

Spring 2019 Syllabus

Social Data Science

Dr. David Garcia

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Course dates: Monday 11.02.2019 to Friday 15.02.2019

Location Monday to Thursday: HG D5.2

Location Friday: HG F 26.5

Course time: 9:15-12:00 and 13:15-16:00

All exercises are based on the R Statistical Language. Lecture slide handouts will be available in Moodle the day before each session. Markdown files with exercise handouts will also be available in Moodle before each session. Sessions will combine theory lectures with interactive exercise sessions and tutorials where students start solving the handouts, to be finalized in their self-study time.

Day 1. Introduction to Social Data Science

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Session 01 – What is Social Data Science?

11.02.2019, 9:15-12:00

Objective: Students will learn the definition of Social Data Science and its relation to other disciplines, as well as introductory concepts of the R Statistical Language.

- The field of Social Data Science
- Administrative issues and overview of the course
- Introduction to R

Exercise 01: Crash course in R and Markdown

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Session 02 – Temporal Orientation

11.02.2019, 13:15-16:00

Objective: Students will learn the concept of long-term orientation and test its relationship with economic development.

- Long-term orientation and other aspects of culture
- Google trends and World Bank data
- Data wrangling with dplyr

Exercise 02: Google trends. Do richer countries look more to the future?

Day 2. Social Dynamics

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Session 03 – The Simmel Effect

12.02.2019, 9:15-12:00

Objective: To understand what fashions reveal about social dynamics.

- Theory of fashion
- Analyzing US Social Security Administration data
- The Simmel effect for baby names

Exercise 03: Do baby names follow fashions?

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Session 04 – Social Impact Theory

12.02.2019, 13:15-16:00

Objective: Students will learn theories about social impact and how they are related to information spreading.

- The theory of Social Impact
- Information spreading in social media
- Testing the division of impact in Twitter

Exercise 04: Twitter Timelines. Is there division of social impact in Twitter?

Day 3. Affect

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Session 05 – Sentiment Analysis

13.02.2019, 9:15-12:00

Objective: A critical understanding of sentiment analysis and its fundamental principles.

- The semantic differential and computerized psycholinguistics
- Supervised and unsupervised methods in sentiment analysis
- Evaluation of sentiment analysis methods

Exercise 05: How well can we measure sentiment from text?

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Session 06 – Emotions

13.02.2019, 13:15-16:00

Objective: To understand the theory and measurement of emotions in social media.

- Representation of individual emotions
- Collective emotions and social sharing of emotions
- Measuring emotional sharing in a trending topic

Exercise 06: Do we tend more to share content if it is emotional?

Day 4. Social Networks

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Session 07 – Social Network Analysis

14.02.2019, 9:15-12:00

Objective: Learn how to construct and analyze social networks

- Introduction to social networks
- Measurement biases and the friendship paradox
- Reddit discussion networks and igraph

Exercise 07: Reddit data and igraph. Is there a friendship paradox in online discussions?

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Session 08 – Social Network Phenomena

14.02.2019, 13:15-16:00

Objective: Learn the relationship between social networks and resilience, to understand assortativity and the processes that generate it

- Centrality measurements and social resilience
- Assortativity, homophily, and contagion
- Network measurements in igraph

Exercise 08: Igraph. What aspects of health are assortative in social networks?

Day 5. Datathon

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Session 09 – Datathon part 1

15.02.2019, 9:15-12:00

Objective: To have an overview of data sources and projects in SDS.

- Project ideas and suggestions
 - Useful R packages and data sources
 - Most of the session will be self-exercise to start the project under supervision
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Session 10 – Datathon part 2

15.02.2019, 13:15-16:00

Objective: To design a SDS project.

- Continuation of self-exercise session under supervision
- At the end of the session, each student will briefly describe their project plan and work so far
- Student projects will be continued after the course and delivered at a later date during the semester