# Course Offer Master Winter Semester 2022/23
# Digital Health (DH)

**(Status: 10/12/2022)**

| | Course Titel | Type | Lecturers Supervisors | weekly hours per semester | CP | Participants (max.) | Language | Digital Health | | | | Scalable Computing Algorithms for Digital Health | | | Digitalization of Clinical Research Processes | | | Acquisition, Processing and Analysis of Health Data | | | Health Data Security | | | Professional Skills | | | | Bridge moduls | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | DH | | | | SCAD | | | DICR | | | APAD | | | HDAS | | | PSK | | | | BM | | | |
| | | | | | | | | Health Systems and Sciences for Digita Health | Software Architectures for Digital Health | Ethics, Law and Compliance for Digital Health | Data Science for Digital Health | Concepts and Metods | Technologies and Tools | Specialization | Concepts and Metods | Technologies and Tools | Specialization | Concepts and Metods | Technologies and Tools | Specialization | Concepts and Metods | Technologies and Tools | Specialization | Communication Skills | Management and Leadership | Design Thinking Basic | Design Thinking Advanced | Principles of IT Systems | Fundamentals of Programming | Introduction to Principles in Medicine | Fundamentals of Healthcare Systems |
| | | | | | | | | PR-DH-HHS | PR-DH-SW | PR-DH-EC | PR-DH-DS | PR-SCAD-C | PR-SCAD-T | PR-SCAD-S | PR-DICR-C | PR-DICR-T | PR-DICR-S | PR-APAD-C | PR-APAD-T | PR-APAD-S | PR-HDAS-C | PR-HDAS-T | PR-HDAS-S | PR-PSK-CO | PR-PSK-MAE | PR-PSK-DTB | PR-PSK-DTA | PR-BM-IT | PR-BM-PR | PR-BM-PM | PR-BM-HS |
| | | | | | | | | MA Digital Health Prüfungsordnung 2021 | | | | | | | MA Digital Health Prüfungsordnung 2021 | | | | | | | | | MA Digital Health Prüfungsordnung 2021 | | | | | | | |
| 1 | Advanced Competitive Programming 2 | V | Prof. Dr. Tobias Friedrich, Philipp Fischbeck, Hans Gawendowicz | 4 | 6 | | DE | | | | | 6 | 6 | 6 | | 6 | | | | | | | | | | | | | | | |
| 2 | Advanced Machine Learning Seminar | S | Prof. Dr. Christoph Lippert | 4 | 6 | 10 | EN | | | | | 6 | 6 | 6 | | | | 6 | 6 | 6 | | | | | | | | | | | |
| 3 | AI in Practice: Implementing Real-World Solutions | PS | Prof. Dr. Gerard de Melo, Tolga Buz | 4 | 6 | 24 | EN | | | | | | | | 6 | 6 | 6 | 6 | 6 | 6 | | | | | | | | | | | |
| 4 | Algorithms for Programmable Matter | PS | Prof. Dr. Tobias Friedrich, Dr. George Skretas | 2 | 3 | 15 | EN | | | | 3 | | 3 | 3 | | | | | | | | | | | | | | | | | |
| 5 | Applied Probabilistic Machine Learning | S | Prof. Dr. Bernhard Renard, Dr. Hugues Richard, Jens-Uwe Ulrich | 4 | 6 | 20 | EN | | | | | 6 | 6 | 6 | | | | 6 | 6 | 6 | | | | | | | | | | | |
| 6 | Big Data Systeme | V | Prof. Dr. Tilmann Rabl, Lawrence Benson, Ilin Tolovski | 4 | 6 | | EN | | | | | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | | | | | | | | | | | |
| 7 | Biostatistics & Epidemiological data analysis using R | VL/Ü | Dr. Stefan Konigorski | 4 | 6 | | EN | | | | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | | | | | | | | | | | |
