MNGT6232
Data Analysis & Statistical Modelling for Business

Session 2, 2015
The UNSW Business School is actively monitoring student learning and quality of the student experience in all its programs. A random selection of completed assessment tasks may be used for quality assurance, such as to determine the extent to which program learning goals are being achieved. The information is required for accreditation purposes, and only aggregated findings will be used to inform changes aimed at improving the quality of UNSW Business School programs. All material used for such processes will be treated as confidential and will not be related to course grades.
Data Analysis & Statistical Modelling for Business

Course overview

We welcome ideas to improve these course materials. Please email suggestions to coursematerials@agsm.edu.au
Contents

Course calendar 1
   Session 2, 2015 1

Course outline 2
   Course contents 2
   Learning outcomes 5

Assumed knowledge 6
   Assumed Excel knowledge 6
   Assumed Mathematical knowledge 6

Learning technology 7
   Your resources 7
   Equipment you will need 7
   IMPORTANT: StatTools™ add-in: Installation of software 8
   Apple Mac Users 8
   Tablet compatibility 9
   StatTools™ help desk support 9
   Diagnostics add-in: Installation of software 9
   Saturday workshops 9
   Examples in the course material 10
   Exercises with Downloadable Solutions 10
   Group work 10
   On-line materials 11
   UNSW IT Service Centre 11
   The AGSM eLearning Coordinator 11
   External TELT Service Centre 11
   Podcasts and Screencasts 12
   Further reading 12

Assessment 13
   AGSM assessment policy 13
   Assessment 1 – Multiple Choice questions (MCQs) 13
   Assessment 2 – Group assignment 13
   Assessment 3 – Examination 14

List of Statistical Symbols 15

Acknowledgements 16
   Course coordinator 16
   Contributors 16
# Course calendar

## Session 2, 2015

## Data Analysis & Statistical Modelling for Business

**MBA (Executive)**

<table>
<thead>
<tr>
<th>Week no.</th>
<th>Week begins</th>
<th>Unit</th>
<th>Assessment due (% weighting)</th>
<th>Student Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>18-May</td>
<td>SOV</td>
<td>Multiple Choice Questions (MCQs) Assessment Component schedule below (25%)</td>
<td>Download files from Moodle to your hard disk. Install StatTools™ Excel add-in. Read Student Overview (SOV) material.</td>
</tr>
<tr>
<td>1</td>
<td>25-May</td>
<td>1</td>
<td>Unit 1 MCQs open Saturday 30th May and close Friday 5th June</td>
<td>Begin arranging groups (Maximum 4) for the Group Assignment.</td>
</tr>
<tr>
<td>2</td>
<td>1-Jun</td>
<td>2</td>
<td>Unit 2 MCQs open Saturday 6th June and close Friday 12th June</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>8-Jun</td>
<td>3</td>
<td>Unit 3 MCQs open Saturday 13th June and close Friday 19th June</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>15-Jun</td>
<td>4</td>
<td>Unit 4 MCQs open Saturday 20th June and close Friday 26th June</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>22-Jun</td>
<td>5</td>
<td>Unit 5 MCQs open Saturday 27th June and close Friday 3rd July</td>
<td>Group Assignment available on Moodle.</td>
</tr>
<tr>
<td>6</td>
<td>29-Jun</td>
<td>6</td>
<td>Unit 6 MCQs open Saturday 4th July and close Friday 10th July</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>6-Jul</td>
<td>7</td>
<td>Unit 7 MCQs open Saturday 11th July and close Friday 17th July</td>
<td>Install the Diagnostics add-in. See Software Installation Instructions. The Diagnostics add-in will be needed in Unit 7 and beyond.</td>
</tr>
<tr>
<td>8</td>
<td>13-Jul</td>
<td>8</td>
<td>Unit 8 MCQs open Saturday 18th July and closed Friday 24th July</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>20-Jul</td>
<td>9</td>
<td>Unit 9 MCQs open Saturday 25th July and close Friday 31st July</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>27-Jul</td>
<td>10</td>
<td>Unit 10 MCQs open Saturday 1st August and close Friday 7th August</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>3-Aug</td>
<td>11</td>
<td>Group Assignment due (25%). Unit 11 MCQs open Saturday 8th August and close Friday 14th August</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>10-Aug</td>
<td>12</td>
<td>Group Assignment with model solutions returned. Exam – Practice Questions in Unit 12</td>
<td></td>
</tr>
</tbody>
</table>

**Workshop 1** (Saturday 20 June) Refer to material.

**Workshop 2** (Saturday 1 August) Refer to material.

**Final Exam 50%** (Saturday 22 August)
Course outline

Data Analysis & Statistical Modelling for Business explores possibilities in using statistical data for creating models to assist managers make decisions.

This course develops expertise in a standard set of statistical and graphical techniques, which will be useful in analysing business related data. These techniques are widely applied in a number of areas of management, including operations, sales and marketing, strategy, finance and economics. The course provides a change in mindset from 'statistics can be used to show anything' to 'statistics provides a methodology to manage uncertainty and variation'.

Course contents

The course aims to encourage you to think statistically. Two simple words describe this capability in managers; the ability to "understand variation". The course will encourage you to develop your abilities to understand and use data. It is designed to equip managers with the quantitative skills to make effective use of statistical data in the business workplace, to develop expertise in a standard set of statistical and graphical techniques which will be useful in analysing data, and to learn to apply these techniques in a number of areas of management. It is intended that you will leave the course with an ability to use statistical software to analyse data, and above all, with a good understanding of how to describe and model complex business relationships using regression analysis.

The units in this course are organised into five sections:

1. The Foundations

Unit 1, Summarising and Visualising Data introduces you to the basic graphical and statistical methods used to analyse one variable, in laymen’s term a column of data in a spreadsheet. It also introduces you to StatTools™, the statistical package used throughout the course to do the number crunching. These basic skills are not only very important in the course but are directly transferable to the design of management reports back in the workplace. The unit introduces the key concept of variation in data, how to summarise and visualise it with the aim of identifying patterns.

Unit 2, The Normal Distribution introduces you to arguably the most prevalent probability distribution in statistics, the normal distribution or bell-shaped curve as it is often called. Most statistical methods are based on the concept of probability so the unit begins with the concept of a continuous probability distribution. It extends this concept to the normal distribution and examines the empirical rules which describe how data appears when it is normally distributed. Whilst more theoretical than other units, this unit provides the fundamentals for the business applications of
statistical tools throughout the course. The unit introduces the key concept of the Central Limit Theorem which allows us to draw conclusions about the business and its activities based on taking samples and recording data. Many management problems involve sampling, such as studying samples of customers or calls from a service desk or invoice errors and inferring what might be happening in the bigger picture.

2. Performance and Business Processes

Unit 3, Monitoring Business Processes: Part 1 introduces the methods for monitoring the performance of business processes. Since companies are composed of processes that deliver and support products and services, collecting data in terms of quality, cost and speed of these processes is an important business activity. Part 1 examines methods when the data is continuous such as lead time or financial data or in the case of product parameters measures of weight, length and density.

Unit 4, Monitoring Business Processes: Part 2 extends the methods for continuous data to discrete and categorical data. Examples include monitoring defects, production and sales volumes, customer complaints, work injury rates and yes/no outcomes. The data in such cases will appear as counts, proportions or percentages.

Unit 5, Hypothesis Testing and Confidence Intervals allows a manager to compare the performance of different machines, people systems, offices and other elements. The unit introduces the concept of statistical significance, a concept which is central to determining through objective means whether one set of numbers is more often than not, higher or lower than another set of numbers. The methods in the units are often applied to root cause analysis to validate through data whether suspected root causes of poor business performance are actual root causes. Hypothesis testing is akin to problem-solving with data, rather than relying on intuition only, and increases the likelihood that the manager will select the best option when resolving an important business issue.

3. Building Models in the Search for Improvements in Performance

Unit 6, Simple Regression Models: Part 1 examines the situation where there is single independent variable influencing a single dependent variable. The key issue is to find out to what extent the independent variable contributes to explaining the variation in the dependent variable. A practical context is attempting to investigate the relationship between bottom-line results and employee engagement scores. The unit introduces the key concepts of correlation and line of best fit. The unit also addresses the situation where the independent variable is a categorical variable such
as a “Yes-No” occurrence. For example, the manager may be interested in discovering whether customer satisfaction differs for a new customer (coded New=Yes) versus an existing customer (coded New=No).

