SDSC2005: INTRODUCTION TO COMPUTATIONAL SOCIAL SCIENCE

Effective Term
Semester B 2025/26

Part I Course Overview

Course Title
Introduction to Computational Social Science

Subject Code
SDSC - Data Science
Course Number
2005

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

Data science centers around data, originated by human or non-human. This course provides students with an extensive exposure to the elements of computational social science that concerns exclusively with human-generated data. Topics include opportunities and challenges for social science research in the digital age, descriptive/predictive vs. explanatory research, found data versus made data, research design, causal inference, sampling of social units, online experiment, behavioral analytics, text mining, and social research ethics.

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Explain clearly fundamental principles and methods of computational social science (CSS)	20	x		
2	Classify various CSS methods of data collection and data analysis	20	x	x	
3	Evaluate existing CSS studies and design new studies to improve weaknesses in the existing studies	30	x	x	x
4	Apply appropriate CSS methods to solve given practical problems	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	Learning through teaching is primarily based on lectures.	1, 2, 3, 4	39 hours in total
2	Case studies	Describe and critique classic cases of computational social science.	3, 4	in or after class

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks ("-" for nil entry)	Allow Use of GenAI?
1	Take-home assignments	1, 2, 3, 4	50	These assignments contain questions to enable students to demonstrate deep understanding of the basic concepts and methodologies of computational social science, and their applications to solve real world social problems.	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

Take-home assignments

Criterion

Ability to explain the basic concepts, apply methods of computational social science, and design relevant studies for 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
Final exam

Criterion
Ability to answer and tackle conceptual and operational questions using computational social science methodologies and analytical frameworks.

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
Characteristics of social research, descriptive research, predictive research, explanatory research, "found" data, "made" data, causal inference, sampling of social units, research design, online experiment, behaviour analytics, text mining, research ethics in social research

Reading List

Compulsory Readings

	Title
1	Bit by bit: Social research in the digital age, by Matthew Salganik, Princeton University Press, 2018
2	The Practice of Social Research, 15th edition, by Earl Babbie, Cancage, 2021

Additional Readings

	Title
1	Nil