

# Master of Business Analytics

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MELBOURNE  
BUSINESS  
SCHOOL

## Program snapshot

### Program details

- Length: one year, starting in January
- Fees: AU\$53,700\*
- FEE-HELP and major government student support payments (Austudy, ABSTUDY and Youth Allowance) available to those who meet the eligibility criteria
- Class size: approximately 50-70
- Age range: typically 23-28 years
- Contact hours: 38-40 hours a week
- Delivery: full-time
- Provides SAS certification



### Pre-requisites

- Undergraduate degree with a credit average or above
- Evidence of academic success in quantitative subjects and a natural talent and passion for working with data
- Evidence of English proficiency
- Shortlisted applicants will be interviewed.

### Application dates

Closing date: November annually  
 Round dates: refer to [mbs.edu/mbusa](http://mbs.edu/mbusa)

\*Fees are for 2018 only and subject to change

**‘The Master of Business Analytics has taught me some really valuable analytics skills, but more importantly, I’ve gained a suite of soft skills to convincingly present data to tell compelling stories that drive decision-making and provide a better understanding of business problems.’**

**Brad Trewella**  
 Consultant, Solution 49x, KPMG  
 Master of Business Analytics 2015

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# Welcome to analytics

Industry surveys show that more than 1,600 jobs will be created in Australia in the field of business analytics, and an estimated 1.5 million positions worldwide, by 2018. In today's world of ever increasing data, businesses that can derive critical insight from such information hold a competitive edge.

Graduates with the analytics skills to derive those insights will be sought after by Australian and global employers. Melbourne Business School has designed an intensive one year program that will equip you with advanced skills in business analytics and accelerate your career.

Known internationally for our diverse faculty and research that is at the forefront of global business trends and knowledge, you can find our alumni making a difference across a range of industries in more than 90 countries.

Underpinning our success has been the unique partnership between business and academia, which continues to this day.

Our business pedigree distinguishes the Master of Business Analytics from other data science degrees and makes it so highly valued in the marketplace.

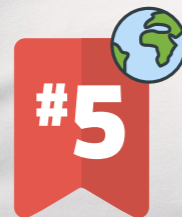
## Dr. Simon Holcombe

Academic Director, Master of Business Analytics  
Melbourne Business School



**#1 Business Analytics program outside the US**

QS 2018 Masters in Business Analytics rankings



**#5 Business Analytics program in the world**

QS 2018 Masters in Business Analytics rankings

# Master of Business Analytics

The digital age is generating a continuous flow of information and datasets for all aspects of business. To interpret and transform this data into valuable insights for business decision-makers, you need to speak the language of business.

The Master of Business Analytics degree offers the most integrated learning experience for future analytics leaders in the Asia-Pacific region. It provides you with a solid foundation in business alongside the maths and technology pillars of data science.

Along the way, experts from our business partners in the fields of computer science, statistics, mathematics and business management will support your studies through Analytics Labs, scholarships and industry events.

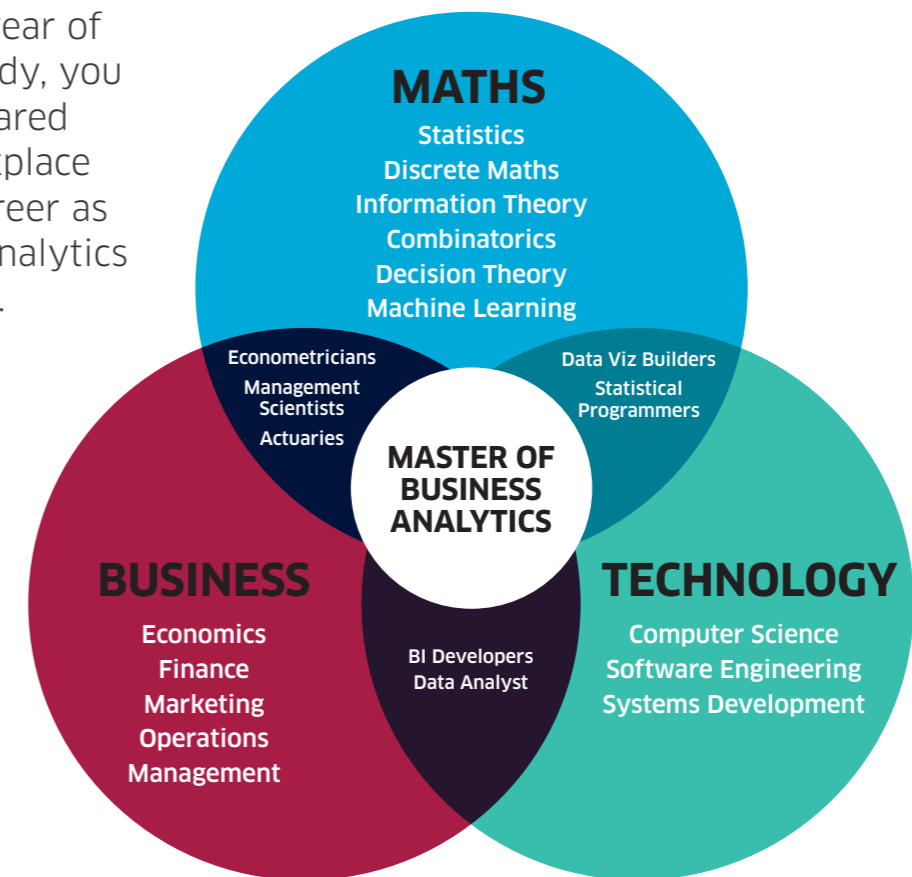
Our Careers Management Centre will connect you with major companies who recruit from Melbourne Business School each year to find the best and brightest talent in business analytics.

After one year, you will become a data science expert who will join the Master of Business Analytics graduates now helping top businesses empower their decision making, and who can approach any data challenge with a mindset to explain clearly to business leaders:

- What is happening?
- Why is this happening?
- What if these trends continue?
- What will happen next?
- What should we do?

As this is an advanced business analytics degree program, you will focus on how quantitative methods – such as quantitative analysis, predictive modelling and fact-based management – can drive business decision making.

In just one year of full-time study, you will be prepared for the workplace and your career as a business analytics professional.



## What makes the Master of Business Analytics so different?



### One-year program

The Master of Business Analytics is offered at Melbourne Business School as an intensive program, allowing you to complete a 1.5-year degree in just one year of full-time study. Classes are taught Monday to Friday, 9am to 5.30pm. It differs from undergraduate study, with smaller classes, students on campus each weekday for the full day and greater access to teaching faculty.



### Prepare you to undertake SAS certification

On completion of the one-year program, graduating students will receive a Master of Business Analytics degree from the University of Melbourne along with the preparation required to attain a SAS Certificate in Business Analytics. This globally recognised certification identifies professionals who are both skilled data analysts and have a fully rounded business focus on analytics for problem-solving and decision-making.