**Unit 7, Simple Regression Models: Part 2** extends the previous unit to cases where there are unusual data known as outliers and leverage points. These are known in business as anomalies or special causes and their presence can impact a regression model in adverse ways. The unit also introduces the role of transformations especially the use of the logarithmic function. A price-elasticity problem common in economics is used to illustrate the impact of transformations.

**Unit 8, Multiple Regression Models: Part 1** examines the situation where there are multiple independent variables influencing a single dependent variable. The key issue is to find out to what extent each independent variable contributes to explaining the variation in the dependent variable. A practical context is attempting to explain bottom-line results from knowledge of customer preferences and employee engagement levels. The unit introduces the key concept of multicollinearity where the independence assumption of independent variables is violated. The unit starts with a polynomial regression model to demonstrate how curvilinear models may be constructed.

**Unit 9, Multiple Regression Models: Part 2** extends the basic model of multiple regression to cover (a) analysis of leverage points and outliers and (b) variable selection methods. The latter methods produce the most powerful model with the least number of variables. The unit introduces the key concept of model parsimony, or ‘explaining the most with the least’. Managers find model parsimony a useful concept when the cost of data collection is high since it means they can identify and monitor the most important data for their business without wasting resources on collecting data that is not useful for decision-making.


**Units 10 and 11, Time Series Models: Parts 1 and 2** extend regression analysis to cover time series models. These units are particularly relevant for managers tracking their company’s performance, both in financial and non-financial terms, over time. A direct application of time series models is sales forecasting particularly where trends and seasonality are present. The units introduce the key concept of autocorrelation, meaning today’s results are impacted by yesterday’s results. The units improve the capability of managers in the area of understanding and forecasting Key Performance Indicators (KPIs). Unit 10 covers the situation where no trend and seasonality are present, while Unit 11 covers the more complex situation where they are present.
5. Practice Exam Questions

Unit 12, Practice Exam Questions provides an opportunity for students to reflect on the key concepts in Units 1–11. It provides a lengthy list of exam practice questions and solutions. These will provide an opportunity for students to more thoroughly understand the expectations of the exam and test their knowledge of the course content.

Learning outcomes

When you have completed this course you should be able to:

- Appreciate that the collection and statistical analysis of data improves business decisions and reduces the risk of implementing solutions that waste resources and effort.

- Select and deploy the correct statistical method for a given data analysis requirement. In particular, develop expertise in describing data, process management, hypothesis testing and model building.

- Achieve a practical level of competence in building statistical models that suit business applications.

- Recognise, develop and distinguish between models for cross-sectional analysis at a single point in time and models for time series analysis at multiple points in time.

- Run a statistical software package that integrates with Excel and interpret its output.

- Increase your capability as a manager to “think statistically” using data and use this capability to support your business intuition.

- Build sufficient skills to provide leadership in statistical methods for the staff in your area of responsibility.
Assumed knowledge

Assumed Excel knowledge

Students are expected to know the basic operations of Excel, including constructing formulae and copying and pasting. If this is not the case, students are advised to build a basic understanding of Excel prior to Week 1 or seek the assistance of a group member as needed.

Assumed Mathematical knowledge

Statistical methods are based upon mathematics and in particular algebra. Whilst advanced mathematics is kept to a minimum to enable students to concentrate on data analysis and interpretation at the managerial level, students do need to be comfortable with the mechanics of how equations work. Equations are the way in which statistical models are described. Also, some mathematical proofs of the theory are included in the units for interested students but are not examinable.

The AGSM Maths Skills Resource Package is recommended for students who need extra assistance in mathematics.

http://www.agsm.edu.au/maths skills/
Learning technology

To assist you in your study of Data Analysis & Statistical Modelling for Business, you have a number of elements.

Your resources

- Moodle, the AGSM e-learning platform.
- The twelve units of course materials and the data for exercises in the form of Excel files are found on Moodle.
- The StatTools™ statistical software from Palisade which is an Excel add-in bundled within the DecisionTools™ suite of software. You can download the software from the link on Moodle. **Installation of StatTools™ is required prior to Week 1.**
- The Diagnostics Excel add-in written by AGSM. Installation is not required until Unit 7. The add-in is in the Unit 7 data files folder and is available on Moodle.
- The two compulsory Weekend workshops
- Your fellow class members
- Websites: the AGSM’s and some internet sites for background information.

