics covered include introduction to modelling of organisations and business problems; measurement; variability; uncertainty; statistical tests and quantitative approaches to decision making. The unit provides a foundation for quantitative techniques used in other Master of Business Administration units.
The goal of the unit

The goal of the unit is to develop in the student the ability to formulate and solve problems within a statistical framework. Knowledge imparted here will lay the groundwork for analytical and inferential fact-based thinking, invaluable to other disciplines.

Learning outcomes

On completion of this unit, you should be able to:
1. Analyze relevant data using mathematical and graphical methods on descriptive statistics;
2. Understand basic concepts on probability theory, and how these apply to real-life scenarios;
3. Learn sampling theory and methodology for use in inferential statistics;
4. Calculate and interpret point and interval estimates in relation to quality assurance;
5. Use hypothesis testing to solve relevant decision-making problems;
6. Understand the basic theory in linear regression and ANOVA for multi-dimensional analysis of information;
7. Use Microsoft Excel (and an Excel Add-On) as a tool for statistical analysis.

Prerequisites

Students are required to bring a computer with MS Excel software and PH-Stat Add-on installed during lectures. Since this is a statistical course it will entail computational examples and applications of the topics discussed. Basic knowledge in the use of MS Excel is also a must.

TEACHING AND LEARNING RESPONSIBILITIES

Teaching and learning strategies

Since the unit is heavy on statistical concepts and computing, lectures are hereby ensured of a generous mix of application examples of the concepts discussed. Relevant examples from the business perspective will abound, so students will be familiar on how to approach similar situations in their workplace. The ultimate goal is to exact a balance between providing the statistical theory, implementing the concepts and learning from the results.

Examinations for the course will also follow the same strategy—wherein the first few items would test the student’s grasp of the concepts learned, while at the end providing a fair amount of problem-solving activities ultimately requiring the student to base decision-making on results from applications learned.

The “Statistics in Practice” project will provide the student an actual example, which can be used as reference in any future applications. This will basically prepare the student on how to handle end-to-end analytical approaches to decision-making, relative to his/her field.
**Charter of student rights**

This Charter of Student Rights upholds the fundamental rights of students who undertake their education at the University of Western Australia.

It recognises that excellence in teaching and learning requires students to be active participants in their educational experience. It upholds the ethos that in addition to the University’s role of awarding formal academic qualifications to students, the University must strive to instil in all students independent scholarly learning, critical judgement, academic integrity and ethical sensitivity. The charter outlines the rights and responsibilities for both students and staff of the university and you are encouraged to refer to the charter at: [http://www.guild.uwa.edu.au/info/student_help/student_rights/charter.shtml](http://www.guild.uwa.edu.au/info/student_help/student_rights/charter.shtml).

**Use of student feedback**

Periodic feedbacks from students are highly significant and encouraged since these serve as a basis for the continued improvement of the unit. Over the last 3 years, this unit has undergone several enhancements—such as, a widened coverage of topics, more relevant discussions and examples, and scheduling changes to strategically benefit student’s capacity to learn and understand.

**ASSESSMENT MECHANISM**

**The purpose of assessment**

There are a number of reasons for having assessable tasks as part of an academic program. The assessable tasks are designed to encourage you to explore and understand the subject more fully. The fact that we grade your work then gives you an indication of how much you have achieved. Providing feedback on your work also serves as part of the learning process.

**Assessment details**

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
<th>Due date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid-term Exam (1 hour in-class test, open notes)</td>
<td>25%</td>
<td>Monday 6(^{th}) February 2006</td>
</tr>
<tr>
<td>“Statistics in Practice” Project (Maximum of 2,000 words)</td>
<td>25%</td>
<td>Wednesday 22(^{nd}) March 2006</td>
</tr>
<tr>
<td>Final Exam (2 hours, open notes and covering all topics)</td>
<td>50%</td>
<td>Saturday 25(^{th}) March 2006</td>
</tr>
</tbody>
</table>
The standard of assessment

The Graduate School must ensure that the processes of assessment are fair and are designed to maintain the standards of the School and its students. The School follows the University of Western Australia's grading system:

- **HD (Higher Distinction)**: 80-100%
- **D (Distinction)**: 70-79%
- **CR (Credit Pass)**: 60-69%
- **P (Pass)**: 50-59%
- **N+ (Fail)**: 45-49%
- **N (Fail)**: 0-44%

The School awards marks leading to these grades by using the following general criteria which are presented here as an indication of the School's expectations. These general criteria may be supplemented by specific standards provided with regard to a particular assignment.

