2023 *LEARN.ENERGISE.CONNECT* VICTORIA PROGRAM

When: Wednesday 29th November   **Where: Hyatt Place Melbourne Caribbean Park - 38 Dalmore Drive,**

8:00- 8:25 : ARRIVAL   **8:30-8:45: WELCOME ADDRESS**

8:55 - 10:15   SESSION 1

1A: Intro to TI-Nspire™ CX II CAS Technology & Available Resources- Presenters: Roger Wander & Brian Lannen
New to TI-Nspire™ CX II CAS technology? Wondering how you and your students are possibly going to learn to use it with confidence? Well, this is the workshop for you.Your presenters have planned a session that goes at a pace you're comfortable with. They will reveal how TI-Nspire links numerical, algebraic and graphing aspects of mathematical problems in a dynamic way, promoting student exploration of concepts. They'll also show you where you can access a vast array of helpful tutorials created by Australian and international TI presenters to continue your learning well beyond today's session. Let's start!

1B: The Notes Application, Widgets and more! Presenters: Chris Ireson and Craig Browne
In this session, participants will be shown how to use the functionality of the TI-Nspire™ CX CAS technology and the versatility of the Notes Application to create an amazing, easy to use resource known as a Widget. Widgets can be used to explore and understand mathematical concepts and principles. Students can easily pre-prepare their own Widgets to efficiently solve typical exam questions. Participants will learn how to build and save their own Widgets and be provided with a number of Widgets to add to their 'MyWidgets' folder. This session will open up possibilities in all areas of the mathematics curriculum including VCE General, Methods and Specialist Mathematics.

1C: Transformation Matrices & 3D Vectors: approaches to teaching new topics in Specialist Mathematics- Presenters: Bozenna Graham and Neale Woods
In the first part of this session, explore the fascinating world of transformation matrices in this hands-on workshop. From simple applications how to transform a point, shape and curve, to more in-depth analysis of invariant points and lines, including the significance of the determinant. In the second part of the session, the focus will be on using TI-Nspire™ technology to explore the cross product, vector planes and normals to a plane. Examples and ideas of investigations and explorations will be presented to make this topic more accessible to students.

10:15 - 10:40   MORNING TEA

10:45 - 11:55   SESSION 2

2A: Functions and Algebra- Presenter: Shelley Pendlebury
A variety of activities will be used to demonstrate how TI-Nspire™ CX CAS technology can be used to explore algebra and functions. This session will highlight essential CAS skills students need in order to maximise their understanding of various functions and algebraic concepts; which will contribute to their performance in investigations and assessments. Participants will walk away with ready-to-use activities suitable for years 9 to 12.

2B: Probability & statistics enriched in Maths Methods & Specialist Maths- Presenter:Frank Moya
In this hands-on session, participants will explore ways in which TI-Nspire™ technology can be used in Maths Methods and Specialist Maths to enrich the teaching and learning of the 'Data analysis, probability and statistics' area of study. The integrated set of TI-Nspire applications will be used to solve a variety of problems, and to help visualise key concepts - including the notion of a sampling distribution for sample means (Specialist Maths) and sample proportions (Maths Methods), and the associated confidence intervals.

2C: Introduction to Python- Presenters: Sanjeev Meston
This session will focus on Introducing the session participants to one of the most commonly and easy to use Coding languages i.e. Python. Python now is extensively used by teachers and students to enhance their knowledge of Computational Mathematics, Algorithmic thinking, and Pseudo coding. Python now also is one of the most extensively and widely used programming languages for Artificial Intelligence, Data Science and Machine Learning. The built in Python Application with a range of modules in the TI-Nspire CAS technology is an ideal tool to commence coding.

12:00 - 13:10   SESSION 3

3A: Investigation Task- Probability & Statistics- Presenters: Brian Lannen & Frank Moya
This session will offer examples of probability problems that are ideally suited for investigation across the secondary year levels, including the 'the collector's problem' and Bertrand's box paradox. Participants will have the opportunity to explore and engage with each problem through intuition, simulation and calculation. Each problem could be used as the basis for a Mathematical Methods Unit 1/2 Investigation task. However, at a basic level, each problem is accessible to junior students and can be used to meet the F-10 curriculum requirement to "conduct simulations, using digital tools to determine probabilities and describe results (VC2M8P03).

