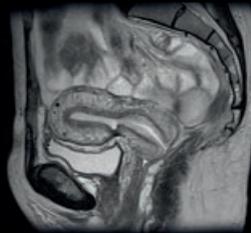
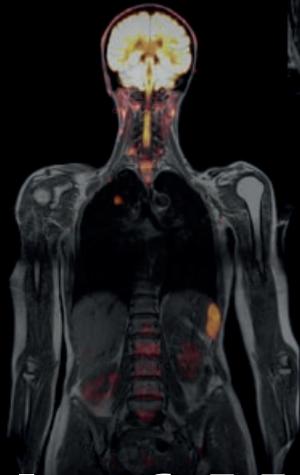
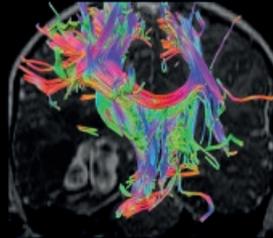
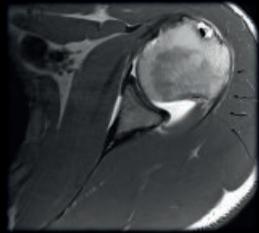


**ESMRMB**

European Society for Magnetic Resonance in Medicine and Biology



# School of MRI 2016

## Educational courses for physicians and MR technologists/radiographers

**Advanced MR Imaging of the Abdomen**  
*May 5–7, Istanbul/TR*

**Clinical fMRI & DTI - Theory and Practice**  
*June 16–18, Barcelona/ES*

**Advanced Head & Neck MR Imaging**  
*June 16–18, Brescia/IT*

**Advanced MR Imaging in Paediatric Radiology**  
*August 25–27, London/UK*

**Advanced Cardiac MR Imaging**  
*September 1–3, Zagreb/HR*

**Body Diffusion-weighted MRI: From Theory to Practice**  
*September 26–28, Vienna/AT*

**Advanced Neuro Imaging: Diffusion, Perfusion, Spectroscopy**  
*October 20–22, Barcelona/ES*

**Advanced Breast & Female Pelvis MR Imaging**  
*October 20–22, Athens/GR*

**MR Safety**  
*November 17–19, Gelsenkirchen/DE*

**Advanced MR Imaging of the Musculoskeletal System**  
*Autumn 2016, France*



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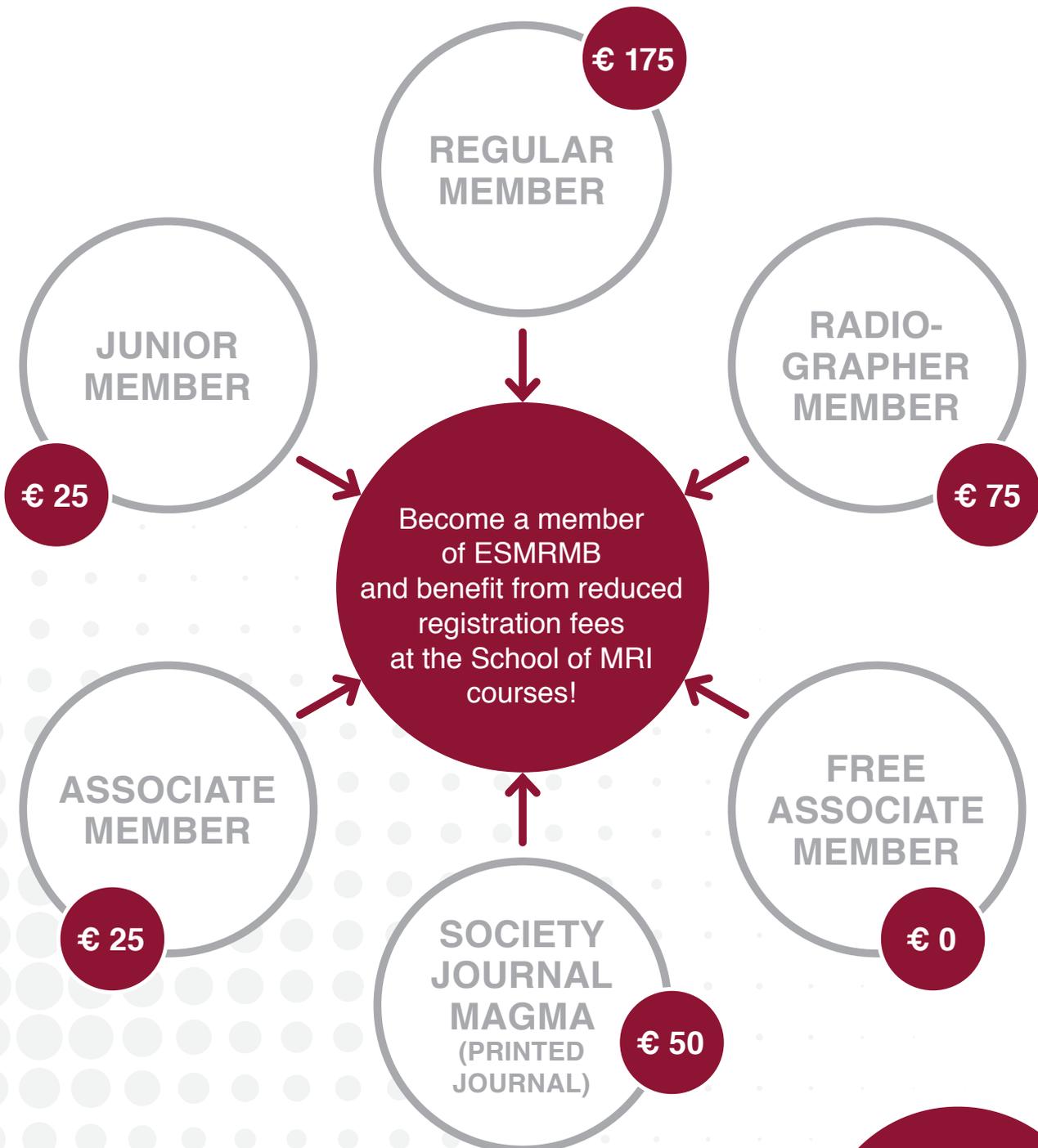
*Education in partnership*

[www.esmrm.org](http://www.esmrm.org)

**ESOR** EUROPEAN SCHOOL OF RADIOLOGY

**ESMR** EUROPEAN SOCIETY OF RADIOLOGY

# Join the European Forum for MR Research and Clinical Practice



# Welcome from the Director of the School of MRI Programme



Dear Colleagues,

It is now one year ago that I had the honour and pleasure to officially take over the position as the director of the School of MRI. It is a great pleasure for me to inform you that the School of MRI was again successful in 2015, with an average number of 51 participants per course. Four courses were fully booked, and the maximum number of participants had to be extended up to 90 people. I have attended two courses myself: the Head and Neck MR Imaging and the Breast and Female Pelvis MR Imaging course. I was impressed by the high quality of the lectures and practical sessions, and this was reflected in the evaluations and feedback of the participants. I also had the chance to act as course organiser of the MR Safety course in Lund, Sweden, which was attended by the maximum number of 45 participants. The importance of MR Safety is underlined by the EU Directive which must be implemented by July 2016 and will require some form of training to protect MR workers.

I would thank the course organisers for their long-standing involvement and for providing high quality content every year. Furthermore the expertise of the lecturers enables us to offer successful advanced clinical courses to participants from all over the world. Last but not least, we should not forget the contribution of the local organisers, who are very important for local arrangements and the promotion of the courses in each country. The success of the individual courses also depends on their active engagement.

As an outlook for 2016 we plan 10 courses in Europe. A further non-European MSK course in St. Petersburg is in preparation, and should take place in 2017.

To support a new concept of the Executive Board of the ESMRMB, educational courses should increasingly be combined with the annual congress. Austria will host one School of MRI course immediately before the congress in Vienna in 2016 to offer possible synergies for the attendance of educational courses and the annual ESMRMB congress.

In addition, we will, for the first time, offer online education within the School of MRI in 2016. This incorporates web-based teaching, the use of which is steadily increasing internationally. A basic course on applied MR techniques was developed as pilot project and will take place at the end of 2016.

So there are plenty of opportunities to increase your knowledge in the field of MRI and I hope to be welcoming you in 2016 either as participant, teacher or future organiser.

With my best greetings and best wishes for a healthy and successful 2016

Prof. Siegfried Trattnig  
Director of the ESMRMB School of MRI  
Medical University, Vienna/AT

# ESMRMB 2016 SEPT. 29 – OCT. 1 VIENNA/AT

ESMRMB

European Society for Magnetic Resonance in Medicine and Biology

33<sup>RD</sup> ANNUAL SCIENTIFIC MEETING



MARK  
YOUR  
CALENDAR!

The European Forum for MR research  
and clinical practice  
[www.esmrmb.org](http://www.esmrmb.org)

# Organisation Committee

**Siegfried Trattnig**

Director of the School of MRI  
Medical Director of the Centre of Excellence for High-field MR  
Department of Radiology  
Medical University Vienna/AT

**Fred Avni**

Radiologist, Department of Radiology  
Jeanne de Flandres Hospital, Lille/FR

**Jens Bremerich**

Radiologist, Department of Radiology  
University Hospital of Basel/CH

**Nicholas Gourtsoyiannis**

Radiologist, Department of Radiology  
University Hospital of Iraklion, Crete/GR

**Dow-Mu Koh**

Consultant Radiologist, Department of Radiology  
Royal Marsden Hospital, London/UK

**Riccardo Manfredi**

Radiologist, Department of Radiology  
G.B. Rossi Hospital, University Hospital of Verona/IT

**Roberto Maroldi**

Radiologist, Department of Radiology  
University of Brescia/IT

**Marion Smits**

Neuroradiologist, Department of Radiology  
Erasmus MC, Rotterdam/NL

**Prudencia Tyrrell**

Radiologist, Department of Radiology  
Robert Jones and Agnes Hunt Orthopaedic Hospital  
Oswestry/UK

**Joan C. Vilanova**

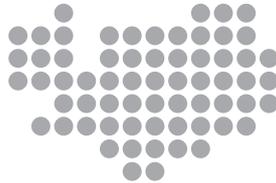
Radiologist, Department of Radiology  
University of Girona/ES

