

ASSOCIATION FOR MATHEMATICS EDUCATION OF SOUTH AFRICA



25th Annual National Congress
1st – 5th July 2019

*Developing Deep Mathematical Thinking through
Mathematics Teaching*



Edgewood Campus, Pinetown
KwaZulu-Natal

FINAL ANNOUNCEMENT

FINAL ANNOUNCEMENT AND CALL FOR PAPERS

You are invited to the 25th Annual National Congress of the Association for Mathematics Educators of South Africa (AMESA) and we request that you submit contributions on the theme:

Developing Deep Mathematical Thinking through Mathematics Teaching

VENUE

**Edgewood Campus, Pinetown
KwaZulu-Natal**

CONGRESS THEME

Developing Deep Mathematical Thinking through Mathematics Teaching

The 21st Century has thus far been characterised by various changes and innovations, namely social, economic and technological. The issue of these changes and innovations has been acknowledged and hence, we have a constant, and sometimes radical, adaptation of the school curriculum. In this environment of change and innovation we are all attempting to adjust our teaching, so that we and our learners will not be left behind. Mathematics education is ideally positioned to engage with these changes and innovations. It is in this spirit that we host a conference that will expose our mathematics teachers, in a practical way, to some of these changes and innovations.

The AMESA KZN invites you to the annual National Congress. In an attempt to make a useful contribution towards the teaching and learning processes, the conference will address issues that are pertinent to all teachers in mathematics classrooms. The theme of the conference is “Developing Deep Mathematical Thinking through Mathematics Teaching”. Stacey (2007: 39) listed three important issues that one needs to consider when engaging with mathematical thinking. First, mathematical thinking is an important goal of schooling. Second, mathematical thinking is important as a way of learning mathematics and finally mathematical thinking is important for teaching mathematics. The 2019 congress submissions and contributions aims to enhance the argument that deep mathematical thinking can contribute to effective classroom teaching.

SUB-THEMES FOR THE CONFERENCE

1. Developing deep mathematical thinking through mathematics teaching using technology based pedagogies.
2. Developing deep mathematical thinking through mathematics teaching using indigenous knowledge and decolonisation.
3. Developing deep mathematical thinking through mathematics teaching using games, problem solving and investigations.
4. Developing deep mathematical thinking through mathematics teaching within Higher Education.
5. Developing deep mathematical thinking through research in mathematics education.

PROGRAMME

The congress participants include an exciting array of mathematics teachers and lecturers, materials and technology developers, national and international researchers and government advisers, presenting on policy directions and research findings, and sharing teaching ideas and materials.

The programme will include:

1. Pre-congress workshops (Sunday 30th June, 14:00 –17:00)

These details are to be confirmed. Please check the AMESA Congress 2019 website for details closer to the commencement of Congress 2019

2. Plenary addresses by invited speakers, including overseas speakers.

Prof Judit Moscovitch (Overseas speaker from the University of California, Santa Cruz)

Prof Deonarain Brijlall (Durban University of Technology)

Ms Noluntu Baart (DBE, Eastern Cape)

Dr Jayaluxmi Naidoo (University of KwaZulu-Natal)

Prof Zurab Janelidze (University of Stellenbosch)

3. Panel discussions on key issues in Mathematics Education.

Panel Discussion 1: Developing Deep Mathematical Thinking through Mathematics Teaching – Problem solving in the 21st Century

Panel: Dr Vasuthavan Govender (Convenor) with Prof Deonarain Brijlall, Prof Zurab Janelidze and Ms Noluntu Baart.

Panel Discussion 2: Developing deep mathematical thinking through mathematics teaching using indigenous knowledge and decolonisation

Panel: Prof Renuka Vithal (Convenor) with Prof Judit Moscovitch, Prof Rajendran Govender and Prof Mogege Mosimege

4. Parallel sessions presented by participants, in the following areas:

Foundation Phase, Intermediate Phase, Senior Phase, FET Phase, and Teacher education.

The following formats of presentation will be used:

- **Long papers** (40 minute presentation plus 20 minute discussion)
- **Short papers** (20 minute presentation plus 10 minute discussion)
- **“How I teach”** papers (20 minute presentation plus 10 minute discussion)
- **Posters** (Exhibited on a 1,2 m x 1,8 m board, for the duration of the conference. Authors should be available at certain hours for discussion.)
- **Workshops** (1 or 2 hours)

5. **Activity Centre:** Hands-on practical mathematics activities for participants.
6. **Exhibits and Maths Market:** Promotion of products by commercial vendors.
7. **AMESA Curriculum Phase Committees discussions.**
8. **AMESA Special Interest Group meetings.**
 - Ethnomathematics (Chair: Prof Mogege Mosimege)
 - Mathematical Problem Solving (Chair: Dr Vasuthavan Govender and Mr Manare Setati)
 - Mathematics and Visualisation (Chair Prof Vimolan Mudaly)
 - Writing for publication (Chair: Prof Rajen Govender/ Prof Anthony Essien)
 - Mathematics and the use of Technology (Chair: Dr Jayaluxmi Naidoo)
9. **AMESA Annual General Meeting.**

OTHER FEATURES OF CONGRESS

- Social events and Excursions
- Daily congress competitions
- Delegates who need transport from the airport and bus station **must make their own arrangements** by using a private taxi, Uber or Taxify.
- Internet facilities – We will try for these facilities but we cannot guarantee access.

CONTACT DETAILS

Please send all communication about administrative matters to:

The AMESA Congress Secretary

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 2050 WITS
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 Cell: 082 390 7088
 Fax: 086 406 3591
 Email: congress2019@amesa.org.za

Congress Director

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Please send all communication about the academic programme to:

The Academic Coordinator

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Congress Deputy Director

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 Tel: 039 6823577
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Congress website - See the congress website for updated relevant information:
<http://www.amesa.org.za/AMESA2019/>

THE LOCAL ORGANISING COMMITTEE (LOC)

The LOC is made up of members who have been actively involved in mathematics education in the branches and provincial structures of AMESA. They come from a variety of backgrounds and include teachers, subject advisors, administrators and mathematics teacher educators. They have been allocated various portfolios and duties for Congress 2019. These details will be included in the final announcement.

