

# BASIC MRI PHYSICS (Łódź, Poland, 23-27 Sept 2024)

## Purpose

The course is a part of the ERASMUS Course on Magnetic Resonance Imaging (EMRI). It is meant to provide a solid understanding of the basic principles underpinning MRI.

Topics related to nuclear magnetic resonance, image encoding, relaxation, spin-echo and gradient-echo imaging, fast imaging, instrumentation, site planning, specialized MRI (perfusion, diffusion, flow, functional MRI).

Formal lectures are intertwined with question&answer and self-teaching sessions.

The course is targeted at diagnostic imaging professionals including fields of Clinical Radiology, Medical Physics, Radiography, Electroradiology and staff/students from clinical and scientific facilities.

The limit of 30 participants will be followed, in the order of payment.

**Accreditation for CME points is in progress.**

## Registration, fees and contact:

**Regular fee:** 750 EUR

**Student fee:** 550 EUR (student proof required)

Fees include participation, certificate, coffee breaks, lunches and one social dinner as in the preliminary programme.

**Accommodation:** Accommodation is not included. Participants are encouraged to contact Student's House no 1 (3B Politechniki Alley) for preferential rates and proximity to the venue. If you wish to book breakfast together, mention it in your reservation:

[anna.garnys@p.lodz.pl](mailto:anna.garnys@p.lodz.pl)

**Bank account:** PL 56 1240 3028 1978 0000 2822 2358

Put 'conference I-23/MRI24' as payment title/note

### Registration form:

- <https://drupal.emricourse.org/index.php>
- select Basic MRI Physics - Lodz (PO) – 2024 module
- please include address due to local requirements
- if sponsored by an institution, please specify institution data and address
- after initial registration, an e-mail will be sent with description of further necessary actions
- registration is confirmed by payment

### Contact to local organiser:

[jakub.jurek@p.lodz.pl](mailto:jakub.jurek@p.lodz.pl)

## Venue:

Institute of Electronics, Lodz University of Technology

B9 building, 4<sup>th</sup> floor

Aleja Politechniki 10, Łódź

<https://maps.app.goo.gl/64PWZjB5d4TQ5Cds8>

## Faculty:

Dr. Stephen Gandy, University of Dundee

Dr. Stephen Nicholas, University of Dundee

Dr. Stephen Sawiak, University of Cambridge

Dr. Peter Van Schuerbeek, University Brussels

Dr. Rafał Obuchowicz, Jagiellonian University (Cracow)

## Preliminary programme:

### **Monday 23.09.2024**

9.00 Registration at the Institute of Electronics

9.45 *Welcome*

10.00 Background physics and mathematics

(Dr. Peter Van Schuerbeek)

11.00 Basic NMR

(Dr. Peter Van Schuerbeek)

12.00 Questions & Answers

13.00 *Lunch at Zatoka Smaku*

14.00 Imaging encoding

(Dr. Peter Van Schuerbeek)

15.00 *Coffee break*

15.30 Relaxation times and contrast

(Dr. Stephen Gandy)

16.30 Questions & Answers

17:30 *Welcome Reception at the Institute of Electronics*

### **Tuesday 24.09.2024**

9.00 Basic Spin Echo imaging

(Dr. Stephen Sawiak)

10.00 *Coffee break*

10:30 Spin Echo imaging in practice

(Dr. Stephen Sawiak)

11.30 Questions & Answers

12:30 Self-evaluation and self-teaching

13.00 *Lunch at Zatoka Smaku*

14.00 Instrumentation and site-planning

(Dr. Stephen Nicholas)

15.00 *Coffee break*

15.30 Safety and quality assessment

(Dr. Stephen Gandy)

16.30 Questions & Answers

17.30 Self-evaluation and self-teaching

### **Wednesday 25.09.2024**

9.00 Basic Gradient Echo imaging

(Dr. Peter Van Schuerbeek)

10.00 *Coffee break*

10.30 Gradient Echo imaging in practice

(Dr. Peter Van Schuerbeek)

11.30 Questions & Answers

12:30 Self-evaluation and self-teaching

13.00 *Lunch at Zatoka Smaku*

14.00 Fast and ultra-fast imaging (Dr. Stephen Nicholas)  
15.00 *Coffee break*  
15.30 Artefacts (Dr. Stephen Nicholas)  
16.30 Questions & Answers  
17.30 Self-evaluation and self-teaching  
19:30 *Dinner at Bawelna Restaurant (Manufaktura)*

#### **Thursday 26.09.2024**

9.00 Functional MRI (Dr. Stephen Sawiak)  
10.00 *Coffee break*  
10.30 Diffusion and perfusion (Dr. Stephen Sawiak)  
11.30 Questions & Answers  
12.30 Self-evaluation and self-teaching  
13.00 *Lunch at Zatoka Smaku*  
14.00 Flow effects and angiography (Dr. Stephen Gandy)  
15.00 *Coffee break*  
15.30 Cardiac MRI (Dr. Stephen Gandy)  
16.30 Questions & Answers  
17.30 Self-evaluation and self-teaching

#### **Friday 27.09.2024**

9.00 Technical advances in MRI from the perspective of a practicing radiologist (Dr. Rafał Obuchowicz)  
10.00 Questions & Answers  
11.00 *Coffee break*  
11.30 Examination and course evaluation  
12.00 Certificates and farewell

## Course materials:

Course materials will be available to download for registered delegates approximately 1-2 weeks prior to the start of the course. All lectures will be delivered using MS power point projection, but please do bring your own laptop or notebook if you wish to follow the lectures interactively. Paper notebooks will be provided.