**Johan Wikström**

Radiologist, Department of Radiology  
Uppsala University Hospital, Uppsala/SE

**Course Secretariat**

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## ESMRMB OFFICE

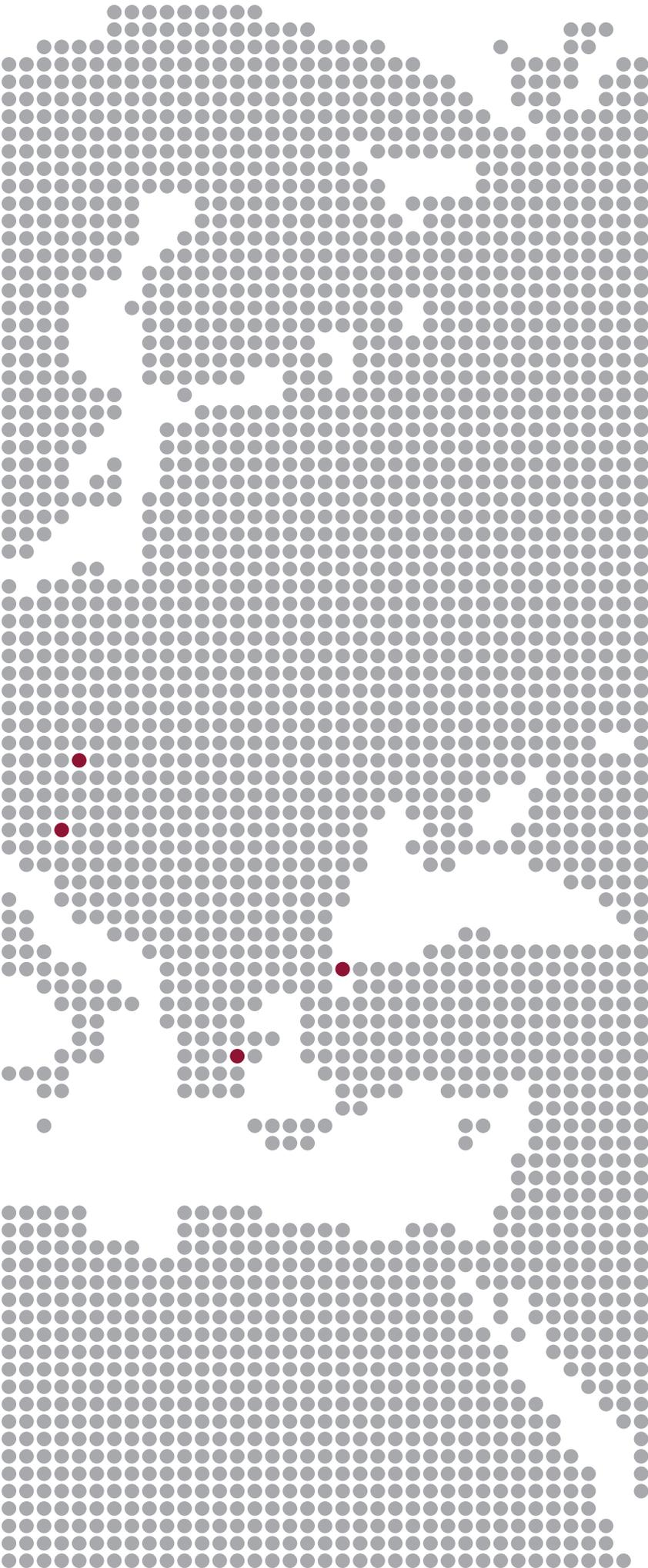
Neutorgasse 9, 1010 Vienna, Austria  
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[www.school-of-mri.org](http://www.school-of-mri.org)

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**EUROPEAN SOCIETY FOR MAGNETIC RESONANCE  
IN MEDICINE AND BIOLOGY (ESMRMB)**  
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All information, including travel times and fares, is  
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and cannot be held responsible for any inaccuracies.

Vienna, February 2016  
Coordination: Claudia Passuello, Denise Cosulich  
Layout: Barbara Biegl  
ESMRMB Office, Vienna/AT

# Content



## 7 General Information

### 8–27 Courses 2016

(sorted by course date)

#### 8 **Advanced MR Imaging of the Abdomen**

May 5–7, Istanbul/TR

#### 10 **Clinical fMRI & DTI – Theory and Practice**

June 16–18, Barcelona/ES

#### 12 **Advanced Head & Neck MR Imaging**

June 16–18, Brescia/IT

#### 14 **Advanced MR Imaging in Paediatric Radiology**

August 25–27, London/UK

#### 16 **Advanced Cardiac MR Imaging**

September 1–3, Zagreb/HR

#### 18 **Body Diffusion-weighted MR Imaging: From Theory to Practice**

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#### 22 **Advanced Breast & Female Pelvis MR Imaging**

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#### 24 **MR Safety**

November 17–19, Gelsenkirchen/DE

#### 26 **Advanced MR Imaging of the Musculoskeletal System**

Autumn 2016, France

### 30 Registration Information

# Learn wherever you are

## eLearning by ESMRMB

### NEW in 2016

Education  
made easy

The ESMRMB is proud to announce that in 2016, the School of MRI programme offers its first online educational course.

The School of MRI, offering successful advanced clinical training since many years, will now again be complemented by a **basic course in applied MR techniques**. The course is aimed at those of you who have no or little physical and mathematical background, but would like to understand the process of image formation and the sequences of usual clinical MR imaging.

#### Course programme:

- The physical basis of Nuclear Magnetic Resonance
- Magnetic Resonance Imaging: formation of the image
- Basic clinical sequences, tissue contrast and image quality
- Basic methods of contrast enhancement
- MR Hardware and safety aspects

#### Outlines of the training:

- 8 modules à 45-60 minutes
- 1 module per week (duration of training: 8 weeks)
- Interaction with speakers (question/answer time at the end of each module)
- self-assessment test
- certificate of attendance



Further information on the dates, registration, programme and speakers can be found online at

[www.school-of-mri.org](http://www.school-of-mri.org)

# General Information

7

Do you really know what k-space means, how to optimise contrast in MR images using a FLASH sequence, what a bSSFP sequence can be used for, and how to interpret artefacts in MR images? Do you know what the so-called BOLD effect is and how to apply diffusion imaging? Do you know the best imaging strategies to analyse inborn heart defects and the optimal sequence to visualise cartilage? If you are easily able to answer all these questions, there is perhaps no need for you to sign up for one of the MR teaching courses of ESMRMB. If not, ESMRMB offers you the opportunity to enhance your knowledge and to get prepared for the needs of modern daily MR business.

## Participation Requirements

All courses are held at an advanced educational level. Participants should be physicians with well established knowledge in MRI physics and techniques. In addition they should have a minimum of 6 months of experience in applied MRI in the relevant field.

## The ESMRMB School of MRI offers Advanced Clinical Courses, which will enable you to:

- ensure optimum use of MRI in the relevant field of MR application
- know the indications and limitations of MRI compared to other imaging modalities
- acquire an in-depth understanding of measurement strategies in the relevant area
- optimise imaging strategies for the best visualisation of underlying structures and diseases
- interpret morphological data correctly back to tissue components and pathologic alterations of tissues
- interpret functional data back to physiological or pathological activities

- All courses are held in English language.
- The duration of each course is 2,5 days. The courses start either on Thursday between 8 and 9 a.m. or between 1 and 2 p.m. and last until Saturday between 1 and 2 p.m. or between 5 or 6 p.m. The Body-Diffusion course will take place from Monday to Wednesday.
- The detailed programme of each course as well as the exact time schedule are available at the ESMRMB website.
- 50% of the total teaching time is used for repetitions in small groups (maximum 17 people per group) to intensify the learning experience.
- A maximum of 65 places per course is available. If less than 40 participants register, ESMRMB reserves the right to cancel a course at the latest 4 weeks prior to its beginning. The course on 'MR Safety' is limited to 35 participants.
- ESMRMB ensures the evaluation of all courses and guarantees professional and didactically experienced teachers.
- A voluntary examination will be held at the end of each course.

## Filming and Recording Policy

Filming and recording during the courses is basically not permitted. Exceptions may be granted by the course organiser on-site. If you wish to record any lecture (for your personal use only), please contact the respective lecturer and course organiser for permission.

## Accreditation

An application has been made to the UEMS-EACCME for CME accreditation of these events. A certificate of attendance will be available online.

An application for the ESSR Diploma will be made for the MSK course.

## Registration Information

For information regarding registration and registration fees, please refer to page 30.

Please note that registration is possible online at [www.school-of-mri.org](http://www.school-of-mri.org)

# Advanced MR Imaging of the Abdomen

8

**May 5–7, 2016  
Istanbul/TR**

**Course organiser:  
Nicholas Gourtsoyiannis  
Athens/GR**

**Local organiser:  
Sukru Mehmet Erturk, Istanbul/TR**

**Course venue:**

Sisli Etfal Training and Research Hospital  
(Şişli Etfal Eğitim ve Araştırma Hastanesi)  
Conference Hall  
Halaskargazi CadESI , Etfal Sokak  
34371 Sisli/Istanbul  
Turkey

**Preliminary faculty:**

D. Akata, C. Bartolozzi, V. Goh, N. Gourtsoyiannis,  
T. Helmberger, S. Jackson, G. Morana, R. Pozzi-Mucelli,  
H. P. Schlemmer

**Course duration:**

Thursday morning – Saturday noon

**The aim of this course:**

The course aims to convey an in-depth knowledge about MR imaging of the abdomen. The topics covered include modern MRI techniques and updated MR applications for diagnosing focal and diffuse liver disease as well as recent developments in MR imaging of the pancreatic disorders and gynaecological disorders. The course also focuses on MR imaging of the GI tract, the kidneys, adrenal glands and prostate. A team of renowned teachers with expert knowledge in abdominal imaging ensures a high quality teaching programme and looks forward to welcoming you in Istanbul.

**Participation requirements:**

Physicians who have good knowledge in MR techniques; minimum of 6 months experience in applied MRI of the Abdomen.



## Learning Objectives

### Application of Diffusion & Perfusion MRI in the Abdomen

- To be familiar with the principles of diffusion & perfusion MRI
- To be familiar with the technical aspects related to diffusion & perfusion MRI
- To be aware of the additional information these techniques provide in clinical practice

### MR Imaging of the Focal Liver Lesions

- Appearance on T1 and T2-weighted sequences
- Contribution of chemical shift imaging and T2\* effects
- Role of DWI on detection and characterisation
- Differential diagnosis based on enhancement patterns
- Role of hepatocyte-specific contrast agents

### MR Imaging of Diffuse Hepatic Parenchymal Disease and HCC

- Diffuse fatty infiltration, focal non-steatosis, hemosiderosis, hemochromatosis, cirrhosis, portal hypertension, collateral routes, ascites, regenerative nodules, dysplastic nodules, diffuse and focal manifestations of HCC
- Appearance on T1-weighted sequences
- Role of in- and opposed phase imaging
- Role of multiecho GE sequences (detection of both fat and iron)
- Role of diffusion-weighted sequences
- Appearance on T2-weighted sequences
- Role of hepatospecific contrast agents

### MR Imaging of Pancreatic Lesions

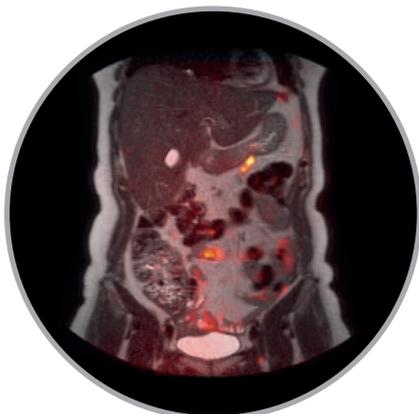
- Appearance of the normal pancreas and tumours on T1-weighted sequences
- Appearance of the normal pancreas and tumours on T2-weighted sequences with short TE
- Enhancement patterns of focal pancreatitis versus pancreatic tumours
- Staging of pancreatic tumours
- Contribution of diffusion-weighted imaging

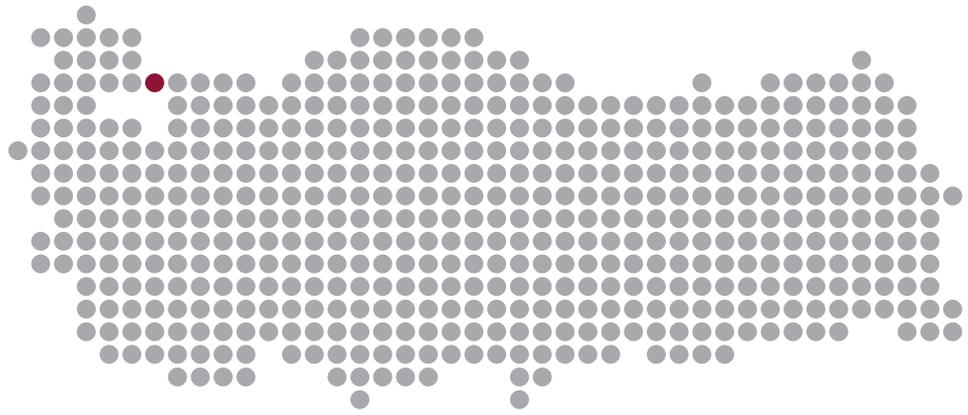
### MR Enteroclysis of the Small Bowel: State of the Art

