



COLLEGE OF ENGINEERING

SEMINAR ANNOUNCEMENT

Engineering in Healthcare:

“Digital Human Modeling for Ergonomic Assessment in Hospitals”

Presenter: Awni Qasaimeh

Abstract:

US healthcare system is vastly growing due to high needs in society. In 2005, healthcare sector spending was estimated to be 16% of GDP. It is expected to possess 20% of GDP in 2015. However, healthcare delivery system is poorly designed to accommodate these rapid changes. Inefficient utilization, real practice & evidence-based practice gap and poor safety are some of the major results of these malfunctions in healthcare infrastructure. In 2011 waste was estimated 37% of US spending on healthcare. Healthcare as a system can be looked at from engineering perspective as a set of diverse entities. Engineering tools can be utilized to improve the design, control and adaptation to merging parameters and inputs.

Healthcare providers are at increasing risks of Work-Related Musculoskeletal Disorders (WMSDs) caused by awkward postures due to patient lifting. Decision makers prefer quantified justifications for investing in new lifting devices. Three patient lifting techniques were analyzed in the first case study. A comparison between manual lifts and assistive device lifting is made to quantify the reduction in injuries based on two dependent variables: lower back compression forces and fatigue. The second case study will attempt to study the impact of working postures, gender, percentile, body rotation angle of sonographers using digital human modeling. Furthermore, the use of discrete event simulation to evaluate different working scenarios in reducing patient turnaround time will be discussed in the third case study.

About the Speaker:

Awni Qasaimeh is an assistant professor at the department of manufacturing and engineering technology. He holds a Ph.D. in Industrial and Systems Engineering from State University of New York (SUNY) at Binghamton. Qasaimeh has worked as reliability engineer with Advanced Energy Industries, Colorado. During his PhD, he was a doctoral research associate with Universal Instruments Corporation, NY, through Watson Institute for Systems Excellence (WISE), and the Integrated Electronics Engineering Center (IEEC) at SUNY-Binghamton. His research interests include electronics manufacturing, reliability engineering, and engineering in healthcare.

Date: November 25, 2013

Time: 12 P.M. – 1 P.M.

Bring your own lunch; beverages and snacks to be provided.

Location: Prescott 225