

# UQ-QAMT Senior Mathematics Day 22 November 2021

## St Lucia (Face-To-Face Program) (correct as of 11 October 2021)

Time	Stream 1	Stream 2	Stream 3
8.30am	<b>Registration and Refreshments</b> Venue: 63-348		
9am – 9.15am	<b>Welcome and UQ Update</b> Professor Joseph Grotowski UQ School of Mathematics and Physics Venue: 63-348		
9.15am – 9.25am	<b>QAMT Update</b> Queensland Association of Mathematics Teachers Venue: 67-348		
9.25am – 10.25am	<b>Statistics for General Mathematics</b> Dr Michael Bulmer, UQ School of Mathematics and Physics Venue: 63-348	<b>Mathematical Methods: IA2 and IA3 Discussion</b> Heather Meinecke, St Joseph's College Venue: 63-358	<b>Vectors and Matrices for Specialist Mathematics</b> Wenbo Li, UQ School of Mathematics and Physics Venue: 63-360
10.25am – 10.40am	<b>Morning Tea</b> 63-L3 Foyer		
10.40am – 11.40am	<b>Networks and Graph Theory for General Mathematics</b> Associate Professor Barbara Maenhaut, UQ School of Mathematics and Physics Venue: 63-348	<b>Statistics for Mathematical Methods</b> Dr Michael Bulmer, UQ School of Mathematics and Physics Venue: 63-358	<b>Specialist Mathematics: IA2 and IA3 Discussion</b> Heather Meinecke, St Joseph's College Venue: 63-360
11.40am – 12.40pm	<b>How I Learned to Love Pivoting between Learning Mathematics from Home and Learning in Person</b> Kristen Maus, Mount Alvernia College Venue: 63-348	<b>Integration Techniques in Mathematical Methods and Specialist Mathematics</b> Wenbo Li, UQ School of Mathematics and Physics Venue: 63-358	<b>Statistics for Specialist Mathematics</b> Dr Michael Bulmer, UQ School of Mathematics and Physics Venue: 63-360
12.40pm – 1.20pm	<b>Lunch</b> 63-L3 Foyer		
1.20pm – 2.20pm	<b>Year 10 Mathematics ATAR Preparation Class</b> Mikayla Mason, Roma State College Venue: 63-358		<b>Specialist Mathematics: Vector Calculus</b> Dr Sam Kault, UQ School of Mathematics and Physics Venue: 63-360
2.20pm – 3.10pm	<b>Reducing Students' Exam Stress</b> Nick Brooking, Peace Lutheran College Venue: 63-348		<b>Specialist Mathematics: Differential Equations</b> Dr Sam Kault, UQ School of Mathematics and Physics Venue: 63-360
3.10pm – 3.20pm	<b>Closing Remarks</b> Venue: 63-348		
3.20pm – 4.20pm	<b>Drinks and Networking</b> 63-L3 Foyer		



# Senior Maths Day (Abstracts)

## Stream 1

### Statistics for General Mathematics

Dr Michael Bulmer, UQ School of Mathematics and Physics

This session will discuss statistics and probability topics in General Mathematics and show examples of using them in teaching and assessments.

### Networks and Graph Theory for General Mathematics

Associate Professor Barbara Maenhaut, UQ School of Mathematics and Physics

We will discuss topic 2 and topic 3 in unit 4 of General Mathematics. Some issues that teachers encountered while teaching this unit will be addressed and there will be plenty of time for questions and discussion.

### How I Learned to Love Pivoting between Learning Mathematics from Home and Learning in Person

Kristen Maus, Mount Alvernia College

The session will include the showcase of the experience in using digital notebooks that are set up through online communication platforms to construct lessons and then teach them in a way that allows me to easily adapt to learning from home (with other benefits for students that are absent, cutting down on the amount of “follow up” teachers have to do). The presenter will show examples of how a year 7 class operates as a digital class using just a digital notebook, which allows the teacher to easily monitor students’ work. Digital notebooks also great for maths departments with beginning teachers or teachers who are new to the subject as it allows them to easily pick up a suite of resources to help reduce workload.