- To discuss the advantages of volume challenge
- To describe the examination protocol in detail
- To explain the comparative merits of the multiple contrast mechanism
- To present normal appearances
- To familiarise with MRE imaging findings
- To review crohn disease activity

### MR Imaging of Kidneys and Adrenal Glands

- MRI appearance of the normal kidneys and adrenals
- The enhancement patterns of the renal and adrenal masses
- Characteristics of the renal tumours, including RCC, oncocytomas, angiomyolipomas etc.
- Staging of the RCC, including the diameter of the lesions, and extra-renal and vascular extension
- In- and opposed-phase imaging
- Benign and malignant adrenal tumours





## City information Istanbul/Turkey

Population:	approx. 14.030.000
Time zone:	CET +1
Currency:	TRY (Turkish Lira)
Country dialling code:	+90
Closest airports:	Ataturk Airport (IATA: IST) Sabiha Gokcen Airport (IATA: SAW)

Istanbul, a world center of great value in the past as well as in the present, embraces Asia on the one hand and Europe on the other. With its historical peninsula, numerous scenic and historical beauties, Istanbul is a magnificently unique city that has been capital to many civilizations from past to present and still continues to be home to residents from all over the world. This rooted city, with a history dating back to 300 thousand years, constitutes a mosaic of many civilizations and cultures. One may come across legacies and monuments of thousands of years behind any door or around any corner in Istanbul. Whether you take a tour in Istanbul or visit any of the 39 districts nearby, you will catch hold of various historical and natural wonders any minute. You may begin your Istanbul tour at the Grand Bazaar that will enchant you with its bright and pleasant environment while a sense of peace and security will wrap you tightly in Hagia Sophia. A tour of the pearl of the Bosphorus, Ortaköy, Beşiktaş and Kabataş will let you enjoy the delightful views along the deep blue coast. With the Black Sea in the north, the Marmara Sea in the south and the Istanbul Strait running in all its glory through the middle of the city, you will experience great moments in Istanbul and witness the unique combination of the Mediterranean and Black Sea climates.

### Transportation:

Istanbul is provided by two international airports. Istanbul Ataturk Airport (IST) is located on the European side of the city, 24km west of the city centre. It is served by Havataş, an airport shuttle service operating twice an hour, between 04:00 and 01:00, to head for Taksim. The trip costs TRY 11 and takes approx. 40 minutes. Taxis transport the arriving passengers within an estimated time of 30 min. to Taksim, Cihangir or Galata. Costs for a taxi ride amounts to TRY 45-55. Istanbul Sabiha Gokcen International Airport (ISGIA) is located 50km from Taksim on the Asian side of Istanbul. With Havataş shuttles you can travel to Kadıköy and Taksim. The shuttles take passengers to Taksim for a total of TRY 14 and to Kadıköy for TRY 9. A taxi ride to Taksim lasts easily an hour and amounts to TRY 85 upwards.

**Hotel information:** [www.school-of-mri.org](http://www.school-of-mri.org)

### MRI of the Prostate

- To learn about the multiparametric MRI of the prostate
- To understand the role of MRI in the detection of significant prostate cancer
- To know about image-guided biopsies of the prostate (MR- and MR/US-guided biopsies)
- To learn about MRI in the staging of prostate cancer

### MR Imaging in diagnosing and staging of ovarian cancer

- To be able to describe radiological findings of OC
- To be able to differentiate the most common pathologies mimicking cancer
- To be able to describe tips and pitfalls in imaging
- To be able to stage ovarian cancer
- To identify findings associated with in-operability

### MR Imaging of Rectal Cancer

- To understand the role of MRI for staging and restaging of rectal cancer
- To learn about the imaging features relevant for clinical decision making
- To understand the pitfalls in interpretation

# Clinical fMRI & DTI – Theory and Practice

10

**June 16–18, 2016  
Barcelona/ES**

**Course organiser:  
Marion Smits  
Rotterdam/NL**



**Local organiser:  
Nuria Bargallo, Barcelona/ES**

**Course venue:**  
Hospital Clinic Universitat de Barcelona  
Facultat de Medicina  
Carrer de Casanova, 143  
08036 Barcelona  
Spain

**Preliminary faculty:**  
V. Giampietro, D. Jones, S. Lehericy, A. Leemans, R. Peeters,  
S. Rombouts, M. Smits, C. Tax, S. Wastling, S. Williams

**Course duration:**  
Thursday morning – Saturday noon

**The aim of this course:**  
The aim of this course is to convey in-depth knowledge about functional MR imaging (fMRI) and diffusion tensor imaging (DTI), with a focus on clinical practice. These advanced MR neuroimaging techniques are increasingly applied to the study of the healthy and diseased human brain and provide information about the brain's activity and its connections. The course will offer an overview of present methodologies, an update about functional anatomy and an overview of clinical as well as some research applications. These topics are taught using a mixture of lectures and small group exercises. In addition, a practical session on a 3T MR system performing fMRI studies in healthy volunteers complements the taught elements of the course. Finally, special attention is given to the (clinical) interpretation of specific cases, including results from both routine presurgical fMRI examinations and more advanced fMRI (group) studies. We are happy to welcome you to this course in Barcelona!

**Participation requirements:**  
Physicians and technicians/radiographers with good knowledge of MR techniques; minimum of 3 months' experience in applied MR imaging and/or fMRI or DTI.

Become a member and benefit from reduced registration fees

## Learning Objectives

### Basics of fMRI

- Physiological principles of fMRI
- Blood oxygen level dependent contrast (BOLD) MR technique and imaging sequences
- Resting state fMRI

### Basics of DTI

- Physiological principles of anisotropic diffusion
- DTI technique and imaging sequences
- Concepts of quantification of white matter integrity
- Concepts of fibre tractography

### Experimental and Paradigm Design

- Technical set-up for fMRI
- Categorical, factorial, parametric designs
- Blocked versus event-related paradigms
- Paradigms: development, implementation and pitfalls

### Data Analysis

- Spatial preprocessing
- Statistical analysis
- Fibre tractography

### Functional Anatomy

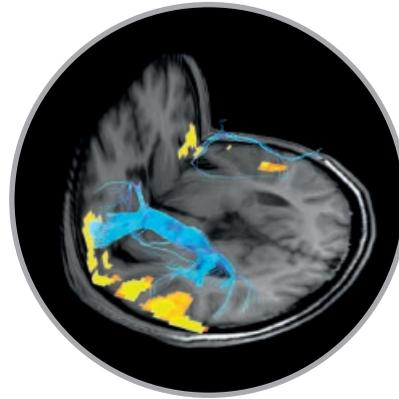
- Motor system
- Language system
- Visual system
- Auditory system
- Applications and (clinical) interpretation

### Presurgical fMRI/DTI

- Risk estimation in brain tumour patients
- Combining fMRI and DTI in brain tumour patients
- Challenges and pitfalls

### fMRI/DTI in Psychiatry

- Applications in psychiatric disease
- Pharmacological fMRI
- Pitfalls



## City information Barcelona/Spain

Population:	approx. 1.621.500
Time zone:	CET
Currency:	EUR
Country dialling code:	+34
Closest airport:	Barcelona Airport (BCN)

Barcelona is the second largest city in Spain and the most famous city in Catalonia. It is also the largest city on the Mediterranean coast. Founded as a Roman city, Barcelona became the capital of the County of Barcelona. Besieged several times during its history, Barcelona has a rich cultural heritage and is today an important cultural centre and a major tourist destination. Particularly renowned are the architectural works of Antoni Gaudí and Lluís Domènech i Montaner, which have been designated UNESCO World Heritage Sites. Gaudí's masterpiece La Sagrada Família, which is still under construction, is the international symbol of Barcelona. Barcelona is internationally renowned as a tourist destination, with numerous recreational areas, one of the best beaches in the world, mild and warm climate, historical monuments, including eight UNESCO World Heritage Sites, many good-quality hotels, and developed tourist infrastructure.

### Transportation:

Barcelona is served by Barcelona-El Prat Airport, 17km from the city centre. The airport is connected to the city by an airport bus - Aerobús (A1) - which connects the airport (T1) to the city centre and main underground stations in only 35 minutes. The price for a one-way ticket is EUR 5,90 and for a round trip EUR 10,20. From Terminal 2 there is also a train available which connects the airport to the city centre in 30 minutes and costs EUR 2,35. As of 2016 there will also be a metro from the T1 and T2 from the Airport to the centre of Barcelona. One-way tickets for the metro cost EUR 2,15, but there is also a 10-tickets card available at a fee of EUR 10,30, which can be used for all public transportation services. Taxis are available at both Terminals I & II and cost approx. EUR 30.

**Hotel information:** [www.school-of-mri.org](http://www.school-of-mri.org)

# Advanced Head & Neck MR Imaging

12

**June 16–18, 2016  
Brescia/IT**

**Course organiser:  
Roberto Maroldi  
Brescia/IT**

**Local organiser:  
Davide Farina, Brescia/IT**

**Course venue:**  
University of Brescia  
Piazzale Spedali Civili 1  
25123 Brescia  
Italy

**Preliminary faculty:**  
T. Beale, C. Czerny, F. de Keyzer, D. Farina, N. Freling,  
R. Maroldi, B. Schuknecht, A. Trojanowska, B. Verbist

**Course duration:**  
Thursday morning – Saturday noon

**The aim of this course:**  
The aim of this course is to offer an in-depth knowledge of current MR imaging techniques for the diagnosis of head and neck lesions. The course will provide the participant with an update on fundamental and advanced sequence protocols to image the different head and neck regions. A comprehensive coverage of the MR signal of the normal tissues will give the preliminary basis for head and neck anatomy. We will focus on imaging strategies, recent developments and specific MR findings to characterise head and neck congenital, inflammatory, benign and malignant diseases. Special emphasis will be placed on differential diagnosis and on grading tumour extent. The course will provide a combination of lectures and case based interactive teaching in small groups.

**Participation requirements:**  
Physicians who have good knowledge in MR techniques; minimum of 6 months experience in applied Head and Neck MRI.



