

# **ASU** Department of **Biomedical Informatics**

## **Arizona State University**

**SPRING 2017**

**Biomedical Informatics Weekly Seminar Series**

### ***Bayesian Structural Equations Modeling***

**Hamy Temkit**

*Biostatistician*

**Mayo Clinic Arizona**

**April 28, 2017 (2:45 p.m. – 4:00 p.m)**

**Room Sj 1-149 , Samuel C. Johnson Research Bldg.**

**Mayo Clinic Scottsdale**



**Speaker's Bio:** Dr. Hamy Temkit graduated with an MS in mathematics from Polytechnic University in Brooklyn and then received an MS in statistics from Florida State University. He joined the Division of Biostatistics in Indianapolis at IUPUI and worked as a MS biostatistician from 2000-2007. In 2014, he then joined ASU and obtained a PhD degree in Statistics in optimal designs for generalized linear models and functional magnetic resonance imaging (fMRI). While at ASU he was also a statistical research assistant for the Multidisciplinary data mining project Minerva (funded by the DoD). In 2014, he then joined the Biostatistics department in Mayo Clinic at Arizona, as a biostatistician II. His areas of interest and research are optimal designs, structural equations modeling, Bayesian statistics, data mining and machine learning.

**Talk Abstract:** Structural Equations modeling (SEM) is gaining popularity as a sound statistical method that is based on Maximum likelihood estimation (MLE). Its range of applications is expanding rapidly in several areas of science, such as economics and neuroscience. The SEM methodology takes into account measurements errors and latent variables, and offers great flexibility to model more sophisticated models. In this presentation, we glance over the theory of the classical frequentist approach of SEM, and present examples of widely used models such as the measurement model or confirmatory factor analysis (CFA). We then introduce the Bayesian paradigm and provide estimates of the parameters by sampling from the posterior distributions obtained from chosen conjugate priors and using Bayesian and MCMC techniques of augmented data and Gibbs sampling. Finally, we will go over the code syntax in R and use the two SEM R packages Lavaan and Openbugs to run our models.