



# BUSINESS EXPLORER PROGRAM

## BIG DATA CHALLENGE

### BUSINESS EXPLORER PROGRAM

In 2019 Monash Business School is introducing the new Business Explorer Program which will run across three days, each held at a different Monash campus. Schools can choose to book students to attend one, two or three days.

### BIG DATA CHALLENGE

**DATE: FRIDAY 22 FEBRUARY**

**VENUE: MONASH UNIVERSITY, CLAYTON CAMPUS**

The popular Big Data Challenge will be the first event in the program. This year it will be a cross-disciplinary event to showcase the application of big data across different industries. The event will be run by Monash Business School in collaboration with the Monash faculties of IT and Science.

Big Data Challenge is designed for high-achieving students studying units 3 and 4 Mathematical Methods or Specialist Maths. Students will be placed in teams to consider what Melbourne might look like in 2050 through the lens of business analytics, actuarial science, applied mathematics and data science. Prizes will be awarded to the winning team of each workshop.

This event is a great way for students to explore the dynamic world of mathematics and the many study and career opportunities it can offer.

Places are limited and bookings are open now.

### BIG DATA CHALLENGE PROGRAM OVERVIEW

|                   |   |
|-------------------|---|
| 8.30am – 9.00am   | Student registration                              |
| 9.10am – 9:35am   | Welcome to the Big Data Challenge                 |
| 9.45am – 10.30am  | <b>Problem Solving Briefing</b>                   |
| 10.30am – 10.50am | Morning tea                                       |
| 10.50am – 12.30pm | <b>Problem Solving Challenge</b>                  |
| 12.30pm – 1.15pm  | Lunch   |
| 1.15pm – 2.00pm   | <b>Finalise Problem Solving Session</b>           |
| 2.10pm – 2.40pm   | Current Student Panel                             |
| 2.40pm – 3.10pm   | Industry Panel                                    |
| 3.10pm – 3.45pm   | <b>Solutions to the Problem Solving Challenge</b> |
| 3.45pm – 4.00pm   | Announcement of the winners                       |

*See detailed overview on page 2.*

### BUSINESS EXPLORER PROGRAM - WHAT'S NEXT?

- **Beyond Business** - Friday April 26 – Monash City (271 Collins St)

Aimed at year 11/12 students studying units 3 or 4 in one of Accounting, Economics and/or Business Management. It is also suitable for high achieving students interested in studying business and/or commerce in the future. Students will be challenged to apply problem solving skills to real-life business issues.

- **Commerce Connect** - Thursday September 26 – Caulfield campus

This event is for academically gifted Year 11 students undertaking a business or commerce subject. Students will explore the world of commerce via a series of masterclasses.

Places will fill up quick so please click [here](#) to express your interest in these future activities.

*\*Please note a maximum of five students can be enrolled into each Explorer Day Program per school.*

## BIG DATA CHALLENGE - ACTIVITY OPTIONS

Students will select one activity for the day from the following options. You will be able to nominate two preferences in the registration form.

### ACTUARIAL SCIENCE CHALLENGE

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Actuarial studies involve the use of mathematical, econometric and financial models to identify, analyse and quantify risk within a business, and then design and build systems for clients to manage risk.

With health technology improving all the time, Australians are living longer and longer. Life expectancy in 2016 was eighty-three years old, up from around 50, one hundred years ago! The average Australian will live to well over ninety years old by 2050.

Most Australians spend their working life setting aside savings for the purpose of retirement. With people living longer and longer, how will this impact society? How much will you need to save through your working life to pay for your retirement? Are there any alternatives? In this challenge, you will develop a model that tests out these questions.

### APPLIED MATHEMATICS CHALLENGE

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Operations research is a branch of mathematics that uses mathematical modelling and optimisation to determine the best plans or schedules.

With rapid population growth, Melbourne's traffic is becoming worse, with major implications for productivity. This challenge asks how we can reduce congestion in the Melbourne metropolitan area by using a mix of rail and road transport to efficiently collect and deliver goods. Where should terminals be established for transferring goods between trucks and trains? Given appropriate data about travel times and demand, students will be asked to consider how to model this problem mathematically and produce solutions with the optimisation software provided. Through the activity, students will learn some of the conceptual and practical aspects of optimisation modelling.

### BUSINESS ANALYTICS CHALLENGE

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With more data being generated than ever before, having the skills to transform raw findings into useful insights will become increasingly valuable. Business Analytics involves mathematical, statistical and computing skills to analyse complex data within a commercial context.

Climate change is consistently in the news and we must be energy-wise, for Melbourne's greener future. The consequences for Melbourne are more extreme high temperatures and drought. Individuals can play a big role in mitigating the extremes of the future, if they know how their actions contribute to the world as a whole. All of Melbourne households now have smart meters, which report the energy use every 30 minutes.

We will show you how to download the smart meter data for your household, wrangle it into shape, and then how to make plots to explore household energy use. What times of day does the household use the most energy, or time of year? Is it related to the weather or specific events? We will compare the usage across different households. All the tools used are open source software that will be available to you in the future.

### DATA ANALYSIS CHALLENGE

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Modelling for data analysis explores the statistical foundations that underline analytic aspects of data science and with visualisation; interactive data is now common in business, engineering, design and the social and physical sciences.

The data analysis challenge will advance students understanding of big data analysis modelling to effectively implement a challenge strategy for sustainability efforts in Melbourne 2050. Through a process of determining the data to identify prediction models, students will perform tests and consider different visualisation models to efficiently communicate their challenge concept.

## HOW TO REGISTER

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### REGISTER YOUR SCHOOL NOW

Places are limited to five students per school. When you register your students they will have an opportunity to rank which challenge they would like to participate in. The university will do their best to accommodate their request.

[Register your students online](#)

### REGISTRATIONS CLOSE

Monday, 18 February at 5.00pm

### INFORMATION FOR TEACHERS

Students do not require a teacher to accompany them. All Monash University staff have current Working with Children Checks. Should you wish to attend please indicate so on the registration form.

### PERMISSION FROM PARENTS/GUARDIANS

As photography may be taken on the day, we require parents to sign the photography permission form.

[Download the permission form](#)

### ATTENDANCE

Students must arrive and register for the event by 8.30am. Students who have not arrived by 9.00am will have their school notified.

### DRESS CODE

Students are able to wear appropriate casual clothes and will be provided with a Monash University T-shirt to wear on the day and keep after the event.

### CATERING

Complimentary morning tea and lunch will be provided on the day.

### LOCATION

The Big Data Challenge will be held at Monash University, Clayton campus. Detailed instructions on where to meet will be issued to students as part of our confirmation prior to the event

### QUESTIONS

If you have questions about the day, please email [katherine.cashmore@monash.edu](mailto:katherine.cashmore@monash.edu)