

**Workshop Title:** Meaningful Mathematics Teaching and Learning Pedagogy, A Sustainable Method to Empower High Order Thinking Skills (HOTS) and Metacognition of Students

**Speakers:** AP. Dr. Ang Miin Huey, School of Mathematical Sciences, USM

### **Workshop Synopsis**

Mathematics is not about computing using formula. Computing is one of the (basic) tools in mathematics study and formula is just one type of end product of mathematical studies. So, what is mathematics? Mathematics is a language that is used to describe ideas of how a problem can be solved in an analytical quantitative way. Mathematics consists of its own vocabulary and sentences called statements. Meaningful Mathematics teaching and learning gets under way once a child starts to read, think and write mathematically with understanding. The cumulative of these understood concepts induced the child's interest in mathematics. In addition, deep interest nurtures the resilience of the child in developing High Order Thinking Skills (HOTS) in Mathematics. Well coordination of different combinations of HOTS help the child reach his or her metacognitive peak which will increase the efficacy in doing independent lifelong self-learning processes in Mathematics.

This 2-hour workshop will cover the following topics:

Teaching and Learning Mathematics through

- a. Mathematical definitions.
- b. Logical Reasoning thinking using simple mathematical statements.
- c. HOTS thinking using implication and compound statements
- d. Expressing ideas and arguments mathematically.

**Objectives:** At the end of the course, participants will able to:

1. Practice their learning or teaching of mathematics meaningfully through Mathematical Spirit that encompasses understanding, thinking and communicating mathematically.
2. Read and interpret mathematical statements correctly.
3. Write and communicate their quantitative problem-solving ideas or arguments clearly to others using proper mathematical statements.

### **Who should attend:**

This workshop is suitable for those who like to enhance their mastering of mathematical thinking and writing skills. It is especially useful for high school, pre-university or college mathematics teachers and lecturers; high school, pre-university and college students.

### **Requirements:**

Mathematical background on integers and sets.