San José State University  
Computer Science Department  
CS185C, Introduction to Social Network Analysis (COVID-19 edition), Section 2, Fall, 2020

Course and Contact Information

Instructor: Aikaterini Potika  
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Telephone: 408-9245134  
Email: katerina.potika@sjsu.edu  
Office Hours: TBA  
Class Days/Time: TTh 12-1:15pm  
Classroom: MH 233  
Prerequisites: CS 146 (with a grade of "C-" or better in each); or instructor consent.

Course Format

Faculty Web Page and MYSJSU Messaging

Course materials such as syllabus, handouts, notes, assignment instructions, etc. can be found on Canvas Learning Management System course login website at http://sjsu.instructure.com. You are responsible for regularly checking with the messaging system through MySJSU at http://my.sjsu.edu (or other communication system as indicated by the instructor) to learn of any updates.

Course Description

The Web and social networks are complex networks. We will study them by unifying tools from different disciplines: computer science, economics, and social sciences. Topics include graph theory, information networks, search, advertisement, auctions etc.

Course Learning Outcomes (CLO)

Upon successful completion of this course, students will be able to:

- CLO1. Discuss graph theory used to predict and determine network behavior
- CLO2. Reflect on the basic topics of behavior analysis
- CLO3. Carry out the basics of web search, sponsored and matching markets
- CLO4. Determine network properties and features in real world settings
- CLO5. Integrate different approaches from computer science, economics and social studies to design complex networks
- CLO6. Carry out network analysis using various software and visualizations
- CLO7. Summarize main tools to analyze complex networks
Required Texts/Readings

Textbook
Networks, Crowds, and Markets: Reasoning About a Highly Connected World, 1st Edition by David Easley (Author), Jon Kleinberg (Author)
ISBN-10: 0521195330

We will be using the online pre-print version of the book.

Other Readings
- Social Media Mining An Introduction by Reza Zafarani, Mohammad Ali Abbasi, Huan Liu, ISBN: 9781107018853
- Online resources

Other technology requirements / equipment / material
Software
https://gephi.github.io/
http://ccl.northwestern.edu/netlogo/index.shtml
https://www.r-project.org/
https://networkx.github.io

Network Data Repositories
https://snap.stanford.edu/data/
http://konect.uni-koblenz.de

Course Requirements and Assignments
Success in this course is based on the expectation that students will spend, for each unit of credit, a minimum of 45 hours over the length of the course (normally three hours per unit per week) for instruction, preparation/studying, or course related activities, including but not limited to internships, labs, and clinical practica. Other course structures will have equivalent workload expectations as described in the syllabus. Assignments will focus on COVID-19 applications.

Final Examination or Evaluation
Faculty members are required to have a culminating activity for their courses, which can include a final examination, a final research paper or project, a final creative work or performance, a final portfolio of work, or other appropriate assignment.
**Homework assignments:** individual, regularly assigned will include written problem assignments, and perhaps some online exercises. Solutions will be not posted. The homework is a tool for you to learn the material and prepare for the exams.

**Reading assignments:** Reading assignments will regularly be for the next class (see schedule).

**Quizzes:** Unannounced quizzes (at least 4) may be given during class, each taking about 5 minutes total. These will generally be problems from the reading assignment and/or the homework.

**Group Project:** A programming project of your choice related to the course’s topics in groups of two students. Never use any code you find on the web, unless given by me. Penalty for late submission 5% for every 3 days up to 9 days, after that no submission will be accepted. Final presentation at the end of the semester is mandatory.

**Participation:** In-class participation, online polls etc.

**Midterm exams:** There will be two written Midterm exams during the semester.

**Final exam:** One written final exam. The exams will contain multiple-choice questions, short answer questions and questions that require pseudocode and/or computations.

**Grading Information (Required)**

No extra point options.

**Determination of Grades**

Final Grade:
25% Project
10% Homework
5% Participation
10% Quizzes
30% Midterms
20% Final

Exams with closed books, final exam is comprehensive. No make-ups exams except in case of verifiable emergency circumstances

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<tr>
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<th>Percentage</th>
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<tr>
<td>A plus</td>
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Classroom Protocol

Attendance is highly recommended. Please avoid disturbing the class: turn-off cell phones (or put them on vibrate mode), no text messaging in the class or the exams, no taking pictures and video, avoid coming late. You may not publicly share or upload material for this course such as exam questions, lecture notes, or solutions without my consent.

University Policies (Required)

Per University Policy S16-9 (http://www.sjsu.edu/senate/docs/S16-9.pdf), relevant information to all courses, such as academic integrity, accommodations, dropping and adding, consent for recording of class, etc. is available on Office of Graduate and Undergraduate Programs’ Syllabus Information web page at http://www.sjsu.edu/gup/syllabusinfo/”.

CS176: Introduction to Network Analysis, Fall 2020

The schedule is subject to change with fair notice and how the notice will be made available

Course Schedule

Week 1: Introduction, Chapters 1, 2 (2.1)
Week 2: Graphs, Chapter 2 (2.2–2.3)
Week 3: Centrality measures, other resources
Week 4: Strong/Weak Ties, Chapter 3 (3.1–3.4) & other resources
Week 5: Graph Partitioning, Chapter 3 (3.3–3.6) & other resources
Week 6: Visualizations, Homophily/Segregation, Chapter 4 (4.1) & other resources
Week 7: Positive and Negative Relationships, Structural Balance, Chapter 5 (5.1-5.3)
Week 8: Behavior Analysis, other resources
Week 9: Auctions and Markets, Chapters 9 (9.1–9.6) & 10 (10.1–10.5)
Week 10: Sponsored Search Markets, Chapter 15 (15.1–15.3)
Week 11: Structure of the Web, Chapters 13 & other resources
Week 12: Link Analysis, Web Search - Chapter 14 (14.1–14.4)
Week 13: Information Cascades - Chapter 16 (16.1–16.3)
Week 14: Properties of graphs and random graphs - Chapters 18, 20 & other resources
Week 15: Project presentations