Modulbezeichnung:	**Magnetic Resonance Imaging sequence programming (MRIpulseq)** (Magnetic Resonance Imaging sequence programming)	**5 ECTS**
Modulverantwortliche/r:	Moritz Zaiß	
Lehrende:	Andreas Maier, Moritz Zaiß	

Startsemester: SS 2021	Dauer: 1 Semester	Turnus: halbjährlich (WS+SS)
Präsenzzeit: 60 Std.	Eigenstudium: 90 Std.	Sprache: Englisch

Lehrveranstaltungen:

Magnetic Resonance Imaging sequence programming (SS 2021, Seminar, Andreas Maier et al.)

Empfohlene Voraussetzungen:

The prerequisite for the exercise is knowledge of the Magnetic Resonance Imaging 1 [MRI1] lecture by Prof. Dr. Laun. For more information, please contact: moritz.zaiss@uk-erlangen. Registration via Studon: https://www.studon.fau.de/crs2819947.html

Inhalt:

In this two-week block seminar, the basics of MR sequence programming are taught. Basic sequences such as FID, spin echo, and gradient echo are programmed in Python by the students themselves in this exercise. In addition, the basic image reconstruction based on the simulated and recorded data is written and carried out in Python, including radial imaging and iterative reconstruction. The sequences are created in a format that can be interpreted directly by MR scanners (https://pulseq.github.io). Part of the exercise will therefore be to use the created sequences on a real MRT machine in the Center for Medical Physics and Technology Generate signals from objects and test persons and reconstruct them into MRI images. Basic knowledge of Python is helpful, but can also be acquired in the exercise. The prerequisite for the exercise is knowledge of the Magnetic Resonance Imaging 1 [MRI1] lecture by Prof. Dr. Laun. For participation in the seminar, including an exercise with written report and demonstration in the following week, a total of 5 ECTS points with grade are given.

Lernziele und Kompetenzen:

Students can create sequences in a format that can be interpreted directly by MR scanners (https://pulseq.github.io). In the exercise, they will use the created sequences on a real MRT machine in the Center for Medical Physics and Technology, generate signals from objects and test persons and reconstruct them into MRI images.

Literatur:

https://pulseq.github.io

Studien-/Prüfungsleistungen:

Magnetic Resonance Imaging sequence programming (Prüfungsnummer: 76631)
Prüfungsleistung, Seminarleistung
Anteil an der Berechnung der Modulnote: 100%
weitere Erläuterungen:
Presentation and paper.

Erstablegung: SS 2021, 1. Wdh.: WS 2021/2022
1. Prüfer: Andreas Maier