EMIT

TRAINING MODULE "PHYSICS OF MAGNETIC RESONANCE IMAGING AND SPECTROSCOPY"

TRAINING TIMETABLE

No.	Sub-module
i	Introduction. Program. Using the training materials
1	Basic safety issues in MR. Emergency routines
2	Introduction to the MR unit. Coil systems and corresponding magnetic fields (main field, gradient and RF fields). Surrounding equipment. Software, graphical user interface, acquiring basic MR images. Patient information, patient care, the patient's perspective
3	Getting acquainted with available pulse sequences – an overview
4	Designing and manufacturing a gel phantom for investigation of MRI signal and contrast
5	MRI signal and contrast using basic pulse sequences. Influence of tissue and pulse-sequence parameters
6	Image quality parameters (signal-to-noise ratio, field-of-view, bandwidth, spatial resolution, etc.)
7	Basic k-space properties (possibly a simulation study)
8	Investigation of advanced pulse sequences
9	Image artifacts in MRI
10	Properties of contrast agents in MRI
11	MR angiography (MRA) and flow quantification. Pulse sequences and evaluation (MIP, MPR, etc.)
12	Pulse sequences and evaluation routines in MR spectroscopy (MRS)
13	Overview of clinical applications
14	Comprehensive quality control/quality assurance (QC/QA) program for MRI and MRS
15	Image file transport protocols. Network issues. MR image formats and image storage
16	Post-processing of MR images. Perfusion and diffusion maps. Functional MRI (fMRI)
17	Safety issues regarding personnel and staff. Guidelines, normal policy and legislation
18	Patient safety. Guidelines, normal policy and legislation
19	Safety regarding surrounding equipment and implants: Methods for testing the MR compatibility of various devices with respect to ferromagnetism (translational forces and torques), heating, image artifacts, etc.
20	Commissioning and purchasing routines, preparations for installation, installation procedure
ii	Organising the portfolio, training assessment, etc.