MEMBERS OF THE LOC

Vimolan Mudaly, Sithembiso Khanyile, Jayaluxmi Naidoo, Thembelihle Madondo, Niven Ramdhani, Busisiwe Goba, Sibusiso Khanyile, Siya Nyathi, Thokozani Mkhwanazi, Vukile Buthelezi, Thamsanqa Nyathi, Themba Mthethwa

THE NATIONAL ORGANISATION COMMITTEE (NOC)

The NOC is an AMESA sub-committee involved in national congress tasks and supports the LOC. Its members are appointed on the basis of their proven knowledge, functionality, commitment and delivery on national congresses. A representative for the following year's national congress will also serve on the NOC.

MEMBERS OF THE NOC

Busisiwe Goba (Chairperson); Rajendran Govender (Vice Chairperson); Manare Setati (Financial officer); Kgomotso Pilane (Secretariat), Nombulelo Mandindi (Congress secretariat), Vasuthavan Govender (co-opted)

PLENARY SPEAKERS

 <p>Judit Moschkovich International Plenary Speaker</p>	<p>Judit Moschkovich is Professor of mathematics education at the University of California Santa Cruz. Her research uses sociocultural approaches to study mathematical thinking and learning, mathematical discourse, and mathematics learners who are bilingual and/or learning English. Her work has been published in the <i>Journal for Research in Mathematics Education</i>, <i>Educational Studies in Mathematics</i>, <i>the Journal of Mathematical Behaviour</i>, <i>the Journal of the Learning Sciences</i>, and <i>Cognition & Instruction</i>. She served as member on the Consensus Committee "Supporting English Learners in STEM Subjects," National Academies of Sciences, Division of Behavioural and Social Sciences and Education (2016-2019). She was named a 2018 Fellow of the American Educational Research Association (AERA) and received the 2019 Distinguished Scholar Award, Special Interest Group for Research in Mathematics Education (SIG-RME), American Educational Research Association.</p>
 <p>Deonarain Brijlall</p>	<p>Professor Brijlall is a Professor of Mathematics in the Department of Mathematics at the Durban University of Technology, Faculty of Applied Sciences in Durban, South Africa. He holds a PhD in Topology (Mathematics) and B Ed (Hons) degree in Education. He began his career as a Mathematics and Physical Science high school teacher. Six years thereafter he joined Springfield College of Education and lectured to aspiring preservice teachers. Ten years later he joined the University of KwaZulu-Natal as a lecturer in the Education Faculty also being involved with preservice teacher development. He has over seventy journal publications in national and international journals. He has also supervised ten doctoral students and fifteen masters' students.</p> <p>Professor D Brijlall is involved with research and publications of papers in point-free topology and mathematics education. His special focus is Transformational Educational Studies engaging with research activities</p>

	<p>involved in the learning and teaching of mathematics in higher education. Within these domains of research Professor Brijlall has employed conceptual frameworks of: 1) Shulman’s model for teacher knowledge, 2) Ball et al’s levels of pedagogical content knowledge, 3) Kilpatrick’s conceptual framework for mathematical reasoning and APOS theory. His contribution to APOS theory includes, amongst others, undergraduate students learning of: 1) monotonicity and boundedness of infinite real sequences, 2) continuity of functions, 3) optimisation and 4) the chain rule application in calculus. His research has made contributions in formulating various genetic decompositions for mathematics concepts and procedures for undergraduate studies. In this manner Professor Brijlall has made significant contributions to APOS theory and most of his research findings have implications for pedagogy. He serves on editorial boards of four international journals. He has been awarded in the top ten researcher of the institution for 2015 and 2018.</p>
 <p>Jayaluxmi Naidoo</p>	<p>Dr Jayaluxmi Naidoo completed her B.Ed. (Hons) in 2004 at the University of KwaZulu-Natal and an M.Phil. in 2006 at the University of Nottingham (United Kingdom). She completed her PhD (2010) at the University of KwaZulu-Natal. Originally trained as a mathematics and physical science teacher, Dr Jaya Naidoo is currently a senior lecturer of Mathematics Education and the Academic Leader for Postgraduate certificates and Honours degrees at the University of KwaZulu-Natal (UKZN) Edgewood Campus. Dr Naidoo is also an external moderator and verifier for UMALUSI (FET Mathematics).</p> <p>A former recipient of the UKZN emerging researcher award (2012), she was also successful in obtaining both the SANPAD (2009), and Canon Collins Educational Trust scholarship (2005). Dr Naidoo has presented her research at conferences nationally and internationally and she currently represents AMESA internationally on the South African National Committee for the International Mathematical Union (SANCIMU).</p> <p>In 2018 Dr Naidoo has received the Top 10 Most Published Women Researcher award from the College of Humanities, UKZN. Her research interests include the use of technology in mathematics education, visualisation in mathematics, issues of social justice and mathematics education, the use of pedagogic strategies to improve teaching and learning of mathematics, indigenous knowledge systems and mathematics education, mathematics teacher training and development. Dr Naidoo is currently working on a NRF funded project: Exploring technology based pedagogic tools for teaching mathematics/mathematics education within Higher Education (2018-2020).</p>
 <p>Noluntu Baart</p>	<p>Noluntu Baart began her professional career in Mathematics Education as a teacher at Limekhaya High School in 1995 until 2007. She then joined DBE (Eastern Cape) as a Senior Education Specialist for Intermediate and Senior Phases (ISP) Mathematics in Nelson Mandela Metro Education District (NMMED) responsible for Clusters: Tinara 1-5 and Algoa 1 & 2. Noluntu is responsible for supporting and monitoring grades four to nine Mathematics teachers in the NMMED. Noluntu is currently completing her Masters degree in Mathematics Education at Rhodes University. The title of her dissertation is: <i>Investigating grade six learners changing number sense and procedural fluency after participating in afterschool mathematics clubs.</i></p>



