

SDSC3016: SOCIAL NETWORK ANALYSIS

Effective Term

Semester A 2024/25

Part I Course Overview

Course Title

Social Network Analysis

Subject Code

SDSC - Data Science

Course Number

3016

Academic Unit

Data Science (DS)

College/School

College of Computing (CC)

Course Duration

One Semester

Credit Units

3

Level

B1, B2, B3, B4 - Bachelor's Degree

Medium of Instruction

English

Medium of Assessment

English

Prerequisites

SDSC1001 Introduction to Data Science* and SDSC2001 Python for Data Science

*Pre-requisite SDSC1001 will be exempted for students who are enrolled in Minor in Data Science

Precursors

Nil

Equivalent Courses

Nil

Exclusive Courses

Nil

Part II Course Details

Abstract

This course provides students with an extensive exposure to the elements of social network analysis, with an emphasis on applications for online social media. Topics include graph theory, complex network perspectives, social science perspectives, ego-networks, tie formation, link prediction, information cascading, bipartite/multipartite networks, dynamic networks, signed networks, and community detection.

Course Intended Learning Outcomes (CILOs)

CILOs		Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Explain clearly fundamental principles and methods of network analysis in offline and online context	20	x		
2	Classify various social networks in terms of structural, behavioural and semantic properties	20	x	x	
3	Evaluate existing practices in offline/online network analysis and seek ways to improve the existing studies	30	x	x	x
4	Apply appropriate methods to solve given problems in analysing large-scale online social networks	30	x	x	x

A1: Attitude

Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability

Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments

Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

Learning and Teaching Activities (LTAs)

LTAs		Brief Description	CILO No.	Hours/week (if applicable)
1	Lecture	Students will engage in formal lectures to gain knowledge about social network analytics.	1, 2, 3, 4	39 hours in total
2	Case studies	Students will describe and critique classic cases of social network analysis.	2, 3, 4	in or after classes

Assessment Tasks / Activities (ATs)

ATs		CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Test	1, 2, 3, 4	30	Questions are designed for the first part of network concepts and metrics to see how well the students have learned the fundamental theory, methods, and applications of network analysis. (10-30%)
2	Hands-in assignments	3, 4	20	These are skills based assessment to enable students to demonstrate the basic concepts, methods and algorithms of social network analysis, and applications of social network analysis in some applications. (20-40%)

Continuous Assessment (%)

50

Examination (%)

50

Examination Duration (Hours)

2

Additional Information for ATs

Note: To pass the course, apart from obtaining a minimum of 40% in the overall mark, a student must also obtain a minimum mark of 30% in both continuous assessment and examination components.

Assessment Rubrics (AR)**Assessment Task**

Test

Criterion

Ability to understand and apply fundamental theory and methods of social network analysis.

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Assessment Task

Hands-in assignments

Criterion

Ability to learn the basic concepts, apply methods and algorithms of social network analysis, and develop relevant real world applications.

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Assessment Task

Examination

Criterion

Ability to solve learning tasks using social network analysis methods.

Excellent (A+, A, A-)

High

Good (B+, B, B-)

Significant

Fair (C+, C, C-)

Moderate

Marginal (D)

Basic

Failure (F)

Not even reaching marginal levels

Part III Other Information

Keyword Syllabus

Graph theory, complex networks, social networks, small-world networks, scale-free networks, ego-networks, tie formation, link prediction, information cascading, bipartite networks, dynamic networks, semantic networks, community detection

Reading List

Compulsory Readings

Title	
1	Networks, crowds, and markets: Reasoning about a highly connected world, by David Easley and Jon Kleinberg, Cambridge University Press, 2010.

Additional Readings

Title	
1	Nil