| 8 | Competitive Programming with Deep Learning 2 | PS | Prof. Dr. Tobias Friedrich, Dr. Sarel Cohen, Dr. Davis Issac, Vanja Doskoč, Aishwarya Radhakrishnan | 4 | 6 | | EN | | | | 6 | | 6 | 6 | | | | | | | | | | | | | | | | | |
| 9 | Current Topics in Group Messaging | PS | Prof. Dr. Anja Lehmann, Dennis Dayanikli, Tarek Galal | 4 | 6 | 6 | EN | | | | | | | | | | | | | | 6 | 6 | 6 | | | | | | | | |
| 10 | Cyber Security Management | V/Ü | Prof. Dr. Christian Dörr | 4 | 6 | | DE | | | | | | | | | | | | | | 6 | 6 | 6 | | | | | | | | |
| 11 | Data Management for Digital Health | VL/Ü | Dr. Ing. Matthieu-P. Schapranow | 4 | 6 | | EN | | | | 6 | 6 | 6 | | 6 | 6 | | 6 | 6 | | | | | | | | | | | | |
| 12 | Deep Learning for Optical Character Recognition | PS | Prof. Dr. Tobias Friedrich, Dr. Sarel Cohen, Vanja Doskoč | 4 | 6 | 4 | EN | | | | 6 | | 6 | 6 | | | | | | | | | | | | | | | | | |
| 13 | Development of a Local Hierarchical Multi-label Classification Library | S | Prof. Dr. Bernhard Renard, Fabio Malcher Miranda | 4 | 6 | 3 | EN | | | | | 6 | 6 | 6 | | | | 6 | 6 | 6 | | | | | | | | | | | |
| 14 | Digital Health and Research Systems, Data Interoperability | VL/S | Dr. Kai Uwe Heitmann, Prof. Dr. Fabian Prasser, Prof. Dr. Sylvia Thun | 4 | 6 | | EN | | 6 | | | | | | | | | | | | | | | | | | | | | | |
| 15 | Eingebettete Betriebssysteme | V/S | Prof. Dr. Andreas Polze | 4 | 6 | | DE | | | | | 6 | 6 | 6 | | | | | | | | | | | | | | | | | |
| 16 | From fairness to cyberbiosecurity: accountability in machine learning for biology and medicine | S | Prof. Dr. Bernhard Renard, Melania Nowicka, Jakub Bartoszewicz, Marta Lemanczyk | 2 | 3 | 6 | EN | | | | | 3 | 3 | 3 | | | | 3 | 3 | 3 | | | | | | | | | | | |
| 17 | Fundamentals of Programming for Digital Health | V/P | Prof. Dr. Bert Arnrich | 4 | 6 | | EN | | | | | | | | | | | | | | | | | | | | | 6 | | | |
| 18 | Global Team-Based Innovation I | P/S | Prof. Falk Uebernickel | 4 | 6 | | EN | | | | | | | | 6 | 6 | 6 | 6 | 6 | 6 | | | | | 6 | | 6 | | | | |
| 19 | Graph Neural Networks for Knowledge Graph Systems | PS | Prof. Dr. Holger Giese, Christian Adriano, Matthias Barkowsky | 4 | 6 | | EN | | | | | | | | | | | 6 | 6 | 6 | | | | | | | | | | | |
| 20 | Graphenalgorithmen | V/Ü | Prof. Dr. Tobias Friedrich, Dr. George Skretas, Dr. Ralf Rothenberger | 4 | 6 | | DE | | | | | 6 | 6 | 6 | | | | | | | | | | | | | | | | | |
| 21 | HCI Project Seminar on 3D Interaction and Personal Fabrication | PS | Prof. Patrick Baudisch | 4 | 6 | | EN | | | | | 6 | 6 | 6 | | | | | | | | | | | | | | | | | |
| 22 | Introduction Data Science and Phyton for Digital Health | VL/Block | Prof. Dr. Christoph Lippert, Dr. Stephan Konigorski | 2 | 3 | | EN | | | | 3 | 3 | 3 | 3 | | | | 3 | 3 | 3 | | | | | | | | | | | |
| 23 | Introduction to IT Systems | VL/Ü | Prof. Dr. Ch. Meinel, Dr. Anne Kayem, Prof. Tilmann Rabl | 4 | 6 | | EN | | | | | | | | | | | | | | | | | | | | 6 | | | | |
| 24 | Kryptographie | V/Ü | Prof. Dr. Anja Lehmann | 4 | 6 | | DE | | | | | | | | | | | | | | 6 | 6 | 6 | | | | | | | | |
