Computational Social and Behavioral Science MA

Location: Budapest
Language of instruction: angol
Work schedule: full-time
Academic year of first announcing the program: 2025/2026

List of courses

Name	Suggested Semester	Credit	Module	Course type	Description
Digital Society	1	5	Basics of Social Sciences	Mandatory	The course aims to introduce students to the theoretical and practical aspects of the digitalisation of social space. The course will explore important topics such as the primary and secondary digital divide, the impact of digitalisation on everyday life, the role of social media in our daily lives and the impact of algorithms on individual decisions and social processes.
Social Inequality through the Lens of Digital Data	1	5	Basics of Social Sciences	Mandatory	The study of social inequalities is one of the primary areas of research in sociology. In the digital space, previous inequalities have been transformed and new actors such as algorithms and artificial intelligence have entered the shaping of structures. But in the digital space, it is not only inequalities that have been transformed, but also their researchability. The course will first focus on the data and approaches that can be used to explore social inequalities through the lens of digital data.
Mechanisms of Social Behaviour	1	5	Basics of Behavioural Sciences	Mandatory	The primary aim of the Mechanisms of Social Behaviour course is to examine the cognitive processes by which people make decisions and interact with each other. The course both covers the factors that influence social behaviour and the impact of micro-level behaviour on society. It introduces students to the relevance of decision-making and behavioural mechanisms in digital space, particularly how digital space shapes online and offline behaviour and interactions between people.

Using Experimental Design to Understand Social Behaviour	1	5	Basics of Behavioural Sciences	Mandatory	A problem that often arises in the study of social issues is that it is difficult or impossible to interpret the relationships discovered as causality. Various quantitative experimental approaches offer the possibility to identify causal relationships even on a large and generalizable sample. The course will illustrate the advantages and disadvantages of different experimental models through examples. During the semester, we will focus in particular on experimental models that can be implemented in the online/digital space.
Digital Social Research	1	4	Basics of Methodology	Mandatory	The digital space has not only transformed social processes, but also the way we can study social phenomena. The course will explore the data and data access possibilities with which the digital world can be explored, with a particular focus on the problems of generalisability and noise. Throughout the semester, students will learn methods to make raw digital data usable for research purposes and become familiar with the research infrastructure to efficiently analyse large data sets. The course will also cover ethical and privacy aspects of data acquisition and storage.
Social Modelling	1	4	Basics of Methodology	Mandatory	The course provides a holistic approch on how to capture and model different social processes. It opens the fake dilemma of quantitative-qualitative distinction, details the role and barriers of the neccessary of simplification in modeling and gives introduction to the diverse set of methods with which various social and behaviourial mechanisms can be described and explained, with special emphasis on quantitative methods.
Introduction to R	1	1	Basics of Methodology	Mandatory	During the course, students will learn the basics of the R programming language, the logical structure of the program, basic commands and data storage, reference forms and code for simple data analysis.
Introduction to Python	1	1	Basics of Methodology	Mandatory	During the course, students will learn the basics of the Python programming language, the logical structure of the program, basic commands and data storage, reference forms and code for simple data analysis.

Spatial Processes in the Society	2	5	Basics of Social Sciences	Mandatory	Digital data sets have given a new impetus to the spatial analysis of society. The exponential growth of geolocated data gives us the opportunity to study a wide range of social problems and processes from a spatial perspective. The aim of the course is twofold. On the one hand, students will master the methodology of spatial analysis during the semester and, on the other hand, they will learn what are the research questions where this methodology can be effectively applied.
Social Polarisation	2	5	Basics of Social Sciences	Mandatory	Brexit, COVID-19, Budweiser. Three recent topics that have highlighted the sharp fault lines in Western societies. What are the issues that polarise society? What are the factors that increase or decrease polarisation? In this course, we will explore the issue of social polarisation through curricular examples, with a particular focus on the aspects that affect polarisation in the digital space.
Attitudes and Social Influence	2	5	Basics of Behavioural Sciences	Mandatory	The course explores the intricate interplay between attitudes and social influence, delving into the theories, empirical research, and practical applications. It introduces how individuals' attitudes are formed, maintained, and changed within a social context. Topics covered include attitude formation, cognitive dissonance, social norms, conformity, group dynamics, persuasion techniques, and the impact of digital media on attitudes and behavior.
Social Groups as Complex Systems	2	5	Basics of Behavioural Sciences	Mandatory	This MA-level course explores social groups as dynamic and complex systems, offering a comprehensive examination of the principles that govern their formation, structure, and behavior across diverse contexts. Drawing on concepts from sociology, network science, and complexity theory, students will investigate the emergence of collective phenomena, such as social norms, hierarchies, and cooperation, within groups ranging from small communities to large organizations. Through a combination of theoretical discussions, empirical studies, and computational modeling, students will gain insights into the intricacies of social dynamics, the role of individuals within networks, and the impact of information flow on group behavior.