### Connection with industry

The Master of Business Analytics program gives you the business acumen to unpack complex data and present insights to senior executives to drive business value, while developing your technical skills to analyse and interpret complex data.

Supported by the Centre of Business Analytics and its Industry Advisory Board, this unique program is distinguished by its strong focus on solving business problems, which are tackled throughout the one-year degree but most intensively in the five-week Analytics Lab, where you work within an organisation to help solve pressing business challenges.



### Interdisciplinary content

This program is interdisciplinary, incorporating maths and statistics, computer science and business. Many analytics degrees choose one of these areas as their primary focus with only minimal attention paid to the other two. This degree is quantitatively rigorous, requiring you to become comfortable with programming while maintaining a focus on the business context of analytics work. This context is important because the purpose of business analytics is to ensure that the analysis of data is practical and applicable in a business environment.

## Preparing you for the working world

The Personal Effectiveness Program provides you with the soft skills needed to complete your transformation into the well-rounded analytics professional that employers want. It is unique to Melbourne Business School and runs every Friday as part of our Master of Business Analytics program.

Soft skills are the personal qualities that allow you to effectively interact with people. They include attitudes, professional attributes, character traits and communication skills. A good set of soft skills develops your self-awareness, emotional intelligence, confidence with people and leadership qualities.

The soft skills you develop on the Personal Effectiveness Program are reinforced through the Analytics Lab, targeted workshops and subjects that put analytics in the business context.



**‘Soft skills add value to the workplace by giving you the skillset to clearly articulate recommendations drawn from data to key executives.’**

**Ujwal Kayande**  
Professor (Marketing)  
Director, Centre for Business Analytics



**‘Through the Personal Effectiveness Program, we prepare you for the job market and facilitate the transition from the classroom into the workplace.’**

**John Gurskey**  
Director, Career Management Centre

# The Personal Effectiveness Program

Analytics professionals with a strong blend of soft and technical skills are in demand. At the conclusion of the Personal Effectiveness Program (PEP), you will have a well-rounded understanding of the link between analytics, business and decision-making. The ability to communicate findings to guide decision-making is just as important as data manipulation for the analytics professional – because executives can make the wrong decision if good data is communicated to them poorly.

The PEP runs across the program. It identifies specific needs of each individual student and provides ongoing support, training and opportunities to practise and perfect these skills. The program focuses on four core areas:

**Communication skills** including effective presentations, oral communication, written communication, public speaking and communicating technical material to non-technical audiences

**Career development skills** including case practice, interview skills, CV writing, networking, and business etiquette

**Team skills** including managing conflict, cultural awareness, giving and receiving feedback, and resilience

**Business knowledge** including understanding the business and industry context in which analytics professionals operate, how different parts of organisations interact, and meeting and networking with business leaders.

Academic experts and business leaders are invited to speak to the class about a range of subjects to increase knowledge and understanding of business environments.

## Typical Topics



Seminars and workshops delivered through PEP may include:

- Managing your career
- How to find and use a mentor
- Managing your next career transition
- Technical writing for a non-technical audience
- Difficult conversations and managing up
- Storytelling with data
- Presentation skills
- Networking skills
- Behavioural interviewing
- Case interview techniques
- Leading a team
- Project management
- Using LinkedIn for your job search.

**‘The structure of the morning lectures and afternoon workshops meant that you could take advantage of the afternoon sessions to absorb and reinforce the prior content.’**

### Jenny Filby

Insights Analytics Manager, Sportsbet  
Master of Business Analytics 2015

**‘The PEP sessions really helped me build on my soft skillset. It was one of the things that most attracted me to the Master of Business Analytics program. The sessions ranged from workshops with an acting company to work on voice projection and body language, to networking and interview etiquette training – all of which were very useful at the many industry events held by the School.’**

### Rebecca Wilson

Senior Analytics Analyst, A.T. Kearney  
Master of Business Analytics 2015



'The program brings in a technology aspect and a business aspect that no other course or school can offer. It's the first time I've been able to explore different elements of what I'm good at - IT, Mathematics and Business - and bring them all together. Not only that, the Personal Effectiveness Program enabled me to refine those communication skills that a lot of other courses forget about.'

**Christelle Young**

Senior Analytics Analyst, A.T. Kearney  
Master of Business Analytics 2016



## Graduate outcomes

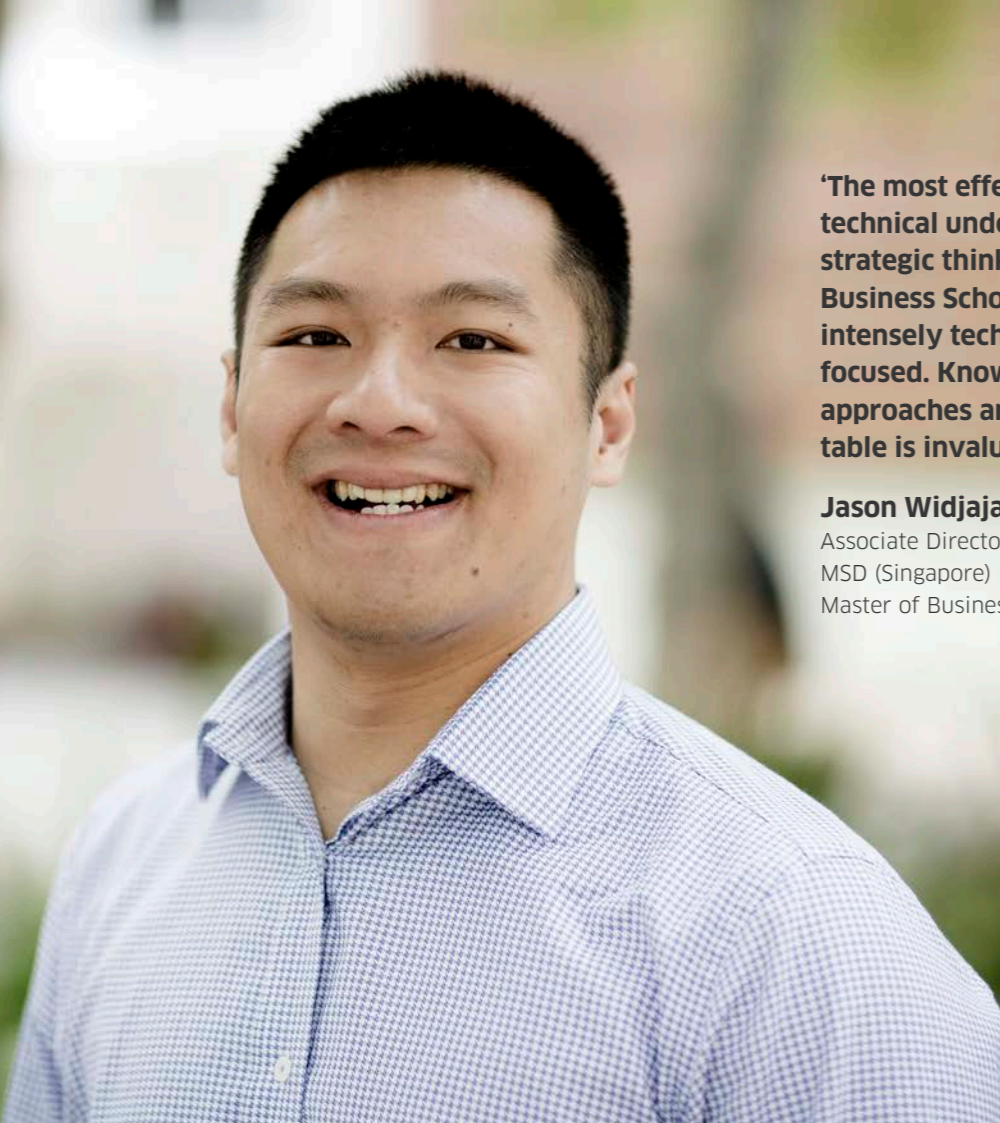
Graduates of Melbourne Business School's Master of Business Analytics program are in high demand, due to their ability to add tangible value to the organisations they work for. Below is a list of some of the companies in which our students have secured roles after completing their degree.



