

Master Study Program Applied Data Science

Overview of Study Modules Offered by or in Collaboration with the Department of Medical Informatics, UMG

Abbreviations:

rec. 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, (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 et al.	WiSe	1-3	6	4	Core curriculum, (I. 1. b.)
M.Inf.2801: Research Lab Rotation	Advanced Research Training in Medical Informatics/Medical Data Science	Krefting et al.	each semester	3-4	12	n/a	Key competencies (I. 2. c. 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 Biomedizin¹	B.Inf.1351.A.1: Grundlagen der Biomedizin I DNA, RNA, Phänotyp, Zellen, Bakterien, Viren, genetisch bedingte Krankheiten, Biobanken	Kossen, Kusch, Nußbeck, Smolorz	WiSe	1-3	6	4	(I. 2. b. IV. 1.)
	B.Inf.1351.A.2: Grundlagen der Biomedizin II Organsysteme, Erkrankungen, medizinische Disziplinen	Kraus	SoSe				

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 – but not mandatory! – to start the module in the winter term, because the second part of the module builds on the first. The module is taught in German.

Modules	Topics	Lecturers	Offer	rec. Sem.	ECTS	CH	Module group
M.Inf.1308: Journal Club²	Journal Club	Krefting, Sax et al.	each semester	1-3	3	2	(I. 2. b. IV. 1.)
M.Inf.356-1: Personalized Medicine³	Personalized Medicine	Sax et al.	SoSe	1-3	3	2	(I. 2. b. IV. 1.)
M.Inf.1303: Imaging and Visualization	Biomedical Signal and Image Processing	Dullin, Spicher	SoSe	1-3	6	4	(I. 2. b. IV. 2.)
M.Inf.1304: E-Health	E-Health	Krefting et al.	WiSe	1-3	6	4	(I. 2. b. IV. 2.)
M.Inf.1307: Current Topics in Medical Informatics	Clinical Decision Support Systems in Medicine	Ritter	WiSe	1-3	6	4	(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.)

² **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.

³ Prior attendance of module B.Inf.1351.A is strongly recommended.