Zurab Janelidze
SAMS speaker

Zurab Janelidze is a Professor of Mathematics at Stellenbosch University. He joined the university in 2009 as a Lecturer, four years after the family moved from Georgia to South Africa following the appointment of his father, George Janelidze, as a Professor of Mathematics at the University of Cape Town. Being strongly influenced by his father’s mathematical interests, his scientific work lies in the field of Category Theory. At Stellenbosch University, he led introduction of Foundations of Abstract Mathematics modules for mathematical enrichment of undergraduate students. He serves on the editorial boards of Cahiers de Topologie et Géométrie Différentielle Catégoriques and Applied Categorical Structures, which are among leading international journals in his field. He has strong passion for teaching and a few creative hobbies that include drawing and musical composition.

PANEL DISCUSSIONS



Vasuthavan Govender
(Chair of Panel Discussion 1)

Vasuthavan Govender chairs the first panel discussion in which we unpack our theme of Congress 2019:

“Developing Deep Mathematical Thinking through Mathematics Teaching– Problem solving in the 21st Century”

Dr Vasuthavan Govender (convenor) and Prof Deonarain Brijlall, Prof Zurab Janelidze and Mrs Noluntu Baart



Renuka Vithal
(Chair of Panel Discussion 2)

Renuka Vithal is an adjunct Professor of Mathematics Education at the University of Witwatersrand.

She is the chair of our second panel discussion titled:

“Developing deep mathematical thinking through mathematics teaching using indigenous knowledge and decolonisation”

Prof Renuka Vithal and Prof Judith Moscovitch, Prof Rajendran Govender and Prof Mogege David Mosimege

Durban the conference city

Spreading along the east coast of South Africa, Durban is noted for its lush greenery (especially the sugar cane plantations) and beautiful beaches. Durban’s numerous parks include the Botanic Gardens with its orchid house, Jameson Park and its rose gardens, and various nature reserves and places of interest. The city is home to the University of KwaZulu-Natal, formed in 2004.

Durban is a diverse African city that is focused on citywide investment, growing our economy and creating a better quality of life. In Durban we play hard and we work hard. It’s not a coincidence that we attract so many local and international tourists on a daily basis. We are a growing urban

setting, rich in diversity, cultural amenities and outdoor recreational opportunities. The threads that are woven into this City are integral to the rich history of South Africa, and contribute to the cultural diversity and harmony that defines life in eThekweni.

The University of KwaZulu-Natal was formed on 1 January 2004 as a result of the merger between the University of Durban-Westville and the University of Natal. The new university brings together the rich histories of both the former Universities.

From the mountain vistas of the Drakensberg to the wild reaches of Maputaland, KwaZulu-Natal is a province of contrasts. The University of KwaZulu-Natal offers prospective students the choice of five campuses, each with its own distinctive character. The conference will be hosted at the Edgewood Campus.

Formerly the Edgewood College of Education before its incorporation in 2001, the Edgewood campus in Pinetown is the University's primary site for teacher education and the home of the University's School of Education. Situated in Pinetown with easy access to the N3 highway and approximately 20 minutes' drive from Durban, the campus offers sophisticated and attractive facilities to a growing number of Education students and is close to all major amenities. The School provides initial and in-service teacher education and offers university higher degrees in a wide range of specialisations in education as well as carrying out research and consultancy. The School is actively engaged with policy-making in education in South Africa and contributes to the international profile of the university through participation in international conferences, teaching international students, hosting international visitors and publishing in international books and journals.

CALL FOR PAPERS

You are invited to submit contributions to the academic programme. Please note, that in order to ensure a high standard of presentations and broad based participation:

- we will accept no more than two inputs per presenter,
- we will not accept any presentation for the programme unless a full transcript or workshop outline has been submitted for reviewing,
- we will adhere to the due dates for submission as this ensures time for useful and relevant reviews of submissions,
- we will only include names on the programme of those who have paid their registration fees.

To help you in planning and writing your proposal, we include technical guidelines for preparing a paper. An electronic styles template is available on the congress website. ***The Presentation Proposal Form*** (page 12) must be submitted with your proposal to the Academic Coordinator by **6 April 2019**.

CALL FOR REVIEWERS

In order to have a sufficient number of reviewers for submitted papers, we invite AMESA members to volunteer to help with reviewing papers. This review process should take place during March and April 2019. You can serve as reviewer if you are a current AMESA member and have presented a reviewed paper (a long or short paper) at previous AMESA congresses, or have published in *Pythagoras*. If you qualify and are willing, please fill in the ***Reviewer Form*** (page 14) and send it to the Academic Coordinator by **15 March 2019**.

EXHIBITION AND MATHS MARKET

Publishers, entrepreneurs and NGOs are invited to present and promote their commercial products in a special session in the programme called a *Maths Market* presentation. Research about such products may be presented as an academic paper which will be reviewed, but commercial products would not be directly promoted in academic sessions. *Maths Market* presentations are not reviewed and not published in the Congress Proceedings. Please contact the Congress Director for more details.