3B: TI-Nspire™ CAS and Mathematical Methods Examination 2 2023- Presenter: Raymond Rozen & James Mott
In this session we will look at a selection of questions from the 2023 VCAA Mathematical Methods Examination 2, in particular questions relating to the revised study design. We will explore how TI-Nspire can be used to perform the corresponding operations and consider how these affordances and constraints can inform future teaching practice. Users of TI-Nspire can benefit and save time in recording solutions and checking answers to multiple choice and parts of extended response questions, by using pre-prepared notes pages and some lesser known commands.

3C: Recursion & Networks- Presenters: Neale Woods & Craig Browne
This first part of this session will cover the various ways TI-Nspire™ technology can be used to generate recursive sequences. The second part of the session will be spent going through a selection of Networks questions from past Further Maths Examinations, a topic which is now part of the VCE General Mathematics Study Design.

| 13:15 - 14:00 | LUNCH |
| 14:05 - 15:15 | SESSION 4 |

4A: Building experience and confidence with Pseudo Code- Presenters: Peter Fox and Sanjeev Meston
Would you like your students to ace pseudo-coding exam questions? Accessible applications of pseudo-code make it possible to create more time in your course outline, reinforce student understanding of selected topics and have some fun along the journey. TI-Nspire CX CAS technology offers a range of applications to help understand, test and execute pseudo-code and algorithmic thinking. Through a series of judiciously procured examples, participants will build their confidence in this area of the study design and see how pseudo-coding can be used to open a world of possibilities.

4B: Investigation Task - Space, Geometry & Measurement- Presenters: Craig Browne & Roger Wander
The Australian Curriculum: Mathematics places a notable emphasis on the role of investigations as valuable learning tasks. A delightful example of a Space, Geometry and Measurement task incorporating TI-Nspire™ CAS technology to promote student learning will be shared. This investigation has been designed to be accessible to students with varying mathematical content knowledge and abilities, and can be adapted to suit varying year levels. Join us as we explore the Geometry, Lists & Spreadsheet and other TI-Nspire applications that empower your students to truly investigate a set of realistic mathematical situations.

4C: Computational Thinking 7 - Presenter: Angel Wong
In our rapidly evolving technological landscape, the demand for critical thinking, complex problem-solving, and proficiency in harnessing computing power has never been greater. This session is designed to dive deep into the significance of computational thinking as an integral component of the Australian Curriculum Version 9. We will explore methods, tools, and strategies aimed at empowering educators to nurture computational thinking skills among middle and early high school students.

| 15:20 - 16:30 | SESSION 5 |

5A: General Mathematics Exam Preparation – solutions & resources- Presenters: Angel Wong & Brian Lannen
Join us to unravel keys to success in VCAA General Mathematics Examinations. We will start with a demonstration of suggested solutions to selected questions on the 2023 papers. Attendees will learn practical strategies and build knowledge of how to leverage TI-Nspire technology, including free online resources to empower students in their journey towards success in VCAA General Mathematics.

5B: Investigation Task - Number & Algebra- Presenter: David Tynan
In this workshop, participants will engage with a number of technology active investigation tasks suitable for Years 7-10 mathematics classroom, focussing on Number and Algebra topics.

5C: TI-Nspire™ CX II CAS and Specialist Mathematics Examination 2 2023 Presenters: James Mott & Raymond Rozen
In this session we will look at a selection of questions from the 2023 VCAA Specialist Mathematics Examination 2, in particular questions relating to the revised study design. We will explore how TI-Nspire can be used to perform the corresponding operations and consider how these affordances and constraints can inform future teaching practice. Users of TI-Nspire can benefit and save time in recording solutions and checking answers to multiple choice and parts of extended response questions, by using pre-prepared notes pages and some lesser known commands.