**HD** The student has a clear understanding of theory, concepts and issues relating to the subject and is able to adopt a critical perspective. The student is able to clearly identify the most critical aspects of the task and is able to offer a logically consistent and well-articulated analysis within the analytic framework presented in the course. The student is able to draw widely from the academic literature and elsewhere but maintains relevance.

**D** The student has a clear understanding of theory, concepts and issues relating to the subject. The student is able to develop an analysis of an issue using the analytic framework presented in the course and is able to identify and evaluate the critical issues. The student is able to draw upon relevant academic and other material.

**CR** The student demonstrates an understanding of the analytic framework developed in the course and a partial understanding of concepts and issues. The student is able to identify some key issues and is able to present a logical discussion, but with some conceptual errors or gaps between analysis and conclusions shortcoming. The student is able to draw upon an adequate range of references and other materials.

**P** The student generally takes a descriptive rather than analytic approach to the subject. The student is able to demonstrate some understanding of the issues involved but does not demonstrate the ability to apply the analytical framework which had been developed in the course. Draws primarily upon course materials for referencing.

**N+** The student is unable to demonstrate that he or she understands the core elements of the subject matter. The student is able to provide some insight into issues but misapplies analytic framework developed in course, omitting key factors and, for example, drawing conclusions which are not related to the preceding discussion.

**N** The student is unable to demonstrate any understanding of the subject matter. Material presented for assessment is unrelated to course framework and shows no effort to identify or address critical aspects of the topic.

The scaling of marks to ensure comparability between classes in an acceptable academic practice. The GSM and Board of Examiners has the right to scale marks where it is considered necessary to maintain consistency and fairness.
Assessment components

Assessment

Mid-Term Exam

There will be a one-hour in-class exam before the lecture of chapter 6. Coverage will be from chapters 1 to 5 and will generally deal with the concepts on Descriptive Statistics. The exam contains 3 parts: True or False; Multiple Choice; and Problem Solving (which will typically require only short answers). Students will be required to interpret MS Excel outputs and answer corresponding questions on statistical analysis.

Final Exam

The final exam will cover all topics fully discussed during the course. The exam will be for two hours and students will be allowed access to their notes and/or other references. The exam contains 3 parts: True or False; Multiple Choice; and Problem Solving (which will typically require only short answers). Students will be required to interpret MS Excel outputs and answer corresponding questions on statistical analysis.

“Statistics in Practice” Project

The “Statistics in Practice” project is designed to develop student’s skills in actual applications requiring the use of statistical analysis in interpreting data for decision-making. During the first lecture date, the requirements and expectations for this will be discussed to ensure that the student will have enough time to prepare for the project.

Students are encouraged to provide their own data (either from primary or secondary sources). This will ensure familiarity with the information used, as well as provide a practical application, relevant to the student, through the results or decisions reached.

The project will require basic analysis of the data using descriptive methods learned, and should contain statistical analysis using any one of the following techniques:

1. Hypothesis testing (either one or two sample tests);
2. Analysis of Variance (ANOVA);
3. Regression analysis (either single or multiple linear regression);
4. Time-series analysis
The suggested format for the report is given below.

<table>
<thead>
<tr>
<th>Section</th>
<th>Task</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td>Includes your name, the title of the report and its word length.</td>
<td></td>
</tr>
<tr>
<td>Executive Summary</td>
<td>A single paragraph should describe the most important facts and conclusions from the report. This section is often easier to write last.</td>
<td>10</td>
</tr>
<tr>
<td>Table of Contents</td>
<td>Gives an outline of the report together with page numbers.</td>
<td></td>
</tr>
<tr>
<td>Introduction</td>
<td>Several paragraphs in which you describe the background, the question(s) of interest and the relevant dataset(s). The key variables should be outlined and relevant assumptions discussed.</td>
<td>25</td>
</tr>
<tr>
<td>Analysis and Methods</td>
<td>Interpret the data with the aid of graphical displays and statistical summaries. Because the report has been prepared for senior management with little or no exposure to statistical tools and techniques, the interpretations should be explained in clear, concise terms. It is not necessary to show complex formulae, nor is it necessary to show in-depth computations.</td>
<td>40</td>
</tr>
<tr>
<td>Conclusions and Summary</td>
<td>Summarizes the detail presented in the previous section and discusses possible recommendations.</td>
<td>20</td>
</tr>
<tr>
<td>References</td>
<td>Harvard Style or Endnote 5</td>
<td></td>
</tr>
<tr>
<td>Appendices</td>
<td>Should include all tables and graphs <strong>not</strong> directly referred to in the report. All tables and graphs should have a number and a title.</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>The <strong>maximum of 2000 words</strong> excludes table of contents, charts and tables, and appendices.</td>
<td>100</td>
</tr>
</tbody>
</table>