IMPORTANT DATES

Reviewer Information	8 March 2019
Submission of full presentation proposal manuscripts	15 March 2019
Notification of proposal review results	20 April 2019
Application for financial support	31 March 2019
Early registration	On or before the 24 April 2019
Normal registration	From the 25 April to 26 May 2019
Late registration	After 26 May 2019
Final day for registration	14 June 2019
Cancellation of any costs Last day for booking of student accommodation	31 May 2019 (last date)
Equipment requests for presenters	1 June 2019
Registration opens	30 June 2019 at 12:00
Residences open	30 June 2019 at 14:00
Opening ceremony	1 July 2019 at 10:00
Closing ceremony	5 July 2019 at 12:00

GUIDELINES FOR SUBMISSION OF LONG PAPERS

Length: 8–12 pages: Each Long Paper will be scheduled for a total time of 60 minutes: 40 minutes for oral presentation and 20 minutes for discussion. The following types of papers are suitable for presentation as a long paper:

1. Research report

This should include the following:

- A statement about the focus of the paper or the research questions, and a motivation for the significance of the research;
- An indication of the theoretical framework of the study reported;
- A discussion of the related literature;
- An indication of and justification for the methodology used;
- Some sample data and findings and a statement of how these help to answer the research questions;
- What your findings mean for mathematics teaching and learning or further research;
- List of references.

2. The presentation of Mathematics/Mathematical Literacy content

These could include content in Mathematics/Mathematical Literacy, relevant to the school curriculum, such as:

- An innovative way of dealing with a section of Mathematics/Mathematical literacy;
- Alternative proofs for theorems;
- Interesting mathematics that teachers are conversant with; Mathematics/Mathematical

- Literacy that is new in the proposed curriculum;
- List of references.

3. Theoretical, methodological or philosophical essays

These should include the following:

- A statement about the focus of the paper and a motivation for its significance;
- An indication of the theoretical, methodological or philosophical framework within which the focus or theme of the paper is developed;
- Reference to related literature;
- A clearly articulated statement of the author's position on the focus or theme;
- What your results mean for mathematics teaching, learning or research;
- List of references.

Reviewing: Two reviewers, with experience in the area, will review your paper. Specifically, reviewers will be asked to comment on the following: mathematical content, theoretical framework and related literature, methodology (if appropriate), statement and discussion of results (if appropriate), clarity and relevance to the AMESA audience. *A developmental approach to reviewing will be applied to your paper. In other words you will be given feedback by the reviewers, which you could use to improve your paper and then (if necessary) re-submit for further review and feedback.* If your paper is not accepted in this category it will be reconsidered for submission as a short paper presentation.

Publication of Long Papers: Authors may choose not to have their accepted long papers published in the AMESA 2019 Congress Proceedings, to keep open the possibility to submit it to a journal. Note that authors must still submit the full manuscript for review, but if they choose to exclude their long paper from the Proceedings, they must then submit an extended abstract of 2-4 pages of the paper and this extended abstract will then be published in the Proceedings.

GUIDELINES FOR SUBMISSION OF SHORT PAPERS

Length: 5–8 pages: Each Short Paper presentation will be given a total time of 30 minutes: 20 minutes for oral presentation and 10 minutes for discussion. This kind of presentation is most suitable for work in progress and may include the following:

1. **Reflection on teaching or practice:** This is mainly for mathematics educators who would like to share their reflections on their teaching or on their participation in a developmental project or research project. For reflection on teaching you need to specify the following:
 - The grade and class size;
 - The mathematics topic taught;
 - The mathematical goals and purposes;
 - A description of the lesson;
 - What factors contributed to the success of the lesson;
 - What factors tended to hamper success and how you dealt with them.
2. **For reflection on participation in a mathematics development project** you should specify the following:
 - The duration of the project;
 - Mathematical aspects covered by the project;
 - Practical examples of how participation in the project impacted on your teaching.

- 3. The presentation of Mathematics/Mathematical literacy content:** For details on this type of presentation, refer to number 2 under the long papers.
- 4. Proposals: Research or development:** This can be a presentation of a proposal for a research or mathematics education developmental project and should include the following:
- A description of the focus of the research project or developmental project;
 - Motivation for the study or project;
 - Some indication of the theoretical framework of the study or project;
 - Some discussion of the related literature;
 - How the study or project will be undertaken, including some justification of methodology;
 - Participants and time lines;
 - List of references.
- 5. Initial sharing of data:** This is mainly for people who have done research and are still working on their analyses. The paper should include the following:
- A statement about the focus of the paper or the research questions, and a motivation for the significance of the research;
 - Some aspects of the theoretical framework of the study reported;
 - Some discussion of the related literature;
 - An indication of and justification for the methodology used;
 - Some sample data and initial analysis or description of data;
 - List of references.

Reviewing

Two reviewers, with experience in the area, will review your paper. Specifically, reviewers will be asked to comment on the following: mathematical content, conceptual coherence, clarity and relevance to the AMESA audience. *A developmental approach to reviewing will be applied to your paper. In other words you will be given feedback by the reviewers, which you could use to improve your paper and then (if necessary) re-submit for further review and feedback.*

GUIDELINES FOR “HOW I TEACH” PAPERS

Length: Minimum 1 page and a maximum of 4 pages.

Critical information to be included:

- **Title:** A heading for your paper e.g. How to use paper folding in geometry.
- **Name:** Your Name and Surname
- **Organisation:** Where you are from e.g. the name of your school.
- **Phase:** The phase your talk is aimed at i.e. foundation, intermediate, senior, FET or tertiary.
- **Introduction:** Include here a paragraph on what your talk is about. Why you chose to talk about it. What you are going to do in the talk.
- **Content:** You might want to write one or two sentences on your experiences of using such activities in your class and some of the advantages or disadvantages of using the activities.
- Also provide here a brief conclusion on the talk.

- **References:** Add here any references that you might have used. In other words, if you took the activities from a textbook or from the internet, please acknowledge these sources.
- There may be other headings you want to include (e.g. “teacher tips”) – please feel free to do so.

