



Masterclass network

Mathematics Masterclass

2017-18



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Mathematics Masterclasses

Welcome to the Royal Institution Mathematics Masterclass Aberdeen series. Your place on the series is for every class in the programme and at the final class you will receive a certificate if you have attended regularly. If you miss a class then you must have a written explanation from your parent or guardian to ensure you can still receive your certificate.

1. Saturday 11th November 2017

10:00 – 12:30

Room N309, Sir Ian Wood Building
Robert Gordon University, AB10 7GE

“Coding Messages” **By Peter Todd, Arbroath High School**

In this session we will be looking at a range of codes from simple Caesar ciphers to solving a daily puzzle with 159 million million million different possible solutions that could help win a war.

2. Saturday 25th November 2017

10.00 – 12.30

Room N309, Sir Ian Wood Building
Robert Gordon University, AB10 7GE

“Xtra vs Sugar-free” **By Daniel Vogel, University of Aberdeen**

In 2016, Irn-Bru launched their new drink Irn Bru XTRA, which they describe as “excitingly new and refreshing”, but with “no sugar”. But can we be sure that this is not just marketing: the same old Irn Bru Sugar-free put in cans with a new label?

In this Masterclass, we will *do* actual science: we carry out a complete empirical study to answer a research question. We collect data and then analyse the data. The first part means blind tasting of Irn Bru and the second part is where the math comes into play.

3. Saturday 9th December 2017

10:00 – 12:30

Room N345, Sir Ian Wood Building
Robert Gordon University, AB10 7GE

**“Triangle to Measure the Earth”
By Donald Smith, University of Stirling**

How would you find the height of a tree without climbing it?
What are these white pillars for that you find on the tops of mountains?
How did sailors work out where they were in the middle of the ocean before the days of GPS? The answer to all these questions is found in the simple triangle. We shall build on our knowledge of triangles to see how this is possible. Don't forget your calculator!

4. Saturday 20th January 2018

10:00 – 12:30

Room N309, Sir Ian Wood Building
Robert Gordon University, AB10 7GE

**“Anyone for tennis (and maths)?”
By Adrian McBurnie, EnQuest**

"Anyone for tennis ... and maths? Britain's number one tennis player, the Olympic gold medallist and multiple grand slam champion Sir Andy Murray, plans to be competing in the Australian Open in Melbourne in late January. If we know the probability of him winning any individual point in a match, how can we determine the probability of him winning that match? In this masterclass we explore three mathematical ideas and see how we can combine them to answer this question."

5. Saturday 10th February 2018

10:00 – 12:30

Room N309, Sir Ian Wood Building
Robert Gordon University, AB10 7GE

“Graphical Explorers”

By Garry Brindley, Robert Gordon University

The talk will use graphs to solve a diverse range of problems including scheduling examinations, checking a postman's route, bridge crossings, calculating the optimum route for a delivery man and designing the best dartboard.

6. Saturday 24th February 2018

10:00 – 12:30

Room N309, Sir Ian Wood Building
Robert Gordon University, AB10 7GE

“The Physics of Blood Spatter – How Pythagoras can Solve a Murder”

By Aberdeen SPA Forensic Lab

The interpretation of blood patterns is critical in investigating violent crime, and the patterns of blood spatter at the murder scene and on a suspect's clothing can provide valuable investigative information on how a murder was committed, what sort of weapon was involved, how many blows may have been struck, and what role a suspect may have played – were they the assailant, an accomplice or are they entirely innocent? This talk explores the formation of blood droplets in blood spatter, why the knowledge of how to calculate the surface area and volume of spherical blood droplet can be important, the role of air resistance and momentum in how far spatter can travel, and why trigonometry and Pythagoras are so important in calculating where blood spatter was directed from at a crime scene.

7. Saturday 10th March 2018

10:00 – 12:30

**Room N311, Sir Ian Wood Building
Robert Gordon University, AB10 7GE**

**“Numbers All Around Us”
By Brenda Harden, Northfield Academy**

We all use and see numbers every day. Do we know about perfect numbers, Mersenne primes and Binary? Do we know about the Simpsons and numbers? We will explore some interesting facts about numbers and also introduce some magic on the way!

All talks are subject to change.

If you have any queries please do not hesitate to contact JennyTaylor during office hours on 01224 274194 or via email at jennytaylor@techfest.org.uk.

If you need to contact someone on the morning of the Masterclasses please phone
Jenny on 07817 745250



Transport

Regular buses run to and from the Garthdee campus. For more information, go to www.rgu.ac.uk/transport

SAT NAV Postcode

The Sir Ian Wood Building (at Riverside East) AB10 7QJ

Parking

You do not require a parking permit to park at RGU during Maths Masterclasses at the weekend. There is no weekend parking charge.