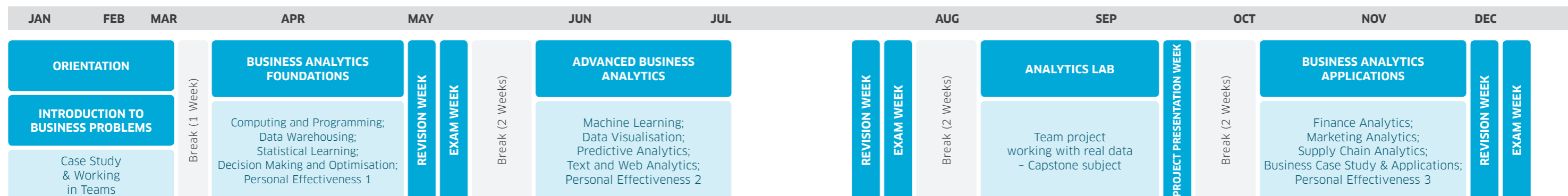
'The most effective analytics leaders marry technical understanding, commercial acumen and strategic thinking - and that's what Melbourne Business School teaches. Real-life data science is intensely technical but also intensely business focused. Knowing the right talent, technical approaches and analytics tools to bring to the table is invaluable.'

**Jason Widjaja**

Associate Director, Global Data Science Competency,  
MSD (Singapore)  
Master of Business Analytics 2015



# Program structure



Module 1 is a six-week module that incorporates orientation activities.  
 Module 4 is also a six-week module (five weeks working with an organisation and one week for presentations).

Modules 2, 3 and 5 are each nine-week modules, in which the first seven weeks contain new content.  
 The eighth week is for revising material and the ninth week for exams. Breaks of one/two weeks take place between modules.

The goal of this program is to equip its graduates with the capabilities to apply data-analytic techniques to a variety of business problems. The knowledge and skills required to do this are multi-disciplinary, drawing on mathematics, statistics, computer science and business. The program will cover foundational and advanced data-analytic techniques, as well as frameworks for applying those techniques to a variety of business contexts.

The program is intensive. Content is organised into five modules, covering a whole calendar year. Generally speaking, mornings are devoted to lectures, workshops and direct instruction. Afternoons are devoted to exercises, team assignments and tutorials. Every Friday is 'Personal Effectiveness Day', when the Personal Effectiveness Program (PEP) helps you develop your soft skills.

## Typical week

	Monday	Tuesday	Wednesday	Thursday	Friday
9.00-10.15am	Stats Learning	Data Warehousing	Programming	Optimisation	
10.45am-Noon	Stats Learning	Data Warehousing	Programming	Optimisation	Personal Effectiveness
Noon-2.00pm	Lunch Break	Lunch Break	Lunch Break	Lunch Break	Lunch Break
2.00-5.00pm	Stats Learning exercises	Data Warehousing exercises	Programming exercises	Optimisation exercises	Personal Effectiveness

## Module 1

### Introduction to Business Problems

This subject is the introduction to the Master of Business Analytics. It focuses on two issues: (i) introduce business problems, best addressed with analytics, and their complexities, and (ii) the complexities of possible solutions. A broad survey of business frameworks and perspectives are covered in this module to help set the context for the business problems encountered. Team processes will be examined, and project management tools provided, to implement the proposed solutions.

During the module, students will also attend sessions on foundational concepts in maths, statistics, programming and SAS to ensure that all background material required for Module 2 has been reviewed.

Students will be presented with a dataset and a case study of an organisation, facing a significant business problem. Students will be asked to prepare possible solutions to the problem, which will be revisited in the Business Analytics Applications subject at the end of their program of study.

## Module 2

### Foundations of Business Analytics

This subject equips students with the foundations and tools needed for a career in Business Analytics.

### Computing and Programming

Solving problems in business often requires computer programming to manipulate, analyse, and visualise data. This component helps students, with little or no background in computer programming, learn how to design and write programs using a high-level procedural programming language, and to solve problems using these skills. Topics such as cyber security, cyber ethics and privacy, regarding the collection of individual data, will also be discussed.

### Data Warehousing

Data warehouses are designed to provide organisations with an integrated set of high-quality data to support decision-makers. They should support flexible and multi-dimensional retrieval and analysis of data. Topics covered include data warehousing and decision-making; data warehouse design; data warehouse implementation; data sourcing and quality; online analytical processing (OLAP); dashboards; data warehousing for customer relationship management; and case studies of data warehousing practice.

### Decision Making and Optimisation

There are an assortment of mathematical methods to obtain efficient solutions to a large variety of complex business problems. This component helps students formulate a business problem as a mathematical model and then use computational techniques to estimate and solve the model. Topics covered could include decision-making under uncertainty, optimal location/allocation of resources in business processes, decision trees, linear programming, integer linear programming, and Monte Carlo simulations.

### Statistical Learning

With the explosion of available data, statistical learning, which is the analysis of complex datasets, has become an important field in many business contexts, including marketing, finance, and even human resource management. The aim of this component, and the follow-on component in Advanced Business Analytics, is to help students learn how to extract relevant information from large amounts of complex data to make improved business decisions. Topics covered in this component include data exploration; resampling methods; linear and nonlinear regression; parametric classification techniques; and model selection.

## Module 3

### Advanced Business Analytics

This subject equips students with the advanced models, methods and tools required for a deep understanding of the latest analytic techniques.

### Machine Learning

This component builds on the material in Module 2's Statistical Learning and covers advanced analytic methods. It extends the statistical-learning component of Module 2 (Foundations of Business Analytics) in three ways. First, new techniques, such as tree-based methods and neural networks, are introduced. Second, students are introduced to unsupervised statistical-learning techniques, and third, students learn how to combine models and techniques to produce ensembles with better predictive capabilities.