Reviewing

Your paper will be reviewed. *A developmental approach to reviewing will be applied to your paper. In other words you will be given feedback by the reviewers, which you could use to improve your paper and then (if necessary) re-submit for further review and feedback.* The Academic Committee of Congress 2019 reserves the right to make minor editing changes.

GUIDELINES FOR POSTERS

Poster presentations are available for those whose work is more suitably communicated in a pictorial or graphical format, rather than through an oral presentation. There is no formal oral presentation associated with posters, but a time will be allotted, after sufficient display time, during which presenters will be available at their posters for informal discussion with participants. A poster (1,2 m x 1,8 m board), can present research projects, software developments, curricula innovations, educational programmes, etc., related to Mathematics Education.

Note the following as you prepare your proposal for a poster:

- Your proposal should describe both the contents of the poster and its particular visual (pictorial or graphical) characteristics.
- Your proposal should be restricted to one page, including references and figures. If accepted, this text will be included in the Congress Proceedings.
- Type and centre the title (in capitals), author(s) names, and affiliation(s) of the author(s) in this order.

Reviewing

The Academic Committee will review the proposals for Poster Presentations. If your proposal is accepted, the Academic Committee will provide further guidance on the preparation of the actual poster itself.

GUIDELINES FOR WORKSHOP PRESENTATIONS

Note that workshop write-ups and the worksheets will *not* be published in the Congress Proceedings. It will be included in the CD-ROM Proceedings, and copies of the activities will only be duplicated for the workshop participants. Your proposal should include:

1. **Motivation for running workshop.** This is for reviewing and should include:

- **Title of the workshop**
- **Name of presenter(s)**
- **Institution where you are employed**
- **Target audience:** The phase your workshop is aimed at e.g. intermediate.
- **Duration:** There will be 1-hour or 2-hour workshop slots. Please ensure that you choose an appropriate length slot.

- **Maximum number of participants:** You may limit the number of participants in your workshop. Workshop presenters should attempt to cater for at least 30 participants.
- **Motivation for the workshop:** Why is the workshop important? How will it help participants?
- **Description of content of workshop**
- **What will be done in the workshop?** How will the time slot be broken up?
- **The activities and worksheets to be used in the workshop** (maximum 8 pages)

2. An abstract describing the level, nature and content of the workshop (200 words)

Note: Only this abstract will be published in the Congress Proceedings.

- Workshops need to be **hands-on sessions** where participants are **actively involved** in doing the activities that you provide. Usually these activities will be done in groups, consisting of 3–5 participants. There should also be ample time for discussions (approximately 25% of your time is suggested).
- If you have used ideas from other sources, it is essential that you acknowledge these sources.
- We will *not* accept any submissions where more than two pages have been copied directly from another source.

Reviewing:

The Academic Committee will review the proposals for Workshop Presentations.

TECHNICAL GUIDELINES FOR PREPARING MANUSCRIPTS

We are endeavouring to work towards a uniform appearance for all papers in the Congress Proceedings. An electronic template and guidelines will be available from the congress website.

Please use the template as the basis for your paper and adhere to these guidelines:

- Restrict your paper to the maximum number of pages as specified for the type of presentation, including references, figures, and appendices.
- Write the paper in English.
- Type and centre the title (in capitals), author(s) name(s), and affiliation(s) of the author(s), in this order.
- Underline the name of the presenting author(s).
- Begin the paper with an abstract of up to ten lines, single-spaced, preferably in italics.
- Use a 14-point type (Times New Roman), a 16-point line space, and 6 points between paragraphs, occupying a frame of 170 mm by 247 mm. Please use exact dimensions, and fill the entire frame. Remember that the original text will be reduced in the Proceedings.
- Give references in the APA style.
- **Do not number the pages.**

E-mail the paper as an attachment (word document) to the Academic Coordinator by 15 March 2019, together with your completed Presentation Proposal Form. **Fax copies will not be accepted.**

TABLE OF PRESENTATION CATEGORIES

This page is for your reference when completing the Reviewer Form or the Presentation Proposal Form. Reviewers will receive proposals for review according to their preferred categories that they mark in their Reviewer Form. The proposals will be sent to reviewers according to the presentation categories that authors have marked in their Presentation Proposal Form.

Educational level	
1. Foundation Phase (Gr R–3)	4. Further Education & Training (Gr 10-12)
2. Intermediate Phase (Gr 4–6)	5. Teacher Education (pre- & in-service training)
3. Senior Phase (Gr 7–9)	

In the case of research, please state the type of research:	
1. Empirical/ Experimental	4. Ethnographic/Interpretative
2. Statistical	5. Theoretical/Philosophical
3. Case study	6. Action research

Focus themes for presentation:	
1. Indigenous Knowledge Systems	15. Reasoning, proof and proving in mathematics education
2. Financial Mathematics	16. Problem solving and modelling in mathematics education
3. Mathematical Literacy	17. Functions and graphs
4. Teaching and learning of geometry	18. Numeracy
5. Teaching and learning of probability	19. Classroom practice
6. Teaching and learning of algebra	20. Geometric and spatial reasoning
7. Teaching and learning of calculus	21. Measurement: Focusing on primary education
8. Teaching and learning of patterns and sequences	22. Mathematics Education in a multilingual and multicultural context
9. Teaching and learning of fractions	23. Mathematics curriculum development
10. Motivation, beliefs and attitudes towards mathematics and its teaching	24. Assessment in Mathematics Education
11. Mathematical knowledge for teaching	25. Mathematics Education at secondary level and access to tertiary education
12. Mathematics in context	26. In-service education; professional development of teachers
13. Enhancing learner understanding of mathematical concepts	27. Other suitable focus themes not covered here (please state in your presentation proposal form)
14. The use of technology in the teaching and learning of mathematics	

PROVISIONAL PROGRAMME

Sunday 30 June

10:00 – 20:00 Registration
 14:00 -16: 00 Hostel accommodation opens & Pre-congress workshop start