## Learning Objectives

### Basic and Advanced MR Imaging Techniques

- DW Imaging
- IVIM DW derived perfusion-fraction Imaging (D\*)
- Which sequences on head and neck on 3T?
- 3T Isotropic and non-isotropic high-res imaging
- DCE-MR: Which use in the head and neck?
- Isotropic T1w and T2w imaging at 1.5T
- Imaging arteries and veins. Black blood, TOF, PC, CE-MR

### DWI in the Head and Neck

- Which protocol for oncologic imaging?
- Critical issues in managing artefacts
- Low b, high b, ADC map: low ADC vs high ADC
- Applications in the Head and Neck: primary tumor & recurrences
- DWI and cholesteatoma

### MR Imaging of the Oral cavity and Oropharynx

- MR anatomy of the oral cavity and oropharynx
- MR examination of the cooperative & uncooperative patient
- The submucosal mass
- Patterns of growth of malignant neoplasms
- Key information and MR most frequent pitfalls

### MR Imaging of the Sinonasal Tract and the Skull Base

- MR anatomy of the anterior skull base floor, orbit, pterygopalatine fossa, cavernous sinus and Meckel's cave
- MR examination of the sinonasal tract and anterior skull base
- Polypoid masses. Feasibility of endonasal surgery. Grading skull base invasion. MR in predicting orbit preservation

### MR Imaging of the Nasopharynx and Parapharyngeal Space

- MR anatomy of the nasopharyngeal walls and parapharyngeal space
- How to study the nasopharynx and parapharyngeal space lesions
- Differential diagnosis of submucosal masses
- MR patterns of pre- and post-styloid masses
- Staging nasopharyngeal neoplasms

### MR Imaging of the Oropharynx and Oral Cavity

- MR anatomy of key oral cavity structures
- MR strategies to image flaps and post-treatment changes
- Role of DCE-MR and DWI imaging
- Role of MR in detecting mandible invasion. Perineural spread and bone invasion

### MR Imaging of Major and Minor Salivary Glands

- MR anatomy of key landmarks
- Fat sat sequences, DCE-MR and DWI imaging. MR Sialography
- Distinguishing parapharyngeal from parotid gland 'deep lobe' tumours



**Surface Coil MR Imaging of the Larynx and Hypopharynx**

- How to image the larynx and hypopharynx: tips and tricks
- Which sequences? Which study planes?
- New insights on muscles and fat spaces: high-res anatomy
- How to recognise edema of fat, muscles and cartilage

**MR Imaging of Lymph Nodes and Lumps in the Neck**

- Imaging techniques to detect and characterise neck nodes. Which role for DWI?
- Retrolatero-pharyngeal and parotid nodes
- MR of cystic, vascular and solid masses in the neck
- The unknown primary. Is MR imaging useful?

**MR Imaging Techniques and Assessment in the Follow up of Cancer**

- The timing of MR follow up and the integration with Molecular Imaging
- How to tune an effective Imaging protocol in the treated patient
- Tissue changes due to therapy and the correspondent patterns on MR sequences
- MR follow up and the assessment of the feasibility of salvage therapy for recurrent tumor

**MR Imaging of Temporal Bone and CPA Lesions**

- MR anatomy of VII and VIII cranial nerves. The normal membranous labyrinth. Landmarks for the jugular foramen
- Imaging temporal bone and CPA lesions. 3D T2 sequences
- DWI imaging
- Inner ear malformations: is cochlear implant feasible? Neuro-vascular conflict. Detecting the recurrent cholesteatoma

**MR Imaging of the Orbit**

- MR anatomy and imaging techniques
- Extra-ocular vascular lesions: cavernous hemangioma, lymphatic malformations, varices, AV malformations
- Inflammatory pseudotumour, lymphoma and orbital metastasis
- Thyroid ophthalmopathy: MR Imaging

**City information Brescia/Italy**

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Population:	approx. 193.600
Time zone:	CET
Currency:	EUR
Country dialling code:	+39
Closest airports:	Milan-Bergamo Airport (BGY) Milan-Linate Airport (LIN) Verona Airport (VRN)

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Brescia is the second largest city in the Lombard region of Italy after Milan. Located between two of Italy's most famous lakes, Lake Garda and Lake Iseo, Brescia is often overlooked by visitors who bypass the city itself and head straight to the undeniably beautiful lakes. A great pity, as Brescia has one of the most beautiful historic centres in the region, and some of the best Roman and Lombard remains in northern Italy. Among the many great local sights are the 11th-century Duomo Vecchio (Old Cathedral, also called La Rotonda), unique for its circular shape, the 17th-century Duomo Nuovo (New Cathedral) next door, and the first-century Roman ruins at Tempio Capitolino.

**Transportation:**

Brescia is reachable by different airports: Milan Bergamo Airport "Orio al Serio" is 50km away from Brescia. A shuttle bus to Brescia Railway Station run by the company Autostradale. Verona "Valerio Catullo" Airport, 60km from Brescia, is connected to Brescia by train and shuttle bus. Milan Linate "Forlanini" airport is connected to Brescia by train and shuttle bus. Brescia is also well-connected by train, being on the main railway line which runs Milan - Brescia - Verona - Vicenza - Padua - Venice.

**Hotel information:** [www.school-of-mri.org](http://www.school-of-mri.org)

# Advanced MR Imaging in Paediatric Radiology

14

**August 25–27, 2016  
London/UK**

**Course organiser:  
Fred Avni  
Lille/FR**

**Local organiser:  
Paul Humphries, London/UK**

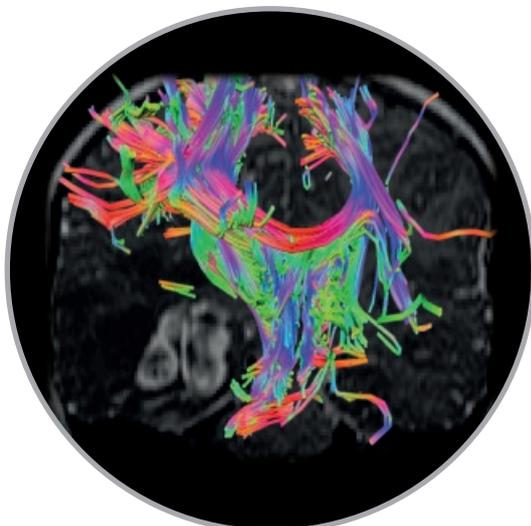
**Course venue:**  
Great Ormond Street Hospital for  
Children NHS Foundation Trust  
Great Ormond Street  
London WC1N 3JH  
United Kingdom

**Preliminary faculty:**  
S.F. Abella, F. Avni, M. Calleja, M. Cassart, P. Humphries,  
L.-S. Ording Muller, O. Olsen, A. Smets, E. Vazquez Mendez

**Course duration:**  
Thursday morning – Saturday noon

**The aim of this course:**  
With this course, we intend to familiarise the attendees with MR Imaging in children so that the indications would be better understood and the examinations optimised. The eleven topics that have been chosen cover most of nowadays indications. Experienced lecturers have been chosen according to their technical and pedagogic skills.

**Participation requirements:**  
Physicians and technicians/radiographers who have good knowledge of MR techniques; minimum of 6 months experience in Paediatric Radiology.



## Learning Objectives

### Paediatric MRI - physics and technique:

- To identify the main physical principles underpinning practical clinical MRI in children.
- To discuss the usefulness of specific sequences, weightings and imaging planes in body imaging.

### Paediatric vascular MRI:

- To identify typical indications.
- To discuss the use of intravenous gadolinium and alternative techniques for vascular imaging in children.
- To illustrate typical findings and pitfalls in paediatric vascular MRI.

### MRI of the digestive tract:

- To illustrate basic and advanced MRI applications in the pediatric abdomen focusing on MRI-enterography
- To discuss indications and pitfalls
- To describe the potential and use of specific sequences in the bowel and abdomen

### MRI of the Urogenital system:

- To discuss appropriate sequences and techniques for urological and genital imaging
- To discuss where MRI can add value in urogenital imaging
- To highlight difficult areas and pitfalls

### Fetal MRI:

- To revisit what we need to know from fetal development, anatomy and physiology
- To discuss the best indications and sequences of fetal MR imaging
- To illustrate anomalies affecting the fetal brain, chest and abdomen

### Oncology MRI and Full Body Applications:

- To describe the advantages and disadvantages of MRI compared to CT for oncology imaging
- To discuss the role of MRI in paediatric tumour staging and response assessment
- To discuss the concept of whole body MR imaging in paediatrics

### Hepatobiliary MRI:

- To illustrate MR applications in the paediatric liver, including biliary tract evaluation and liver tumour imaging
- To address specific technical challenges for liver and biliary imaging in neonates and infants
- To address limitations of MR and the role of other imaging for hepatobiliary diseases

### Neuro MRI 1 (tumours, differential diagnoses and techniques):

- To describe the role of advanced MRI in assessing pediatric tumors of the brain and the spinal cord in children
- To illustrate the most specific MRI findings in each particular tumor and its main differential diagnosis
- To review the role of these advanced MRI techniques in monitoring treatment response and prognosis



## City information London/United Kingdom

Population:	approx. 8.300.000
Time zone:	GMT/ CET -1
Currency:	British Pound (GBP)
Country dialling code:	+44
Closest airports:	London Heathrow (LHR), London Gatwick (LGW), London Stansted (STN), London Luton (LTN), London City Airport (LCY)

London – capital city of England and the United Kingdom – is one of the largest cities in Europe. London is not only a financial and educational powerhouse but also renowned for its art and history. London has the highest number of universities and educational institutions of any city within the European Union. Famous sights worth visiting include London Bridge, Buckingham Palace and Big Ben, which has a light in the clock tower which indicates when the House of Commons is in session.

London has a diverse range of cultures, and more than 300 languages are spoken within its boundaries. London is a melting pot, where tradition meets the spirit of the time.

### Transportation:

Heathrow airport is located to the west of the city and is accessible with the London underground (Piccadilly Line) or Heathrow Express train to Paddington Station. An underground ticket from Heathrow to central London costs about GBP 6 and a one way ticket with the Heathrow Express around GBP 20. A taxi ride takes approx. 45-60 minutes and costs between GBP 45 and GBP 80.

London Gatwick is the second largest airport in the UK after Heathrow and is located around 45km south of London. There are direct bus and train services to the city centre of London (Victoria) and fares range from GBP 15 – GBP 25 one way. National Express operates direct services to London Victoria and operate once an hour with a journey time of 1.5 to 2 hours, depending on the time of day. Easy bus is a low-cost frequent airport transfer service from London and Gatwick with prices from GBP 7-10. Buses depart every 15 to 20 minutes during peak times and run throughout the day and night from both North and South terminals to Earls Court/West Brompton in central London. The journey takes about 1 hour.

London Stansted is connected to London Liverpool Street by the Stansted Express and fares start at approx. GBP 19. London Luton is also served by National Express coaches, trains, buses and taxis. London City Airport is easy to reach by public transportation, with the Docklands Light Railway service linked to London's Underground and national rail stations.

**Hotel information:** [www.school-of-mri.org](http://www.school-of-mri.org)

### Neuro MRI 2 (neonatal imaging and congenital anomalies):

- To learn the increasing role of MRI as an essential tool either in the acute setting of term neonates with hypoxic-ischemic encephalopathy and similar conditions, as well as in the research field, for prognosis of neurodevelopmental outcome in preterm neonates.
- To illustrate the technical advances in spectroscopy, diffusion tensor imaging, perfusion imaging, functional MR imaging, as well as the use of higher magnetic field strengths that make MRI an invaluable tool for deeper evaluation of the developing brain.
- To review some logistic challenges and safety concerns specifically related to neonatal MRI (higher magnetic field, transporting, monitoring considerations, etc.)

