The University of Auckland

TIME 2000

AUT
AUCKLAND UNIVERSITY OF TECHNOLOGY

AN INTERNATIONAL CONFERENCE ON TECHNOLOGY IN MATHEMATICS EDUCATION

PROGRAMME AND ENROLMENT FORM

DECEMBER 11th-14th, 2000
AUCKLAND, NEW ZEALAND

CASIO®

Mail To: TIME 2000, Centre for Continuing Education
The University of Auckland, Private Bag 92019
Auckland, New Zealand or Fax to +64 9 3737419

TIME 2000	
Tax Invoice: GST N0: 10-010-381	**C2707**

....
Title First name Surname

Institution .....

.....

Institution Postal Address .....

.....

Phone ..... Fax.....

Email .....

All Fees in $NZ and inclusive of GST

A - Registration:

	By 24 Oct	After 24 Oct	
☐ Full	$450	$500	$
☐ Single Day	$225	$250	$
Day			
☐ Student	$150 Full		$
☐ Student Day	$75 Single Day		$

TOTAL A: .....

B - Accommodation

☐ O'Rorke Hall ☐ Railway Campus Standard Studio
☐ Railway Campus Large Studio

Date In..... Date out .....
Number of nights .....
Number of nights x $59 (O'Rorke Hall)
Number of nights x $77 or $83 (Railway Campus)

TOTAL B: .....

C - Optional Extras (Partners/Guests. Day/Student Regs)

☐ Conference Dinner $65
☐ Conference Reception $25
☐ Must See Three Tour $69 Day .....
☐ Gannets & Volcanics of the West $69 Day .....

TOTAL C: .....
☐ Interested in tours on other days

TOTAL PAYMENT A + B + C: .....

D - Special Interest Group Meetings
I suggest the following topic(s)

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PAYMENT (inclusive of GST)

☐ Cheque (payable to the University of Auckland)
☐ Please Invoice (New Zealand only)
or debit ☐ Visa ☐ Mastercard

Account Number .....

Expiry Date ..... Signature .....

TIME 2000

AN INTERNATIONAL CONFERENCE ON TECHNOLOGY IN MATHEMATICS EDUCATION

DECEMBER 11th - 14th, 2000
AUCKLAND, NEW ZEALAND

The conference committee, on behalf of The University of Auckland and Auckland University of Technology would like to invite you to attend TIME 2000.
The conference will focus upon the uses of technology in the following areas of mathematics and statistics:

- Teaching
- Learning
- Assessment
- Distance Education
- Research
- Teacher Development
- Problem Solving
- Curriculum
- Web-based Resources

Participants will discuss, present, explore and exchange information using:

- presented papers
- hands-on workshop sessions
- panel/group discussions
- special interest groups
- displays of books, materials and technologies

The sessions will cover a broad range of topics, both theoretical and practical, and while relevant to educators at all levels, there will be a secondary and tertiary emphasis. Attention is drawn to the Wednesday of the conference, which has been arranged with streams particularly relevant to school classroom practice. School teachers will find this day particularly valuable. The conference has attracted a wide range of quality international presentations and includes speakers from the UK, USA, Germany, Japan, Singapore, Hong Kong, Finland, Australia and New Zealand. We are confident that the programme will provide a stimulating and productive environment.

Conference Publications
The proceedings, available upon registration at the conference, will be in two distinct parts:
(i) refereed full papers
(ii) other papers submitted (e.g. supporting workshops)
Descriptions of workshops etc. will be published on the conference web page and in the conference pack given to all participants on registration.

Provisional Programme **Subject to amendment**

KEY FP = Full Paper SC = Short Communication W = Workshop
NB: The name that appears on the programme is not necessarily the presenter.

