Course Information

Dates: Fall term
Meeting days, time:
Location:

Instructor Information

Overview and Objectives:
This course is an introduction to the theory, methods, and procedures of network analysis with emphasis on applications to health and social behavior. The goal of the course is to provide a working knowledge of concepts and methods used to describe and analyze social networks so that professionals and researchers can understand the results and implications of this body of research. The course also provides the training necessary for scholars to conduct network analysis in their own research and practice careers.

The course consists of readings, class discussions, analysis assignments, and a final project. Assignments are designed to build components of a full network study, culminating in the final project. Individual projects will use data that the student collects him/herself. The data collection and entry process will be quite simple and consist of identifying a group (a class, a club, organization, etc.) that students can ask to complete a simple questionnaire. Other electronic or observational sources of data may also be used.

Learning Objectives:
1. Read and comprehend concepts presented in the social network literature including its terminology and application.
2. Explain how network analysis contributes to areas of study of interest to the student.
3. Use network analysis as a research technique in their own research including knowledge of what concepts are applicable and how to collect and analyze social network data.
4. Conduct network analyses of original or secondary social network data that contributes to the scholarly or professional development of the field.

Recommended Textbook:

Responsibilities
Please complete reading assignments before class and come prepared to discuss them. You will be assessed on your understanding of the assigned reading. Homework assignments are individual and to be turned in at the beginning of class on the due date. Late assignments will be penalized 10% per day past the due date (unless prior arrangements have been made).
Note: You will find all the assigned materials and activities on CourseWeb and should complete them by the dates and times indicated.

Course Requirements:
Class participation and attendance 20%
Homework assignments 30%
Final project 50%

Attendance Policy
Students are expected to sign-in to each class (computer provided in suite lobby). If a problem is encountered with the sign-in system, please contact the course instructor(s) as well as Allie Giel (alg190@pitt.edu) immediately.

Course Grading Scale:
For the computation of the final course grade as well as for the course assignments, the following grading scale will be used:
93 - 100 = A  86 – 89 = B+  76 – 79 = C  66 – 69 = D+
90-92   = A-  80 – 85 = B  70 – 75 = C+  60 – 65 = D+  < 60 = F

Website resources
All homework assignments, course information, and communication will be available at http://courseweb.pitt.edu.

Academic Integrity
Students in this course will be expected to comply with the University of Pittsburgh’s Policy on Academic Integrity (http://wwwprovost.pitt.edu/info/ai1.html). Any student suspected of violating this obligation for any reason during the semester will be required to participate in the procedural process, initiated at the instructor level, as outlined in the University Guidelines on Academic Integrity. This may include, but is not limited to, the confiscation of the examination of any individual suspected of violating University Policy. Furthermore, no student may bring any unauthorized materials to an exam, including dictionaries and programmable calculators.

Competencies
The following competencies are addressed in this course:
Research questions
Reviewing other studies
Study design
Organizing datasets
Data analysis plans
Course Schedule

Session 1: Introduction to social networks and health

Learning Objectives:
- Introduce the basic language of networks and providing an overview of the course.
- Describe the history of network research with discussions of
  - Contributions from different academic disciplines
  - Major contributors to network analysis
  - Where is network analysis today and in the future.

In-Class Activities:
- Open discussions on how network analysis can be applicable to areas of interest to students

Required Reading(s):

Recommended Reading:
- Scott: Chapters 1 & 2

Homework Assignment:
- Network representations and network conversions
Learning Objectives:
- Learn the basics of centrality, one of the most useful concepts in network analysis
- Discuss various centrality measures and the differences in their computation and application
- Understand distance calculations which are often used to calculate centrality measures
- Discuss the application of centrality measures to behavior change programs

In-Class Activities:
- Software demonstration of centrality measures, positions, and roles

Required Readings:

Recommended Reading:
- Scott: Chapter 5, pages 85-99

Homework Assignment:
- Centrality calculations
Session 3: Ego-centric networks

Learning Objectives:
- Learn how to measure ego-centric networks
- Understand some common instruments used and common measures created from ego-centric data
- Discuss the major hypotheses investigated using ego-centric data

Required Readings:

Homework Assignment:
- Design data collection for ego-centric data
Session 4: Structure and positions

Learning Objectives:
• Learn how to identify positions, or roles, in a network
• Understand how to group together nodes that have the same links to other nodes
• Discuss how nodes can occupy the same position without necessarily being directly connected to one another (in contrast to groups).

In-Class Activities:
• Live demonstration of 6-degrees of separation

Required Reading(s):

Recommended Reading:
• Scott: Chapter 7, pages 126-148

Homework Assignment(s):
• Design data collection for network data
Session 5: Online data

Learning Objectives:
- Describe online network data and how offline measures can or cannot be mapped
- Understand the nuances of big data
- Discuss the necessity and utility of software packages
- Example studies of network online data

Required Reading(s):

In-Class Activities:
- Live demonstration of online network data analysis

Homework Assignment(s):
- Incorporate feedback from instructor on network study
Session 6: Interventions

Learning Objectives:
- Discuss importance of understanding system and organizational functioning and how networks can be used to improve it
- Discuss several studies that have tested network interventions and many intervention choices exist
- Learn that who delivers the message, and how, may be more important than its content

Required Reading(s):

Homework Assignment:
- Update ego- or network-centric design to integrate intervention
Session 7: Models, begin presentations

Learning Objectives:
- Introduce new developments in the implementation of statistical procedures for testing network properties
- Discuss ERGM, which enable researchers to test hypotheses about network structure and the distribution of behaviors that explicitly accounts for the non-independence and structural dependence of social networks
- Understand how programs are in their infancy, and application just growing.
- Introduce longitudinal data, and the use of the stochastic actor oriented behavioral (aka SIENA) model to test for social influence and selection.

Required Reading(s):

In-Class Activities:
- First 5 presentations (50 minutes)
Session 8: Presentations

In-Class Activities:
- Final 10 presentations (100 minutes)

Course Wrap-up:
- Resources for further leadership development (locally and nationally)
- List of additional readings/resources
- Feedback and Course Evaluation