| 25 | Linear Programming and Combinatorial Optimization | V/Ü | Prof. Dr. Tobias Friedrich, Dr. Davis Issac, Dr. Nikhil Kumar | 4 | 6 | | EN | | | | | | | 6 | | | | | | | | | | | | | | | | | |
| 26 | Machine Intelligence with Deep Learning | S/P | Dr. Haojin Yang, Christian Bartz, Joseph Bethge,Ting Hu, Gregor Nickel, Jona Otholt | 4 | 6 | | EN | | | | 6 | | | | 6 | 6 | 6 | 6 | 6 | 6 | | | | | | | | | | | |
| 27 | Mathematics for Machine Learning | V | Prof. Dr. Christoph Lippert | 4 | 6 | | EN | | | | | 6 | 6 | 6 | | | | 6 | 6 | 6 | | | | | | | | | | | |
| 28 | Meta-Reinforcement Learning for Self-Adaptive Systems | PS | Prof. Dr. Holger Giese, Christian Adriano, Sona Ghahremani, He Xu | 4 | 6 | | EN | | | | | | | | | | | 6 | 6 | 6 | | | | | | | | | | | |
| 29 | Mobilkommunikation | V/Ü | Prof. Holger Karl | 4 | 6 | | EN | | | | | | | | | | | 6 | 6 | 6 | | | | | | | | | | | |
| ~~30~~ | ~~Modern Database Systems~~ | ~~V~~ | ~~Dr. Michael Perscheid, Stefan Halfpap, Marcel Weisgut, Thomas Bodner, David Justen, Daniel Lindner~~ | ~~4~~ | ~~6~~ | | ~~EN~~ | | | | | ~~6~~ | ~~6~~ | ~~6~~ | | | | | | | | | | | | | | | | | |
| 31 | Network Security in Practice | S/P | Dr. Feng Cheng, Pejman Najafi | 4 | 6 | | EN | | | | | | | | | | | | | | 6 | 6 | 6 | | | | | | | | |
| 32 | Privacy Preserving Outlier Detection | S/Ü | Dr. Anne Kayem | 4 | 6 | | EN | | | | | 6 | 6 | 6 | | | | | | | 6 | 6 | 6 | | | | | | | | |
| 33 | Probabilistic Models: Modeling, Learning and Analysis | V | Prof. Dr. Holger Giese, Christian Adriano, Maria Maximova, Sven Schneider | 4 | 6 | | EN | | | | | | | | 6 | 6 | 6 | 6 | 6 | 6 | | | | | | | | | | | |
| 34 | Process Mining | V/Ü | Prof. Leopold | 2 | 3 | | EN | | | | | | | | 3 | 3 | 3 | | | | | | | | | | | | | | |
| 35 | Programming life with deep learning: design your own molecule | S | Prof. Dr. Bernhard Renard, Jakub Bartoszewicz, Melania Nowicka | 4 | 6 | 3 | EN | | | | | 6 | 6 | 6 | | | | 6 | 6 | 6 | | | | | | | | | | | |
| 36 | Recent Trends in Deep Learning and AI | PS | Prof. Dr. Gerard de Melo, Maximilian Schall, Tolga Buz, Marco Cipriano, Tamara Czinczoll, Sedigheh Eslami, Babajide Owoyele, Moritz Schneider | 4 | 6 | 20 | EN | | | | | | | | 6 | 6 | 6 | 6 | 6 | 6 | | | | | | | | | | | |
| 37 | Research and Implementation of Database Concepts | P/S | Dr. Michael Perscheid, Stefan Halfpap, Thomas Bodner, Marcel Weisgut, David Justen, Daniel Lindner, Martin Boissier | 4 | 6 | | EN | | | | | 6 | 6 | 6 | | | | | | | | | | | | | | | | | |
| 38 | Science - Introduction to Scientific Reseaech | S | Dr. Ralf Teusner, Dr. Timo Kötzing | 2 | 3 | | DE | | | | | | | | | | | | | | | | | 3 | | | | | | | |
| 39 | Social Media Mining | S/P | Prof. Dr. Christoph Meinel, SeyedAli Alhosseini | 4 | 6 | | EN | | | | | | | | | | | 6 | 6 | 6 | | | | | | | | | | | |
| 40 | Trends and Concepts in the Software Industry | S (Block) | Prof. Dr. Hasso Plattner, Dr. Michael Perscheid, Dr. Ralf Teusner, Franziska Dobrigkeit | 4 | 6 | | EN | | | | | 6 | 6 | 6 | | | | 6 | 6 | 6 | | | | | | | | | | | |