TIME	MONDAY 11 DECEMBER 2000
3:30 -5:30	*REGISTRATION AT THE UNIVERSITY OF AUCKLAND, MATHS/PHYSICS BUILDING, 38 PRINCES STREET, AUCKLAND*
6:00	*POWHIRI FOLLOWED BY WELCOME RECEPTION AT THE UNIVERSITY OF AUCKLAND MARAE*

TIME	TUESDAY 12 DECEMBER 2000						
9:00 – 10:00	*JIM KAPUT – Implications of the Shift from Isolated Expensive Technology to Connected, Inexpensive, Ubiquitous and Diverse Technologies*						
10:00 – 10:30	**MORNING TEA at the UoA**						
10:30 – 11:10	J Appleby **FP**	K Brauer **SC** T deAlwis **SC**	C Hoyles & L Healy **FP**	M Cavanagh & M Mitchelmore **FP**	J Bradley & M Kemp **SC** T MacLaurin & L. Loi **SC**	K Lipson & M McDowall	J Anderson
11:15 – 11:55	L Wood & G Smith et al **SC** T Erickson & W Finzer **SC**	A Graham & M Thomas **FP**	L Mustoe **FP**	D Hewitt **FP**	D Tynan & J Dowsey **FP**	**W**	**W**
12:05 - 1:00	*BETH CHANCE – A Model of Classroom Research in Action: Using Assessment to Improve Students' Reasoning*						
1:00 – 2:00	***LUNCH at the UoA***						
2:00 – 3:00	*DAVID TALL - Technology and Versatile Thinking in Mathematics* SPONSORED BY THE BRITISH COUNCIL						
3:15 – 4:00	J Bookman **W**	P Watson **W**	G Oates **W**	C McRobbie R Jamieson-Proctor et al **FP**	L Leinonen & A Sakkinen **W**	H Peterson & P Maclaren **W**	D Erasmus **W**
4:00 – 4:30	**AFTERNOON TEA at AUT**						
4:30 – 6:00	S Young **W**	Y Hong & M Thomas **W**	T deAlwis **W**	N Sanif **W**	R Peck **W**	N Binnie **W**	T Erickson **W**
6:00	**HAPPY HOUR!**						

TIME	WEDNESDAY 13 DECEMBER 2000							
9:00 – 10:00	*PAM BISHOP – A Strategy for the Use of Technology to Enhance Learning and Teaching in Mathematics, Statistics and OR* SPONSORED BY THE BRITISH COUNCIL							
10:00 – 10:30	**MORNING TEA at the UoA**							
10:30 – 11:10	S Norton et al **FP**	W Middleton & P Bishop	Y Hong & M Thomas **FP**	T Wong & Y Lai **FP**	C Hoyles & R Noss **FP**	D Smith CASIO	L Ball, G Asp D Tynan & J Dowsey	W Morony
11:15 – 11:55	P Forster & U Mueller **FP**	**W**	S Higgins & D Moseley **FP**	T Cooper G Kidman et al **FP**	P Swan & L Sparrow **FP**	**W**	**W**	**W**
12:00 - 1:00	**LUNCH at the UoA**							
1:00 – 2:00	*BARRY KISSANE – Technology and the Curriculum: The Case of the Graphics Calculator* SPONSORED BY CASIO							
2:15 – 3:00	K Stacey G Asp & B McRae **FP**	W Middleton **SC** D Tynan & J Dowsey **SC**	S Norton et al **FP**	D Gronn **FP**	J Olive **FP**	R Lorimer & S Klymchuk **W**	R Averill **W**	K Lipson & M McDowell **W**
3:00 – 3:30	**AFTERNOON TEA at AUT**							
3:30 – 5:00	D Butler **W**	R Gray **W**	K Spooner **W**	K Woodruffe **W**	B Kissane **W**	D Smith CASIO **W**	J Cook **W**	L Ball, G Asp D Tynan & J Dowsey **W**
5:00	**FINISH**							
7:30	**CONFERENCE DINNER SPONSORED BY CASIO – VENUE: Royal New Zealand Yacht Squadron**							