### MSK 1 (infection/inflammation):

- To describe relevant techniques and sequences for the assessment of infectious and inflammatory disorders of the musculoskeletal system
- To discuss the current state of the art in imaging juvenile inflammatory disorders, including potential pitfalls
- To describe the added value in MR imaging compared to conventional imaging for the assessment of infectious musculoskeletal pathologies

### MSK 2 (adolescent MSK):

- To discuss the merits of different sequences and techniques that can be used for adolescent imaging, including MR arthrography, and differences compared to imaging younger children
- To describe the common adolescent injuries associated with sports activities
- To describe disorders of the paediatric and adolescent hip, in particular acetabular dysplasia and femoro-acetabular impingement

# Advanced Cardiac MR Imaging

16

**September 1–3, 2016  
Zagreb/HR**

**Course organiser:  
Jens Bremerich  
Basel/CH**



**Local organiser:  
Maja Hrabak Paar, Zagreb/HR**

**Course venue:**  
University Hospital Centre Zagreb  
(Klinički bolnički centar Zagreb)  
Kišpatićeva 12  
10000 Zagreb  
Croatia

**Preliminary faculty:**  
J. Bremerich, P. Buser, M. Carlsson, M. Gutberlet,  
M. Hrabak-Paar, P. Hunold, A. Jacquier, L. Natale,  
A. Redheuil, F. Santini

**Course duration:**  
Thursday morning – Saturday noon

**The aim of this course:**  
MRI has evolved to a valid clinical tool in everyday practice. Its unique capabilities of imaging cardiac morphology and function with excellent spatial, temporal and contrast resolution explain its outstanding role in imaging cardiac disease. Successful cardiac imaging requires thorough knowledge of both, pathology and modality. Beginners and advanced course participants learn basic principles of cardiac MR and review dedicated protocols. Clinical topics provide deep insight into congenital, valvular, ischemic, inflammatory, and pericardial disease as well as storage disorders, masses and cardiomyopathy. Participants discuss these disorders with respect to relevant clinical questions. Strengths and limitations of MR and CT will be highlighted. The focus of this course is MR, but CT and its role for coronary imaging and cardiovascular risk assessment are also addressed.

**Participation requirements:**  
Physicians who have a good knowledge in MR techniques and a minimum of 6 months experience in applied Cardiac MRI.



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## Learning Objectives

### Tissue characterisation, Fibrosis, Amyloidosis

- T1-/T2-/T2\*-/ECV-mapping, Late Gadolinium Enhancement
- Sarcoidosis
- Amyloidosis
- Hemosiderosis, Thalassemia
- Myocarditis

### Heart Failure

- Definition
- Pathophysiology
- Clinical presentation
- Treatment options

### Protocols Step-by-Step: Safety, Set-up for Stress

- Set-up for stress test
- Safety considerations
- Dedicated protocols
- Cooperation Radiology/Cardiology/Physics

### Basic Principles of Cardiac MRI

- Spin-echo, Gradient-echo
- Triggering, gating
- Resolution of time, space, contrast
- Coronaries
- Contrast modulation by preparation pulses

### Cardiac CT

- Basic principles
- Coronaries
- Calcium Score
- Valves
- Postprocessing



## City information Zagreb/Croatia

Population:	approx. 790.000
Time zone:	CET
Currency:	Croatian Kuna (HRK)
Country dialling code:	+385
Closest airport:	Zračna luka Zagreb Airport (ZAG)

Zagreb, the capital of Croatia, is the crossing point between Eastern, Western, Central and Southern Europe. The city is marked by central European culture and history, mixed with the warm and hospitable Mediterranean spirit. It is a city of green parks and walks that are easily reachable on foot. Its Lower Town was built at the end of the 19th century under the influence of Vienna's architecture with the central Jelacic Square, the Croatian National Theater building and the Zrinjevac park, being just a few sights not to be missed. The medieval Upper Town with the splendid cobblestone streets and red tiled roofs is home to the cathedral, parliament and government buildings, as well as the city landmark St. Mark's Church, the famous Stone Gate - the eastern entrance to Gradec, and traditional Dolac fruit and vegetable market. Zagreb gastronomy offers hundreds of tastes, including national dishes (cheese and cream, strukli, turkey with mlinci, Dalmatian pasticada, kuleni), Mediterranean food directly from the Adriatic sea, and various international cuisines.

### Transportation:

Zagreb International Airport is located 17km south-east from the city center. The scheduled bus shuttle "Pleso prijevoz" is operating in both directions between the Main Bus Station in Zagreb and Zagreb International Airport every 30 minutes. The bus station in direction Zagreb City is located just outside the international arrivals, a ticket costs 30 Kunas (~ EUR 4) and can be bought from the bus driver. Taxis are also available in front of the airport.

Zagreb has a good public transportation system, consisting of trams and buses. Tram and bus tickets are sold at the newspaper kiosks and must be validated in the machines on board. Zagreb's Funicular Railway is the oldest Zagreb public transportation component and runs on a 66m-long track from the Lower Town to the Upper Town.

Hotel information: [www.school-of-mri.org](http://www.school-of-mri.org)

### Congenital Heart Disease

- Segmental analysis
- Grown up congenital heart disease
- MR or CT
- Regurgitation, Insufficiency

### Valvular Heart Disease

- Regurgitation
- Insufficiency
- Flow

### Cardiomyopathy

- Pathophysiology
- ARVC
- Dilated cardiomyopathy and Non compaction
- Hypertrophic cardiomyopathy

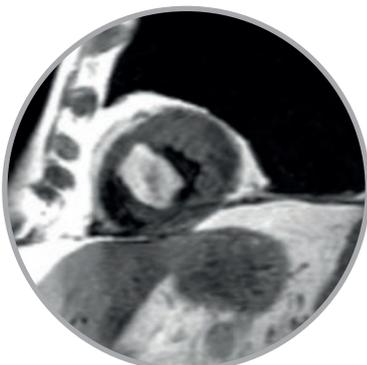
### Ischemic Heart Disease:

#### Infarct, Viability, Perfusion, Stress

- Function
- Perfusion
- Infarct, Viability, Late enhancement

### Cardiac Masses, Pericardial Disease

- Systematic approach
- Benign and malignant tumours, metastasis, thrombus
- Acute vs. chronic pericarditis



# Body Diffusion-weighted MR Imaging: From Theory to Practice

18

**September 26–28, 2016  
Vienna/AT**

**Course organiser:  
Dow-Mu Koh  
London/UK**



**Local organiser:  
Gregor Kasprian, Vienna/AT**

**Course venue:**  
Medical University Hospital (AKH)  
Jugendstilhörsaal (building 88)  
1090 Vienna  
Austria

**Preliminary faculty:**  
D.J. Collins, F. De Keyzer, G. Kasprian, D-M. Koh,  
R. Maroldi, C. Matos, A. Padhani, H.P. Schlemmer,  
T. Takahara, H. Thoeny, I. Thomassin-Naggara

**Course duration:**  
Monday noon – Saturday evening

**The aim of this course:**  
Diffusion-weighted MR imaging is increasingly utilised in the body in oncology to improve patient management. In this course, an expert panel will review the principles and optimisation use of diffusion-weighted MR imaging according to regions of the body, highlighting the current and emerging roles for disease detection, disease characterisation, tumour response assessment, disease prognostication and the evaluation of disease relapse. The technical aspects of performing diffusion-weighted MR imaging in the body will be discussed. Other roles for the technique such as whole body imaging, the evaluation of inflammatory conditions and MR neurography will also be covered.

**Participation requirements:**  
Participants should be physicians or technicians/radiographers who have basic knowledge in MRI techniques and are experienced in MRI (6 months minimum).



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registration fees

## Learning Objectives

### Principles of diffusion-weighted MR imaging (DW-MRI) as applied to the body

- Principles of DW-MRI
- Choice of imaging sequence
- Selection of b-values
- ADC quantification
- Non-monoexponential diffusion: intravoxel incoherent motion, stretched exponential and diffusion kurtosis imaging
- Measurement reproducibility
- Sources and types of artefacts on DW-MRI
- Common pitfalls

### DW-MRI in the head and neck

- Implementation of DW-MRI in head and neck region
- Detection and characterisation of head and neck tumours
- Nodal assessment
- Treatment response assessment
- Residual and recurrent diseases
- Evaluation of salivary glands

### DW-MRI of the liver and abdomen

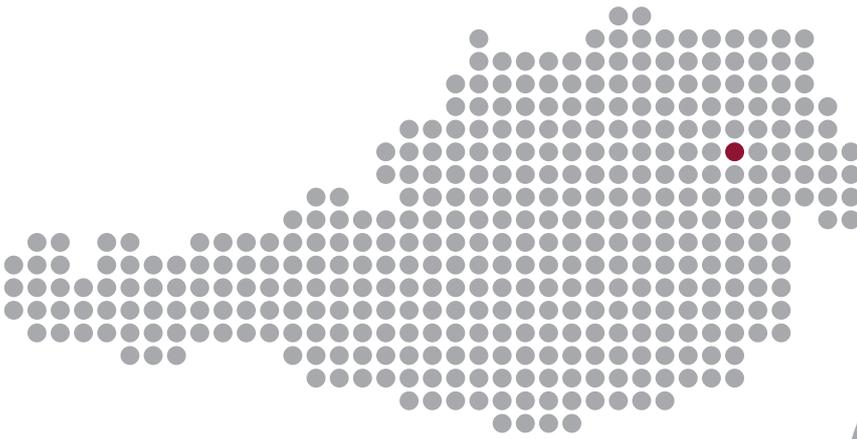
- Choice of imaging technique in liver and abdomen
- Implementation of DW-MRI in clinical protocols
- Applications in the cirrhotic and non-cirrhotic liver
- Applications in the pancreas
- Applications in the biliary tract
- Applications in the small bowel and colon
- Tumour detection, characterisation and assessment of treatment response

### DW-MRI of the kidneys

- Technical implementation in the kidneys
- Evaluation of renal function using DW-MRI
- Clinical applications of DW-MRI in diffuse renal disease
- Application of DW-MRI in the assessment of focal renal lesions
- Potential challenges

### DW-MRI of the male pelvis

- Technical implementation in the male pelvis
- Evaluation of prostate cancer
- Combining DW-MRI with multiparametric imaging
- Evaluation of diseases of the urinary bladder
- Nodal evaluation in prostate and bladder cancers



### DW-MRI of the female pelvis

- Technical implementation for evaluating the female reproductive organs
- Evaluation of diseases of the vagina
- Evaluation of diseases of the cervix
- Evaluation of diseases of uterus
- Evaluation of adnexal masses and the ovaries
- Tumour detection, characterisation and assessment of treatment response
- Practical usage in clinical routine

### DW-MRI for the assessment of treatment response: why, when and how?

- Assessment of tumour response to treatment using validated criteria
- Impetus of using functional imaging techniques to assessment treatment response
- ADC as a quantitative metric for response assessment
- Assessing the significance of results
- Evidence of using ADC to assess tumour response to radiotherapy, chemotherapy, radiochemotherapy and minimally invasive treatments
- Unmet challenges

### Whole-body MRI including DW-MRI: assessing bone and soft tissues

- Current challenges of evaluating metastatic bone disease and diffuse marrow involvement
- Impetus for whole body MRI and whole body DW-MRI
- Image interpretation and avoidance of pitfalls
- Normal evolution of marrow DW-MRI signal and ADC values
- Potential clinical applications

### MR neurography and tractography of the peripheral nerve using DWI

- MRI techniques for evaluating the peripheral nerve DW-MRI for MR neurography and tractography
- Imaging interpretation
- Potential clinical applications

### Non-oncological applications of body DW-MRI

- Key non-oncological applications of body DW-MRI
- Evaluation of infective and inflammatory conditions in the body
- Computed diffusion-weighted MRI
- Other emerging applications and techniques

## City information Vienna/Austria

Population:	approx. 1.793.667
Time zone:	CET
Currency:	EUR
Country dialling code:	+43
Closest airport:	Vienna International Airport (VIE)

Vienna – the capital as well as the largest city in Austria - serves as an economic and politic hub, hosting many international organisations like the United Nations and OPEC. There is a lot to see in Vienna, from the gothic St. Stephen's cathedral to the Hofburg Imperial Palace, from the Art Nouveau splendour of the Secession to the magnificent late baroque palace of Schönbrunn and the well known Riesenrad (Ferris Wheel) in the Vienna Prater. In Vienna, music is in the air; more famous composers have lived here than in any other city, and it is known as the home of the waltz and operetta. Enjoy the fantastic music of the Vienna Staatsoper, the Volksoper, the Musikverein and the Konzerthaus. Visit unique art collections at the Albertina, the Kunsthistorisches Museum (Museum of Art History), the Belvedere, the Leopold Museum, the Museum of Modern Art, and many more. Visiting Vienna doesn't just mean sightseeing it also means enjoying a 'G'spritzer' (a white wine spritzer), chocolate cake (the unique 'Sacher Torte'), coffee (like the Viennese 'Melange') and the famous 'Wiener Schnitzel'.