Monday 01 July

08:00 – 09:45 Registration
 08:30 - 09:30 Tea
 10:00 – 11:30 Opening ceremony and Plenary
 14:00 - 16:30 Parallel Sessions
 18:30 - Welcome dinner

Tuesday 02 July

08:30 - Congress day starts
 16:30 - AGM
 18:30 - Cultural evening

Wednesday 03 July

08:30 - Congress day starts
 13:00 - Congress day ends
 13:00 - Excursions

Thursday 04 July

08:30 - Congress day starts
 17:30 - Congress day ends
 18:30 - Gala Dinner

Friday 05 July

08:30 - Congress day starts
 11:30 - Closing Ceremony
 12:30 - Lunch and departure

EXCURSIONS (Wednesday afternoon, 03 July 2018)

Social

Participants may choose one of these excursions (indicate your choice on the Registration form)

No.	Name of tour	Details and other information	Cost
1.	Moses Mabhida Stadium Tour	You have seen the impressive Moses Mabhida Stadium dominate the Durban skyline from afar, now get up close and personal as we take you into the heart of Durban's majestic stadium.	R350.00 per person
2.	Phezulu Safari Park	Situated in Botha's Hill, only 35 km's from central Durban. Ticket are priced per person includes the following: - Zulu Cultural Village Tour - Traditional Zulu Dancing Show	R400.00 per person

		- Crocodile Park - Snake Park	
3.	UShaka Marine World	At uShaka Sea World, it really is an adventure, with dolphin shows, seal shows, penguin presentations, shark dives, ray feeds and so much more.	R450.00 per person
4.	KwaZulu-Natal Sharks Board Maritime Centre of Excellence	The KwaZulu-Natal coastline is the only coastline with 37 beaches equipped with bather safety gear owned and maintained by the KwaZulu-Natal Sharks Board Maritime Centre of Excellence in South Africa. In addition, the KZNSB conducts research into the biology of sharks and other animals caught in shark safety gear, and offers a public education programme on safety precautions that must be adhered to by bathers.	R500.00 person
5.	The Inanda Township tour	This is a tour through the township of Inanda. Inanda played a significant role in the political arena for many years. Delegates will view the route that encompasses the history of both Mahatma Gandhi and John Langalibalele Dube, who were friends and who shared a common philosophy of life	R500.00 per person

NOTE: *If the maximum number of participants to make an excursion viable is not reached, or the maximum number has been exceeded, you will be notified by **21 June 2019** and will have an option to be refunded or to choose another excursion if there will be still available space in that particular excursion opted for.*

EVENING SOCIAL FUNCTIONS

Monday	01 July 2019	18:30	Welcome dinner (free) Cash Bar available
Tuesday	02 July 2019	18:30	Cultural evening (R350)
Thursday	04 July 2019	18:30	Gala dinner (R400)

IMPORTANT NOTICE

HOSTEL ACCOMMODATION AT EDGEWOOD CAMPUS

We have booked **500** rooms in the student residences at the Edgewood Campus and they cost R520 per night per person **including** breakfast and dinner. Accommodation at the student residences will only be provided to the first 500 applicants. No more than 500 beds are available. All bookings must be made by the **31st of May 2019**. No bookings will be accepted thereafter.

Beds will be allocated on a first come first serve basis. **ONLY** those who book will get the rooms. Each Residence comprises 54 single rooms, 8 communal baths and toilets. The rooms are basic with a bed, table and chair and a wardrobe.

Delegates need to bring their own linen and padlock for the doors.

ALTERNATIVE ACCOMMODATION

Besides the student residences, there are a large number of venues available in and around Pinetown. These can easily be found using Google search. A few are listed in the table below. We have **NO** arrangements with these providers. All accommodation is made at the delegates own risk.

Accommodation	Email	Telephone no.	Website
Highway Commando	Mongubane@gmail.com Admin@hme.co.za	060 340 3186	http://highwayaccommodation.co.za/
Pinetown Lala Land		072 382 2607 031 701 4269	https://www.wheretostay.co.za/pinetown-lala-land-bed-and-breakfast-pinetown-accommodation-durban
Makaranga		031 764 6616	https://www.makaranga.com/
Ammazulu African Palace	info@ammazulupalace.com	0317648000 0715238290	http://www.ammazulupalace.com/contact-us.asp
Valley Lodge	info@valleylodge.net	031 765 6407/8	http://valleylodge.net/
Palace Lodge			
Khululeka Lodge		081 270 6139	
Liabela Bed & Breakfast	reception@liabela.co.za	031 702 2161	http://www.liabela.co.za/
Green Meadow country estate		084 582 2022	
Kloof Falls Lodge Bed & Breakfast	info@klooffallslodge.co.za	031 764 1502	http://www.klooffallslodge.co.za/
Splendid Inn Pinetown		031 701 0130	https://www.premierhotels.co.za/hotels/kwazulu-natal/durban/pinetown/
La Familia Guesthouse		084 883 7671 031-7096321	https://www.wheretostay.co.za/la-familia-guest-house-bed-and-breakfast-pinetown-accommodation-durban
Bayside Lodge Pinetown		031 702 3541	http://baysidegroup.co.za/
Villa Valencia		072 382 2607	https://www.wheretostay.co.za/villa-valencia-bed-and-breakfast-pinetown-accommodation-durban
Butterscotch Bed and Breakfast	jenny@butterscotchbnb.co.za	031 709 1318 084 512 5338	http://butterscotchbnb.co.za/
Hillside Guesthouse	reservations@34hillside.com	081 506 0211	http://www.34hillside.com/
Sylvern Bed & Breakfast	sylvernbandb@mweb.co.za	031 267 1078	http://www.sylvern.co.za/
Heaton Cottage B&B	heatoncottage@mweb.co.za	031 267 2019	https://www.heatoncottage.co.za/
The Bell Inn	bellin@telkomsa.net	031 709 0561	http://www.thebellinn.co.za/
Westville Bed & Breakfast	info@westvillebandb.co.za	031 266 5867	http://westvillebandb.co.za/
Blue Waters Hotel	reservations3@bluewatershotel.co.za	031 327 7000	http://www.bluewatershotel.co.za/
Southern Sun Elangeni & Maharani	tsogosunhotels.contactus@tsogosun.com	031 362 1300	https://www.tsogosun.com/southern-sun-elangeni-maharani?chebs=gl-hotel_southern-sun-elangeni-maharani&utm_source=google&utm_medium=businesslisting&utm_campaign=hotel_southern-sun-elangeni-maharani

