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Department of Information Science
Inzululwazi yeNgcaciso

Departement Inligtingwetenskap
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Socio-Informatics 348 Sosio-Informatika

Module Framework • Moduleraamwerk

Module	**Computational Social Science** ***Berekening Sosiale Wetenskap*** *58173 348 2025*	**Module**
Lecturer	Dr L Martin `<lisamartin@sun.ac.za>`	**Lektor**
Consultation Hours	Mon / Ma 15:00–16:00, Arts / Lettere 453 Wed / Wo 12:00–13:00, Arts / Lettere 453 *By Appointment*	**Konsultasie Ure**
First Meeting	21 Jul 2025, 14:10, Arts 225	**Eerste Ontmoeting**
Document Revision	9 Jul 2025 (v1.1)	**Dokument Weergawe**

Module Overview

This module introduces students to the inter-disciplinary field of computational social science, which combines insights from computer and information science, sociology and social network analysis, economics, political science, and public health in order to equip students to answer social science questions using computational methods.

Students are not expected to have any prior computer programming knowledge. Students will learn to ask social science questions, and answer these questions by collecting and analysing data from digital sources. Students will acquire skills in data analysis programming languages and in data analysis techniques for working with digital trace data.

Module-oorsig

Hierdie module stel studente bekend aan die inter-dissiplinêre veld van rekenaar-sosiale wetenskap, wat insigte uit rekenaar- en inligtingwetenskap, sosiologie en sosiale netwerk-analise, ekonomie, politieke wetenskap en openbare gesondheid kombineer om studente toe te rus om sosiale wetenskap vrae te beantwoord deur die gebruik van berekeningsmetodes.

Daar word nie van studente verwag om enige voorafgaande rekenaarprogrammering kennis te hê nie. Studente sal leer om sosiale wetenskaplike vrae te vra en hierdie vrae te beantwoord deur data van digitale bronne in te samel en te ontleed. Studente sal vaardighede verwerf in data-analise-programmeertale en in data-analise tegnieke om met digitale spoordata te werk.

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Learning Outcomes

On completion of the module students should be able to

- describe key characteristics of social research in the digital age;
- identify the appropriate computational method to address particular social science questions;
- execute the basic operations of data analysis programming languages;
- implement data wrangling techniques to facilitate social science analyses;
- integrate the three steps of exploratory data analysis (transformation, visualisation, and modelling) to address social science questions through a computational method; and
- use standard analysis techniques against digital trace data.

Leeruitkomste

Na voltooiing van die module behoort studente in staat te wees om

- sleutelkenmerke van sosiale navorsing in die digitale era te beskryf;
- die toepaslike berekeningsmetode te identifiseer om bepaalde sosiale-wetenskaplike vrae aan te spreek;
- die basiese bewerkings van data-analise-programmeertale uit te voer;
- data-twistegnieke te implementeer om sosiale-wetenskaplike ontledings te fasiliteer;
- die drie stappe van verkennende data-analise (transformasie, visualisering en modellering) te integreer om sosiale-wetenskaplike vrae deur middel van 'n berekeningsmetode aan te spreek; en
- gebruik standaard analise tegnieke teen digitale spoordata.

Prescribed Literature

Voorgeskrewe Literatuur

WICKHAM, Hadley, ÇETINKAYA-RUNDEL, Mine and GROLEMUND, Garrett, 2023. *R for Data Science: Import, Tidy, Transform, Visualize, and Model Data*. Second edition. Beijing ; Sebastopol, CA: O'Reilly. ISBN 978-1-4920-9740-2.

Available: https://r4ds.hadley.nz/

SALGANIK, Matthew J., 2018. *Bit by Bit: Social Research in the Digital Age*. Princeton: Princeton University Press. ISBN 978-0-691-15864-8 978-0-691-19610-7.

Available: https://www.bitbybitbook.com/en/1st-ed/preface/

SILGE, Julia and ROBINSON, David, 2017. *Text Mining with R: A Tidy Approach*. First edition. Beijing ; Boston: O'Reilly. ISBN 978-1-4919-8165-8.

Available: https://www.tidytextmining.com/

ATTEVELDT, Wouter van, TRILLING, Damian and ARCÍLA, Carlos, 2021. *Computational Analysis of Communication: A Practical Introduction to the Analysis of Texts, Networks, and Images with Code Examples in Python and R*. Hoboken, NJ: John Wiley & Sons. ISBN 978-1-119-68028-4 978-1-119-68027-7.

Available: https://cssbook.net/

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Class Information

There are three in-person, synchronous lectures and two in-person praticals per week. All classes are compulsory and students who fail to attend them may be considered to have not completed the module.

Students must attend practical classes in the group that has been allocated to them. Details of these allocations will be announced in a lecture and on SUNLearn.

Klasinligting

Daar is drie persoonlike, sinchrone lesings en twee persoonlike praktiese per week. Alle klasse is verpligtend en studente wat versuim om dit by te woon, kan geag word dat hulle nie die module voltooi het nie.

