PSYCHOLOGY 607
NETWORK ANALYSIS – FALL 2018

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Office Hours by appointment

Lecture Place and Time:
257 Straub Hall, Wednesday 1:00 – 2:50pm

Course Description:
Network analytic approaches can be applied in several areas of psychological research: from examining functional neural networks to characterizing the structure of psychopathology. This seminar will focus on the broad applications of network analytic approaches in psychological research, with equal emphasis on theory and application. We will cover topics including (but not limited to) applying graph theory to functional connectivity MRI, symptom networks in psychopathology, social network analysis, and stochastic actor-oriented models (longitudinal changes; selection/influence effects). In addition to understanding the theory behind, and rationale for using, these different network analytic methods, this course will include hands-on workshops applying these techniques with the software **R**.

Reading:
- Albert-László Barabási & Jennifer Frangos (2014). *Linked: The New Science of Networks*, Basic Books. ProQuest Ebook Central, http://ebookcentral.proquest.com/lib/uoregon/detail.action?docID=679705
- Albert-László Barabási (ongoing). *Network Science*. http://networksciencebook.com/
- We will also read scientific articles associated with each topic, which can be accessed through the University's library system.

Course Requirements & Grading:
Your grade will be determined by class participation (60%) and completion of a project (40%) applying one or more of the network analytic methods learned during the course.
- 90-100%, your grade will be an A
- 80-89%, your grade will be a B
- 70-79%, your grade will be a C
- 60-69%, your grade will be a D
- < 60%, your grade will be an F
- For those taking the class pass/fail your grade must be ≥ 70% to receive a P

Project:
One goal of this seminar is for you to be able to apply network analysis methods to your research. To measure the success of this goal, I'd like you to complete one of two possible projects:
1. Analyze data using one of the network analysis methods discussed in class, write up the results, and present them during our last meeting.
2. Preregister a study using one of the network analysis methods discussed in class and post it to OSF.

The project will be worth **40%** of your overall grade and is due on **11/28 by 1pm** (when class begins).

Accommodations:
You are strongly encouraged to contact the Accessible Education Center (164 Oregon Hall; 346-1155) if you have a condition that creates difficulty for you as a student. With advance planning, adjustments are relatively straightforward. Adjustments at the last minute can be problematic and sometimes are not possible.

SCHEDULE OF LECTURE TOPICS and READING ASSIGNMENTS

PLEASE NOTE: This outline is tentative, and there may be changes during the quarter.

WEEK	DATE	TOPIC AND READING
Week 1	09/26/18	**Introduction to Network Theory**
Week 2	10/03/18	**Network Theory** *Linked* Chapters 1-6 (54 pgs)
Week 3	10/10/18	**Functional brain networks** *Linked* Chapter 7 (10 pgs) van den Heuvel & Sporns (2011) *Rich-Club Organization of the Human Connectome*
Week 4	10/17/18	**Functional brain networks** Bassett, Xia & Satterthwaite (2018) *Understanding the Emergence of Neuropsychiatric Disorders with Network Neuroscience*
Week 5	10/24/18	**Symptom networks** *Linked* Chapter 8 (10 pgs) Fried & Cramer (2017) *Moving Forward: Challenges and Directions for Psychopathological Network Theory and Methodology*
Week 6	10/31/18	**Symptom networks** Rouquette et al. (2018) *Emotional and Behavioral Symptom Network Structure in Elementary School Girls and Association with Anxiety Disorders and Depression in Adolescence and Early Adulthood*
Week 7	11/07/18	**Social networks** *Linked* Chapters 9-10 (24 pgs) Clifton & Webster (2017) *An Introduction to Social Network Analysis for Personality and Social Psychologists*
Week 8	11/14/18	**Longitudinal social network analysis** Snijders, van de Bunt & Steglich (2010) *Introduction to stochastic actor-based models for network dynamics*
Week 9	11/21/18	**Multi-method network analysis**
Week 10	11/28/18	**Project presentations**