Module title	**Medical Imaging and Image Processing**
Code	BECS3
Degree Programme	Master of Science in Life Sciences
Group	BECS (Biomedical Engineering and Computational Science)
Workload	3 ECTS (90 student working hours: 42 lessons contact = 32 h; 58 h self-study)
Module Coordinator	**Name**: Dr. Alex Ringenbach **Phone**: +41 (0)61 228 55 55 **Email**: alex.ringenbach@fhnw.ch **Address**: FHNW, HLS, Gründenstrasse 40, 4132 Muttenz
Lecturers	Dr. Alex Ringenbach, FHNW
Entry requirements	Bachelor level of analysis, linear algebra, statistics, Matlab programming skills There is an online tutorial available for students without Matlab skills.
Learning outcomes and competences	After completing the module, students will be able to: • apply image processing methods to basics image analysis problems • understand the typical image processing chains on clinical applications • knowing some advanced image processing methods
Module contents	• Image: Representation, File Formats, Image Quality • Medical Image Acquisition Systems: Radiology, CT, MRI • Image Processing in Clinical Practice: Processing Chains • Operations in Intensity Space • Filtering in Spatial Domain and Feature Detection • Segmentation and morphological Operations • Feature Description and Classification • Spatial Transforms and Registration • Rendering and Surface Models • Advanced Topics to Segmentation and Registration • Practical Work with Matlab and other Tools
Teaching / learning methods	Lectures, accompanied with practical work
Assessment of learning outcome	1. Project work (1/3) 2. Final examination, closed book (2/3)
Format	7-weeks
Timing of the module	Spring semester, CW 15-21
Venue	Olten
Bibliography	Wolfgang Birkfellner, 2014. Applied Medical Image Processing. CRC Press Reinhard Klette, 2014. Concise Computer Vision. Springer Verlag
Language	English
Links to other modules	
Comments	
Last Update	25.09.2020