### Transportation:

Vienna is served by the airport near Schwechat, located 18km southeast of the city centre and well connected to all major European cities. The CAT (City-Airport-Train) runs from the airport to the city centre twice an hour. A round trip ticket costs EUR 17 and it takes 16 minutes. The underground as well as bus and tramway network is extensive and within the city limits a one-way ticket costs around EUR 2,20.

**Hotel information:** [www.school-of-mri.org](http://www.school-of-mri.org)

# Advanced Neuro Imaging: Diffusion, Perfusion, Spectroscopy

20

October 20–22, 2016  
Barcelona/ES

Course organiser:  
Johan Wikström  
Uppsala/SE



Local organiser:  
Alex Rovira Canellas, Barcelona/ES

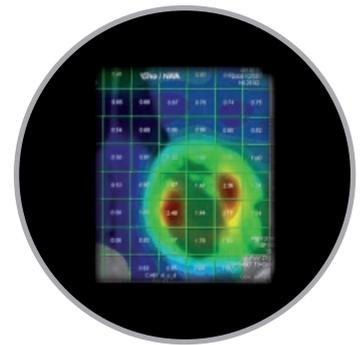
Course venue:  
Hospital Vall d'Hebron  
Passeig Vall d'Hebron 119-129  
08035 Barcelona  
Spain

Preliminary faculty:  
A. Björnerud, S. Brockstedt, E.R. Danielsen, P. Due-Tønnesen,  
S.Haller, L. Knutsson, M. Koch, R. Kreis, E.M. Larsson,  
J. Wikström

Course duration:  
Thursday morning – Saturday noon

**The aim of this course:**  
The aim of this course is to convey in-depth knowledge about advanced functional MR techniques for imaging of the central nervous system. The combination of MR physics (at a level for radiologists) and clinical applications in this course provides an excellent opportunity to improve the understanding as well as the clinical interpretation of diffusion- and perfusion-MRI and MR spectroscopy. During the last decade, these techniques have matured and are now frequently incorporated into daily clinical work. Furthermore, significant progress in the development of refined techniques, such as diffusion tensor imaging, has been made during the last few years. The course will offer an overview of present methodology with clinical applications in neuroradiology, as well as promising new methods, using a mixture of lectures and small group exercises. We are happy to welcome you to this course in Barcelona where European experts in the field will share their knowledge with you.

**Participation requirements:**  
Radiologists, neuroradiologists, physicians, physicists, radiographers, MRI nurses and others who have good knowledge in MR techniques; minimum of 6 months experience in applied MRI and/or Neuro Imaging.



## Learning Objectives

### Diffusion (dMRI: DWI and DTI)

- Basic mechanisms
- Isotropic diffusion
- Anisotropic diffusion
- The ADC concept
- Pulse sequences and acquisition techniques
- Diffusion tensor imaging
- Diffusion kurtosis imaging
- Introduction to axonal fibre tracking and q-space imaging
- Pitfalls, practical issues, implementation

### Perfusion (pMRI or PWI)

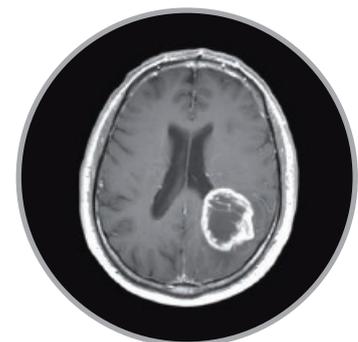
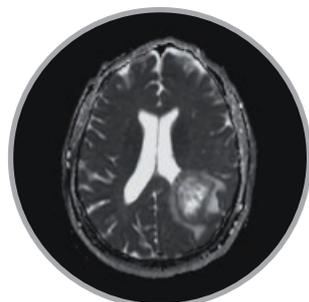
- Basic Physiology
- Dynamic Susceptibility Contrast (DSC) methods
- Pulse sequences
- Modelling, implementation and pitfalls
- Convolution and deconvolution
- Advanced modelling, heterogeneity, leakage correction
- Arterial spin labelling (ASL)

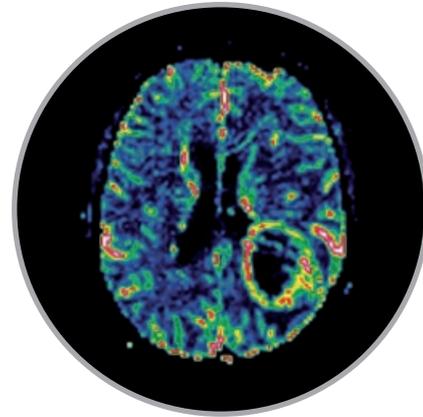
### Clinical Applications of dMRI and pMRI

- Stroke
- Epilepsy
- Brain tumours
- Infection/inflammation
- Dementia
- Trauma
- Metabolic diseases

### MR Spectroscopy (MRS)

- Basic principles
- Sequences for proton spectroscopy
- Postprocessing
- Metabolite quantification
- Quality Control and artefacts
- Clinical aspects
- Interpretation
- Pitfalls
- Applications





## City information Barcelona/Spain

Population:	approx. 1.621.500
Time zone:	CET
Currency:	EUR
Country dialling code:	+34
Closest airport:	Barcelona Airport (BCN)

Barcelona is the second largest city in Spain and the most famous city in Catalonia. It is also the largest city on the Mediterranean coast. Founded as a Roman city, Barcelona became the capital of the County of Barcelona. Besieged several times during its history, Barcelona has a rich cultural heritage and is today an important cultural centre and a major tourist destination. Particularly renowned are the architectural works of Antoni Gaudí and Lluís Domènech i Montaner, which have been designated UNESCO World Heritage Sites. Gaudí's masterpiece La Sagrada Família, which is still under construction, is the international symbol of Barcelona. Barcelona as internationally renowned a tourist destination, with numerous recreational areas, one of the best beaches in the world, mild and warm climate, historical monuments, including eight UNESCO World Heritage Sites, many good-quality hotels, and developed tourist infrastructure.

### Transportation:

Barcelona is served by Barcelona-El Prat Airport, 17km from the city centre. The airport is connected to the city by an airport bus - Aerobús (A1) - which connects the airport (T1) to the city centre and main underground stations in only 35 minutes. The price for a one-way ticket is EUR 5,90 and for a round trip EUR 10,20. From Terminal 2 there is also a train available which connects the airport to the city centre in 30 minutes and costs EUR 2,35. in the next month thy will be a metro from the T1 and T2 from the Airport to the center of Barcelona. Since 2016 there is also a metro from the T1 and T2 from the Airport to the centre of Barcelona." Taxis are available at both Terminals I & II and cost approx. EUR 30. One-way tickets for the metro cost EUR 2,15, but there is also a 10-tickets card available at a fee of EUR 10,30, which can be used for all public transportation services.

**Hotel information:** [www.school-of-mri.org](http://www.school-of-mri.org)

# Advanced Breast & Female Pelvis MR Imaging

22

**October 20–22, 2016  
Athens/GR**

**Course organiser:  
Riccardo Manfredi  
Verona/IT**



**Local organisers:**

**L. Mouloupoulos, Athens/GR**

**P. Prassopoulos, Alexandroupoli/GR**

**Course venue:**

Central Building, University of Athens  
30, Panepistimiou str  
10679 Athens  
Greece

**Preliminary faculty:**

B. Hamm, K. Kinkel, R. Kubik, R. Manfredi,  
V. Martinez de Vega, S. Mehrabi, T. Metens,  
M. Müller-Schimpfle, A. Rockall, L. Umutlu, D. Weishaupt

**Course duration:**

Thursday morning – Saturday noon

**The aim of this course:**

Technical advances have opened up new diagnostic applications in female MR imaging with MRI gaining an increasing role in this patient population also in a clinical routine setting.

This course will offer an overview of current MR imaging strategies for the diagnosis of breast and pelvic diseases including foetal imaging and pelvic floor MRI. Established as well as potential future indications will be reviewed compared to other imaging examinations. We will discuss hard- and software requirements of MR systems for optimal clinical use as well as the optimisation of imaging strategies and diagnostic advantages arising from the application of contrast agents.

The aim of the course is furthermore to convey in depth knowledge of morphological changes of the breast and pelvic female organs under pathological conditions.

We would like to welcome you to this course in Athens/GR, where European experts in the field of female MR imaging will be given the opportunity to share their knowledge with you in plenary lectures and reinforce the information in small group discussion.

**Participation requirements:**

Physicians who have good knowledge in MR techniques and some experience in applied MRI of the breast and female pelvis.



## Learning Objectives

### MR Imaging Techniques (Breast & Female Pelvis)

- Hard- and software requirements
- Basic pulse sequences for breast and pelvic MRI
- Advanced pulse sequences (including ultrafast sequences)
- Image post-processing
- Recent and future developments

### Female Pelvis:

#### Protocol Optimisation, Benign Disease of the Uterus

- Optimised MR imaging strategy
- Normal MR appearance of the female pelvis according to age and menstrual cycle
- Muellerian duct abnormalities: Indication for MRI compared to HSG and US
- To diagnose and differentiate leiomyoma from adenomyosis
- Questions to be answered by MRI before and after leiomyoma embolization

### MR Imaging of the Cervix and the Uterus:

#### Malignant Lesions

- Optimised MR imaging strategy
- MR appearance of malignant lesions of the cervix
- MR appearance of malignant lesions of the uterus
- Staging of malignancies
- Follow-up of malignant tumours

### MR Imaging of the Ovaries

- Optimised MR imaging strategy including DWI
- Appearance of the normal ovaries on T1-, and T2-weighted images and the enhancement patterns
- Indications for MRI compared to US and CT for imaging in patients with adnexal masses
- Benign and malignant lesions
- Staging and follow-up of ovarian carcinoma

### MR Imaging of the Pelvic Floor

- Hard- and software requirements
- Application of open magnet systems
- Optimised MR imaging strategy
- Anatomy of the pelvic floor
- Indications for MRI in the incontinent patient
- Ano-rectal diseases

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**MRI in the Obstetric Patient/Fetal MRI**

- Safety considerations
- Contrast agents in the pregnant and nursing patient
- Optimised MR imaging strategy, including ultrafast sequences
- Indications for MRI in the obstetric population
- MRI of the healthy foetus and the utero-placental unit
- Morphological changes in foetal malformation and pathology

**Technical Aspects of Breast MRI**

- Hard- and software requirements
- Currently used 2D and 3D techniques
- Post-processing of the source images
- Importance of temporal and spatial resolution
- New sequences: Diffusion-weighted image (DWI) and spectroscopy of the breast

**MR Imaging of the Breast**

- Breast imaging protocol
- BIRADS-classification for breast MRI
- Indications of breast
- Pitfalls & limitations
- Interventional techniques in breast MRI
- Breast MRI following breast surgery
- Breast implants and implant failure

**MRI of the Breast: Screening the high Risk Population**

- Pros and Cons of breast cancer screening using MRI
- How to select women who benefit most?
- How and when to perform MRI?

