

Syllabus: Introduction to Network Analysis

This course is designed for students who are comfortable with R and have experience with data analysis and data manipulation. In just 100 minutes of instructional time, students learn how to think about networks, quantify and analyze network relationships, and identify key nodes in a network.

By the end of this course, students will be able to:

1. Frame a problem from the standpoint of networks and relationships.
2. Calculate and analyze various network measurements to understand the underlying structure.
3. Identify potential weak points and key players to prevent failures or leverage the network.

Assessment:

1. **Concept reviews:** these are comprised of short five question quizzes that cover the most important concepts and ideas in each lesson. They encourage holistic understanding and are multi-faceted question types (i.e. drag and drop, fill-in-the-blanks, matching, etc).
2. **Exercises:** these are additional videos that cover the coding functions in the instructional video in more depth. They are project-based and include coding templates for students to strengthen their skills outside of the course.

Materials provided:

1. Accompanying PDFs to use as reference materials
2. R code templates from the instructional videos and exercises
3. Data sets used in the instructional videos and exercises

Course Outline

1. An overview of networks: 21 min
 - a) What's new with networks?
 - b) Networks in business
 - c) The impact of networks

2. Setting up your network data: 24 min
 - a) Geocoding network data
 - b) How do you measure a network?
 - c) Wrangling network data

3. Analyzing your network structure: 28 min
 - a) Visualizing your network
 - b) Identifying key network hubs
 - c) Summarizing network metrics

4. Analyzing your network strength: 25 min
 - a) Testing network resiliency
 - b) Building a function for networks
 - c) Identifying disconnected networks

Total instruction time: 1 hr, 38 min