### Data Visualisation

Data visualisation reveals the underlying structure of datasets, 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 datasets. This includes the visualisation of multivariate, temporal, text-based, geospatial, hierarchical, network and graph-based data.

### Predictive Analytics

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 methods include traditional regression, time series, multivariate and econometric models, as 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, is also 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.





# Module 4

## Analytics Lab

This subject involves practical experience for teams of students working on a real analytics project for an organisation. The five-week project integrates academic learning, practical challenges in implementing data analytics in an organisation, employability skills and attributes, and an improved knowledge of organisations, workplace culture and career pathways.

The assessment week will involve the completion of a report for the subject and a project presentation.

## In 2016 and 2017, students worked with:

- AT Kearney
- Woolworths
- Sportsbet
- ANZ
- Brightstar
- Forethought
- BP
- CHE Proximity
- Quantum
- NAB
- Telstra
- SEEK
- Suncorp
- Coles Flybuys
- Converge
- Dun & Bradstreet

## What type of topics could be covered?

Data analysis on datasets, investigating issues such as:

- Customer churn/loyalty
- Logistics and supply chain
- Forecasting demand
- Optimal product or category portfolio
- Marketing-mix optimisation
- Credit risk
- Employee selection, retention and training
- Analysis of social media or other unstructured data sources

Optimisation of processes, such as:

- Call centre operations
- Logistics and delivery routes
- Schedules
- Allocation of marketing resources across products
- Service delivery

# Module 5

## Business Analytics Applications

This subject's primary focus is the application of data analytics in business contexts. Three of the subject's components address common applications of business analytics: Finance Analytics, Marketing Analytics, and Supply Chain Analytics. The business case study, introduced in the Introduction to Business Analytics subject, is revisited so students can view and find solutions to the same comprehensive business case with the benefit of the knowledge they have obtained from the program. Students are also introduced to other contemporary applications of business analytics.

### Finance Analytics

Quantitative analytics have become an invaluable part of managing financial institutions, not only for profitability but also for safeguarding the organisation against risk. In this component, students will be applying data-analytic skills to finance applications. Topics include financial performance benchmarking; modelling and computation of financial risks; dynamic portfolio management; computational derivative pricing; and modelling fixed income securities. The focus of the component will be on both theoretical development and practical implementation, using contemporary data from the financial market.

### Marketing Analytics

It has become increasingly important to know how marketing actions translate into revenue and profit growth. The tools that enable this translation are part of the toolkit called 'marketing analytics'. Marketing analytics is a technology-enabled and model-supported approach to harness customer and market data and enhance marketing decision-making. This component of Module 5 provides students with (i) knowledge of marketing analytics, (ii) the ability to know which analytics tools to use for which marketing problems, (iii) the ability to use those tools to solve marketing problems, and (iv) the ability to influence marketing outcomes such as satisfaction, choice, loyalty, word of mouth, and customer referrals.

## Supply Chain Analytics

Rapid advancements in technology (particularly the Internet), combined with fast and cheap computing power, has enabled firms to radically transform their industries by developing business models and re-engineering their supply chains. This Module 5 component provides students with (i) knowledge of mathematical modelling and analytic tools, relating to logistics and supply chain optimisation problems, (ii) the ability to use these tools and techniques to analyse strategic, tactical and operational decisions, pertaining to inventory management, facility location, logistics and other supply chain, management-related decisions, and (iii) exposure to real world logistics and supply chain decisions through case studies.

### Business Case Study

This component revisits the case study examined in the subject Introduction to Business Problems earlier in the program. The primary goal of this component is to use the analytics knowledge and skills obtained throughout the program to recalibrate solutions to the business problem in the case study. The secondary goal is to introduce students to some emerging applications in the form of a special-topics component. These topics will vary, depending on emerging trends.

## 2017 Analytics Lab snapshot: EYC3

For their five-week analytics lab, students Shin Tan, Ignacio Recasens and Joshua Carmichael helped design and build a client-facing website chatbot for EYC3 – EY’s Asia Pacific centre of information management excellence.

The ultimate purpose of the tentatively named ‘Bot-bot’ is to support clients and develop their understanding of EYC3. It will answer simple and curveball questions, direct users to where they need to be, retrieve case studies and converse naturally to provide a memorable experience.

In designing variations of the conversation flow, the students gathered a list of possible questions and used Microsoft Community of Intelligence technology to best understand the intent behind each query. By effectively creating a new EYC3 staff member, the students are helping to improve user experience and show that EYC3 is a pioneer in the use of artificial intelligence.

Working alongside some of the brightest talents in advanced analytics at EYC3, the students have applied numerous techniques learnt in the classroom to a cutting-edge business challenge.

For EYC3, the chatbot has just begun to grow. As the technology evolves and new ideas emerge, EYC3 will build upon the students’ work to showcase its technological capabilities in the APAC region.

## 2017 Analytics Lab snapshot: Suncorp

After an intensive five-week analytics lab, students Maggie Ma, Zihan Gao and Raj Vijayaraghavan delivered a commercial insurance forecasting tool that Suncorp now uses every day.

The students were given ownership of a large analytical problem to which they applied classroom techniques and visualisation tools to analyse a few hundred million rows of clean and dirty data. They deciphered a way to influence cash flow and revenue to improve the bottom line, and experienced just how complicated real-world data can be.

Thanks to careful planning, the close-knit team systematically broke the problem down and brought structure to the data so it was easier to work with in their allotted time. They then applied their soft skills to communicate with stakeholders about the project, which helped them clarify the best way to present their solution as a money saver.

Thanks to their meticulous work, stakeholders in the business were pleased with the elegant solution the students created from the sea of data they dealt with every day of the lab.

As new data continues to pour in to Suncorp, the team is proud that their forecasting tool can handle any large dataset that comes its way, making all future reporting for Suncorp much easier.