**MRI: Lymph node Staging**

- Imaging strategy
- Plain MRI
- Contrast-enhanced MRI
- Lymphatic spread in uterine tumours

**City information Athens/Greece**

Population:	approx. 665.000 3.750.000 (metropolitan area)
Time zone:	CET+1/ EET
Currency:	EUR
Country dialling code:	+30
Closest airport:	Athens International Airport (AIA) - Eleftherios Venizelos

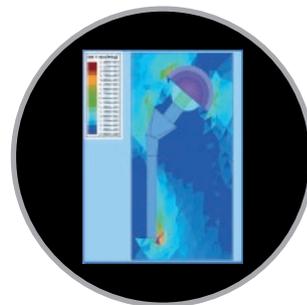
Athens is a major European capital, vibrant and safe, where history meets with comfort and fascination. The Acropolis is one of the world's most famous landmarks and Greece's history and culture, combined with the nightlife, a wonderful climate, traditional cuisine and renowned Greek hospitality are just some of the countless attractions Athens has to offer. Visiting Athens will be an experience that you never will forget.

**Transportation:**

Athens International Airport (AIA) "Eleftherios Venizelos" is located about 20km east from Athens centre. Bus routes run by the public bus company ETHEL and connect the airport with the city centre, Piraeus (port) and the greater area. All buses leave from the Arrivals level on a non-stop basis seven days a week. The line X95 goes directly to the city centre and leaves every 15 minutes. Passengers get a one-way ticket for EUR 6,-. Connections from the AIA Rail Station are provided either by suburban rail for EUR 10,- or by the metro trains (line 3) for EUR 6,-. A taxi ride to the city centre inner ring costs approx. EUR 38,-, and takes travellers 45 minutes.

**Hotel information:** [www.school-of-mri.org](http://www.school-of-mri.org)

# MR Safety



24

**November 17–19, 2016  
Gelsenkirchen/DE**

**Course organiser:  
Siegfried Trattnig  
Vienna/AT**



**Local organiser:  
Gregor Schaefer, Gelsenkirchen/DE**

**Course venue:**  
MR:comp GmbH  
Conference room  
Buschgrundstrasse 23  
45894 Gelsenkirchen  
Germany

**Preliminary faculty:**  
D. Beitzke, J. Felbinger, L. Herson, D. McRobbie, A. Melzer,  
M. Mühlenweg, F. Stahlberg, G. Schaefer, F. Schick,  
S. Trattnig, H. Tomson

**Course duration:**  
Thursday morning – Saturday noon

**This course is limited to 35 participants!**

**The aim of this course:**  
The aim of the course is to provide a systematic overview on the complex physical laws of MR interactions and their potential risks with respect to the static magnetic field, the switched gradient field and RF fields. Another important field are standards of MR Safety and compatibility testing in active as well as non-active implants with a focus on a training in clinical strategies how to handle implant safety issues in the MR environment, enhance patients safety and improve the MR workflow in daily routine. Special aspects such as cardiovascular implants and MR Safety issues in interventional MR will be presented, too. The most recent developments and risks of Gadolinium-based MR contrast agents will be covered. The course will provide a combination of lectures and practical training sessions in smaller groups.

**Participation requirements:**  
The target group can be subdivided into the following two categories:  
Hospital: radiologist, radiological technologist, physician, anaesthesiology staff, nurse, technical or medical, researcher, maintenance staff  
MRI manufacturer: application specialists, researcher developer, system tester, production staff member



## Learning Objectives

### Introduction to construction and function of MRI scanner

- Update on MR scanner components
- Update on MR basics

### A systematic overview on MR interactions with magnetic and electrically conductive materials

- Characteristics of the static magnetic field inside and around a clinical MR system
- Forces and torques acting on magnetic materials in static magnetic fields
- Characteristics of the radiofrequency electromagnetic transmitter field and of the gradient fields
- Induction of electrical currents by time varying electrical and magnetic RF fields in conductive structures and tissue

### Risks in MRI I:

#### static Bo field, dangers due to superconductors

- Value of the static magnetic field around the magnet
- Exposure limits for static magnetic fields
- Potential risks for human exposure to static magnetic fields
- Dependence of physiologic effects on relevant parameters of the static magnetic field
- Potential risks of superconducting magnets

### Risks in MRI II:

#### MR gradients and RF

- Exposure limits for low frequency gradient fields
- Potential risks for humans with gradient fields
- Exposure limits for high frequency RF fields
- Potential risks of high frequency RF fields
- Dependency of SAR from the static magnetic field

### Implant Testing and Safety Considerations

- Active definitions of MR Safety and terms
- Standards of MR Safety and compatibility testing
- Presentation of standard test methods
- Simulation of RF heating using human models
- MR Labelling of active and non-active implants with respect to static magnetic and switched gradient magnetic fields and RF fields

### Implant problems and optimisation. Researching implants

- Impact of implants on clinical MRI and financial consequences
- Strategies of improvement, workflow
- Effective research of MRI-conditions of implants
- MR Conditionals pacemaker
- Fixed Parameter mode

### Cardiovascular implants and cardiac pacemakers in MRI

- Risks and subsequent limitations of MR imaging after stents and stent graft implantation
- The risks of conventional, 'old' cardiac pacemaker implantation
- Newest guidelines of MR safety after stent and pacemaker implantation



### MR Safety issue in Interventional MR

- Principles of Interventional MRI and intraoperative MRI
- Potential risks for clinicians and patients
- Technical requirements for safe Interventionals MRI and intraoperative MRI
- Limitations of Visualisation and Tracking of interventional Devices
- How to avoid reaching exposure limits during interventions
- Examples from clinical and preclinical studies

### Contrast agents

- Chemical characteristics of Gd chelates
- Risks of Nephrogenic Systemic Fibrosis
- Evaluation of renal function
- Allergic reactions with Gd chelates
- New developments of Gd based contrast agents

### EU Directive and MR worker training

- MRI in the context of European health and safety legislation
- Existing national and international EMF exposure guidelines and standards
- EC standard 60601-2-33
- The Physical Agents (EMF) Directive: state of play and possible future developments

### Practical session I

#### Systematic inspection with entering the MR area

- Definition of zones within the MR environment, in particular zone III and IV
- Supervision of entrance to the magnet room and the ways how to control it
- Correct patient positioning
- To get familiar with the location of emergency equipment
- Training of typical medical emergency situations in a live MR setting

### Practical session II

#### Demonstration of MR effects

- Spatial distribution of the static magnetic field of whole-body MR systems
- Forces and torques on different materials; Eddy current effects on moving conductive plates
- Generation of image artefacts by (slightly) magnetic materials
- Generation of imaging artefacts by conductive ring structures
- Heating in copper rings with different ohmic resistance

### Practical session III

#### Heating measurement of a single wire

- RF heating experiment
- To differentiate between different MR interactions
- To understand the parameter complexity and to know the necessities for interpretation of the RF part of the MR labelling of devices/items

### Practical session IV

#### Safety basics and quality management

- Pre-MR – Screening Procedures
- Patient MRI Safety Screening Form
- Safety Questions and Information
- Safety documents

## City information Gelsenkirchen/Germany

Population:	approx. 291.164
Time zone:	CET
Currency:	EUR
Country dialing code:	+ 49
Closest airports:	Düsseldorf Airport (DUS), Dortmund Airport (DTM)

Gelsenkirchen is imbedded in the northern part of the Ruhr area, the largest agglomeration in Germany. Well known for its enthusiasm for the local football club, Gelsenkirchen also offers an interesting industrial heritage. Being a tiny village until the 19<sup>th</sup> century, the Industrial Revolution caused a respective growth. Gelsenkirchen used to be the most important coal mining town in Europe and was known as the “city of a thousand fires”. Today the city holds Germany’s biggest solar power plant and became a centre of solar technologies. At the same time cultural and industrial highlights like “Zeche Nordstern”, the “Consol Theatre”, the “Musiktheater im Revier” - representing local culture and the “Nordstern Videokunstzentrum” providing insights into a variety of temporary exhibitions are conveying the extraordinary atmosphere of Gelsenkirchen.

### Transportation:

The nearest major airports are Düsseldorf International Airport (DUS) and Dortmund Airport (DTM). Both airports have international and domestic flights and are situated approx. 50km from the centre. Düsseldorf International Airport is served by the Düsseldorf Airport Train Station, so the arriving passengers are directly connected with Gelsenkirchen by taking the S9 to Gelsenkirchen Buer-Nord. Travellers have the possibility to take the SkyTrain to get from their terminals to the airport station which operates between 3:45 am and 0:45. Regional trains leave for a 35 minutes trip to Gelsenkirchen approx. every half an hour. From Dortmund Airport, busses operate every half an hour and serve as a direct connection to Dortmund train station. A one way ticket is EUR 8,50 and takes the passengers to the station, where trains depart approx. every half an hour for another 25 minutes’ drive to Gelsenkirchen.

Hotel information: [www.school-of-mri.org](http://www.school-of-mri.org)

# Advanced MR Imaging of the Musculoskeletal System

26

**Autumn 2016  
France**

**Course organiser:  
Prudencia Tyrrell  
Oswestry/UK**

**Local organiser:  
Nicolas Amoretti, Nice/FR**

**Preliminary faculty:**

J. Gielen, A. Karantanas, I. Noebauer-Huhmann, E. McNally, V. Pullicino, L. Sconfienza, N. Theumann, P. Tyrrell, F. VanHoenacker, M. Zanetti

**Course duration:**

Thursday morning – Saturday noon

**The aim of this course:**

MR imaging of the musculo-skeletal system is one of the most common requests in routine clinical work. MRI is more sensitive than x-rays and CT in the detection of tumours, degeneration, inflammation and sports injuries. However specificity is often low and requires the knowledge of morphologic signs or specific sequence protocols. In this course, ten topics are addressed – spine, shoulder, elbow, hand and wrist, hip/pelvis, knee, ankle and foot, bone marrow, bone and soft tissue tumours and sports injuries of the lower limb. Within each topic three to four subtopics addressing common or sometimes more complex subjects are covered including anatomy, typical and atypical imaging examples with differential diagnoses. The course will be a combination of lectures and smaller group case based repetitions.

We look forward to welcoming you to this international course which is held by European experts in the field of musculo-skeletal imaging.

**Participation requirements:**

Physicians and technician/radiographers who have a good knowledge of MR techniques; minimum of 6 months experience in applied MRI of the musculoskeletal system.



## Learning Objectives

### Bone and Soft-Tissue Tumours

- How to perform an MRI for bone tumours
- How to perform MRI for soft-tissue tumours
- Differential diagnosis of soft-tissue lesions
- Differential diagnosis of bone lesions
- Joint tumours and pseudotumoural lesions

### Hip/Pelvis

- How I perform, read and report a hip exam
- Labral anatomy and pathology
- Types of femoro-acetabular impingement (FAI)
- BME in the hip: Transient osteoporosis, osteoarthritis or osteonecrosis?

