

## NeuroIS Course

| at University of Oulu, Finland |

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### Description

This course provides a broad overview of Neuro-Information-Systems (NeuroIS). NeuroIS relies on neuroscience and neurophysiological theories and tools to better understand the development, use, and impact of information technologies (IT). This field seeks to contribute to the development of new theories that make possible accurate predictions of IT-related behaviors, and to the design of IT artifacts that positively affect economic and non-economic variables (e.g., productivity, satisfaction, adoption, well-being). Using an interactive teaching approach, the course covers fundamental themes, including the following questions: What is NeuroIS? Why NeuroIS? How to conduct NeuroIS studies? The course takes a beginner rather than an expert approach to the material presented. As such, it should be of use to students of Information Systems and Management interested in neuroscience.

The course covers the following main topics:

- *Introduction to NeuroIS*
  - Definition
  - Contribution
  - Methods and Tools
  - Current Challenges for NeuroIS
- *Fundamentals of Human Neurobiology*
  - Human Nervous System
  - Functioning of the Nervous System
  - Major Structures of the Brain
  - Autonomic Nervous System
- *Selected NeuroIS Topics and Related Themes*
  - Neuroscience in IS Design Science Research
  - Evolution Theory and IS Research
  - Technostress
  - Gender Differences in Human-Computer Interaction

### Reading List

In preparation for the course, students should read the following papers. Content of these papers, along with additional material, will be discussed further in class. The goal of the reading list is to ensure that students are not completely unfamiliar with the body of work in NeuroIS. This list does not constitute „everything you need to know,“ but rather provides an overview. The list is selective, yet representative of the current state-of-the-art in NeuroIS.

- Dimoka, A.; Banker, R. D.; Benbasat, I.; Davis, F. D.; Dennis, A. R.; Gefen, D.; Gupta, A.; Ischebeck, A.; Kenning, P.; Müller-Putz, G.; Pavlou, P. A.; Riedl, R.; vom Brocke, J.; Weber, B.: On the Use of Neurophysiological Tools in IS Research: Developing a Research Agenda for NeuroIS. MIS Quarterly 3/2012, 679-702.
- Dimoka, A.; Pavlou, P. A.; Davis, F. D.: NeuroIS: The Potential of Cognitive Neuroscience for Information Systems Research. Information Systems Research 4/2011, 687-702.
- Riedl, R.: On the Biology of Technostress: Literature Review and Research Agenda. DATA BASE for Advances in Information Systems 1/2013, 18-55.
- Riedl, R.; Banker, R. D.; Benbasat, I.; Davis, F. D.; Dennis, A. R.; Dimoka, A.; Gefen, D.; Gupta, A.; Ischebeck, A.; Kenning, P.; Müller-Putz, G.; Pavlou, P. A.; Straub, D. W.; vom Brocke, J.; Weber, B.: On the Foundations of NeuroIS: Reflections on the Gmunden Retreat 2009. Communications of the AIS 27/2010, 243-264.
- Riedl, R.; Hubert, M.; Kenning, P.: Are There Neural Gender Differences in Online Trust? An fMRI Study on the Perceived Trustworthiness of eBay Offers. MIS Quarterly 2/2010, 397-428.
- vom Brocke, J.; Riedl, R.; Léger, P.-M.: Application Strategies for Neuroscience in Information Systems Design Science Research. Journal of Computer Information Systems 3/2013, 1-13.

## Timetable

	<i>Feb 4, 2014 (Tuesday)</i>	<i>Feb 5, 2014 (Wednesday)</i>
08.15-11	Introduction of the Lecturer Introduction to NeuroIS	Selected NeuroIS Topics and Related Themes (Part 1)
11-12	Lunch	Lunch
12.15-15	Fundamentals of Human Neurobiology	Selected NeuroIS Topics and Related Themes (Part 2)

## Assignments and Grading

This course is a 2-credit-point course. Thus, students are expected to invest approximately 54 hours of work, including the pre-course assignment (readings), course participation, and the after-course assignment (research proposal).

*Research Proposal:* Each student develops a research proposal, generally 3-5 pages in length, in which he or she seeks to address an IS topic based on a neuroscience approach. The minimum requirements include (i) description of the topic, research question(s), and/or hypotheses, (ii) research approach (e.g., neuroscience methods and tools), (iii) the expected contribution, and (iv) a list of references (including works from IS and neuroscience). The proposal must be written in English.

*Grading:* Active course participation (including discussions) and quality of the research proposal.