Lectures and reading material
IN5210 - Fall 2025

v.2 updated per 20.08.2025

Introduction to IN5210

Lecturer: Petter Nielsen, Maja L. Thomassen and Vetle A. Utvik

About the lecture:

This is an introductory lecture to the course. We explain the motivation, content, and key practical issues of the course.

Supplementary reading:

Nielsen, P., and Sahay, S. (2022). A critical review of the role of technology and context in digital health research. *DIGITAL HEALTH*. 8.

Sørensen, C. (2016). The Curse of the Smart Machine? Digitalisation and the children of the mainframe. *Scandinavian Journal of Information Systems*, 28(2), 1-12.

Watson, R. T. (2014). A Personal Perspective on a Conceptual Foundation of Information Systems, *Journal of the Association for Information Systems*, 15 (8), pp. 514-535.

Introduction to Information Systems: Theories

Lecturer: Silvia Masiero

About the lecture:

This is an introductory lecture to the field of Information Systems (IS) and the main theoretical approaches within it. It aims to equip the students with an understanding of information systems as the social study of technology, as well as a mapping of five core thematic areas in the IS field: applications of IT to support organisational functioning; the process of systems development; information systems management; the organisational value of information systems; and the societal impact of information systems. Having done that, the students are introduced to four main theoretical approaches in the IS discipline: systems theory; organisational rationalism, structuration and critical theory. Such approaches are exemplified through present-day IS debates including on generative AI (GAI) and the implications of digital ID for development. In conclusion, the lecture highlights the link between theory and methodology, the topic of the next lecture.

Theory and concepts:

Thematic areas of IS:
- Applications of IT to support organisational functioning
- The process of systems development
- Information systems management
- The organisational value of information systems
- The societal impact of information systems

Theories of IS:
- Systems theory
- Organisational rationalism
- Structuration Theory
- Critical Theory

Core reading:

Avgerou, C. (2000). Information systems: what sort of science is it?. *Omega*, 28(5), 567-579.

Supplementary reading:

Marabelli, M., & Davison, R. M. (2025). GAI and the Environment: A Call for Action for IS Scholars. Americas Conference of Information Systems (AMCIS) 2025, https://aisel.aisnet.org/amcis2025/social_inclusion/social_inclusion/8/.

Introduction to Information Systems: Methodology

Lecturer: Silvia Masiero

About the lecture:

In this lecture, the students are introduced to the three epistemologies (positivist; interpretive; critical) of information systems, as well as four methodological approaches: case studies; ethnography; action research and grounded theory. Links between epistemology, methodology and methods are illustrated, and the lecture ends with a recap that links together the concepts on methodology with those on theory, learned in the previous lecture.

Theory and concepts:

Epistemologies:
- Positivism
- Interpretivism
- Critical

Methodologies:
- Action Research
- Case Study
- Ethnography
- Grounded Theory

Core reading:

Myers, M. D. (1997). Qualitative Research in Information Systems. MISQ Discovery, 1-18.

Supplementary reading:

Walsham, G. (2006). Doing interpretive research. *European Journal of Information Systems*, 15(3), 320-330.

Use of theory in practice

Lecturer: Alexander Kempton

About the lecture:

This lecture concerns what theory is and the use of theory in research. A key learning point is to clarify the difference between related research and theoretical perspective. In addition, it will provide practical insights into how to navigate and manage research literature and how to build on it in your research.

Theory and concepts:

- Related research vs theoretical perspective
- Theory, construct, concepts
- Conducting a literature review

Core reading:

Gregor, S. (2006). The nature of theory in information systems. *MIS quarterly*, 611-642.

Burton-Jones, A., Akhlaghpour, S., Ayre, S., Barde, P., Staib, A., & Sullivan, C. (2020). Changing the conversation on evaluating digital transformation in healthcare: Insights from an institutional analysis. *Information and Organization*, 30(1).

Supplementary reading:

Webster, J., & Watson, R. T. (2002). Analyzing the past to prepare for the future: Writing a literature review. *MIS quarterly*, xiii-xxiii.

Systems thinking: Soft systems methodology

Lecturer: Sune Dueholm Müller

About the lecture:

In this lecture, Systems Thinking is introduced as a problem-solving approach that involves analyzing and understanding complex systems in their entirety. The Soft Systems Methodology is presented as an exemplary Systems Thinking approach.

Theory and concepts:

Ripple effects; events, structures, mechanisms, and structures; root definitions; and conceptual models.

Core reading:

Checkland, P. B. (1988). Information systems and systems thinking: time to unite? *International Journal of Information Management*, *8*(4), 239-248.

Supplementary reading:

Mathiassen, L., & Nielsen, P. A. (1989). Soft systems and hard contradictions. *Journal of Applied Systems Analysis*, 16, 75-88.

