<u>Course Description</u> MEDD6387 Research into Teaching and Learning of Mathematics

Course description

This course gives an overview of theories and research on the teaching and learning of mathematics. Research in the teaching and learning of some major areas in mathematics such as algebra is reviewed. In addition, examples of investigation of mathematics teacher's pedagogical content knowledge, teacher conception, and assessment related to the teaching and learning of mathematics, classroom research, small-scale and large-scale studies will be discussed. The course and assessment are designed in such a way for an introduction to a virtual experience of research culture for mathematics teachers and professionals. It is hoped that in the course the students will read, talk about, reflect upon how research may have an implication in their profession. They are expected to make presentations, plan their own research, and develop an awareness of how a research culture can be an enhancement of their life-long professional development. At the end of the course, students should be able to: (1) be aware of the issues and topics related to research in the teaching and learning of mathematics, (2) carry out literature review for specific issues of interest, reflect and discuss in relation to the local context and their workplace, and (3) write a research proposal for school-based development for the mathematics teaching and learning.

Course objectives

The course and assessment are designed in such a way for an introduction to a virtual experience of research culture for mathematics teachers and professionals. It is hoped that in the course the students will read, talk about, reflect upon how research may have an implication in their profession. They are expected to make presentations, plan their own research, and develop an awareness of how a research culture can be an enhancement of their life-long professional development.

At the end of the course, students should be able to

- 1. Be aware of the issues and topics related to research in the teaching and learning of mathematics;
- 2. Carry out literature review for specific issues of interest, reflect and discuss in relation to the local context and their workplace;
- 3. Develop innovative pedagogical materials for mathematics teaching and learning.

Course learning outcomes (CLOs)		Aligned programme learning outcomes (PLOs)
1.	Be aware of the issues and topics related to research in the teaching and learning of mathematics	PLOs 1-4
2.	Carry out literature review for specific issues of interest, reflect and discuss in relation to the local context and their workplace	PLOs 1-4
3.	Develop innovative pedagogical materials for mathematics teaching and learning	PLOs 1-5
Course assessment methods		

E-forum posting

- E-forum posti
- Written essay

Course content and topics

- A virtual visit to an international conference
- Algebra
- School algebra and learning of algebra
- Mindset theory, Self-directed learning, Flipped learning, Game-based learning
- Bringing about changes in teaching and learning
- Assessment and learning
- Large-scale studies: Trends in International Mathematics and Science Study (TIMSS) and PISA
- Large-scale studies: The Learner's Perspective Study (LPS)

Required / recommended readings and online materials

To be advised during lectures

Other additional course information

Nil