

Course Syllabus

Course Information

Registrar Information

<i>Course #</i>	ECE 232E
<i>Course title</i>	Large Scale Social and Complex Networks: Design and Algorithms
<i>Instructor</i>	Prof. Vwani Roychowdhury
<i>Class time and location</i>	TR 4pm-5:50pm/Young Hall CS76
<i>Final day and time</i>	None
<i>Course prerequisite or requisites</i>	<ul style="list-style-type: none">• Calculus & Linear Algebra• Probability• Basic Python & R skill is preferred

Course Materials

- Christos H Papadimitriou and Kenneth Steiglitz. Combinatorial optimization: algorithms and complexity. Courier Corporation, 1998
- Lecture notes / lecture videos and supplemental resources will be provided week-on-week.

Course Schedule/Outline

Course content is divided into weekly modules. Due dates are communicated within each Assignment tool.

<i>Week 1</i>	Representation of graphs, Structural properties of graphs
<i>Week 2</i>	Power law networks, Generative models for Random networks
<i>Week 3</i>	Dynamics of Random networks
<i>Week 4</i>	Erdős–Rényi networks, Community detection algorithms, PageRank algorithm
<i>Week 5</i>	Reinforcement learning, Inverse Reinforcement learning
<i>Week 6</i>	One-to-All shortest path algorithm, Graph convolutional networks (GCN)
<i>Week 7</i>	All-to-All shortest path algorithm, Minimum spanning trees
<i>Week 8</i>	Class of NP problems, Hamiltonian cycle problem, Approximation algorithms
<i>Week 9</i>	Advanced topics on Twitter mining, Collaborative spam filtering
<i>Week 10</i>	none

Course Policies

Grade calculation

- 100% Projects

Grading policies

- Group project, each group only needs one submission; Maximum group size is 3
- Late-work: 5 points off per day, three days maximum

University Policies and Support for Students

Academic Integrity

UCLA is a community of scholars. In this community, all members including faculty, staff and students alike are responsible for maintaining standards of academic honesty. As a student and member of the University community, you are here to get an education and are, therefore, expected to demonstrate integrity in your academic endeavors. You are evaluated on your own merits. Cheating, plagiarism, collaborative work, multiple submissions without the permission of the professor, or other kinds of academic dishonesty are considered unacceptable behavior and will result in formal disciplinary proceedings usually resulting in suspension or dismissal. See the [Dean of Students website \(https://deanofstudents.ucla.edu/\)](https://deanofstudents.ucla.edu/) for more information.

[source: Dean of Students syllabus statement ([syllabus \(https://deanofstudents.ucla.edu/file/4b995724-f033-476a-bccc-f6103528d959\)](https://deanofstudents.ucla.edu/file/4b995724-f033-476a-bccc-f6103528d959))]

Accommodations for Students with Disabilities

If you are already registered with the Center for Accessible Education (CAE), please request your Letter of Accommodation in the Student Portal. If you are seeking registration with the CAE, please submit your request for accommodations via the CAE website. Students with disabilities requiring academic accommodations should submit their request for accommodations as soon as possible, as it may take up to two weeks to review the request. For more information, please visit the [CAE website \(https://cae.ucla.edu\)](https://cae.ucla.edu), visit the CAE at A255 Murphy Hall, or contact us by phone at (310) 825-1501.

[source: Center for Accessible Education ([Faculty Questions \(https://cae.ucla.edu/faculty/faqs\)](https://cae.ucla.edu/faculty/faqs))]

Resources for Students

UCLA provides resources if you are feeling overwhelmed and need personal and/or academic assistance.

Please see the [Red Folder \(https://studentincrisis.ucla.edu/file/39679e1c-a57d-48d0-83a2-a906c1e53669\)](https://studentincrisis.ucla.edu/file/39679e1c-a57d-48d0-83a2-a906c1e53669) for more information.

Title IX and Equity, Diversity and Inclusion

Advocacy and Confidential Services:

Please note that Title IX prohibits gender discrimination, including sexual harassment, domestic and dating violence, sexual assault, and stalking. If you have experienced sexual harassment or sexual violence, you can receive confidential support and advocacy at the CARE Advocacy Office for Sexual and Gender-Based Violence, 205 Covell Commons, Los Angeles, CA, 90095, care@careprogram.ucla.edu, (310) 206-246 5. Counseling and Psychological Services (CAPS) provides confidential counseling to all students and can be reached 24/7 at (310) 825-0768.




Reporting and Non-confidential Services:



Your professor is required under the UC Policy on Sexual Violence and Sexual Harassment to inform the Title IX Coordinator should he become aware that you or any other student has experienced sexual violence or sexual harassment. In addition, You can also report sexual violence or sexual harassment directly to the University's Title IX Coordinator, 2255 Murphy Hall, titleix@equity.ucla.edu , (310) 206-3417. Reports to law enforcement can be made to UCPD at (310) 825-1491.

Engineering EDI Resources:

There are a number of specific resources on Equity, Diversity, and Inclusion available to students in the Samueli School of Engineering, including trained faculty officers in each department who can be consulted if you have a question on EDI issues and are not sure where else to turn. Please see <https://samueli.ucla.edu/equity-diversity-and-inclusion> (<https://samueli.ucla.edu/equity-diversity-and-inclusion>) for information.

Course Summary:

Date	Details	Due
Sat Apr 22, 2023	 Project 1: Random Graphs and Random Walks https://bruinlearn.ucla.edu/courses/161074/assignments/1397705	due by 11:59pm
Mon May 8, 2023	 Project 2: Social Network Mining https://bruinlearn.ucla.edu/courses/161074/assignments/1397706	due by 11:59pm
Mon May 22, 2023	 Project 3: Reinforcement and Inverse Reinforcement Learning https://bruinlearn.ucla.edu/courses/161074/assignments/1397707	due by 11:59pm

Date	Details	Due
Mon Jun 12, 2023	 Project 4: Graph Algorithms (https://bruinlearn.ucla.edu/courses/161074/assignments/1397708)	due by 11:59pm
	 Echo360 Presentations (https://bruinlearn.ucla.edu/courses/161074/assignments/1397704)	