

Master of Science (M.Sc.)

„Business Informatics“

University of Mannheim

– Module catalog –

for students starting in spring 2018 or later

Appendix

Academic Year

HWS 2023/ FSS 2024

Die folgenden Veranstaltungen wurden nach Veröffentlichung des Modulkatalogs dem Kursprogramm hinzugefügt.

B. Specialization Courses

Module No.	Name of Module	Offered	Language	ECTS
DS 203	Responsible AI: Conceptual Foundations, Methods and Applications	Fall	E	6
	Reinforcement Learning - Coding	Fall	E	5

DS 203	Responsible AI: Conceptual Foundations, Methods and Applications
Form of module	Lecture with Essay
Type of module	Specialization Course
Level	Master
ECTS	6
Workload	Hours per semester in presence: 28 (2 SWS) Self-study: 56 h lectures; 20 h essay / preparation oral exam
Prerequisites	Basic knowledge about AI systems (knowledge-based systems, machine learning, deep neural networks)
Aim of module	<p><u>Conceptual foundations:</u></p> <ul style="list-style-type: none"> - understanding of important concepts in human-AI interaction and AI ethics (such as trust, autonomy, responsibility) <p><u>Methods:</u></p> <ul style="list-style-type: none"> - e.g., narrative interviews, group discussions, design research methods (prototyping, design thinking, technomimesis), (digital) ethnography, participatory action research <p><u>Applications:</u></p> <ul style="list-style-type: none"> - AI in medicine and healthcare - Social robotics - Generative AI - other use cases / real-world AI applications
Learning outcomes and qualification goals	Expertise: Students gain insights and understanding of important concepts in human-AI interaction and AI ethics. They learn modes of transdisciplinary thinking and theorizing. Along sector-specific use cases they learn about ethical, legal and social aspects and challenges of real-world AI application, e.g. for healthcare.
	Methodological competence: Students learn elements of mixed-methods study design for human-AI interaction research
	Personal competence: Students learn to critically assess conceptual, ethical, legal and social aspects of human-AI interaction. They gain skills in transdisciplinary research and theory-building and learn to transfer these insights to real-world human-AI interaction scenarios.
Media	Slides are available online

Literature	<ul style="list-style-type: none"> - Voenekey, S., P. Kellmeyer, O. Mueller, and W. Burgard, ed. 2022. The Cambridge Handbook of Responsible Artificial Intelligence: Interdisciplinary Perspectives. Cambridge Law Handbooks. Cambridge: Cambridge University Press. https://doi.org/10.1017/9781009207898 (open source) - Coeckelbergh, Mark. AI ethics. (2020). The MIT Press. https://www.gbv.de/dms/bowker/toc/9780262538190.pdf - Heilinger, J.-C. (2022). The Ethics of AI Ethics. A Constructive Critique. Philosophy & Technology, 35(3), 61. https://doi.org/10.1007/s13347-022-00557-9 - McLennan, S., Fiske, A., Tigard, D., Müller, R., Haddadin, S., & Buyx, A. (2022). Embedded ethics: A proposal for integrating ethics into the development of medical AI. BMC Medical Ethics, 23(1), 6. https://doi.org/10.1186/s12910-022-00746-3 - Schmitt, L. (2021). Mapping global AI governance: A nascent regime in a fragmented landscape. AI and Ethics. https://doi.org/10.1007/s43681-021-00083-y
Methods	Interactive lecture
Form of assessment	Essay
Admission requirements for assessment	--
Duration of assessment	Essays need to be handed in by December 8th
Language	English
Offering	Fall semester
Lecturer	JProf. Dr. Philipp Kellmeyer
Person in charge	JProf. Dr. Philipp Kellmeyer
Duration of module	1 Semester
Further modules	Follow-up (block) seminar planned for summer semester 2024
Range of application	Msc Business Informatics, Msc Data Science, Lehramt Informatik
Semester	All semesters possible

Modulnummer	Reinforcement Learning - Coding
Form of module	Lectures with exercises
Type of module	Mathematics C
Level	Master
ECTS	5
Workload	28 hours lectures 122 hours self-studies
Prerequisites	Reinforcement Learning
Aim of module	Implementation of standard algorithms in reinforcement learning <ul style="list-style-type: none"> • Bandit algorithms (UCB) • TD algorithms (Q-learning, TD) • Policy gradient algorithms (SAC, PPO)
Learning outcomes and qualification goals	MK1, M02, M03 MF1, MF3 (cf, "Erläuterungen zu den Abkürzungen")
Media	Blackboard, Slides
Literature	Original articles
Methods	Lectures, programmig tasks
Form of assessment	written exam
Admission requirements for assessment	-
Duration of assessment	90 min
Language	English
Offering	irregular
Lecturer	Prof. Dr. Leif Döring
Person in charge	Prof. Dr. Leif Döring
Duration of module	1 semester

Further modules	-
Range of application	M.Sc. Wirtschaftsmathematik, B.Sc. Wirtschaftsmathematik, M.Sc. Mathematik, M.Sc. Mannheim Master in Data Science, M.Sc. Wirtschaftsinformatik
Semester	1 st , 2 nd , 3 rd