

# DSC3016: SOCIAL NETWORK ANALYSIS

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## Effective Term

Semester A 2026/27

## Part I Course Overview

### Course Title

Social Network Analysis

### Subject Code

DSC - 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 or DSC1001 Introduction to Data Science\*  
and  
SDSC2001 or DSC2001 Python for Data Science

\*Pre-requisite SDSC1001 or DSC1001 will be exempted for students who are enrolled in Minor in Data Science

### Precursors

Nil

### Equivalent Courses

SDSC3016 Social Network Analysis

### 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 ("-" for nil entry)                                                                                                                                                                                                  | Allow Use of GenAI? |
|---|----------------------|------------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| 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.<br><br>(10-30%)                   | No                  |
| 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.<br><br>(20-40%) | Yes                 |

**Continuous Assessment (%)**

50

**Examination (%)**

50

**Examination Duration (Hours)**

2

**Minimum Continuous Assessment Passing Requirement (%)**

30

**Minimum Examination Passing Requirement (%)**

30

**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

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**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

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**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

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## 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 |