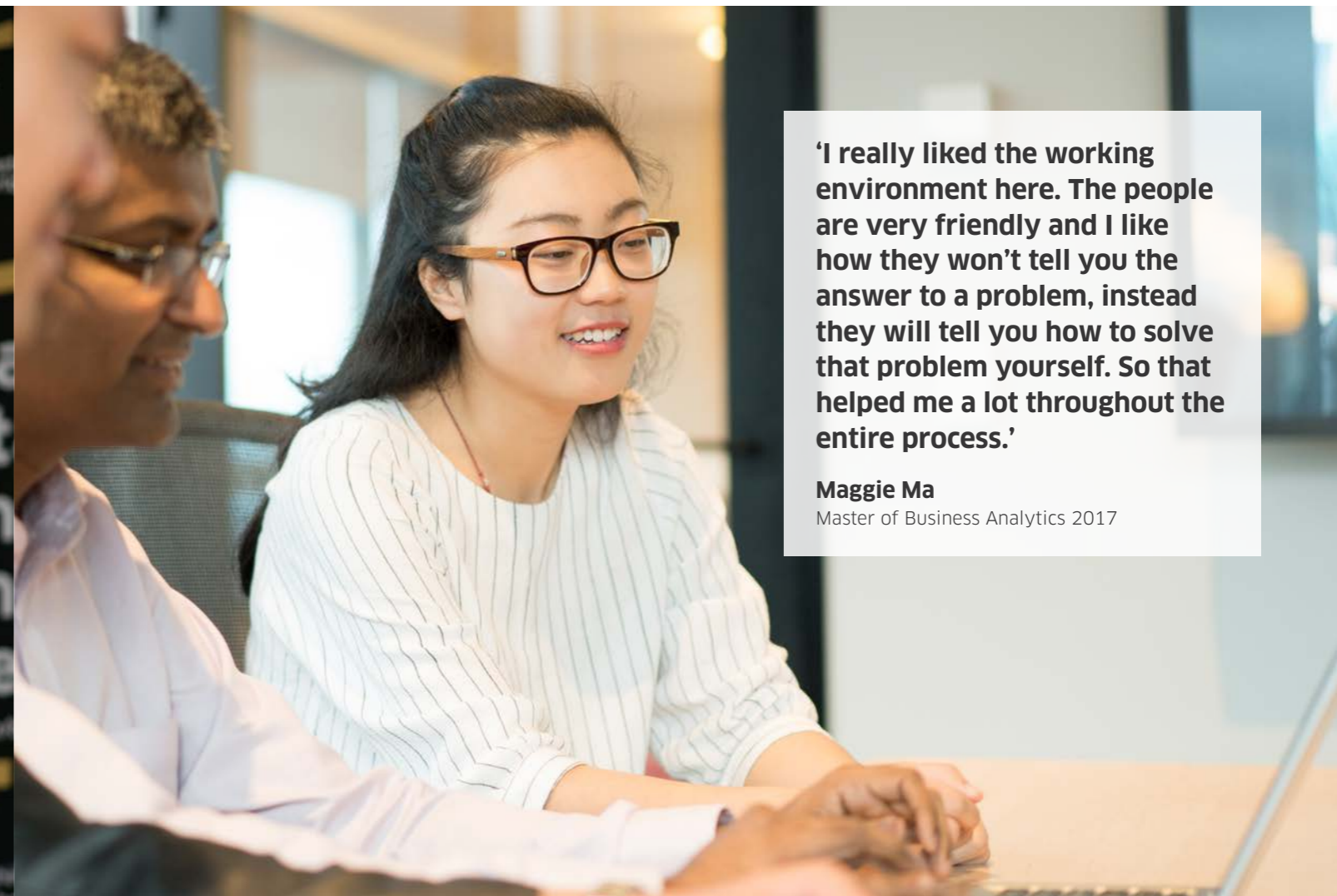
**‘In terms of the bot’s personality, we’re trying to give it a bit of flair. You want to see a bit of variety, a bit of spice and we’re trying to inject that into its personality so people will be engaged by the chatbot.’**

**Joshua Carmichael**  
Master of Business Analytics 2017

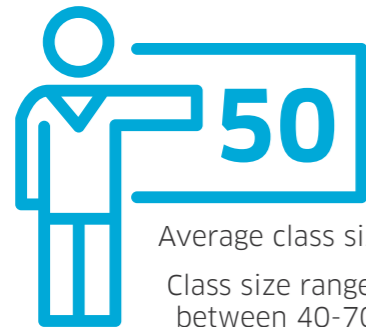


**‘I really liked the working environment here. The people are very friendly and I like how they won’t tell you the answer to a problem, instead they will tell you how to solve that problem yourself. So that helped me a lot throughout the entire process.’**

**Maggie Ma**  
Master of Business Analytics 2017



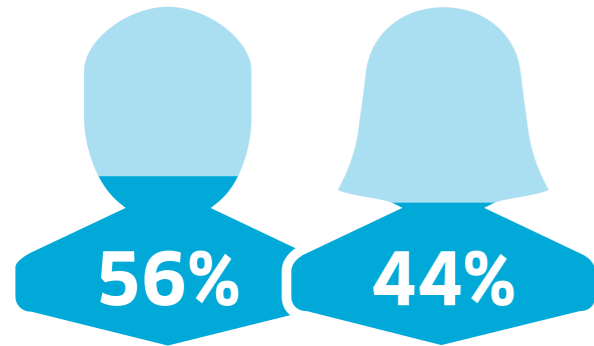
# Typical class profile



Average class size  
Class size ranges between 40-70



Age range



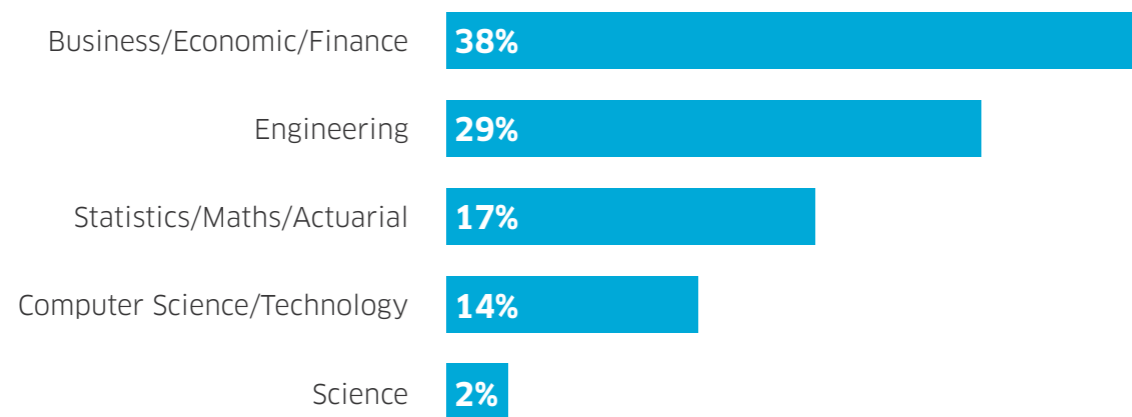
Male

Female



Median work experience is **3 years**

## Undergraduate backgrounds



# Our Faculty

Our faculty experts will help you approach problems in new ways and master the tools required to solve them.

Faculty from the Department of Computing and Information Systems in the School of Engineering at the University of Melbourne will equip you with computing and data management skills. Melbourne Business School Faculty will provide a blend of statistical, mathematical and decision-making tools. Together, we deliver an integrated program that will provide you with the skills to not only analyse the data but also use that information to formulate strategy.

We teach using a variety of techniques, including case studies, simulations and practical projects. These techniques allow you to work in a team, tackle real data, think critically and articulate your findings.