Text and Society	2	5	Basics of Methodology	Mandatory	Qualitative discourse analysis has long been part of the methodological canon in the social sciences. Literacy plays an important role in the representation of society and texts provide an opportunity to gain insights into the culture of the past and present or even subtle aspects of social behaviour. Since the 2000s, the increasingly dynamic development of computational linguistics has opened up the possibility of high-quality quantitative analysis of texts. In this course, students will learn the curricular methods of computational text analysis. The semester will emphasize the use of large linguistic models in social science and the discriminant bias of these models.
Applications of Artificial Intelligence and Machine Learning	2	5	Basics of Methodology	Mandatory	As computing resources increase, researchers have access to increasingly complex methodological solutions. These solutions often rely on some form of artificial intelligence and/or machine learning. In this course, students will gain an understanding of the applicability and practical implementations of models capable of processing and analysing large amounts of data. The course will also focus on the question of which AI applications can be used effectively in research and the ethical implications of using these applications.
Innovative Analysis of Historic Sources	3	5	Social Sciences Block	Mandatory elective	The scope of digitization transcends the contemporary landscape and extends to encompass historical data as well. Numerous projects and initiatives have been initiated to digitize historical records, registers, and newspapers. This course is designed to equip students with the skills to navigate digitized historical sources using cutting-edge tools, while also acknowledging the inherent constraints of such research endeavors. Furthermore, students will gain insights into the process of integrating findings from these newfound data sources into the established canons of history and social knowledge.

EKIP11.1 - Racial Thinking and Xenophobia	3	5	Social Sciences Block	Mandatory elective	The seminar aims to examine ethnic, racial and minority issues from a demographic perspective. The seminar will enable students to understand in a more complex way some racial, ethnic or minority issues from that demographic perspective. First of all, they will acquire a demographic toolkit (concepts and methods) at the beginning of the semester, so that they will be equipped to explore and apply new ways of understanding the issues of their interest through this lens. The seminar will help to identify the challenges and opportunities of demographic change in ethnic, racial and minority issues that have social, policy, economic or geopolitical relevance. In keeping with the complexity of the phenomenon, the seminar will adopt a transdisciplinary approach, including sociological, legal, public health, economic, political science, psychological, socio-political, and social-psychological perspectives alongside a primary demographic focus.
IRM03.1 - Governance and Power	3	5	Social Sciences Block	Mandatory elective	The course discovers the different theories of power. What is power? Who possesses power? International relations is traditionally prone to define power as the military potential of states. The goal of the course is to exceed this approach and analyze the question of power from different perspectives, especially focusing on the relation between power and governance.
EKCM123.1 - Publicity, Public Discourse, Public Deliberation, and Public Life	3	5	Social Sciences Block	Mandatory elective	The purpose of the course is: to raise students' knowledge on publicity, analyzing the concept of public in historic and contemporary context; to introduce them into the notion of deliberative (or discursive) democracy which is a system of democratic participation where the political decision-making is made on the way of public discourse. Fieldwork, included into the course, will develop students' skills in identifying the processes of public discourse and analyzing the social processes which construct and influence public life. The course aims to strengthen students' critical thinking, ability to argue, and readiness to understand and participate in public processes. Students will be able to orient themselves independently in the world of public discourse and public life and will be able to understand how public deliberation construe and construct democracy and other characteristics of political systems. The course increases the responsibility of students to participate in the field of public life by clarifying legal and institutional framework of public

