Curriculum

(As of 12/2025)

Jun. Prof. Michael Götz	**Medical Image Interpretation and Analysis** Interpretation & analysis of medical images; domain-specific challenges: image normalization, registration, resampling, annotation fusion, data augmentations (Part of KEMAI Module 2 - Basics and Technology of Imaging Modalities)	Wednesday, 14:00-15:30 21.01. 2026 O27 123 28.01.2026 O27 2201 04.02.2026 O27 123
Prof. Rebecca Hufendiek	**From Ethical Foundations to Ethics by Design – <mark>catch-up date</mark>** Defining Intelligence in AI What does "intelligence" mean in the context of AI? How do we ascribe intelligence to machines vs. living beings? Technology & Value Neutrality Is technology simply a neutral tool, or does it inherently carry values? How can ethical considerations be embedded in technological design? Ethics by Design Framework Exploration of a structured approach to integrating ethics into AI development. Philosophical foundations: fairness, autonomy, transparency.privacy, accountability, wellbeing. Ethics by design principles and application. (Part of KEMAI Module 1 "Responsible Research in Medical AI"	Wednesday, 14:15-15:45 11.02.2026 O27 - 2201
Prof. Rebecca Hufendiek	**"Ethics-by-Design"** Workshop	Wednesday, 10:00 6.5.2026, Place: TBD
Prof. A. Beer, Prof. M. Beer, Dr. Ina Vernikouskaya	**Foundations of Medical Imaging (Part 2)** Physical & technical basics and applications of X-Ray, computed tomography (CT), positron emission tomography (PET), magnetic resonance imaging (MRI), ultrasound (US) (Part of KEMAI Module 2 - Basics and Technology of Imaging Modalities)	Tuesday, 13:30-15:00 14.07.2026 Reisensburg

Curriculum

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KEMAI

Prof. Heiko Neumann	**Machine Learning for Medical Image Analysis** Supervised and unsupervised learning; regression; classification; optimization; (deep) convolutional neural networks; recurrent neural networks; (vision) transformer architectures; applications: recognition, object detection, image segmentation; visualization. Theories and computational models of attention; attention mechanisms in machine learning; medical visual search scenarios; search/attention guidance; issues of rare target occurrence. (Part of KEMAI Module 3 "Learning Based Systems in Medicine")	Date, time & place: TBD 4 units, most likely early summer
Prof. Hans Kestler	**Statistical Learning Theory** Complexity measures; frameworks of statistical and algorithmic learning; regularization; compression bounds. (Part of KEMAI Module 3 "Learning Based Systems in Medicine")	Date, time & place: TBD 4 units in fall 2026

Further dates of interest/ Important dates 2026

- 02/2026 Four doctoral researchers in medicine joining KEMAI
- 06.03.- 07.03.2026: Equal opportunities retreat Augsburg
- 25. - 27.03.2026: Intermediate Evaluation I / Spring Meeting IGradU
  Poster presentation (also for Ethics doctoral researchers)
- 31.05. – 03.06.2026: Joint Meeting of the German Research Training Groups 2026, Dagstuhl
- 14.07. – 16.07.2026: KEMAI Summer School, Reisensburg
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