| 41 | Trends in BPM Research | V/S | Prof. Dr. Mathias Weske, Tom Lichtenstein | 2 | 3 | | EN | | | | | | | | 3 | 3 | 3 | | | | | | | | | | | | | | |
| 42 | WWW and beyond - Applications in the realm of digital education | S | Prof. Dr. Christoph Meinel, Hendrik Steinbeck, Theresa Zobel | 4 | 6 | | EN | | | | | | | | 6 | 6 | 6 | | | | | | | | | | | | | | |
| 59 | Interoperability in Data Processing Pipelines | S | Prof. Dr. Tilmann Rabl, Ilin Tolovski | 4 | 6 | 12 | EN | | | | | 6 | 6 | 6 | | | | 6 | 6 | 6 | | | | | | | | | | | |
| | **Professional Skills** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 43 | Academic Writing for Science | S | Sharon Nemeth | 2 | 3 | 15 | EN | | | | | | | | | | | | | | | | | 3 | | | | | | | |
| 44 | Advanced Track Desgin Thinking (D-School) | P/S | Dr. Claudia Nicolai | 6 | 9 | 40 | EN | | | | | | | | | | | | | | | | | | | 9 | | | | | |
| 45 | Basic Track Design Thinking (D-School) | P/S | Dr. Claudia Nicolai | 6 | 9 | 80 | EN | | | | | | | | | | | | | | | | | | 9 | | | | | | |
| 46 | Ethik und Dilemmata in der globalisierten Welt: Erfahrungen aus der SARS-CoV-2-Pandemie | S | Dr. Barbara Buchberger | 2 | 3 | 30 | DE | | | | | | | | | | | | | | | | | 3 | | | | | | | |
| 47 | Founder Fundamentals | S | Dr. Frank Pawlitschek, David Hahn | 2 | 3 | 25 | EN | | | | | | | | | | | | | | | | | | 3 | | | | | | |
| 48 | Führungskompetenz - über die harten Auswirkungen der Soft Skills | S (Block) | Michael Heidemann, Eugen Unger | 2 | 3 | 24 | DE | | | | | | | | | | | | | | | | | 3 | 3 | | | | | | |
| 49 | Global Design Thinking-Workshop: Teamed Leadership (D-School) | P/S | Dr. Claudia Nicolai | 2 | 3 | 40 | EN | | | | | | | | | | | | | | | | | | 3 | 3 | | | | | |
| 50 | Intrapersonelle & Interpersonelle Kompetenzen | S (Block) | Dr. Jana Leidenfrost | 2 | 3 | 18 | DE | | | | | | | | | | | | | | | | | 3 | | | | | | | |
| 51 | Leading Yourself and Others in a Virtual World | S (Block) | Karsten Drath | 2 | 3 | 36 | EN | | | | | | | | | | | | | | | | | | 3 | | | | | | |
| 52 | Management Essentials | V | Prof. Dr. Eric Kearney | 2 | 3 | 30 | EN | | | | | | | | | | | | | | | | | | 3 | | | | | | |
| 53 | Managing People, Managing Teams, and Leading Change | S (Block) | Ulf Schäfer | 2 | 3 | 20 | EN | | | | | | | | | | | | | | | | | | 3 | | | | | | |
| 54 | (Neuro-) Design Thinking for Digital Engineering | V | Dr. Julia von Thienen, Irene-Sophia Plank | 2 | 3 | | EN | | | | | | | | | | | | | | | | | 3 | | | 3 | | | | |
| 55 | Sonic Thinking - Methods of working with sound | S | Dr. Julia von Thienen | 2 | 3 | | EN | | | | | | | | | | | | | | | | | 3 | | | 3 | | | | |
| 56 | Unternehmenssimulation Strategisches Management | S (Block) | Prof. Dr. Braun, Robert Dabitz | 2 | 3 | 20 | DE | | | | | | | | | | | | | | | | | | 3 | | | | | | |
| 57 | Verhandeln und Konfliktmanagement | S (Block) | Dr. Birgit Keydel | 2 | 3 | 20 | DE | | | | | | | | | | | | | | | | | 3 | 3 | | | | | | |
| 58 | Wayfinder: Self- and Leadership Development (D-School) | P/S | Dr. Claudia Nicolai, Dr. Martin Schwemmle | 2 | 3 | 18 | EN | | | | | | | | | | | | | | | | | | 3 | | 3 | | | | |