

Compulsory Elective

Human Centered Digitalization (MOD-E03)					
Code Number	Workload	Credits	Semester	Frequency	Duration
48202	180 h	6	3	winter semester	1 Semester
1	Course Title Human Centered Digitalization		Contact hours 4 SWS / 60 h	Self-Study 120 h	Planned Group Size 25 students
2	Course Description Digitalization in private and professional domains is influencing intensely and sometimes even revolutionizing people's life, the way they interact with systems, the way they interact between each other, the way a society changes. Within this course those influences will be addressed from two different viewpoints. From an analytical perspective, former and current developments and their influences will be analyzed and then projected on future trends. From a constructive perspective, those potential influences of e.g. a product or service currently in development will be taken into account to shape the prospective solution.				
3	Course Structure <ul style="list-style-type: none"> • Basic Overview "Computer Science & Society" • Ethics in computer science • Digital media and art • Surveillance and privacy • Artificial Intelligence and responsibility • Sustainability through Digital Transformation • Case Studies "Disruptive Changes by Information Technology" • Digitalization of work life & work environments, processes, products and services • Evaluation of impacts (personal, environment, society) 				
4	Application Focus Case Studies "Disruptive Changes by Information Technology" Involvement in projects: Analyzing impacts and potentials for news products and services				
5	Scientific Focus (Pre-)Studies & surveys about socioeconomic impacts of digitalization Paper with literature review/state-of-the-art				
6	Parameters <ul style="list-style-type: none"> • ECTS: 6 • Hours of study in total: 180 • Weekly hours per semester: 4 <ul style="list-style-type: none"> - Contact hours: 60 - Self-Study hours: 120 • Course characteristics: elective • Course frequency: every year - winter semester • Maximal capacity: 25 students 				

	<ul style="list-style-type: none"> • Course admittance prerequisites: Innovation Driven Software Engineering (MOD1-01), R&D Project Management (MOD1-04) • Skills trained in this course: theoretical knowledge, practical skills and scientific competences • Assessment of the course: Practical Skills (50%): Group work and/or individual task, case studies and projects => demonstration/presentation of the result an Scientific Competences (50%): written paper (literature review, study report or survey, approx. 25 pages) and presentation (in class or at a student conference, e.g. International Research Conference Dortmund) • Teaching staff: Prof. Dr. Christian Reimann, International experts from industry and academia, PhD students from IDiAL
7	<p>Learning outcomes</p> <p>7.1 Knowledge</p> <ul style="list-style-type: none"> • Knows relevant theoretical foundations, area: computer science and society • Know methodical background of case studies and surveys • Is aware of critical limitations of methods for evaluating impact <p>7.2 Skills</p> <ul style="list-style-type: none"> • Can analyze the impact of changes in information technology on individuals, environment and society, based upon a given past scenario • Can evaluate, analyze (and within limits predict) the impact of new products/services on individuals, environment and society, during the concept and development phase • Can conduct methodologically structured evaluations (e.g. field observation, lab tests) and surveys <p>7.3 Competence – attitude</p> <ul style="list-style-type: none"> • Can discuss impacts of changes in information technology on individuals, environment and society with experts • Can advise during product/service development potential impacts of product/service structure/features on individuals, environment and society • Understands scientific publication in the related areas
8	<p>Teaching and training methods</p> <ul style="list-style-type: none"> • Theoretical knowledge: e-learning modules on formal methods, tool tutorials • Practical Skills: Projects with MechatronicUML • Scientific Competences: literature review and synthesis into a paper
9	<p>Course mapping</p> <p>Input for: R&D project & Thesis</p> <p>Input from: Innovation Driven Software Engineering (MOD1-01) R&D Project Management (MOD1-04) Usability Engineering (MOD2-01)</p>
10	<p>References</p> <p><u>Basics</u></p> <p>Luciano Floridi, The Logic of Information: A Theory of Philosophy as Conceptual Design, Oxford University Press, 2019</p>

<p>Luciano Floridi, The Ethics of Information, Oxford University Press, 2015</p> <p>John Weckert (Editor), Computer Ethics, Routledge, 2019</p> <p>Charles Ess, Digital Media Ethics 3rd Edition, Polity, 2020</p> <p>Simon Winter, Human values in a digital society. ACM XRDS 25, 1, Fall 2018</p> <p>(announced) P. G. Kirchschräger, Digital Transformation and Ethics: Ethical Considerations on the Robotization and Automatization of Society and Economy and the Use of Artificial Intelligence. Germany: Nomos, 2021</p> <p><u>Practitioner</u></p> <p>eHealth: Legal, Ethical and Governance Challenges, Carlisle George, Diane Whitehouse, Penny Duqueno, Springer Science & Business Media, 2012</p> <p>An Ethical Global Information Society: Culture and democracy revisited IFIP Advances in Information and Communication Technology, Jacques J. Berleur, Diane Whitehouse, Springer, 2013</p> <p>Human Choice and Computers: Issues of Choice and Quality of Life in the Information Society Volume 98 of IFIP Advances in Information and Communication Technology, Klaus Brunnstein, Jacques Berleur, Springer, 2013</p> <p>B. Bhushan et al. (Editors), Impact of Digital Transformation on Security Policies and Standards, Information Science Reference, 2019</p> <p>ACM Code of Ethics, https://www.acm.org/code-of-ethics</p> <p>IEEE Code of Ethics, https://www.ieee.org/about/corporate/governance/p7-8.html</p> <p>IEEE Code of Conduct, https://www.ieee.org/content/dam/ieee-org/ieee/web/org/about/ieee_code_of_conduct.pdf</p> <p><u>Research (Conferences, Journals and selected papers):</u></p> <ul style="list-style-type: none">• ACM Special Interest Group on Computers and Society (SIGCAS): https://dl.acm.org/sig/sigcas• ACM SGICAS Conference on Computing and Sustainable Societies (COMPASS)• C&T'19, 9th International Conference on Communities & Technologies – Transforming Communities, Vienna 2019• Kalpana Shankar, Future proofing the digital society: an introduction to digital curation and data practices. SIGCAS Comput. Soc. 46, 1, March 2016• Åke Grönlund, Participating in the Digital Society. Digit. Gov.: Res. Pract. 1, 2, Article 17, April 2020 <p>Wail El Hilali and Abdellah El Manouar, Towards a sustainable world through a SMART digital transformation. In Proceedings of the 2nd International Conference on Networking, Information Systems & Security, NISS19, 2019</p> <p>Dongwook Kim, Hun-Yeong Kwon, Daesung Jun, Eunmi Lee, Loni Hagen, and Soon Ae Chun, Opportunities and challenges in the intelligent society: smart cities, digital inclusion, and cybersecurity. In Proceedings of the 19th Annual International Conference on Digital Government Research: Governance in the Data Age (dg.o '18), 2018</p> <p>P. G. Kirchschräger, Digital transformation of society and economy - ethical considerations from a human rights perspective. International Journal of Human Rights and Constitutional Studies, 6 (4), 301–321, 2019</p>
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	<p>P. G. Kirchschräger, Homo Dignitatis – Ethical Orientation for Digital Transformation. <i>Psychologie in Österreich</i>, 4 (39), 274–284, 2019</p>
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