For a full list of our Faculty, please visit <https://mbs.edu/faculty>



**Michael Smith**

Chair and Professor of Econometrics  
PhD (UNSW), BA Hons (UWA)



**James Bailey**

Professor (Computing and Information Systems)  
PhD, BE (Hons), BSc (Melb)



**Karin Verspoor**

Associate Professor (Computing and Information Systems)  
PhD and MSc (Edinburgh), BA (Rice)



**Gerardo Berbeglia**

Assistant Professor (Operations Management)  
PhD (HEC Montreal)  
MSc and BSc (Buenos Aires)



**Worapree (Ole) Maneesoonthorn**

Assistant Professor (Statistics and Econometrics)  
BCom (Cant), BA (Cant), MAE (Monash), PhD (Monash)



**Ujwal Kayande**

Director of the Centre for Business Analytics  
Professor (Marketing)  
PhD (Alberta)



**Andrew Turpin**

Associate Professor  
Deputy Head (Engagement), Department of Computing and Information Systems  
PhD (Melb), BSci (Hons)(Melb), BCom (Melb)

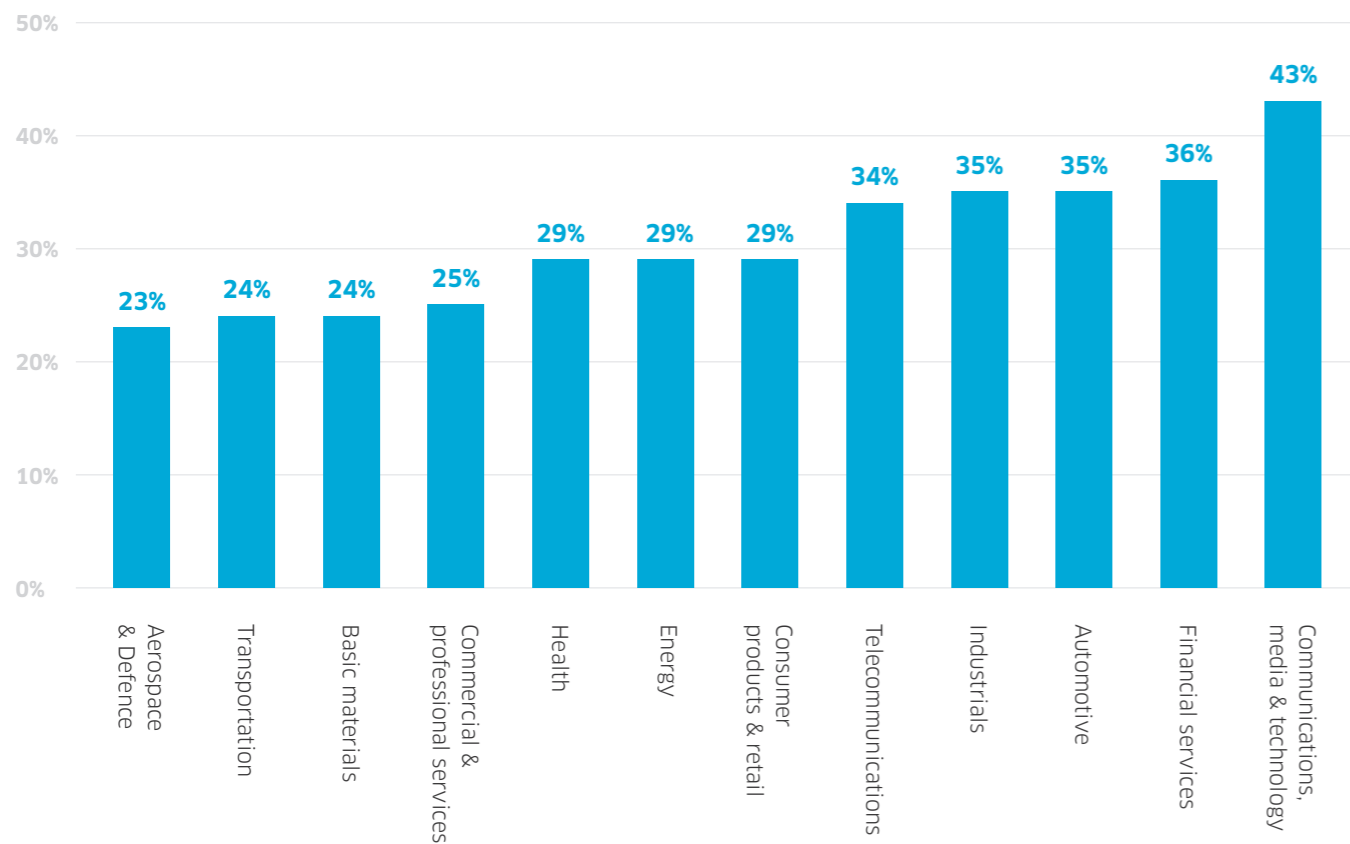
# Why Business Analytics?

A data analytics talent gap is clearly evident. McKinsey Global Institute projects a shortage of 190,000 data scientists by 2018. And according to Accenture, although the industry has been largely centred in the United States and Western Europe, it is fast expanding to the rest of the world.

Analytics is quickly moving from a background role in business to the centre of many key decisions and processes. Many industries, which never considered using data in the decision-making process, are recognising analytics as a strategic capability.

The upside of data analytics is that businesses can see the benefits. It leads to change and improvement and the ultimate goal of increased business growth. Whether it's predictive analytics, insight analytics or optimisation, the analysis of data in business helps make informed decisions across varying business problems in many domains. That's why demand for professionals possessing these skills is increasing.

## The expected growth for analytics talent over the next five years



Source: A.T. Kearney 2015 LEAP (Leadership Excellence in Analytic Practices) talent study

# The type of jobs the Master of Business Analytics could lead to:



## Case studies

Analytics professionals gather and organise data – small or big, structured or unstructured – for analysis using statistics and modelling, and build maths models through optimisation and simulation. The following examples show how organisations use business analytics to gather insights and make business decisions.



1

### How analytics helped Suncorp understand driver behaviour

To understand the driving behaviour and events that can lead to insurance claims, Suncorp's Motor Insurance department worked with external analytics consultants to gain predictive insights for their current and future policyholders.

Over six months, the team looked at existing customer data and purchased information to:

- Outline where customers live
- Identify where customers could drive in a 5 and 10-minute radius
- Investigate the type of roads (back, main, freeway, dead-end) and the surrounds (walkways, parks, schools, supermarkets, intersections) within each radius
- Compare the information against existing insurance claims.

Using various technical and statistical models, the findings were applied to every property within a region for Suncorp to predict insurance claim frequencies – allowing them to predict the number of accidents a customer could have depending on their location.

The findings became part of Suncorp's pricing algorithm for motor insurance, ensuring that its policies and premiums were set at the right level for where a customer lives.

**Dr. Gregory Hill**  
Global Head of Analytics  
Brightstar



2

### Brightstar uses analytics to optimise category sizes

Mobile product retailers typically display and sell a set number of products in categories, such as prepaid handsets, postpaid handsets, tablets or wearables. Individual products cycle in and out of each category over time, but the number of 'slots' remains fixed. So, what is the optimal number of slots to offer per category?