**Submission of assignments**

Assignments should be submitted in class on the due date or if handed into the office; a standard cover sheet should be used and a receipt issued.

Late assignments will attract a penalty of 5% per day. This penalty will be waived by the lecturer only in exceptional circumstances. No marks will be awarded to assignments submitted after other students in the class have had their assignments returned.

Papers of excessive length will also attract a penalty. The penalty will be 5% for each 300 words, or part thereof, over the word limit.

It is the intention that the marked assignments will be returned within two weeks of submission.
ETHICAL SCHOLARSHIP, ACADEMIC LITERACY AND ACADEMIC MISCONDUCT

Ethical scholarship is the pursuit of scholarly enquiry marked by honesty and integrity.

Academic Literacy is the capacity to undertake study and research, and to communicate findings and knowledge, in a manner appropriate to the particular disciplinary conventions and scholarly standards expected at university level.

Academic misconduct is any activity or practice engaged in by a student that breaches explicit guidelines relating to the production of work for assessment, in a manner that compromises or defeats the purpose of that assessment. Students must not engage in academic misconduct. Any such activity undermines an ethos of ethical scholarship. Academic misconduct includes, but is not limited to cheating, or attempting to cheat, through:

- Collusion
- Inappropriate collaboration
- Plagiarism (see more details below)
- Misrepresenting or fabricating data or results or other assessable work
- Inappropriate electronic data sourcing/collection
- Breaching rules specified for the conduct of examinations in a way that may compromise or defeat the purposes of assessment.

Penalties for academic misconduct vary according to seriousness of the case, and may include the requirement to do further work or repeat work; deduction of marks; the award of zero marks for the assessment; failure of one or more units; suspension from a course of study; exclusion from the University, non-conferral of a degree, diploma or other award to which the student would otherwise have been entitled. Refer to the Ethical Scholarship, Academic Literacy and Academic Misconduct and individual Faculty policies. For further information on the rules and procedures in respect of appropriate academic conduct you should visit: http://www.teachingandlearning.uwa.edu.au/tl/academic_conduct

Acknowledgements and plagiarism

In the course of your individual and group work assignments, you will encounter ideas from many sources. These will include journal and newspaper articles, commentaries, books, web sites and other electronic sources, original case sources, lecture materials. All MBA assignments that you submit must acknowledge all the different sources you have used. Not to acknowledge your sources is plagiarism, a form of dishonesty. Plagiarism is the misappropriation of the work or ideas of others and presenting them as your own. This is reprehensible from both an ethical and legal viewpoint. Neither the School nor the University accepts ignorance or the fact that a student’s previous acts of plagiarism had been undetected as a defence.

In order to avoid engaging in plagiarism it is your responsibility to acknowledge all of your sources in any work submitted for assessment and it is essential that you reference the work of others correctly. Where you quote directly from a source, you must ensure that any direct quotations are placed in quotation marks and are fully referenced. Even when you do not quote directly and are just referring to or expanding on the work of others, you must still acknowledge the sources of your information and ideas. Close paraphrasing in which you change a few phrases around, leave a clause out of a long sentence or put the original sentences in a different order is still plagiarism. To mark words as a quotation the entire text that has been copied should be enclosed within quotation marks. If the copied text is four or more lines in length, it may be more appropriate to set it as a separate and indented paragraph. Each time that text is copied, the source must be acknowledged with a reference citation, including the page number.

