

CURRENT PROBLEMS AND CHALLENGES IN NON-UNIVERSITY TERTIARY MATHEMATICS EDUCATION (NTME)

Organisers:

Jim Roznowski

Professor Emeritus, Delta College, Bay City, Michigan, US
jimroznowski@gmail.com

Dr. Low-Ee Huei

Senior Research Fellow, Duke-NUS Graduate Medical School, Centre for Ageing,
Research and Education, Singapore
hueiwuan@duke-nus.edu.sg

Younes Karimi Fardinpour

Instructor I.A. University, Ahar, Iran
fardin81f@gmail.com

Dr. Vilma Mesa (United States)

Associate Professor, University of Michigan, Ann Arbor, Michigan, US
vmesa@umich.edu

Short description of the Discussion Group: aims and underlying ideas

This discussion group will focus on issues related to mathematics education in non-university tertiary institutions (NTME). Institutions in this category confer academic degrees, but have undergraduate education as their primary focus. Institutions may be academically or vocationally focused, granting terminal degrees and certifications or preparing students to transfer to university. Anticipated aims of a discussion group during ICME-13 include: identifying, sharing, and discussing solutions to common key issues, challenges, and opportunities pertaining to all areas of mathematics education in NTMEs throughout the world. Key questions for the DG to consider:

- *What challenges related to teaching, learning, assessment, and curriculum do faculty and students face that are unique in the NTME environment?*
- *What are examples of research-based promising practices that enrich mathematics programmes in the environment specific to NTME?*
- *What are new developments in the assessment of student learning that are more appropriately, if not uniquely, suited to NTME's?*
- *What are examples of developments or innovations with use of technology in NTME that have leveraged the teaching and learning mathematics?*

Planned structure:

Tuesday, 16.30-18.00: Planned timeline	Topic	Material / Working format / presenter
16.30-17.00	Accelerating student progress through the developmental	(New Mathways Project & Carnegie Math Pathways) / Discussion / Fary Sami & Jim

	mathematics sequence.	Roznowski
17.00-17.30	Teaching Calculus I at non-university tertiary institutions.	(Vern, Mesa, & White, 2015) / Discussion / Dr. Vilma Mesa
17.30-18.00	Discussion: <i>What challenges related to teaching, learning, assessment, and curriculum are addressed by these two presentations? What practices can we derive that enrich our own mathematics programmes.</i>	

Friday, 16.30-18.00: Planned timeline	Topic	Material / Working format / presenter
16.30-17.00	Using technology effectively to promote learning.	(Sattler, Feldon, & Orrange, 2015) / Discussion / Dr. Nancy Sattler
17.00-17.30	Motivating student learning using sport data.	(Kvam, 2004) (Addona, 2010) (Parr, 2011) / Discussion / Steve Krevisky
17.30-18.00	Discussion: <i>What lessons about assessment of student learning can we derive from these examples? How can we use these innovations with technology to leverage the teaching and learning of mathematics in our institutions?</i>	

References

- Burn, H., Mesa, V., & White, N. (2015). Calculus I in community colleges: Findings from the national CSPCC Study. *MathAMATYC Educator* 6(3), 34-39.
- Sattler, N., Feldon, F., & Orrange, M. B. (2015). Technology: The Past, the Present, and the Future. *MathAMATYC Educator* 6(2), 4-7.
- New Mathways Project, providing college mathematics pathways that support students' goals. (2016). The Charles A. Dana Center, The University of Texas at Austin. Retrieved from <http://utdanacenter.org/higher-education/new-mathways-project/>.
- Carnegie Math Pathways. (2016). Carnegie Foundation for the Advancement of Teaching. Retrieved from <http://www.carnegiefoundation.org/in-action/carnegie-math-pathways/>.
- Kvam, P., Sokol, J. (2004). Teaching statistics with sports examples. *INFORMS Transactions on Education* 5(1), 75-87.
- Addona, V. (2010). Using sports data to motivate statistical concepts: experiences from a freshman course. Retrieved from http://iase-web.org/documents/papers/icots8/ICOTS8_7B4_ADDONA.pdf.
- Parr, A. (2011). Performing beyond expectations-using sport to motivate students in mathematics lessons. Retrieved from <http://nrich.maths.org/7524>.