Master Study Program Applied Data Science
Overview of Study Modules Offered by or in Collaboration with the Department of Medical Informatics, UMG

Abbreviations:

empf. It is recommended
Sem.: to take this course in semester #
ECTS: Credit Points
CH: Contact Hours per week
WiSe, winter term,
SoSe summer term

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Modules	Topics covered in Medical Informatics Lectures	Lecturers	Offer	rec. sem.	ECTS	CH	Module group
M.Inf.2101: Best Practice Methods of Privacy and Ethics in Data Science	Applied ethics, ethical and legal frameworks, privacy and data protection, anonymity, data ownership, user consent, data collection, data processing, data storage, data management, data sharing, equity and diversity.	**Responsible:** Bickeboeller, Gold **MI Lecturer:** Sax	WiSe	1-3	**5**	2	Core curriculum, Fundamentals of Data Science (I. 1. a.)
M.Inf.2102: Advanced Statistical Learning for Data Science	Advanced statistical methods, ensemble learning (federated learning, transfer learning), model assessment (AUC, PRAUC, MCC), validation (CV, Monte Carlo), and interpretation (EFS, GNN, XAI) as well as statistical network inference.	**Responsible:** Hauschild, Altenbuchinger **MI Lecturers:** Hauschild, Park	WiSe	1-3	**6**	4	Core curriculum, Statistical methods of Data Science (I. 1. b.)
M.Inf.2801: Research Lab Rotation	Advanced Research Training in Medical Informatics, Medical Data Science	Krefting	each semester	3-4	**12**	n/a	Professionali-zation Section, Key competencies (I. 2. c. aa.)
M.Inf.1303: Imaging and Visualization	Image Processing in Medical Care	Krefting, Grothausmann	SoSe	1-3	**6**	4	Professionali-zation Section, Elective courses Data Science – Computer Science (I. 2. a. aa.)

Modules in the Application Domain Medical Data Science (I. 2. b. IV.)

Modules	Topics	Lecturers	Offer	rec. Sem.	ECTS	CH	Module group
B.Inf.1351.A: Grundlagen der Biomedizin[1]	**B.Inf.1351.A.1: Grundlagen der Biomedizin I** DNA, RNA, Phänotyp, Zellen, Bakterien, Viren, genetisch bedingte Krankheiten, Biobanken **B.Inf.1351.A.2: Grundlagen der Biomedizin II** Organe, Organsysteme, Erkrankungen, medizinische Disziplinen	Kusch, Kossen, Rieß, Nußbeck, Kraus	WiSe/SoSe	1-3	**6**	4	(I. 2. b. IV. 1.)
M.Inf.1304: E-Health	E-Health[2]	N. N.	WiSe	1-3	**6**	4	(I. 2. b. IV. 2.)
M.Inf.1307: Current Topics in Medical Informatics	Clinical Decision Support Systems in Medicine	Vogel	WiSe	1-3	**6**	4	(I. 2. b. IV. 2.)
M.Inf.1308: Journal Club[3]	Journal Club	Krefting, Sax et al.	each semester	1-3	**3**	2	(I. 2. b. IV. 2.)
M.Inf.1351: Work Methods in Health Research	Collaborative Work Methods in Research	Sax	WiSe	1-3	**5**	3	(I. 2. b. IV. 2.)
M.Inf.356-1: Personalized Medicine	Personalized Medicine *Prior attendance of module B.Inf.1351.A is strongly recommended.*	Sax et al.	SoSe	1-3	**3**	2	(I. 2. b. IV. 2.)

[1] ***Module B.Inf.1351.A*** *spans over two semesters. A.1 is offered every winter term, A.2 is offered every summer term. It is advisable to start the module in the winter term, because the second part of the module builds on the first. The lecture is given in German, because it is part of the bachelor study program Applied Computer Science.*

[2] *Students should have acquired a sound knowledge of the fundamentals of Medical Informatics before attending this module.*

[3] ***Journal Club*** *is offered continuously during as well as outside of lecture periods. Students have to attend 12 sessions during their studies and do two presentations of their own.*