TIME	THURSDAY 14 DECEMBER 2000						
9:00 – 10:00	*RICHARD LESH – What Mathematical Abilities are Most Needed for Success Beyond School in a Technology Based 'Age of Information' ?*						
10:00 – 10:30	**MORNING TEA at the UoA**						
10:30 – 11:30	**Discussion/Special Interest Groups**						
11:35 – 12:15	G Kidman & R Nason **FP**	R Dengate & S Harvey **SC** W Crowe & E Murphy **SC**	Y Hirano **SC**	J Olive & K Leatham **FP**	J Vincent & B McRae **FP**	E Hamilton **FP**	D Butler **W**
12:30-1:15	**LUNCH at the UoA**						
1:15 – 2:15	*DAVID RYAN – Mathematics in Action: Some New Zealand Examples*						
2:30 – 4:00	R Cameron **W**	J Olive **W**	A Harradine **W**	D Gronn **W**	W Morony **W**	A Neill **W**	I McLean **W**
4:00 – 4:30	**AFTERNOON TEA at UoA**						
4:30 – 5:00	**WRAP–UP / DISCUSSION / PLENARY SPEAKERS**						
5:00	**FINISH**						

Conference Venues
Mathematics and Physics Building, The University of Auckland, 38 Princes St, Auckland 1, and the Science and Technology Building, Auckland University of Technology, St Paul St. The opening event will be a Powhiri (Maori Welcome) and Reception at 6pm on Monday 11th December, to be held on the University of Auckland Marae.

Invited Speakers
Professor Jim Kaput, Professor of Mathematics Education, University of Massachusetts, USA.
Dr Beth Chance, Assistant Professor of Statistics, California Polytechnic State University, USA.
Professor David Tall, Mathematics Education Research Centre, University of Warwick, U.K.
Pam Bishop, Assistant Director, Learning and Teaching Support Network, Centre for Mathematics, Statistics and Operational Research, The University of Birmingham, U.K.
Dr Barry Kissane, Senior Lecturer in Education, Australia Institute of Education, Murdoch University, Western Australia.
Professor Richard Lesh,
R.B. Kane Distinguished Professor, Director School Mathematics and Science Centre, School of Education, Purdue University, USA.
Professor David Ryan, Professor of Operational Research, Head of Department Engineering Science, University of Auckland, NZ.

Organising Committee
Auckland University of Technology:
Murray Black (Co-Convenor), Margaret Parker, Neil Binnie, Jenifer Marshall
The University of Auckland
Mike Thomas, (Co-Convenor), Pam Hurst, Moira Statham, Ye Yoon Hong

Fees (all in $NZ and inclusive of GST)
A. Registration
Full: Paid Prior to 6 October $450
Paid After 6 October $500
Fee includes teas, lunches, Reception, Dinner, Conference Proceedings
Single Day:
Paid Prior to 6 October $225
Paid After 6 October $250
Fee includes teas, lunch, Conference Proceedings. Excludes Reception, Dinner.
Student: $150 Full, $75 Single Day
Fee excludes Reception, Dinner. Proof of full-time student status required.

B: Optional Extras (Partners/Guests or Day/Student Registration)
Conference Dinner: $65
Conference Reception: $25

C: Optional Extras (all categories of registrant)
Auckland Tours
i) Auckland Must See Three Tour (Monday 11 or Friday 15) - Visit to the Sky Tower, tallest building in Southern Hemisphere; Boat Cruise through Harbour to Devonport, Rangitoto Island; visit to Kelly Tarlton Antarctic Encounter and Underwater World. Departs 8.45am Returns 1.45pm. Cost: $69
ii) Gannets and Volcanics of the West (Monday 11 or Friday 15) - travel from the City through the bush clad Waitakere Ranges to the West Coast - outstanding views of Tasman Sea, large gannet colony and ancient volcanic rock formations. Spectacular scenery. Tours of small groups led by a geologist.
Departs 1.00pm Returns 4.30pm. Cost: $69

Accommodation:
The following accommodation options can be booked on the attached enrolment form:
O'Rorke Hall, a quality student Hall of Residence, a short walk from the conference venue. Single Rooms only. Shared facilities. NZ$59 per night bed and breakfast.
The Railway campus, good quality student accommodation in the heritage listed former Auckland Railway Station. Studios, self catering, own facilities. NZ$77 per night per room double (standard) NZ$83 a night per room twin (large)
If you wish to follow up any of the following suggested hotel options you should make your booking directly with the hotel.
1st Class Hotel
Hyatt Regency Hotel
Ph: +64 9 366 1234 Fax: +64 9 303 2932
Standard Hotel
Copthorne Hotel Anzac Avenue
Ph: +64 9 379 8509 Fax: +64 9 379 8582
Budget Hotel
Park Towers Hotel
Ph: +64 9 309 2800 Fax: +64 9 302 1964

Social Programme
The Conference will open with a Powhiri (Maori Welcome) and Reception and a Conference Dinner will be held on Wednesday night. Participants' partners/guests are welcome at these events (Fee will apply).

