

BUSA90501 Advanced Business Analytics

Credit Points:	37.5								
Level:	9 (Graduate/Postgraduate)								
Dates & Locations:	2015, Parkville This subject commences in the following study period/s: June, Parkville - Taught on campus.								
Time Commitment:	Contact Hours: 200 hours Total Time Commitment: Not available								
Prerequisites:	<table border="1"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>BUSA90499 Introduction to Business Problems</td> <td>February</td> <td>12.5</td> </tr> </tbody> </table>			Subject	Study Period Commencement:	Credit Points:	BUSA90499 Introduction to Business Problems	February	12.5
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BUSA90499 Introduction to Business Problems	February	12.5							
Corequisites:	None								
Recommended Background Knowledge:	None								
Non Allowed Subjects:	None								
Core Participation Requirements:	<p><p>For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Student Support and Engagement Policy, academic requirements for this subject are articulated in the Subject Overview, Learning Outcomes, Assessment and Generic Skills sections of this entry.</p> <p>It is University policy to take all reasonable steps to minimise the impact of disability upon academic study, and reasonable adjustments will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact on meeting the requirements of this subject are encouraged to discuss this matter with a Faculty Student Adviser and Student Equity and Disability Support: http://services.unimelb.edu.au/disability</p></p>								
Coordinator:	Assoc Prof Jenny George								
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Subject Overview:	<p>This subject equips students with the advanced models, methods and tools required for a deep understanding of the latest analytic techniques. The subject has five distinct components discussed below.</p> <p>Statistical Learning 2</p> <p>This component builds on the material in Statistical Learning 1 and covers advanced analytic methods. It extends the statistical learning component of Business Analytics Foundations in three ways. First, new techniques such as tree based methods and neural networks are introduced. Second, students will be introduced to unsupervised statistical learning techniques and third, students will learn how to combine models and techniques to produce ensembles with better predictive capabilities.</p> <p>Data Visualisation</p> <p>Data visualisation reveals the underlying structure of data sets using representations that utilise the human visual perceptual system. The topics covered include the algorithms and systems for visually exploring, understanding, and analysing large, complex data sets. This includes the visualisation of multivariate, temporal, text-based, geospatial, hierarchical, network and graph-based data.</p> <p>Predictive Analytics</p> <p>Predicting key business and economic variables is increasingly important, as it drives both objective decision-making and improved profitability. This component aims to cover the main methods used to predict business and economic variables, based on historical data. These include traditional regression, time series, multivariate and econometric models, as</p>								

well as emerging methods such as ensemble forecasts. Both point and density prediction will be considered, along with metrics for the quality of both. Throughout, the focus will be on introducing methods in the context of substantive business and economic problems, using a wide range of prediction methods. The importance of benchmarking different methodologies, and the use of prediction in decision-making frameworks, will also be stressed.

Text and Web Analytics

This component helps students develop an understanding of the key algorithms used in natural language processing and text retrieval, for use in a diverse range of applications including search engines, cross-language information retrieval, machine translation, text mining, question answering, summarisation, and grammar correction. Topics to be covered include text normalisation, sentence boundary detection, part-of-speech tagging, n-gram language modelling, sentiment analysis, web mining and analysis, network analysis (including social network analysis), and text classification.

Personal Effectiveness 2

This component builds upon Personal Effectiveness 1 and will be partially integrated into the other components of Advanced Analytics. This component is designed to help students develop the skills and knowledge required to effectively manage the early stages of their career. The “Personal Effectiveness Program” runs across the course and identifies specific needs of each individual student and then provides ongoing support, training, and opportunities to practice and perfect these skills. The program focuses on three core areas:

- 1 Communication skills: These skills include effective presentations, verbal communication, written communication, public speaking, and communicating technical material to non-technical audiences.
- 2 Career development skills: These skills include case practice, interview skills, CV writing, networking, and business etiquette.
- 3 Team skills: These skills include managing conflict, cultural awareness, giving and receiving feedback, and resilience.

Learning Outcomes:

On completion of this subject, the student will be able to:

Statistical Learning 2

- 1 Demonstrate how to quantitatively analyse large datasets and convert raw data into relevant information for management decisions, using a wide variety of parametric and non-parametric techniques.
- 2 Understand the difference between supervised and unsupervised statistical learning
- 3 Determine which techniques to apply to different types of data.
- 4 Understand how to perform model averaging

Data Visualisation

- 1 Understand the principles involved in data visualisation,
- 2 Be familiar with a variety of data visualisation techniques and systems,
- 3 Understand how to design and evaluate new and innovative data visualisation systems.

Predictive Analytics

- 1 Understand a wide range of models and methodologies relevant to predicting business outcomes.
- 2 Apply appropriate modelling and forecasting techniques to business and economic contexts, and to critique and compare competing methodologies.
- 3 Translate forecasting outputs to information and provide recommendations to address the relevant business problems.

Text and Web Analytics

- 1 Apply natural language processing and information retrieval methodologies to textual data
- 2 Develop and evaluate computational models of language
- 3 Articulate issues relevant to the efficient implementation of language processing systems and text retrieval systems

Personal Effectiveness 2

- 1 Appreciate the importance of communication, career development, and team skills in career success
- 2 Have improved their communication, career development, and team skills.
- 3 Be able to write a technical report appropriate for a non-technical audience.
- 4 Be more comfortable giving feedback.
- 5 Develop presentation skills to convey technical information to a non-technical audience.

Assessment:	Statistical Learning 2 Class participation (attendance at lectures, peer and instructor evaluation of contribution to class learning) continuous 5% 5 x Individual in-class quiz (10 mins each) Weekly 20% Syndicate assignment and presentation (equivalent of individual 900 word assessment) Week 5 25% Final Individual Assessment Problem (Individual, hurdle requirement, 1750 words or equivalent) Week 9 50% Data Visualisation Class participation (attendance at lectures, peer and instructor evaluation of contribution to class learning) continuous 10% Individual Quiz (20 mins) Week 3 10% Syndicate report and presentation (24 hours each person) Week 5 & 7 30% Final Individual Assessment Problem (Individual, hurdle requirement individual 1750 words or equivalent) 50% Predictive Analytics Individual assignment (900 words) Week 3 25% Syndicate assignment (equivalent of individual 900 word assessment) Week 6 25% Final Individual Assessment Problem (Individual, hurdle requirement, 1750 words or equivalent) Week 9 50% Text and Web Analytics Individual quiz (20 mins) Week 3 10% Syndicate project 1 (24 hours each person) Week 5 20% Syndicate project 2 (24 hours each person) Week 7 20% Final Individual Assessment Problem (Individual, hurdle requirement, individual 1750 words or equivalent) Week 9 50% Personal Effectiveness 2 Individual technical report (600 words or equivalent; hurdle requirement) Week 9 50% Individual presentation (as part of group presentations; equivalent of individual 500 word assessment) Weekly 40% Class participation (attendance at skills workshops, peer and instructor evaluation of contribution to class learning) continuous 10%
Prescribed Texts:	None
Breadth Options:	This subject is not available as a breadth subject.
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees