DEPARTMENT of INDUSTRIAL ENGINEERING
UNIVERSITY of HOUSTON

FRIDAY SEMINAR SERIES
BROADEN HORIZONS | EXTEND MINDS

Dr. Vladimir Boginski
Associate Professor
Depart. Industrial Engr. + Manag. Systems
University of Central Florida

Date: Friday, Feb 15, 2019

Time: 1 - 1:50 pm

Location: D3 W122

Network Science and Engineering: Mathematical Modeling and Optimization Aspects

Abstract: Networks can be found everywhere in the modern world: application areas are abundant and diverse, spanning the domains of big data and physical/virtual complex systems. In general, networks reflect how elements of a system/dataset are connected and interact with each other. Network science is an interdisciplinary field that studies these complex networks from various perspectives. "Descriptive" mathematical modeling of networks may reveal interesting connectivity patterns that characterize a complex system/dataset. In addition, an increasingly important task is *optimizing* certain properties of a networked system, for instance, by making optimal decisions on design and/or enhancement of a network. Such problems can be referred to as "prescriptive modeling" or "network engineering". This presentation will address the following broad questions. (i) Can we identify large "well-connected" clusters/communities within a network? (ii) Can we design well-connected networks with certain guaranteed resilience properties? (iii) What are "critical elements" of a network that are responsible for its integrity/vulnerability? (iv) Can we solve these problems to optimality? Modeling and computational aspects of these problems will be discussed.

Biography: Dr. Vladimir Boginski is an Associate Professor of Industrial Engineering and Management Systems at the University of Central Florida (Orlando, FL). He received his bachelor's degree in Applied Mathematics from Moscow Institute of Physics and Technology in 2000 and his M.S. and Ph.D. degrees in Industrial and Systems Engineering from the University of Florida in 2003 and 2005, respectively. He has co-authored over 60 refereed publications and served as PI/co-PI on multiple research awards with a total value of over $15M, sponsored by DOD (Air Force and DTRA), DOE, and NSF. He is a former recipient of the DTRA Young Investigator Award.