Tours/Partners Programme
2 Auckland Tours may be booked on Enrolment Form.
If you are interested in tours on other days please indicate on Enrolment Form.

Inquiries/Enrolment
Send enrolment form to, or contact
Marie-Thérèse Millet
Centre for Continuing Education
The University of Auckland
Private Bag 92019
Auckland, New Zealand
Fax: +64 9 373 7419
Phone: +64 9 3737599 ext 7619
Email: mt.millet@auckland.ac.nz

Conference Website
Announcement and updates will be available:
http://www.math.auckland.ac.nz/TIME2000

PROGRAMME DETAILS

PLENARIES

Pam Bishop, Neville Davies (UK), A strategy for the use of technology to enhance learning and teaching in mathematics, statistics and OR
David Tall (UK), Technology and versatile thinking in mathematics
Jim Kaput (USA), Implications of the shift from isolated expensive technology to connected, inexpensive, ubiquitous and diverse technologies
David Ryan (NZ), Mathematics in action: Some New Zealand examples
Barry Kissane (Australia), Technology and the curriculum: The case of the graphics calculator
Beth Chance (USA), A model of classroom research in action: Using assessment to improve students' reasoning
Richard Lesh (USA), What mathematical abilities are most needed for success beyond school in a technology based *Age of Information*?

WORKSHOPS, FULL PAPERS, SHORT COMMUNICATIONS (ALPHA BY AUTHOR)

J. Anderson, The swinging pendulum: data analysis and the graphics calculator
J. C Appleby, What can we learn from computer-based diagnostic testing?
R. Averill, Uses of technology in New Zealand year 9 mathematics schemes of work and programmes
L. Ball, G. Asp, D. Tynan, J. Dowsey, Integrating CAS into the middle school algebra curriculum
L. Ball, G. Asp, D. Tynan, J. Dowsey, Integrating dynamic geometry software in the middle school mathematics curriculum
N. Binnie, Data analysis using Minitab
J. Bookman, Understanding how students learn using web-based modules
J. Bradley, M. Kemp, Teaching undergraduate statistics: Graphics calculators versus computer packages
K. Brauer, Differential equations in higher education – the benefits of computer algebra systems
D. Butler, How to add that IT sparkle in the mathematics classroom: Getting the most out of Word, the internet and spreadsheets
D. Butler, Adding a sparkle to classroom teaching: Introducing Autograph
R. Cameron, The Learning As We Go student newsletter
M. Cavanagh, M. Mitchelmore, Graphics calculators in mathematics learning: Studies of student and teacher understanding
J. Cook, Calmat: Pre-prepared or DIY?
T. Cooper, R. Nason, G. Kidman, R. Jamieson-Proctor, Year 8 students' progression on an integrated learning system
W. Crowe, E. Murphy, Supporting distance mathematics students
T. de Alwis, Computer algebra systems as visualisation and experimentation tools in mathematics education
T. de Alwis, Teaching mathematics with mathematical animations
R. W. Dengate, S. Harvey, Convergence of technologies, investigational pedagogy and social constructivism
D. Erasmus, A computerised mathematics worksheet
T. E. Erickson, Introduction to FATHOM™ data analysis and statistics software
R. Gray, Alternative approaches to solving quadratic equations with the Casio CFX-9850G graphic calculator.
T. E. Erickson, W. F. Finzer, Software design "with learning in mind": One road leads to FATHOM™
P.A. Forster, U. Mueller, Optional use of graphics calculators in applied questions for high-school calculus
A. Graham, M. O. J. Thomas, A graphic calculator approach to understanding algebraic variables
D. Gronn, Mathematics and computers - the early years
E. R. Hamilton, Mathematics education and learning technology research program trajectories of the national science foundation (USA)
A. Harradine, It is a poor trades person who blames their tool
D. Hewitt, Designing software to allocate appropriate demands on memory and awareness
S. E. Higgins, D.V. Moseley, Teachers' thinking about information technology and learning: Beliefs and mathematical outcomes
Y. Hirano, An analysis of "mathematical museums" and mathematics education
Y. Y. Hong, M. O. J. Thomas, Algebra and calculus with a super–calculator