Digitalization as sociotechnical systems design and development

Lecturer: Magnus Li

About the lecture:

Digitalization is often approached as the design and development of digital technology. However, at its core, digitalization is about improving organizations and society through the opportunities digital technology offers. Because organizational behavior is not determined by technology alone, meaningful improvements typically require active and sustained work with both technical and social dimensions. In this sense, digitalization becomes a matter of what we call sociotechnical systems design and development.

In this lecture, we examine why digitalization requires more than just building technology, and what this means for how digitalization efforts should be organized.

Theory and concepts:

- Information Systems
- Sociotechnical system design

Core reading:

Li, Magnus, "Challenging the “IS” in ISD: From Software to Sociotechnical Systems Design and Development" (2024). ICIS 2024 Proceedings. 9.

Supplementary reading:

Nambisan, S., Lyytinen, K., Majchrzak, A., & Song, M. (2017). Digital Innovation Management: Reinventing innovation management research in a digital world. *MIS Quarterly*, 41(1).

Lee, A. S. (2010). Retrospect and prospect: Information systems research in the last and next 25 years. *Journal of Information Technology*, 25(4), 336–348.

Digitalization and agility

Lecturer: Magnus Li

About the lecture:

Agility is a central concept in digitalization. Because user needs are often hard to articulate in advance and may change over time, software is typically developed through rapid cycles of design, development, and user testing. However, as we explore in this lecture, digitalization efforts are increasingly tied not just to software delivery, but to achieving concrete organizational improvement targets. This shift has important implications for how we understand and organize agility.

In this lecture, we will explore the kinds of uncertainties that arise when digitalization aims to change how organizations work, and what this means for organizing agile processes.

Theory and concepts:

- Agility
- Uncertainty
- Sense and respond
- Product-oriented versus system-oriented agility

Core reading:

Li, M. (2025). "Beyond Software Product Qualities: Forms of Sensing and Responding in System-Oriented ISD Agility." ICIS 2025 Proceedings.

Supplementary reading:

Barthel, P., & Hess, T. (2020). Towards a characterization of digitalization projects in the context of organizational transformation. *Pacific Asia Journal of the Association for Information Systems*, 12(3).

Wiener, M., Mähring, M., Remus, U., Saunders, C., & Cram, W. A. (2019). Moving IS project control research into the digital era: The "why" of control and the concept of control purpose. *Information Systems Research*, 30(4), 1387–1401.

Digital Platforms

Lecturer: Alexander Moltubakk Kempton

About the lecture:

In this lecture, we will discuss digital platforms as a socio-technical pattern for organizing technology and people. We will go through different forms of platforms – transaction platforms (like Uber) and innovation platforms (like Android) – and we will discuss why the platform pattern has become a dominant way to organize both the way innovation and transactions between people occur.

During the lecture, the platform pattern will be explained using typical consumer-oriented cases like iOS and Uber. But we will also go into how the pattern is used to solve problems in other domains, exemplified by cases in the Norwegian public sector.

Theory and concepts:

- Digital platforms
- Boundary Resources
- Platform Ecosystems
- Network Effects

Core reading:

Gawer, Annabelle, and Michael A. Cusumano. "Platform leaders." *MIT Sloan management review* (2015): 68-75.

Supplementary reading:

De Reuver, Mark, Carsten Sørensen, and Rahul C. Basole. "The digital platform: a research agenda." *Journal of information technology* 33.2 (2018): 124-135.

Information infrastructures, digital innovation, and platforms

Lecturer: Egil Øvrelid

About the lecture:

This lecture provides a comparison between research streams (all of them framed as socio-technical perspectives) from a theoretical and practical perspective. Cases from health care are presented

Theory and concepts:

- Information infrastructures
- Digital innovation
- Digital platforms

Core reading:

Bygstad, B., & Øvrelid, E. (2020). Architectural alignment of process innovation and digital infrastructure in a high-tech hospital. *European Journal of Information Systems*, 29.

Bygstad, B. & Hanseth, O. (2018). Transforming Digital infrastructures through Platformization, Twenty-Sixth European Conference on Information Systems (ECIS 2018), Portsmouth, UK, 2018

Supplementary reading:

Henfridsson, O., Nandhakumar, J., Scarbrough, H., and Panourgias, N. (2018). Recombination in the Open-Ended Value Landscape of Digital Innovation, *Information and Organization* (28:2), pp. 89-100.

Jacobides, Cennamo, Gawer (2018) Towards a theory of ecosystems, *Strategic Management Journal*, Vol 39, 8, 2255-2276

Research ethics

Lecturer: Petter Nielsen

About the lecture:

Research takes place under a high grade of freedom and trust and thus also entails a significant degree of personal responsibility for the individual researcher. As a master student and researcher at the University of Oslo, you are responsible for conducting your research according to recognised scientific and research ethical norms. This requires awareness of the ethical aspects of research.

In this lecture, we will examine the research ethical guidelines, norms, and institutions at the University of Oslo and a few ethical dilemmas that you may experience as an Information Systems researcher.