### Reducing Students’ Exam Stress

Nick Brooking, Peace Lutheran College

The session will include strategies in reducing students’ exam stress using both “long-range” and “on-the-day” strategies. The presenter has conducted action research and the presentation will share what the presenter have implemented with his classes in preparing students for the new Queensland External Examinations, the English GCSE and A-level exams.

## Stream 2

### Mathematical Methods: IA2 and IA3 Discussion

Heather Meinecke's Joseph's College

Our understanding of the content we should teach is shaped by our experiences, in particular what we have been taught, what is presented in the text book we use, and what we have been in the habit of teaching. However, in order to best prepare students for the External assessment, the syllabus document should be first and foremost in our minds as the definitive statement of the knowledge we should be transferring in our classes. The Mathematical Methods General Senior Syllabus 2019 is complex and nuanced, and over time our understanding of what it is saying can develop. In this session we will reflect on how our individual (and collective understanding) of the syllabus has developed as we have delivered the course to two full cohorts of students. Examples from school's actual assessment items (as shared via google drive) will be discussed to refine and improve our understanding of the intended content of Methods.

### Statistics for Mathematical Methods

Dr Michael Bulmer, UQ School of Mathematics and Physics

This session will discuss statistics and probability topics in mathematical Methods and show examples of using them in teaching and assessments.

### Integration Techniques in Mathematical Methods and Specialist Mathematics

Wenbo Li, UQ School of Mathematics and Physics

We will discuss key integration techniques covered in Mathematical Methods and Specialist Mathematics, including integration by recognition, integration by substitution, integration by parts and integration with partial fraction. The session will also discuss examples of using them in teaching and assessments.

### Year 10 Mathematics ATAR Preparation Class

Mikayla Mason, Roma State College

The session would focus on teaching a 10/10A Mathematics ATAR prep class. It would focus not only on how to teach concurrently (General Prep and Methods Prep) but also with limited access to technology. The session would also focus on what skills the students need in order to succeed in senior studies and how we incorporate these.

## Stream 3

### Vectors and Matrices in Specialist Mathematics

Wenbo Li, UQ School of Mathematics and Physics

We will discuss Topic 2 in the Unit 3 of Specialist Mathematics, particularly around lines and planes and their connections to system of linear equations. The session will also show examples of using them in teaching and assessment.

### Specialist Mathematics: IA2 and IA3 Discussion

Heather Meinecke's Joseph's College

Our understanding of the content we should teach is shaped by our experiences, in particular what we have been taught, what is presented in the text book we use, and what we have been in the habit of teaching. However, in order to best prepare students for the External assessment, the syllabus document should be first and foremost in our minds as the definitive statement of the knowledge we should be transferring in our classes. The Specialist Mathematics General Senior Syllabus 2019 is complex and nuanced, and over time our understanding of what it is saying can develop. In this session we will reflect on how our individual (and collective understanding) of the syllabus has developed as we have delivered the course to two full cohorts of students. Examples from school's actual assessment items (as shared via google drive) will be discussed to refine and improve our understanding of the intended content of Specialist.

### Statistics for Specialist Mathematics

Dr Michael Bulmer, UQ School of Mathematics and Physics

This session will discuss statistics and probability topics in Specialist Mathematics and show examples of using them in teaching and assessments.

### Specialist Mathematics: Vector Calculus

Dr Sam Kault, UQ School of Mathematics and Physics

This session will discuss vector calculus covered in Topic 2 in Unit 3 of Specialist Mathematics, particularly around projectile and circular motion. The session will also show examples of using them in teaching and assessment.

### Specialist Mathematics: Differential Equations

Dr Sam Kault, UQ School of Mathematics and Physics

The session would focus on Topic 2 of Specialist Mathematics, particularly around differential equations and its corresponding slope fields as well as the applications to differential equations in modelling motion – including simple harmonic motion. The session will also show examples of using them in teaching and assessment.