Y. Y. Hong, M. O. J. Thomas, Super–calculators and conceptual understanding of the Newton–Raphson method
C. Hoyles, L. Healy, From construction to deduction: Potentials and pitfalls of using software
C. Hoyles, R. Noss, Changing the rules: Children, creativity and computer games
G. C. Kidman and R. Nason, When a visual representation is not worth a thousand words
B. Kissane, Probability, statistics and the graphics calculator
L. M. Leinonen, A. T. Säkkinen, Distance learning of the basics of statistical methods
K. Lipson, M. McDowall, Bringing real world statistical practice into the classroom using the graphics calculator
K. Lipson, M. McDowall, Supporting the teaching of introductory statistics at university using the internet
L. Soh Loi, T. L. MacLaurin, Using technology to support teaching statistics to a large class of business students
R. Lorimer, S. Klymchuk, The user-friendly graph drawing package OMNIGRAPH
I. McLean , Frameworks for implementing ICT into the Middle School Mathematics Program – an example that works!
C. McRobbie, R. Nason, R. Jamieson-Proctor, S. Norton, T. Cooper, The influence of computer-rich learning environments on mathematics achievement
W. Middleton, Developing nationally based mathematical software, the UKMCC (Mathwise) project
W. Middleton, P. Bishop, MATHWISE in teaching, learning and assessing
W. Morony, InterActive! by name…interactive by nature
W. Morony, Interactivity in teacher support — InterActive! in focus mathematics
L. R. Mustoe, Teaching mathematics to engineers in the computer age
A. Neill, An introduction to the Assessment Resource Banks (ARBs) and their diagnostic potential.
S. J. Norton, T. J. Cooper, C. J. McRobbie, Can a new-generation intelligent computer-assisted learning package compete with the "school mathematics tradition" in enhancing algebra performance?
S. J. Norton, C. J. McRobbie, T. J. Cooper, Computer avoidance in a mathematics staff: Influences of beliefs and cultural press
G. Oates, Calculus and the graphics calculator
J. Olive, Constructing fraction knowledge in a Java-based computer microworld
J. Olive, Implications of using dynamic geometry technology for teaching and learning
J. Olive, K. Leatham, Using technology as a learning tool is not enough
R. Peck, Teaching a web based statistics course
H. Peterson, P. Maclaren, Statistics on-line
N. I. Sanif, net@matics: Internet collaboration in mathematics education
D. Smith, (Casio Speaker), A smorgasbord of mathematical interactions with the graphic calculator.
D. Smith, (Casio Speaker), A portable , personal mathematical assistant: The FX ALGEBRA 2.0 G C. A 'CAS' in your pocket!
K. Spooner, Excel as a collaborative classroom learning tool
K. Stacey, G. Asp, B. McRae, Goals for a CAS-active senior mathematics curriculum
P. Swan P, L. Sparrow, Calculator technology can offer sensible choice in computationD.
D. Tynan, J. Dowsey, Choosing models to fit the data and the situation
D. Tynan, J. Dowsey, Tool or super tool?
J. Vincent, B. McCrae, Mechanical linkages, dynamic geometry software and mathematical proof
P. Watson, Narrowing the gap between calculators and computers: The Casio Algebra FX2
Tak-wah, Wong, Yiu-chi, Lai, Teaching primary mathematics in Hong Kong: From tradition to vortals
L. N. Wood, G. H. Smith, G. L. Cohen, N. A. Nicorovici, A discreet approach to discrete mathematics: an interactive software package
K. E. Woodruffe, The free Linux operating system and associated software.
S. Young, Questionnaire analysis