Advice on proper referencing is given below. If you have any doubts concerning appropriate referencing formats or how to acknowledge the work of others correctly, you should seek the advice of your lecturer.
Referencing

It is important that the referencing of any sources used in your written work is done properly, if only to substantiate the points you are making in your assignment or project. The Harvard style is the preferred and there are some notes for guidance which have been prepared by the library staff: ‘Citing your sources Harvard Style’ http://www.library.uwa.edu.au/guides/citingsources/harvard.html

Endnote is a really good system for building up a database of references. Not everyone will want to invest the time in using this system but you should consider it if you intend to build up resource materials or plan to undertake extensive research in a particular area. The library staff have also developed a tutoring package: ‘A quick Guide to Using EndNote’ which provides the basics for using EndNote with an essay http://www.library.uwa.edu.au/guides/endnote/quick_endnote.pdf

This is linked to from the how to Use End Note page www.library.uwa.edu.au/guides/endnote/ which provides more comprehensive information.

Appeals against academic assessment

In the first instance, students are strongly advised to talk informally to the lecturer about the grade awarded. The University provides the opportunity for students to lodge an appeal against any mark which he or she feels is unfair. Any student making an appeal is under an obligation to establish a prima facie case by providing particular and substantial reasons for the appeal.

There is a 12 day time limit for making any such appeal. An appeal against academic assessment may result, as appropriate, in an increase or decrease in the mark originally awarded. The University regulations relating to appeals and the form on which the appeal should be lodged can be found in the GSM website or at http://www.publishing.uwa.edu.au/handbooks/interfaculty/PFAAAA.html

TEXTBOOKS AND RESOURCES

Unit web site

Textbook(s)


Software requirements

MS Excel and Prentice Hall (PH-Stat) Add-On. Some excel tables from the installation CD-ROM will also be used as examples within the course;
## UNIT STRUCTURE

### Seminar topics

<table>
<thead>
<tr>
<th>Week</th>
<th>Week Commencing</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Thursday, 12 January 6:00 PM – 9:00 PM</td>
<td>Effective use of MS Excel Introduction &amp; Data Collection (Chapter 1)</td>
</tr>
<tr>
<td>2</td>
<td>Friday, 13 January 6:00 PM – 9:00 PM</td>
<td>Presenting Data in Tables &amp; Charts (Chapter 2)</td>
</tr>
<tr>
<td>3</td>
<td>Saturday, 14 January 9:00 AM – 6:00 PM</td>
<td>Numerical Descriptive Measures (Chapter 3)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Basic Probability and Discrete Probability Distributions (Chapter 4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The Normal Distribution &amp; Sampling Distributions (Chapter 5)</td>
</tr>
<tr>
<td>4</td>
<td>Monday, 25 January 6:00 PM – 9:00 PM</td>
<td>Confidence Interval Estimation (Chapter 6)</td>
</tr>
<tr>
<td>5</td>
<td>Monday, 6 February 6:00 PM – 9:00 PM</td>
<td>In-class test (1st hour of class)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fundamentals of Hypothesis Testing: One-Sample Tests (Chapter 7)</td>
</tr>
<tr>
<td>6</td>
<td>Thursday, 16 February 6:00 PM – 9:00 PM</td>
<td>Two Sample Tests with Numerical Data (Chapter 8)</td>
</tr>
<tr>
<td>7</td>
<td>Friday, 17 February 6:00 PM – 9:00 PM</td>
<td>Analysis of Variance (Chapter 9)</td>
</tr>
<tr>
<td>8</td>
<td>Saturday, 18 February 9:00 AM – 6:00 PM</td>
<td>Two Sample Tests with Categorical Data (Chapter 10)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Linear Regression (Chapter 11)</td>
</tr>
<tr>
<td>9</td>
<td>Monday, 1 March 6:00 PM – 9:00 PM</td>
<td>Multiple Linear Regression (Chapter 12)</td>
</tr>
<tr>
<td>10</td>
<td>Monday, 13 March 6:00 PM – 9:00 PM</td>
<td>Time Series Analysis (Chapter 13)</td>
</tr>
<tr>
<td>Exam</td>
<td>Saturday, 25 March</td>
<td>2 hours, all topics covered</td>
</tr>
</tbody>
</table>
Attendance

Participation in class, whether it be listening to a lecture or getting involved in other activities, is an important part of the learning process. For this reason the GSM has decided not to move to on-line teaching. It is, therefore, important that you attend classes (and be on time).

More formally, the University regulations state that ‘to complete a course or unit students shall attend prescribed classes, lectures, seminar and tutorials’. Students should not expect to obtain approval to miss more than two classes per unit, unless there are exceptional circumstances.

Taping of Lectures

The Graduate School does not provide tape recordings of lectures, however if you do wish to tape record a lecture then as a matter of courtesy, you should obtain the permission of the lecturer first.