

The University of Texas at Arlington  
**Department of Psychology Colloquium Series**  
proudly presents

**OGAN GUREL, MD**

Innovation Specialist, BioHealth

Adjunct Faculty, Departments of Kinesiology, Nursing, Management,  
Bioengineering, Philosophy & Humanities

**UT Arlington**



**On the Logic of Psychiatry**

Modern psychiatric diagnosis is largely based on a history (symptoms) & physical (signs), for which the mental status examination (MSE) constitutes the main part of the latter. Based on these symptoms and signs, the American Psychiatric Association's DSM-5 is consulted by which combinations of such symptoms and signs are used in a logical manner to arrive at the final diagnosis. These symptoms and signs are not organized as random "check lists" but are rather tied together via logical constructs (AND and OR statements). Moreover, there are 298 such conditions in the DSM-5, each one of which has such as a logical diagnostic structure. In this seminar, we present a comprehensive compilation of the logic of the core diagnoses of the DSM-5, in the form of a fully integrated digital logic circuit. From this we can infer both higher-level and detailed logical structures in the diagnostic process as well as the "disordered brain" suggesting future lines of work as well as concepts that may inform the next incarnation of diagnostic standards, e.g. DSM-6. In addition, we have, through this work, identified illogicalities in the DSM-5 which can likewise suggest further lines of improvement in clinical guidance. It was Baruch Spinoza's dream in his 1677 book *Ethics, Demonstrated in Geometrical Order* to set human emotions into mathematical order, applying Euclid's method of geometry to philosophy. While he cannot be said to have succeeded, our work, while still preliminary, leverages not Euclid, but George Boole to make steps towards systematizing lines of inquiry, from psychology to philosophy, that have traditionally been a challenge to frame in mathematical terms and setting the stage for further studies in analyzing these logical structures.

**Friday, Sept. 13 @ 2:00 p.m., SEIR 294**