For one of its clients, global wireless-products distributor Brightstar proposed an objective analytics-based approach to find out. It traded off different perspectives from stakeholders across the supply chain, retail, products and vendor management divisions, using a framework developed by its analytics team.

Brightstar used its 'supply chain visibility' and retail operations to construct a model of customer in-store decision-making, which it fused with expert subjective assessments of customer behaviour and an objective financial-profitability model.

The integrated model was then subjected to Monte Carlo simulation methods to find category sizes that optimise profitability against the various commercial constraints, resulting in the client adopting the recommendations.



### 3 Repositioning Kmart

#### The business problem

In Australia, Kmart was struggling in the first decade of the new millennium. Profits were meagre and store traffic was stagnant. Furthermore, the brand was indistinct, having no strong position among the several discount department stores in the market.

One of the first steps taken by the new CEO was to introduce everyday low pricing and remodel stores. These changes resulted in some moderate improvement in store visits, but the brand message was still vague in the mind of consumers.

#### How data was used to help solve the business problem

To address the business problem, Kmart hired Forethought Research to undertake a thorough analysis of the factors that influence store choice.

It needed a model that:

Showed consumers' likelihood to choose a store, incorporating both emotional and rational evaluations of all stores in the market.

Simultaneously accommodated the attributes of performance, reputation and price; weighted and ranked into a hierarchy, according to their relative importance.

Captured differences between shoppers, including differences that can't be easily observed.

Represented how beliefs, emotions and preference change over time.

#### Authors

Ken Roberts: CEO, Forethought Research. Alumnus of Melbourne Business School and a current Master of Business Analytics industry partner and program supporter.

John Roberts: Professor of Marketing, Australian National University and London Business School.

Peter Danaher: Professor of Marketing and Econometrics, Monash University.

Rohan Raghavan: Research Analyst, Forethought Research.

Emotions were measured and captured, using a quick but effective method to measure nine key feelings: surprise, happiness, love, pride, contentment, anger, sadness, anxiety, shame and value. Forethought Research found that including these emotions significantly improved the model for likelihood to choose a store. A key component of the conceptual model was the linkage between value, quality and price.

#### The outcome

Measuring emotions enabled Kmart's advertising agency to create a television commercial that tapped into the specific emotions that most strongly predict store choice. That is, the model informed the advertising creative brief, something that is notoriously difficult to achieve successfully. The resulting television commercial proved to be highly effective.

Using an econometric model, it was found that store visits were significantly enhanced, over and above Kmart's usual advertising effects, after the launch of the new campaign, which promoted two of the key emotions.

Moreover, compared with store-visit levels before the campaign, total annual visits increased by 20% over the next two and a half years, while the number of items sold increased by 42%. Finally, Earnings Before Interest and Taxes (EBIT) increased by 30% (more than \$65 million) in one year. Interestingly, Kmart's main rival had almost no EBIT growth over the same period, despite vigorous attempts to create advertising interference to counter Kmart's highly successful television commercial.

To read the full case-study visit: [bit.ly/KmartStudy](http://bit.ly/KmartStudy)

## Industry leaders



**'The industry, in many ways, is crying out for this integrated skillset, and I would be surprised if the students going through this program have any challenge landing excellent jobs. Being trilingual – conversant in technology, analytics and business – is squarely within the cross-hairs of what the industry needs.'**

#### Nigel Andrade

Partner & Managing Director,  
Australia & New Zealand  
Global Lead Partner, Proposition & Customer Experience (PCE)  
Labs  
A.T. Kearney



**'The key themes of culture and capability building are very important when companies consider how to make effective use of business analytics. Data (big or not) without context are of little use. The challenge for any enterprise is how to make routine and systematic use of business analytics by establishing the relevant capabilities, and perhaps even more importantly, making their use a part of the way of life, a part of the culture.'**

#### Graeme Liebelt

Chairman, Amcor Limited



**'During the next 20 years, as analytics becomes more important, it is about far more than data – big or otherwise. It is about building a pervasive analytics culture with a clear vision, strong capability, and C-suite support to leverage data-enabled insights that fundamentally improve the competitive position of firms in Australia and around the world. That is why you should do the Master of Business Analytics program, because graduates of the program are the people that tomorrow's organisations are looking for and need today.'**

#### Enrico Rizzon

Vice President & Partner, Procurement and Analytics Solutions  
Practice, A.T. Kearney  
Chair, Industry Advisory Board,  
Centre for Business Analytics  
Melbourne Business School



**'There are those who assume that if we have enough data the numbers will speak for themselves. It is not machine led unaccompanied analytics but rather, humans who will make the essential connections. These latter day data explorers are bound to become our new "cartographers."**

**Forethought Research wishes to congratulate Melbourne Business School for the outstanding Masters of Business Analytics program and faculty. We are confident that many of our newest and best navigators will hail from this program. Our support extends to offering the leading candidate from each year the Forethought-Roberts Prize.'**

#### Ken Roberts

Managing Partner, Forethought Research  
Member, Industry Advisory Board,  
Centre for Business Analytics  
Melbourne Business School

## How to apply

The application process is fully online at [apply.mbs.edu](https://apply.mbs.edu)

### Document requirements

You will need the following supporting documents, ready to upload:

- Resumé
- Academic transcripts (undergraduate transcript is mandatory - if you haven't completed your undergraduate degree, please provide results for as much as you have completed at the time of your application)
- Passport/birth certificate/visa

Once your application has been submitted, shortlisted applicants will be asked to schedule an interview.

### Minimum requirements for consideration

To be eligible for a consideration, you will have:

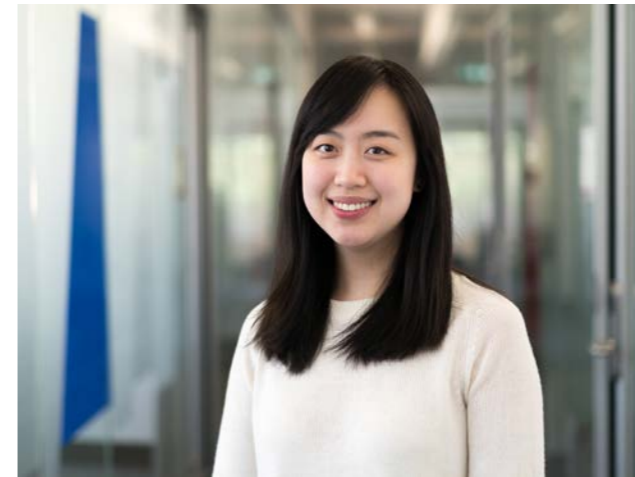
1. Undergraduate degree from a recognised institution with a 65% GPA or above.
2. Demonstrated academic success at third year university level in one of the following disciplines:
 

• Mathematics or Statistics	• Physics
• Computer Science	• Finance or Economics
• Information Systems	• Science
• Engineering	• Actuarial Science
3. A natural talent and passion for working with data
4. International students must demonstrate proficiency in English:
  - a. IELTS - minimum score requirement of 7.0 overall, with no individual score less than 6.5; or
  - b. TOEFL IBT - written score minimum of 24 and no band less than 21.
5. Interviews will be required for shortlisted applicants.