The course notes are designed to be fully self-contained. Thus, there should be no need to consult extra textbooks in order to understand the course material. You may, however, find it useful to consult textbooks if you are seeking additional applications of the concepts and techniques described in this course. If this is the case, there is a list of recommended textbooks in the Further Reading section listed below.

Equipment you will need

- **Excel 2010 or later**, since Microsoft changed the names of some of its probability distribution functions in 2010 and the DASM material has incorporated these changes.
- a **Windows compatible PC** (preferably a laptop/tablet for bringing to classes).
IMPORTANT: StatTools™ add-in: Installation of software

The practical work in the course revolves around using and Excel add-in, StatTools™. You can download StatTools™ from the course website. Since StatTools™ is used in almost every unit, the earlier it is installed and tested on your own computer the better. For installation instructions, please consult Software Installation Instructions.pdf on Moodle.

Students using work computers may need to seek the appropriate permissions from their IT departments to install StatTools™. Installation on work computers that restrict unapproved software may cause issues.

Apple Mac Users

At the time of writing, unfortunately there was no StatTools™ version for a Mac. Your Mac should be able to run Boot Camp. It is included on the "Snow Leopard" Operating System Disk. This allows the system to install and "dual boot" both Mac and Windows operating systems. Follow this document for further information


Note that you need to have an original full version of the appropriate windows operating system (XP, Vista or Windows 7 or later) on disk to be able to use Boot Camp. It will not work with upgrade versions.

Please go to https://www.it.unsw.edu.au/. Under ‘Existing Students’, click on ‘Software’. You should then be presented with a list of software, which includes Microsoft Office for Windows.

There are special student prices available for Microsoft Office. You will be provided with a link where you can purchase the software from an external company.

Please note that the version of Windows 7 (or later) sold via this service is an upgrade version and will not work with Boot Camp. Once you have Boot Camp, Windows and Microsoft Office/Excel for Windows installed, you are ready to install StatTools™.

OS X Lion users should see the Boot Camp FAQ questions specific to Lion here: http://support.apple.com/kb/HT4818 as the options are different for this operating system.
Tablet compatibility

Windows 8 Pro tablets should be compatible with StatTools™ provided a compatible version of Microsoft Excel is installed.

StatTools™ is not available for Android or iOS based tablets

StatTools™ help desk support

The developers of StatTools™, Palisade at www.palisade.com.au, are not obligated to provide phone support for students.

Students can access the knowledge base of problems if they have issues installing or running StatTools™.

http://kb.palisade.com/ or alternatively email support is available by contacting support@palisade.com

Diagnostics add-in: Installation of software

The practical work in the course also revolves around using another product, Diagnostics, which is also an Excel add-in, but this is not needed until Unit 7. See Course Calendar for the timing of the installation.

For installation instructions, please consult Software Installation Instructions.pdf on Moodle.

Saturday workshops

There are two compulsory Saturday workshops. They will provide you with the opportunity to analyse case studies involving data analysis applied to business situations.

Workshop 1 will be held on Saturday 20th June 2015 and Workshop 2 will be held on Saturday 1st August 2015.

You be allocated either a morning or afternoon workshop, closer to the time.
Examples in the course material

Many business situations are included as examples for the students to work through. The use of StatTools™ will enable us to work with a range of data sets like those seen in business settings.

The examples of business situations show the usefulness of statistical techniques in providing fuller information to assist managerial decision-making.

Exercises with Downloadable Solutions

At the back of each unit are one or more exercises without solutions. These are used for class discussion.

Solutions to these exercises are downloadable from Moodle on an end-of-week basis.

Group work

During the course you will have the opportunity to work in groups especially to undertake the Group Assignment. We encourage this form of collaborative work as we feel that you will gain much from discussion on the issues and problems presented in these units.

You might like to consider a few issues before identifying your fellow group members.

- The group will benefit from a mix of skills. There will be many calculations to complete, but there will also be a range of activities. An ideal group would be one consisting of someone who has a quantitative background, someone who knows about computers and Excel, and someone who has good communication skills.

- Your group will function best if you address the issues of contact early on. How will you contact each other? What methods could you use to keep in touch and discuss issues?