Studente moet praktiese klasse bywoon in die groep wat aan hulle toegeken is. Besonderhede van hierdie toekennings sal in 'n lesing en op SUNLearn bekend gemaak word.

	Day	*Period*	*Time*	*Venue*
Lectures / Lesings:	Monday / Maandag	7	14:10	Arts 225
	Wednesday / Woensdag	4	11:10	Old Main 2027
	Friday / Vrydag	5	12:10	Arts 227
Practical / Praktiese:				
Group / Groep 1:	Monday / Maandag	3-4	10:10 (2h)	HUMARGA 320
	Friday / Vrydag	1	08:10	HUMARGA 320
Group / Groep 2:	Tuesday / Dinsdag	3-4	10:10 (2h)	HUMARGA 357/363
	Friday / Vrydag	2	09:10	HUMARGA 357/363
Group / Groep 3:	Wednesday / Woensdag	1-2	08:10 (2h)	HUMARGA 357/363
	Thursday / Donderdag	8	15:10	HUMARGA 320

Notional Hours

The notional credit hour breakdown provided acts as a guide to the estimated time a student should spend on various activities related to the module. This is a guide only and students should spend their time as best suits their optimal learning.

Beraamde Werksure

Die beraamde werksuurverdeling wat verskaf word, dien as 'n riglyn vir die geskatte tyd wat 'n student aan verskeie aktiwiteite wat met die module verband hou, moet bestee. Hierdie is slegs 'n gids en studente moet hul tyd spandeer soos die beste pas by hul optimale leer.

Activity	*Total Hours*	*Breakdown*
Preparing for Lectures / Voorbereiding vir Lesings:	39h	3h × 13 weeks
Attendance at Lectures / Bywoning van Lesings:	39h	1h × 39 (3 per week)
Attendance at Pracitals / Bywoning van Praktiese:	30h	3h × 10 weeks
Completing Practicals / Voltooiing van Praktiese:	30h	3h × 10 practicals
Studying and Writing of Tests / Studeer en Skryf van Toetse:	66h	33h × 2 assessments
Completion of AF Assignment / Voltooiing van AF-opdrag:	36h	36h × 1 assignment
Total / Totaal:	240h	10h × 24 credits

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Assessment

There are three formal assessments in this module (A1, A2, and A3) as well as further formative and summative assessments (AF). Students must complete any two of the A1, A2 and A3; and all of the AF components to complete the module.

Students must have completed the AF assessment to gain entry into the A2 and A3 assessments. Students may also not complete the A3 assessment if they have already completed both the A1 and A2 assessments.

There are no additional assessment opportunities available other than those listed. Students are strongly encouraged to complete the A1 and A2 assessments, leaving the A3 as an option in case of illness or other cases.

Assessering

Daar is drie formele assesserings in hierdie module (A1, A2 en A3) sowel as verdere formatiewe en summatiewe assesserings (AF). Studente moet enige twee van die A1, A2 en A3 voltooi; en al die AF-komponente om die module te voltooi.

Studente moet die AF-assessering voltooi het om toegang tot die A2- en A3-assesserings te verkry. Studente mag ook nie die A3-assessering voltooi as hulle reeds beide die A1- en A2-assessering voltooi het nie.

Daar is geen addisionele assesseringsgeleenthede beskikbaar behalwe dié wat gelys is nie. Studente word sterk aangemoedig om die A1- en A2-assesserings te voltooi, en laat die A3 as 'n opsie in geval van siekte of ander gevalle.

Assessment	*Date*	*Time*	*Weight*	*Duration*	*Venue*
A1:	4 Sep	17:40–19:40	35%	2 hours / ure	HUMARGA 314
A2:	4 Nov	09:00–11:00	35%	2 hours / ure	HUMARGA 314
A3:	28 Nov	09:00–11:00	35%	2 hours / ure	HUMARGA 314
Further-Assessment (AF):	*Due*				
Practicals / Praktiese:	*weekly*		10%		
Assignment / Opdrag:	10 Oct, 23:59		20%		
Total / Totaal:			100%		

Study Guide

Additional information regarding the module structure, assessments, scheduling, and content are available in the module study guide and/or on SUNLearn. Please consult with these resources regularly to keep up-to-date with the module.

Studiegids

Bykomende inligting rakende die modulestruktuur, assesserings, skedulering en inhoud is beskikbaar in die modulestudiegids en/of op SUNLearn. Raadpleeg asseblief gereeld hierdie hulpbronne om op hoogte te bly van die module.

Rules and Regulations

This module framework is augmented by a set of rules and regulations applicable to undergraduate modules in the Department of Information Science. These are available separately on SUNLearn.

Reëls en Regulasies

Hierdie moduleraamwerk word aangevul deur 'n stel reëls en regulasies van toepassing op voorgraadse modules in die Departement Inligtingwetenskap. Hierdie is afsonderlik op SUNLearn beskikbaar.

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