

## **Why are some science and engineering concepts so difficult to learn?**

**Dr. Michelene Chi**

Senior Scientist, Learning Research and Development Center  
Professor of Psychology  
University of Pittsburgh

Friday, August 2

Continental breakfast - 9:00-9:30am

Presentation - 9:30 to 11 am

Open discussion 11-11:30am

CSM campus

CTLM [975 16<sup>th</sup> Street] room 102

Reception - 12 noon to 2pm

University Club (Coolbaugh House –17<sup>th</sup> and Maple Streets, Golden)

Concepts like heat, electricity, and equilibrium are consistently very difficult for students to learn. Even when students know “how to work the problems” they often do not truly understand the underlying concepts. Why is this so? Dr. Michelene Chi, distinguished cognitive psychologist<sup>1</sup> from the University of Pittsburgh proposes that the ways students think about and categorize these concepts can help explain why these concepts are so difficult – AND give us insights into how we might design instruction to improve students’ understanding.

In this seminar, Dr. Chi will share her ideas about this topic as well as demonstrate some of the interventions she is developing to help students more easily understand these concepts. Computer simulations seem to be important aids in helping students learn.

The seminar may be of greatest value to faculty teaching courses involving equilibrium, electricity and magnetism, or transfer of mass, heat or momentum. The seminar will also be of interest to those who use, or plan to use, computer simulations in their instruction. Those planning to attend may wish to visit Dr. Chi’s website [<http://www.pitt.edu/~chi/>] for more information about her work.

If you plan to attend the seminar **PLEASE RSVP TO RUTH STREVELER** ([rstrevel@mines.edu](mailto:rstrevel@mines.edu)) by **July 23**.

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<sup>1</sup> Dr. Chi’s article – Chi, M.T.H., Feltovich, P.J. & Glaser, R. (1981). Categorization and representation of physics problems by experts and novices, *Cognitive Science*, 5, 121-152 – is the most cited work in cognitive psychology.