Human-centered and responsible use of AI technologies (an interdisciplinary Winter School)					
Module Nr. / Code WF	**Credits** 6 CP	**Workload** 180 h	**Semester** /	**Frequency** One-time (one week) 25.- 29.11.2024	**Duration** 1 semester
Course Seminar			**Contact Hours** 40 h	**Self-study** 140 h	**Group size** approx. 25 – 30

Learning outcomes

The *Winter School* module aims to provide a multidisciplinary exploration of the integration of human-centered, sustainable, and responsible artificial intelligence (AI) in organizational settings. It offers participating students a comprehensive understanding of the complexities and opportunities that arise when introducing AI technologies into the workplace, ensuring that ethical and human-centered approaches are prioritized.

As part of the global NET-hUmAIN network for responsible, human-centered, and context-sensitive AI systems (https://net-humain.com), this module brings together students and international experts from the fields of work psychology, work science, neuroinformatics, engineering, and philosophy. Students will engage with researchers and practitioners to explore diverse perspectives on the role of AI systems in shaping the future of work, fostering an environment of critical thinking and collaborative learning.

The module is essential for developing an understanding of AI's ethical, technological, and psychological impacts in organizational practice, equipping students with the skills to navigate and contribute to the evolving artificial landscape.

After successfully completing the module

- students demonstrate a comprehensive understanding of the fundamental principles of human-centered design and the responsible utilization of artificial intelligence (AI) systems, particularly within the context of professional and organizational applications.
- students demonstrate an understanding of the concept of sustainable AI systems.
- students are able to develop and apply solutions to implement AI systems in a responsible manner, with the aim of promoting human well-being, job satisfaction, and trust in organizations.
- students are aware of the effects of AI systems on work processes, decision-making, and human-machine collaboration.
- students are able to critically evaluate the ethical, social, and psychological implications of AI systems in the workplace and apply interdisciplinary perspectives from psychology, industrial science, philosophy, and AI ethics.

Content

The course will cover the following topics: Definition and understanding of Artificial Intelligence (AI) systems; Comprehensive introduction to human-centered and responsible use of AI technologies; Ethical implications of AI in the workplace; Responsible, human-centered, ethical and sustainable design of AI systems; Relevance of AI ethics; Integration of AI systems in different professional contexts; Changes in job roles resulting from the introduction of AI; Current research on the use of AI and its impact on employees; AI use at the management level; social, psychological and technical aspects of AI development; contextual evaluation of AI systems in the workplace; creating sustainable work systems through the use of AI systems; comparing work from the past and the present - how are tasks, requirements and skills changing? XAI methods as a human-centered method; themes, perspectives and focuses of new work.

Teaching Methods

The foundation of this methodology is "problem-based learning" (PBL). Problem-based learning (PBL) comprises authentic tasks and multifaceted application contexts that necessitate the utilization of

knowledge across a spectrum of contexts and/or perspectives, thereby fostering collaborative learning in social settings.

Students engage in authentic research and practical problem-solving in collaboration with external partners, working in both small groups and individually. These solutions are then presented in a variety of formats, for example, through short presentations, posters, or reports. Furthermore, a variety of techniques are employed to enhance the learning experience, including activating methods (e.g., speed dating, theory cards), applied demonstrations (e.g., of AI methods), group discussions, and more innovative formats (e.g., business theater, designing a newspaper of the future).
Furthermore, the seminar may include an excursion to an external partner institution.
A significant component of the seminar is the discourse between students on the topics covered. This discourse encompasses critical engagement between students, teachers, and lecturers, as well as reflective discourse on the application and transfer of the topics.

The course schedule is planned as such:

- *Monday*: Welcome, introduction and getting to know the participants; Introduction of a case study (presented by organisational partner) and interdisciplinary practice-based team learning
- *Tuesday*: information-based learning with speakers Prof. Dr. Emma Ruttkamp-Bloem (University of Pretoria; Expert in AI ethics) and Dr. David Widder (Cornell Tech; Expert in AI and ethics in management); Team-based reflection on the design of theory cards; Practise-based learning in the AI escape on role development
- *Wednesday*: Information-based impulse on "how to start up" on AI and sustainability by Dr. Dennis Michaelis (Gemesys GmbH); Excursion to the museum of mining history to reflect on the "rise and fall" of technology and what we can learn from history regarding the aspect of ethics
- *Thursday*: Business case related teamwork-based problem solving on ethical AI in health care and work contexts; Information-based impulses on the relevance of explainable AI with Pavlos Rath-Manakidis (RUB; Expert in explainable AI), Prof. Dr. Tom Stoneham (University of York; Expert in artificial humans), and Assoc. Prof. Dr. Wolfgang Mayer (University of South Australia; Expert in industrial AI)
- *Friday*: Business theatre led by a performing artist to recap the weeks learning experiences and insights; Summary and reflection in the form of a future's newspaper for the year 2040; Farewell
- *After-Action-Review*: Learning process reflection report, to be submitted by 15.12.2024

Examination Forms
The examination consists of a presentation of personal learning results and lessons learned at the end of the winter school week and subsequent a final learning process reflection report (of 8 pages) as an individual task.

Requirements for Credit Points
Attendance (66%), active participation and presentation, and successful completion of the final report (see also teaching methods).

Application of the module (in other study programs)
The seminar is offered to both bachelor's and master's students at the Faculty of Psychology, the Faculty of Management and Economics (WiWi), and the Faculty of Computer Science as well as to students at the *Institute of Work Sciences* (IAW). It can typically be applied as optional/freely selectable credit. Students of psychology also have the option of taking the seminar as an A&O in-depth seminar in the bachelor's program (Vertiefungsseminare AOW) or as a substitute for the seminar in work psychology II in the master's program.

Relevance for the final grade
The module grade is weighted with the credit points when calculating the final grade.

Module coordinator and full-time lecturer
Annette Kluge (AOW), Uta Wilkens (IAW), Laurenz Wiskott (INI)

Additional Information

The course is a component of the global network for responsible, human-centered, and context-sensitive AI systems (NET-hUmAIN, funded by WUN; https://net-humain.com/). To integrate the NET-hUmAIN consortium, many of the planned formats will be conducted in a hybrid format.