					discourse and enabling them to be active member of a democratic society via public deliberation and public discourse.
Critical Information Processing	3	5	Behavioural Sciences Block	Mandatory elective	Digitalisation has perhaps affected human communication most profoundly. A considerable amount of information is constantly flowing to people, and many actors seek to bend this information space to their advantage. This course introduces students to the most important theoretical aspects and empirical results of critical information processing. The course will focus on psychological and sociological aspects of information processing, the spread of fake news, and the role of social media in the sharing and spreading of fake news.
CCNM17-205 - Philosophy of Language	3	5	Behavioural Sciences Block	Mandatory elective	Our words, sentences are about—refer to—things in the world: objects, people, events. Plausibly, the meanings of expressions play a central role in explaining this referential feature. But what exactly does this role played by meaning consist in? The answer is not at all straightforward. The course starts with Frege's "puzzle", providing the starting point for 20th-century philosophy of language. In the seminar, our aim is to gain a greater understanding of the nature of meaning, and its relation to reference, truth, communication.
CCNM17-219 - Semantics and Knowledge Representation	3	5	Behavioural Sciences Block	Mandatory elective	The topic of knowledge representation has strong connection with most fields of cognitive science, e.g. vision, sensory-motor integration, language, memory, reasoning, and imagery processes. The aim of this course is to present a new theoretical viewpoint on categorization and conceptual representation (the so called 'concept empiricism' approach of J. Prinz and a similar view of L.W. Barsalou). From this starting point we can discuss all important questions of knowledge representation with special focus on empirical questions, cognitive development, and the connection to other cognitive processes.
Modelling of Complex Social Processes	3	5	Methodology block	Mandatory elective	The course provides a comprehensive exploration of the modeling of complex social processes, with a primary focus on the advanced methodology of Structural Equation Modeling (SEM). Through a combination of theoretical discussions and hands-on practical sessions, students will learn to conceptualize, design, and analyze complex social phenomena using SEM and related statistical techniques. The course covers key topics including model specification, latent variable modeling, path analysis, mediation and moderation, model fit assessment, and model modification strategies, all within the context of understanding and explaining complex social interactions and behaviors. Students will engage in research projects applying SEM to

					various domains such as psychology, sociology, economics, and public health, enhancing their quantitative research and data analysis skills.
Solutions for Social Problems with the innovations of information technology	3	10	Methodology block	Mandatory elective	In this course, students of the program jointly work together with students of the Faculty of Informatics on a jointly selected, current social problem, from data collection, through analysis to recommendations. Students will explore the transformative potential of information technology (IT) in addressing and mitigating pressing social problems. Through the interdisciplinary discussions, and hands-on projects, students will identify their roles in offering novel solutions to issues like poverty, climate change, healthcare access, and inequality. The course will foster critical thinking and ethical considerations surrounding IT-driven solutions while equipping students with practical skills to leverage technology for positive social change. By the end of the course, students will be prepared to contribute meaningfully to the ongoing dialogue on harnessing IT innovations for the betterment of society.
The principles of data analysis	3	5	Methodology block	Mandatory elective	Most methodological classes discuss *how* to do certain analyses. This course discusses reasons *why* those analyses are performed. Principles are the guiding rules of any activity, including data analysis. They are subject to constant scientific debate but often remain hidden in the everyday practice of data analysis. The principles often formulate requirements but very often the existing analytical techniques only approximately fulfill these. Yet familiarity with these principles help choosing the appropriate method of analysis and in giving a precise interpretation of the results.
Internship	3-4	5		Mandatory	The aim of the internship is to enable students to develop their theoretical and practical knowledge in the labour market. Any institution working in the field covered by the training and dealing with data analysis is suitable as a placement. The internship lasts four weeks.
Research project seminar	4	14		Mandatory	The aim of the course is for students to independently carry out their own scientific project, in which they explore a research question, either taught or approved by the project leader, using the methodological apparatus of computer social science.
Thesis	4	20		Mandatory	