MEALS

1. Lunches and the Welcome Dinner (Monday evening) are included in the registration fee. Please indicate your dietary requirements on the Registration Form.
2. If you are staying in the hostel, then Breakfast and Dinners are included in the cost of the hostel accommodation.

TRANSPORT

When arriving in Durban, **please make your own** transport arrangements to go to UKZN (Edgewood Campus-Pinetown). There are several taxi's available and these can be obtained via a google search.

EQUIPMENT FOR PRESENTERS

- For computer workshops or presentations, presenters must supply any software to be pre-installed by 1 June 2019.
- For presentations and workshops, presenters must please email their audio-visual requirements to the Congress Director by 1 June 2019 (vimolan@amesa.org.za)

CANCELLATION POLICY

Once your registration form has been processed, a **cancellation fee of 20%** of all costs will be charged for cancellations up to **31 May 2019**.

After **31 May 2019 no refunds** will be made for **any** cancellation of complete or partial costs.

APPLICATION FOR FINANCIAL SUPPORT

A limited amount of funding is available to assist those participants who would otherwise be unable to attend the Congress. The application form must be submitted by 31 March 2019.

CONGRESS MEMORABILIA

Congress memorabilia will be available but NOT from the LOC. We have acquired the services of an independent vendor. Any purchases will be between the delegate and the vendor. Memorabilia are therefore ordered and purchased at the delegates own risk. The LOC has no control of the sales of these memorabilia.

The prices for memorabilia will be advertised on the website.



Jayaluxmi Naidoo
Email: jaya@amesa.org.za

PRESENTATION PROPOSAL FORM

This form must be completed for every presentation proposal and submitted to the Academic Coordinator.

Note: You may prefer to complete the electronic form on the Congress website.

DEADLINE: 15 March 2019

PLEASE TYPE OR HAND - WRITE BY USING ONLY CAPITAL LETTERS

Type of Presentation (mark one) Long paper <input type="checkbox"/> Short paper <input type="checkbox"/> How I teach <input type="checkbox"/> Poster <input type="checkbox"/> Workshop (1 h) <input type="checkbox"/>
Title of presentation:
Author(s):
Presenting Author(s):
Contact Details: <i>The following information should be completed only for the Presenting Authors:</i> Postal address: City:.....Postal Code: Tel No:Cell No:..... Fax No:Email:.....
Complete to assist the Programme Committee in finding you an appropriate reviewer Presentation categories (choose relevant numbers from the Table on page 13): Focus Themes (mark at most three numbers from 1 – 28): ____ Educational level (1 – 5): ____ Type of Research if applicable (from 1 – 6): ____
Only for Long PAPERS: Publish my Long Paper in AMESA 2019 Proceedings YES <input type="checkbox"/> NO <input type="checkbox"/>



Jaya Naidoo
Email: jaya@amesa.org.za

REVIEWER FORM

Please complete the form if you are prepared to help review submitted papers for the Congress.

To qualify as a reviewer, you must be a current AMESA member and have presented a reviewed paper (a long or short paper) at previous AMESA congresses, or have published in Pythagoras or another reviewed journal.

DEADLINE: 17 February 2019

Note: you may prefer to complete the electronic form on the congress website.

PLEASE TYPE OR HAND – WRITE BY USING CAPITAL LETTERS

Contact Details			
Name:			
Institution:			
Postal address:			
City:	Code:		
Tel No:			
Cell No:			
Fax No:			
Email:			
Complete to assist the Programme Committee to match you to appropriate submissions			
Presentation categories (choose relevant numbers from the Table on page 12)			
Please choose at most 4 Focus Themes (1 – 24):			
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Please choose your preferred Educational Levels (numbers 1 – 5)			
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Please choose your preferred Type of Research (1 – 6)			
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>



Niven Ramdhani
Email: nivenramdhani@gmail.com
nivenramdhani@yahoo.com

Application for financial support: AMESA 2019 CONGRESS

DEADLINE: 31 March 2019

I, would like to apply for financial support to attend AMESA 2019 national Congress..

Surname:

First Names:

Postal Address:

..... Postal Code:

Institution:

Area of interest: (primary/secondary/Tertiary):

Tel: (Home): (Work) Cell:

Fax: Email:

Complete 1 and 2 below and take note of 3:

1. I am an AMESA member: YES/NO Membership no:
2. I am able to contribute R of the projected R..... costs for my attendance
3. I undertake to write an article/report on AMESA Congress 2019 which may be published in AMESA News.

Signature: Date:

Note:

- *A typed ½ to 1 page motivation as well as a detailed budget must accompany this application. The application will not be considered without a detailed budget.*
- *Preference for funding will be given to paid-up AMESA members who will be participating in the Congress programme.*

NOTICE OF 2019 ANNUAL GENERAL MEETING (AGM)

The AMESA Annual General Meeting will be held at the 25th Annual National Congress on 2 July 2019 at the University of KwaZulu-Natal (Edgewood Campus), Pinetown, KwaZulu-Natal.