- You should also give some thought to your individual and collective contribution. How will you divide up the work to be done? How will you determine the issues of collaboration and cooperation?
On-line materials

Your course notes will be available on-line via Moodle. These are PDF (Porta}ble Document Format) files. The PDF files can be viewed, printed and navigated using Adobe® Acrobat® Reader.

eLearning

To access eLearning@AGSM MBA, go to http://telt.unsw.edu.au and select Login to UNSW Moodle.

Login to the web Single Sign On (wSSO) using these details:
Username: zNumber
Password: zPass

Moodle eLearning Support:

For online help using Moodle, follow the links: https://student.unsw.edu.au/moodle

For login issues

UNSW IT Service Centre
Hours: Monday to Friday: 8:00am – 8:00pm
Saturday and Sunday: 11:00am to 2:00pm
Email: ITServiceCentre@unsw.edu.au
Phone: +61 2 9385 1333

For assistance in using Moodle, including how to upload assessments.

The AGSM eLearning Coordinator
Hours: Monday to Friday, 9:00am – 5:00pm
Email: elearning@agsm.edu.au
Phone: +61 2 9931 9541

For help with technical issues and problems.

External TELT Service Centre
Hours: Monday to Friday: 7:30am – 9:30pm
Saturday and Sunday: 8:30am – 4:30pm
Email: externalteltsuppport@unsw.edu.au
Phone: +61 2 9385 3331
Podcasts and Screencasts

Since 2010, we have been utilising podcasts and screencasts to assist students. Podcasts are MP3 audio files which you can listen to and they provide the verbal information to go along with the Powerpoint presentations. The Powerpoint and Podcast files are available for download from Moodle (PPT Handouts and Podcasts) so you can listen to them on your MP3 music player. Alternatively, you can watch and listen to the presentations (along with audio) directly over the internet using Slideshare. The links to the various units are available after clicking on the Podcast menu in Moodle.

As noted above, we have also made available screencasts. These screencasts are video files, playable with Windows Media Player, that show you how to work the StatTools™ software and provide additional analysis insights. They are available on Moodle for streaming over the internet (in case you’re travelling).

Please send any comments / suggestions to andreas.kiermeier@agsm.edu.au.

Further reading

The following is not prescribed reading and you can complete the course satisfactorily without it. However, for students who feel they need extra assistance, the following is recommended:

Assessment

Assessment plays two roles. Firstly, it provides feedback to students on their progress. Assignments are designed to determine how well you are coming to grips with the concepts and how well you are able to apply the statistical tools to a range of situations. Secondly, assessment is a means of testing and grading performance.

AGSM assessment policy

See the AGSM MBA (Executive) student homepage for more detail.

In order to pass this course, you must;

- Attempt the MCQs for all units
- Submit the Group Assignment
- Attempt the final exam
- Achieve an aggregate (overall) mark of at least 50

Assessment 1 – Multiple Choice questions (MCQs)

Dates: See Course Calendar for details
Weight: 25%
Required: 5 MCQs to be answered on each of the Units 1 to 11.

Assessment 2 – Group assignment

Due: In your Week 11 class
(Week commencing 3rd August 2015)
Due 9:30 am on the day of your assigned class.
Submitted: Submitted electronically via Moodle
Weight: 25%
Maximum length: As specified on assignment question sheet (available via Moodle in Week 5)
Group Work: Assignments may be completed in groups of up to 4 members. The assignment may be completed individually; however, it is important to note that the effort to complete the assignment assumes four people not one person.
Assessment 3 – Examination

Date: Saturday, 22 August 2015
Duration: 2 hours (plus 10 minutes reading time)
Weight: 50%

This is a two hour open book exam covering all units. In the exam you will be allowed to use electronic devices for the purpose of referring to digital course materials and notes only. These devices must not be connected to the internet, Wi–Fi must be disabled and tablets must be in flight mode. They must not be used to type your exam responses. You may also bring in printed materials and handwritten notes.

Additional reading time is allowed. The type of questions asked will be based upon the concepts and exercises in the units.