Theory and concepts:

- Research ethics
- Researcher integrity

Core reading:

https://www.forskningsetikk.no/en/guidelines/general-guidelines/

https://www.uio.no/english/for-employees/support/research/research-ethics/standard-for-research-integrity/index.html

Davison, R.M., Chughtai, H., Nielsen, P., et al. (2024). The ethics of using generative AI for qualitative data analysis. *Information Systems Journal*.

Data Justice in Research Design

Lecturer: Silvia Masiero

About the lecture:

In this lecture, the students are introduced to core considerations of how to enact data justice (fairness in the way people are visualised, represented and treated through their production of digital data) in the process of designing and executing IS research. We go through considerations of justice towards participants, research ecosystems and the public opinion, also reviewing scenaria in which achieving a just research design can be problematic.

Theory and concepts:

Data justice:
- Data visualisation
- Data representation
- Data-based treatment

Theories:
- Principles for design justice (Design Justice Network)
- Pillars of data justice (Taylor, 2017)

Core reading:

Taylor, L. (2017). What is data justice? The case for connecting digital rights and freedoms globally. *Big Data & Society*, 4(2), 1-14.

Supplementary reading:

Costanza-Chock, S. (2020). Design justice: Community-led practices to build the worlds we need. The MIT Press. Chapter 1.

Dencik, L., Hintz, A., Redden, J., & Treré, E. (2019). Exploring data justice: Conceptions, applications and directions. *Information, Communication & Society*, 22(7), 873-881.

Data Work

Lecturer: Troels Sune Mønsted

About the lecture:

Increasingly data-driven processes requires both private and public organizations to adapt their data related work procedures. Based on the concept of data work, this lectures explores the impact on how data is produced, what challenges this entail on the use and application of data and how this affect people working in an organization. Departing from Klaus Hoyers theory on 'data paradoxes', we will in particular look at four aspects of data work: Data production, data analysis, data instruction, and data use

Theory and concepts:

The lecture will revolve around two central concepts:

- Four dimensions of data work: Data production, data analysis, data instruction, and data use (Hoeyer, 2023).
- Data stewardship (Parmiggiani et al, 2022).

Core readings:

Hoeyer, K. (2023). Chapter 3: Data Work. In: Hoeyer, K. (2023). Data paradoxes: The politics of intensified data sourcing in contemporary healthcare. MIT Press.

Parmiggiani, E., Østerlie, T., & Almkov, P.G. (2022). In the backrooms of data science. *Journal of the Association of Information Systems*, 23(1), 139-164.

Supplementary readings:

Pine, K.H. & Bossen, C. (2020). Good organizational reasons for better medical record: The data work of clinical documentation integrity specialists. *Big Data & Society*, 7(2), 1-13.

Institutional Theory

Lecturer: Johan Ivar Sæbø

About the lecture:

Humans do things. What we do and why and how we do things is typically following patterns, i.e. *behavior*. Institutional theory seeks to understand how patterns of behavior come to be and are upheld, and how they may change. The idea of *institutions* as sets of patterns and rules, formal and informal, is powerful to examine digitalization efforts in organizations. Institutions are everywhere in our life, like traffic rules and copyright laws, how we celebrate Christmas and go on vacation. Digital technologies are constantly involved in shaping and being shaped by such institutions. Recent examples include large language models ("ChatGPT") and the institutions surrounding master theses and home exams, or digitally enabled electric scooters (relying on smartphones, GPS, online payment solutions, etc) and the institution of traffic.

Theory and concepts:

The lecture gives first a general overview of Institutional theory. The second half explores how it can be used to understand human and organizational behavior, exemplified by a case of capacity building for a health information system in Indonesia

Core reading:

Currie, W. L. (2011). Institutional Theory of Information Technology. Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199580583.003.0008.

Chrysantina, A., Sæbø, J. I., & Kaasbøll, J. J. (2022). Introducing online training for health staff: An institutional perspective. *The Electronic Journal of Information Systems in Developing Countries*, 88(6), e12233.

Supplementary reading:

Sahay, S., Sæbø, J. I., Mekonnen, S. M., & Gizaw, A. A. (2010). Interplay of institutional logics and implications for deinstitutionalization: Case study of HMIS implementation in Tajikistan. *Information Technologies & International Development*, 6(3), pp-19.

Burton-Jones, A., Akhlaghpour, S., Ayre, S., Barde, P., Staib, A., & Sullivan, C. (2020). Changing the conversation on evaluating digital transformation in healthcare: Insights from an institutional analysis. *Information and Organization*, 30(1).

Student feedback and exam preparations

Lecturer: Petter Nielsen, Vetle Utvik and Maja Thomassen

About the lecture:

In this lecture, students have the opportunity to provide feedback about the strengths and the weaknesses of IN5210 this semester. The feedback is used as input to develop and improve the course fruther. We further share practical information and a few advices for the exam.