Ideally, you have completed a sequence of two or three undergraduate or graduate statistics courses that include probability theory and regression analysis, but demonstrated mathematical preparation and quantitative aptitude may suffice.

## Scholarships

Each year, a number of scholarships are offered for the Master of Business Analytics program. All applications received by the application closing dates are considered (no additional application required). Additional interviews may be requested to determine scholarship winners.



**'Coming out of an actuarial degree, I was keen for an opportunity to further enhance my quantitative skills and apply that in a business environment. My scholarship helped place myself in a much closer position to meet industry needs.'**

#### Danting Guo

A.T. Kearney Scholar  
Master of Business Analytics 2017



**'Coming from an engineering degree, I was seeking broader and more applied analytical skills. The Master of Business Analytics was particularly appealing because of its business focus and the strong connections within the industry. The BP Scholarship confirmed my choice to join MBS, and has allowed me to fully focus on the course.'**

#### Andrew Smith

BP Scholar  
Master of Business Analytics 2017

### The Forethought-Roberts Prize

Ken Roberts, Chief Executive Officer of Forethought Research, is proud to award the Forethought-Roberts Prize to the top student in the Master of Business Analytics program.

The \$5,000 prize and medal is awarded at the end of each year and recognises the outstanding skills and achievements of one student.

# Centre for Business Analytics

The Centre for Business Analytics was founded by Melbourne Business School in 2014 to address the worldwide demand for analytics research and knowledge. The vision of this multi-disciplinary centre is to 'Transform Decision Making through Business Analytics'. The Centre investigates how data – small or big – can drive organisational success through fact-based, data-driven, proactive decision making. With a mission to be a key catalyst in helping Australian businesses gain a distinctive competitive advantage through harnessing the trilingual insights of business, mathematics and technology; it achieves this by creating collaboration amongst students, faculty, and industry leaders to deliver both academic and business impact.

The central purpose of the Centre is to contribute broadly and deeply to knowledge and practice in analytics. To aid this purpose, we provide seed funding to research projects across the University of Melbourne. Topics of research include: developing new text-mining techniques, new security analytics methods, understanding the shareholder value of investments in analytics, developing new customer lifetime value models and optimising supply chains.

## Engagement with the business community

The Centre is guided by an Industry Advisory Board, from a cross-section of business, which brings diversity and depth of experience to developing and guiding the Centre's strategy. They are acknowledged leaders in driving the use and influence of business analytics in industry and government. Further, the Centre has a number of corporate partners who facilitate research; provide challenging business opportunities to students as part of the Analytics Lab module; and sponsor scholarships and prizes. It is through this depth of engagement that MBS can ensure the continued relevance of the Master of Business Analytics degree and the availability of meaningful learning opportunities.

### David Bowie

Vice President, SAS Australia & New Zealand  
BEC (Macquarie), Chartered Accountant

### Andrew Condron

Director, Insight and Analytics, Gravitas Limited  
BSc (Hons) (La Trobe), MBA (Melb)

### Jane Eastgate

Head of flybuys Analytics, Coles  
BEC (La Trobe)

### Tania Foster

Executive General Manager, CFO Corporate & Institutional  
Bank, National Australia Bank  
BCom (Deakin), MBA (Melb)

### Michael Gassmann

Head of Pricing & Analytics, General Insurance, Suncorp  
GroupBA (UNSW), MBA (AGSM)

### Jenny George

Chief Executive Officer, Converge International  
BSc (Hons) (Cant); PhD (Stanford)

### Emma Gray

Chief Data Officer, ANZ  
BA (DCU), MBA (Harvard)

### Dr Greg Hill

Global Head of Analytics, Brightstar Corporation  
BE (Hons) (Melb), BSc (Melb), PhD (Melb)

### Lawrence Jackson

Managing Director, Catalyst Management  
BCom (UNSW), MBA (Executive) (AGSM)

### Michele Levine

CEO, Roy Morgan Research  
BSc (Melb)

### Brooke Miller

Vice President Sales and Marketing, BP Asia Pacific  
BPlan&Des (Hons) (Melb), MLA (Melb), MBA (Melb)

### Elizabeth Moore

Director of Research, Insights & Analytics, Telstra  
BAGEc (UNSW), MComm (UNSW)

### Gideon Ratner

Executive & EVP - Global Markets, Quantum  
MBA (Melb), InfoSys (Hons) (Melb)

### Enrico Rizzon (Chair)

Partner, A.T. Kearney  
BE (Adelaide), MBA (Melb)

### Ken Roberts

Chief Executive Officer, Forethought Research  
BBus (Monash), MBA (Melb)

### Evan Stubbs

Associate Director, Boston Consulting Group  
BBus (Hons) (QUT)

### Antony Ugoni

Director, Global Matching & Artificial Intelligence, SEEK  
MSc (La Trobe)

# Corporate partners

## Founding Centre Sponsor



## Student Scholarships



## Premium Corporate Members



## Standard Corporate Members



## Minor Sponsor



# Events

The Centre for Business Analytics hosts regular events and an annual conference highlighting the impact of business analytics. In 2017 the following events were hosted by the Centre:

## Melbourne Business Analytics Conference

Students have the opportunity to network with and hear from leading analytics professionals and data-driven organisations, such as Google, Facebook, SAS, IBM, NAB, AFL and more.

## Melbourne Business Analytics Datathon

Teams of students and industry professionals compete for the \$25,000 prize in a showcase of how advanced analytics can transform decision making.

## CEO Speaker Series: Building technology to help the world decide wisely

Paul McCarney, CEO and Co-Founder of Data Republic, on the way businesses use, mobilize and value their data.

## Workshop: Demystifying data and analytics

Antony Ugoni (Director, Global Analytics and AI - SEEK) joins the CFBA to explore how you can use data and analytics to take the uncertainty out of business decisions.

## Panel Discussion: How to extract value from data and transform decision making

Speakers: Professor Ujwal Kayande, Director - Centre for Business Analytics; Antony Ugoni, Director, Global Analytics and AI - SEEK; and Emma Gray, Chief Data Officer, ANZ.

## Talking Data Speaker Series: How to fuel business growth from analytics at Facebook

Steve Lockwood, Facebook Australia's Head of Marketing Science Australia and New Zealand, on how to fuel business growth from analytics at Facebook.



## CAMPUS LOCATIONS

### CARLTON

200 Leicester Street  
Carlton VIC 3053  
Australia  
T: +61 3 9349 8400

### SYDNEY

Level 21, 56 Pitt Street  
Sydney NSW 2000  
Australia  
T: +61 2 9263 9600

### KUALA LUMPUR

Unit A-22-8 Menara UOA Bangsar  
Jalan Bangsar Utama, Bangsar  
Kuala Lumpur 59000 Malaysia

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