Some hints for preparing for the examination:

• work through examples and exercises
• in the examination session, monitor your time carefully and spend some time planning your answers.
• work through the sample exam questions and solutions provided in the Unit 12: Practice Exam Questions. These are mostly from previous exams. The actual exams are not released.
List of Statistical Symbols

Statistics has its own language and many of the symbols used to express statistical terms may be new to students who have not encountered them before or whose previous studies of statistics were a long way in the past. Below we list the set of common statistical symbols you may wish to refer to throughout the course.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Pronunciation</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\mu$</td>
<td>Population mean, expected value or population average</td>
<td>'mu'</td>
</tr>
<tr>
<td>$\sigma$</td>
<td>Population standard deviation</td>
<td>'sigma'</td>
</tr>
<tr>
<td>$\sigma^2$</td>
<td>Population variance; the square of the population standard deviation</td>
<td>'sigma squared'</td>
</tr>
<tr>
<td>$s$</td>
<td>Sample standard deviation</td>
<td>'s'</td>
</tr>
<tr>
<td>$s^2$</td>
<td>Sample variance</td>
<td>'s squared'</td>
</tr>
<tr>
<td>$\neq$</td>
<td>Not equal to</td>
<td></td>
</tr>
<tr>
<td>$\equiv$</td>
<td>Approximately equal to</td>
<td></td>
</tr>
<tr>
<td>$&gt;$</td>
<td>Greater than</td>
<td></td>
</tr>
<tr>
<td>$&lt;$</td>
<td>Less than</td>
<td></td>
</tr>
<tr>
<td>$\geq$</td>
<td>Greater than or equal to</td>
<td></td>
</tr>
<tr>
<td>$\leq$</td>
<td>Less than or equal to</td>
<td></td>
</tr>
<tr>
<td>$X_1$</td>
<td>The first value of $X$ in a series of values</td>
<td></td>
</tr>
<tr>
<td>$X_i$</td>
<td>The $i$th value of $X$ in a series of values</td>
<td></td>
</tr>
<tr>
<td>$X_1, X_2, \ldots X_n$</td>
<td>Describes a series of values of $X$ from the first value, the second value up to the $n$th value. The “……” are read as “up to”.</td>
<td></td>
</tr>
<tr>
<td>$\bar{X}$</td>
<td>The sample mean or the sample average of $X$; pronounced “X bar”</td>
<td></td>
</tr>
<tr>
<td>$\hat{X}$</td>
<td>The sample median; pronounced “X caret”</td>
<td></td>
</tr>
<tr>
<td>$\sum_{i=1}^{n} X_i$</td>
<td>Sum all values of $X_i$; that is, add together $X_1, X_2, \ldots \ldots \ldots \ldots X_n$</td>
<td></td>
</tr>
<tr>
<td>$\sum X$</td>
<td>A shorthand version of $\sum_{i=1}^{n} X_i$</td>
<td></td>
</tr>
<tr>
<td>$\sum_{i=1}^{n} X_i^2$</td>
<td>The sum of the each $X$ squared</td>
<td></td>
</tr>
<tr>
<td>$\sum (X_i - \bar{X})^2$</td>
<td>The sum of the squared deviations that each $X$ is away from $\bar{X}$, the mean of all $X$s</td>
<td></td>
</tr>
<tr>
<td>$\left( \sum_{i=1}^{n} X_i \right)^2$</td>
<td>Each value of $X$ is added to give a total. The total is then squared. Pronounced as “square of the sum of the $X$s”</td>
<td></td>
</tr>
</tbody>
</table>
Acknowledgements

Course coordinator

Dr Paul Walsh was a former Senior Lecturer at the AGSM and is now adjunct faculty. He has been the course coordinator for Data Analysis & Statistical Modelling for Business since 2009. Paul has his own consulting business. Paul has a Ph.D. in applied statistics. He also teaches Statistical Analysis for Managers and Business Process Management in AGSM’s Hong Kong MBA programs. He has consulted widely in the private, public and not-for-profit sectors. His research and consulting interests are in strategy deployment, performance measurement and Lean Six Sigma. His book The Measurement and Management of Strategic Change: A Guide to Enterprise Performance Management is published by Pearson Education Australia (2005).

Paul is also the Program Director for the Lean Six Sigma program at AGSM’s Executive Education Unit.

Email: paul.walsh@unsw.edu.au

Contributors

Chris Carter, Ph D, Professor, Australian School of Business
Samprit Chatterjee PhD, GradDip, BA
Simon Sheather PhD
Ann Wilson MA, PGCE, BA(Hons)