

Joint Master's program Biomedical Engineering

X4M 2330 Computer Vision	Lecture, 2 SWS (exercises not obligatory)
Workload:	see related module
Credit-points:	3
Lecturer:	Erhardt Barth
Language:	English
Curriculum:	Master's program Biomedical Engineering, 2nd Semester
Prerequisites according to examination regulations	None
Recommended prerequisites:	Basic knowledge in signal processing
Learning outcomes:	<p>Students can understand the basics of computer vision.</p> <p>They can explain and perform camera choice and calibration.</p> <p>They can explain and apply the basic methods for feature extraction, motion estimation, and object recognition.</p> <p>They can indicate appropriate methods for different kinds of computer-vision applications.</p>
Content:	<p>Introduction to human and computer vision</p> <p>Sensors, cameras, optics and projections</p> <p>Image features: edges, intrinsic dimension, Hough transform, Fourier descriptors, snakes</p> <p>Range imaging and 3-D cameras</p> <p>Motion and optical flow</p> <p>Object recognition</p> <p>Example applications</p>
Literature:	<p>Richard Szeliski: Computer Vision: Algorithms and Applications. Springer, Boston, 2011</p> <p>I David Forsyth and Jean Ponce: Computer Vision: A Modern Approach. Prentice Hall, 2003</p> <p>Hand-out from lecturer</p>
Examination:	Oral examination
Teaching methods:	Projected slides and board, demonstrations