



PR-7917: Data Science in Neuroimaging (IMG)

Lecture Based Module

Credit weighting: 5 ECTS Co-ordinator: Prof. A. Bokde

The aim of the module is to provide knowledge of modern neuroimaging modalities, develop practical skills and expertise in neuroimaging analysis, develop expertise in management and data sharing of large datasets, and their application to understanding cognition and disease. Students will complete an analysis project and submit a report.

This module will be delivered in a 2-3 week block in February 2026

Details of the module

MRI/BOLD/Diffusion signals

Single Subject preprocessing of fMRI data

Class Meeting – analysis updates

Single Subject analysis – DTI data & tractography

Class Meeting – analysis updates

General Linear Model

Ethics in Neuroimaging

Group Analysis

Class Meeting – analysis updates

Introduction to Neuroimaging Open Science

Large Data Analysis

Structural MRI Analysis

Class Meeting – analysis updates

Reading/Learning Resources

- Functional magnetic resonance imaging. S.A. Huettel, A.W. Song, G. McCarthy (2004) Sinauer Associates, Inc. ISBN978-0-87893-288-7
- Introduction to Human Neuroimaging. Hans Op de Beeck, Chie Nakatani (2019). Cambridge Univ Press

Learning Outcomes

On successful completion of this module students should be able to:

- Describe the physics and physiology being measured through the different imaging modalities
- Critically evaluate the various strategies for analysis of neuroimaging data
- Perform analysis of neuroimaging data
- Understand how neuroimaging may be used to advance our understanding of cognition and disease

Assessment (100%): CA