

2011-2012

# Graduate Seminar Series

## The Department of Mechanical Engineering – Engineering Mechanics

Proudly Presents

**Professor Karen Roemer**  
**Biomechanics**

**Department for Kinesiology and Integrative Physiology**  
**Michigan Technological University**



Karen Roemer received her PhD in Sports Science from the Chemnitz University of Technology in Germany. Her area of expertise is biomechanical modeling and human movement analysis. In Germany she worked in the Olympic Training Centers in Stuttgart and Saarbruecken. Afterwards she started with her doctorate program and worked as a research fellow at the Institute of Mechatronics in Chemnitz and lecturer at the Chemnitz University of Technology. In 2004 she finished 2nd in the New Investigators Award of ISBS (International Society of Biomechanics in Sports) and in 2005 she received the German Karl-Hofmann-Dissertation Award for her PhD thesis. She taught numerous classes in biomechanics, sports technology and movement analysis. After finishing her post-doctorate in Chemnitz she became an assistant

professor for biomechanics at Michigan Technological University in 2008. There, she developed the Human Movement Biomechanics Research Lab within the Kinesiology and Integrative Physiology Program and has been teaching classes in biomechanics and kinesiology.

**Thursday, Jan. 26, 2012      4:00 – 5:00 p.m.      Room 112, ME-EM Bldg.**

## The interaction of sports equipment and the human being

The precise analysis of joint reactions and muscle forces that are responsible for specific human movements represents a basic task in human movement biomechanics. Multi body system models of the human body allow gathering detailed information on the interplay between human body biomechanics and for example sports equipment. The focus of this presentation is set on leg extension movements. How does the set-up of a leg press machine influence joint reactions and muscular effort? How does body shape influence joint reactions for a given set-up in ergometer rowing?