**Special Presentation**
14th Annual Paul S. Richards, MD, Endowed Distinguished Visiting Lectureship in Occupational Medicine

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**“From Virtual Design to on the Floor Reality Building Manufacturing Systems”**

One of the primary focuses of human factors and ergonomics is worker health and safety. This is done by designing and developing models to assess risk to the musculoskeletal system. When new systems were designed, workstations were often developed in 2D, forcing Engineers to view the workspace twice—plan and side view. This workflow may lead to a higher probability of missing issues, resulting in significant and late equipment changes.

Given that the manufacturing landscape today is more competitive, systems must be designed, evaluated and assessed in fewer months and deliver effective launches (reaching production requirements in fewer months, lean, and flexible, safe). Ergonomics must be part of the entire design process and contribute to overall system metrics.

To accomplish this, ergonomics cannot continue to be assessed in isolation, but within the context of the job including jobs per hour, operator utilization, quality and, of course, employee safety and health. New methods that integrate ergonomic assessments early in process design must examine the system and the station together, as it would be implemented on the plant floor. “Virtual Tools” will enable engineers, operators, equipment suppliers, etc. to simultaneously review realistic 3D models.

**Biography**

Dr. Bradley Joseph Ph.D. joined Ford Motor Company in June 1988 as the Ford Corporate Ergonomist. He is currently manages The Virtual Assembly Engineering Methods Group within Powertrain Manufacturing Engineering. His duties include design and development of Powertrain assembly lines during the early engineering design phases. In addition, his department coordinates engineering teams to design, develop and assess new assembly systems and workstations for safety, labor workload, ergonomics, material handling and product feasibility before systems are built. He currently teaches at Wayne State University Industrial Engineering Department and is a Lecturer at the University of Michigan. In addition, he lectured for several years at the Wayne State Medical School (second year) “Connective Tissue” section and associated Clinic day.