CALL FOR NOMINATIONS AND MOTIONS

In terms of the Association's constitution, Motions and Nominations for the 2017 AGM are hereby invited.

The term of office of the current **Treasurer** will come an end at the AGM and nominations for this position is being sought. Please nominate in accordance with the regulations listed below:

The following paragraph from the constitution relates:

Procedures for nominations:

24. Nominations for Office Bearers may be submitted by any two members, a branch or a region of the Association. Such nominations must reach the National Secretary not less than three calendar months before the next Annual General Meeting (AGM).

25. All nominations shall be made in writing and must contain the names of the proposers and the consent of the person nominated. Nominations by a branch or region must be signed by at least four members of the branch committee or Regional committee.

26. The National Council shall make nominations in respect of every vacancy to which no other nomination has been received and may make nominations in addition to those received.

27. The names of all persons nominated for election at the Annual General Meeting shall be included in the agenda of the Annual General Meeting.

Procedures for motions and decision-making:

28. Any two members, a branch or a region of the Association may submit a motion to the Annual General Meeting. Any motion, on which the Annual General Meeting must vote, must reach the National Secretary not less than three calendar months before the date of the Annual General Meeting and must be included in the agenda for the Annual General Meeting.

29. Any motion that does not comply with paragraph 28 may be put to the Annual General Meeting, but may only be put to the vote if an order motion to this effect is carried unanimously by the Annual General Meeting.

Motions and Nominations must be sent to the following address by **31 March 2019**:

The National Secretary
Mrs Kgomotso Pilane
P.O. Box 9092
0300
RUSTENBURG

Work Tel: 082 399 5478
Cell: 083 333 1825
E-mail: secretary@amesa.org.za

AMESA CONGRESS 2019 REGISTRATION FORM

Please rather download an electronic registration form at <http://www.amesa.org.za/AMESA2019/>
Then you can type in Word and e-mail it to us and we can copy and paste to minimize errors

CONTACT DETAILS (please print)

Title:	First Name:	Surname:
Postal Address:		
Postal Code:	Province:	
Institution:	Your e-mail address (our preferred mode):	
Cell:	Tel:	Fax:

Are you a current paid-up AMESA member? Yes No
 If Yes, please provide your membership number for us to check:
 If No, please complete the membership form and include the membership fee here

REGISTRATION FEE

Early registration: R1 200.00 (by 24 April)	R						
Normal registration: R1 450.00 (by 26th May)	R						
Late registration: R1 650.00 (after 26 May)	R						
Day visitors @ R550.00 per person per day	R						
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;"></td> <td style="width: 15%; text-align: center;">Mon</td> <td style="width: 15%; text-align: center;">Tue</td> <td style="width: 15%; text-align: center;">Wed</td> <td style="width: 15%; text-align: center;">Thurs</td> <td style="width: 15%; text-align: center;">Fri</td> </tr> </table>		Mon	Tue	Wed	Thurs	Fri	
	Mon	Tue	Wed	Thurs	Fri		
Congress materials for day visitors can be pre-ordered only until 10 June 2019 at R 550	R						

HOSTEL ACCOMMODATION (please mark with an X)

Date of arrival	Date of departure				
30 th June (5 nights)	1 st July (4 nights)	2 nd July (3nights)	3 rd July (2 nights)	4 th July (1night)	R
R2 600.00	R2 080.00	R1 560.00	R1 040.00	R520.00	

EVENING FUNCTIONS

Tuesday 2 nd July 2019:	Cultural evening (R350.00)	R
Thursday 4 th July 2019:	Gala dinner (R400.00)	R

EXCURSIONS: 3rd July 2019: (choose one only and mark with an X)

Moses Mabhida Stadium Tour	R350.00	R
Phezulu Safari Park	R400.00	R
UShaka Marine World	R450.00	R
KwaZulu-Natal Sharks Board Maritime Centre of Excellence	R500.00	R
Inanda Township Tour	R500.00	R
TOTAL AMOUNT OWING:		R

DIETARY REQUIREMENTS (please mark with an X)

None	Vegetarian	Halaal	Diabetic
Other (please specify)			

AMESA MEMBERSHIP APPLICATION FORM

If you are not a current paid-up AMESA member, you need to complete this section.

Please complete in full and capital letters

1. **Membership no.** (if renewal): _____
2. **Province:** _____ **Branch:** _____ (if known)
3. **Membership type:** Individual Institutional Associate (e.g. full time student)
4. **Field of interest:** Primary Secondary Tertiary
5. **For Individual and Associate members only:**
Surname: _____ **First Name:** _____ **Title:** _____
6. **For Institutional members only:**
Designation of person to whom correspondence should be addressed
(e.g. The HOD Mathematics/Librarian): _____
Name if Institution: _____
Postal Address: _____
_____ **Postal Code:** _____
Tel. no.: _____ **Fax:** _____ **E-mail:** _____
7. **For student (associate) members only:**

I hereby declare that I am a full-time, pre-service student at the following tertiary institution:

_____ **Signature:** _____

Please include proof of registration at tertiary institution with you application.

8. **Membership subscription fee:**
Mark one, and then include the amount in the membership section and total
 - South Africa, **Individual: R150**
 - South Africa, **Institution: R450**
 - South Africa, Associate (**Full-time, pre-service student at a tertiary institution**): **R50**
 - South Africa, **Life membership: R3 500**
 - Other African countries**, Individual: **ZAR210**
 - Non-African countries**, Individual: **USD \$80**

PAYMENT FOR CONGRESS FEES

All Congress payments must be paid directly into the Congress bank account. The methods of payments are either an EFT or a cash deposit paid at the bank into the Congress account. Congress bank account details are as follows:

Bank: ABSA
Branch Code: 632 005
Account name: AMESA Congress
Account Number: 9271 293382

No credit card payments will be accepted at the conference venue.