### Bone Marrow

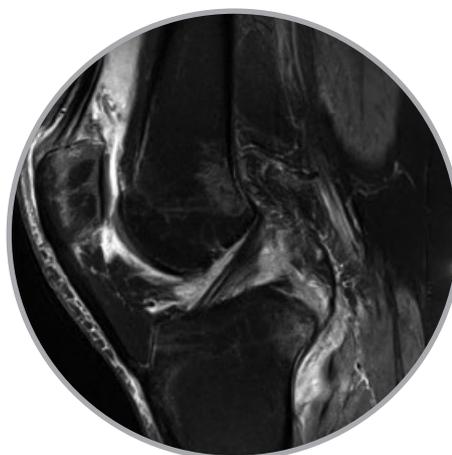
- Normal distribution of bone marrow and bone marrow variations
- Principles of focal and diffuse bone marrow replacement
- Benign versus malignant vertebral compression fractures
- Multiple myeloma/whole body Imaging

### Knee

- Imaging strategies and sequence protocols
- Cruciate and collateral ligaments and menisci
- Osteochondral defects and osteonecrosis
- Bone marrow oedema

### Sports Injuries

- Lesions of the muscle tendon unit
- Sports injuries of the pelvis
- Sports injuries of the lower limb





Please visit [www.esmrm.org](http://www.esmrm.org) for updates

### Shoulder

- How I perform, read and report a shoulder exam
- Classification of impingement
- Rotator cuff lesions
- Shoulder instability

### Elbow

- How I perform, read and report an exam of the elbow
- Anatomic variants simulating disease
- Lesions in lateral/medial/anterior/posterior pain

### Hand and Wrist

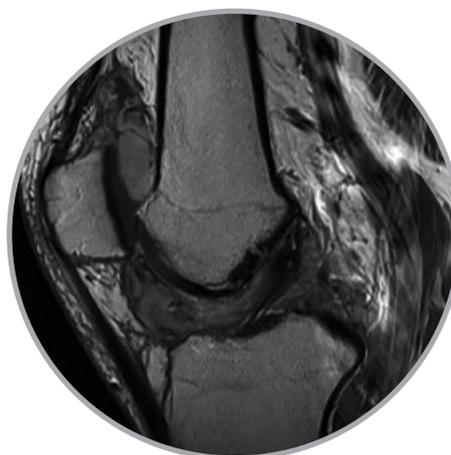
- How I perform, read and report an exam of the wrist
- TFCC lesions
- Carpal instability
- Tumours of the hand and wrist

### Spine

- Disc degeneration and disc prolapse
- Spondylodiscitis
- Sero-negative spondylarthropathies
- Sacrum and sacroiliitis

### Foot/Ankle

- How I perform, read and report a foot exam (including ligaments and tendons)
- Normal variants and variants sometimes associated with disease
- Bone marrow oedema - transient osteoporosis – osteonecrosis – mechanical stress reaction
- Nerve entrapments including Morton's neuroma and its differential





ESMRMB

European Society for Magnetic Resonance in Medicine and Biology

# ESMRMB

## Certificate of MR Excellence



**APPLY  
NOW!**

The **ESMRMB Certificate of MR Excellence** honours physicians and scientists, being active members of the **ESMRMB** and who have made a significant contribution to the field of MR.

**There are 3 categories you may apply for:**

- Clinical certificate of MR Excellence
- Basic science certificate of MR Excellence
- Educational certificate of MR Excellence

If you are a member of **ESMRMB** since 3 or more years, make sure to apply for the **ESMRMB Certificate of MR Excellence** now to prove your excellence in the field of MR.

The next application deadline is **April 1, 2016!**

Find out more on all application details and upcoming deadlines on our website at **[www.esmrb.org](http://www.esmrb.org)**.

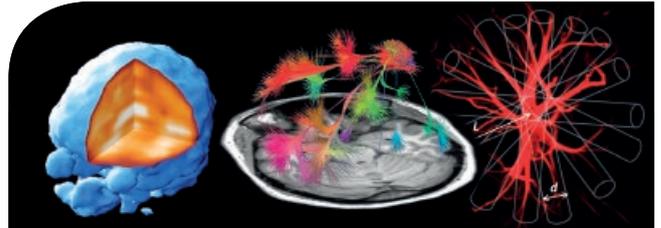
# ESMRMB Education



## School of MRI

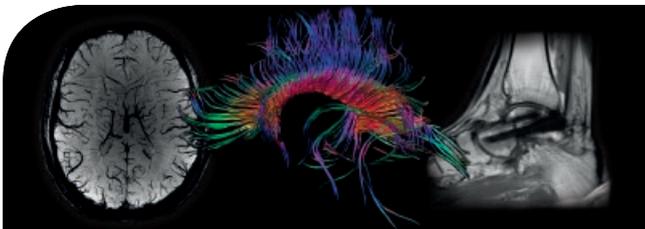
Advanced clinical courses in MR for physicians and technicians

+ NEW in 2016: eLearning



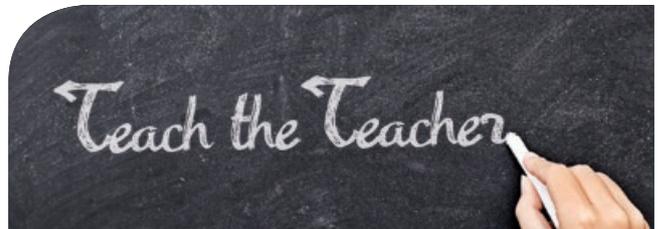
## Lectures on MR

Educational courses, exercises, and practical demonstrations on MR physics and engineering



## Hands-On MRI

Clinical courses for MR technologists/radiographers and interested physicians with hands-on training (scanner & workstation)



## Teach-the-Teacher

ESMRMB/ISMRM fellowship training for young academic MR radiologists from emerging countries



# Registration Information



## 30 Registration (online only)

In order to register for your desired course(s), please visit our website at [www.esmrmmb.org](http://www.esmrmmb.org).

Please note that your registration becomes valid only after the receipt of payment and after confirmation by the ESMRMB Office. The confirmation of payment is available for download in the online 'MyUser Area'.

### Terms of cancellation

In case of written cancellation of the registration by the participant

- > 4 weeks before the course date: the registration fee less 20% for administrative costs will be refunded.
- < 4 weeks before the course date: no refund will be granted.

**If less than 40 participants register, ESMRMB reserves the right to cancel a course at the latest 4 weeks prior to its beginning. Please keep this in mind for your travel arrangements.**

### Registration Fee

The registration fee includes:

- Course attendance
- Teaching material for the course (digital syllabus)
- Coffee and Lunch
- Welcome Reception

Participants are responsible for their travel and hotel arrangements.

A list of suitable hotels for the individual courses is available at the ESMRMB website. When making your flight bookings, please make sure that you will be able to stay for the entire course duration.

Courses either start on Thursday morning or noon and last until Saturday noon or evening. The Body Diffusion course starts on Monday and lasts until Wednesday.



### Early registration fees

(until 8 weeks prior to the course)

**Physicists, Physicians, Chemists and other professionals with equivalent university degree:**

ESMRMB Members***	€ 450
ESR Members***	€ 600
Non-Members	€ 630

**Students\*, Residents\* and MR technologists/radiographers\*\*:**

ESMRMB Members***	€ 300
ESR Members***	€ 350
Non-Members	€ 380

### Late registration fees

(after 8 weeks prior to the course)

**Physicists, Physicians, Chemists and other professionals with equivalent university degree:**

ESMRMB Members***	€ 550
ESR Members***	€ 700
Non-Members	€ 730

**Students\*, Residents\* and MR technologists/radiographers\*\*:**

ESMRMB Members***	€ 350
ESR Members***	€ 420
Non-Members	€ 450

\* Eligibility for the student and resident status is limited to 6 years following the date of the last diploma (bachelor, masters, medical degree; not applicable for PhD degrees!). A copy of the diploma (bachelor, masters, medical degree) has to be sent to the ESMRMB Office no later than 10 days after the registration in order to validate your registration. Please note that for residents an attestation from the head of department is not sufficient! According to the ESMRMB regulations a copy of the diploma is required.

\*\* MR technologists/radiographers are requested to provide an attestation from the head of the institution / head of department no later than 10 days after the registration.

\*\*\* Reduced course fees are available for members in good standing who have paid their 2016 ESMRMB or ESR membership fee.

### Rates refer to one course.

If more than one course is booked at once, a 10% reduction will be granted.

Be updated and join us on  
**facebook** and **Twitter!**



**ESMRMB**

European Society for Magnetic Resonance in Medicine and Biology

[www.facebook.com/ESMRMB](http://www.facebook.com/ESMRMB)  
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Abraham Lincoln



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**ESMRMB**

European Society for Magnetic Resonance in Medicine and Biology

# ESMRMB Society Journal MAGMA

MAGMA (*Editor-in-Chief: P.J. Cozzone*) is a multidisciplinary international journal devoted to the publication of articles on all aspects of magnetic resonance techniques and their applications in medicine and biology. In addition to Regular Issues, the journal also publishes Special Issues:

## Two NEW Special Issues in 2015 !

**"Tissue segmentation in MRI"**  
with Fritz Schick as Guest-Editor

**"Ultrahigh Field MR: Cutting Edge Technologies Meet Clinical Practice"**  
with Markus Barth, Frank Kober, Thoralf Niendorf, Siegfried Trattnig  
as Guest-Editors

## RECENT SPECIAL ISSUES

- 2014** "X-nucleus magnetic resonance imaging"  
with Lothar Schad and Simon Konstandin as Guest-editors
- 2013** "MRI and PET together: friends or foes"  
with Thomas Beyer and Ewald Moser as Guest-editors
- 2012** "MR Thermometry"  
with Robert Turner as Guest-editor
- "Arterial Spin Labeling MRI"  
with David Alsop as Guest-editor

## MAGMA's impact and dissemination is rapidly increasing:

**2014 Impact Factor : 2.869 !**

MAGMA ranks now :

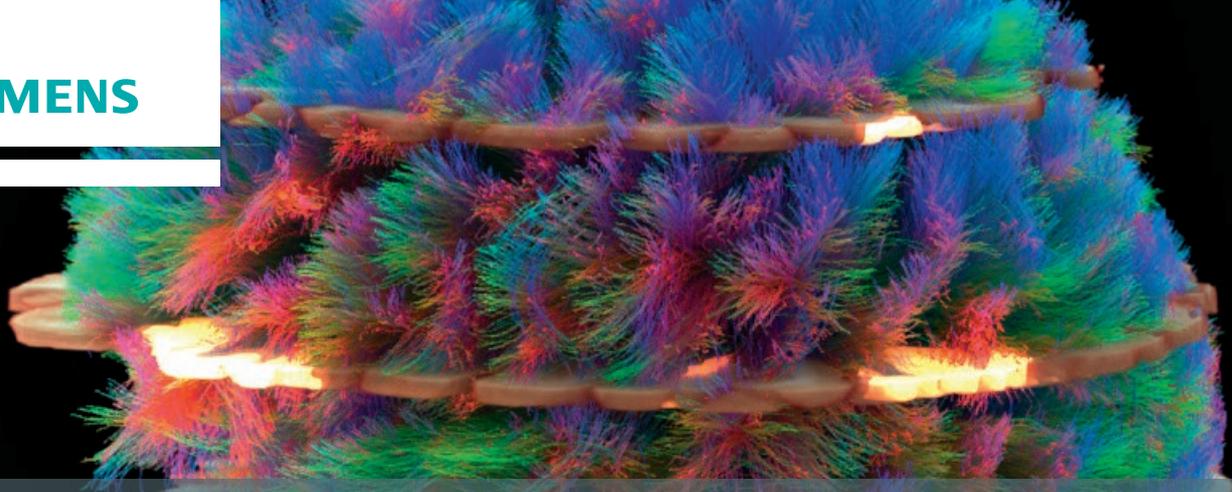
30<sup>th</sup> out of 125 journals in the category  
"Radiology, Nuclear Medicine & Medical Imaging »

- Manuscript submissions are in constant progression
- MAGMA offers the shortest publication cycle among all MR journals!  
Only 5 weeks for the reviewing process and 3 weeks for time to publication online after final acceptance
- MAGMA is currently read by thousands of institutions worldwide through the Springer library consortia
- More than 100 full-text articles are downloaded daily in 2015
- As a bonus to authors, MAGMA keeps with its policy of NOT applying charges for color illustrations!

An ESMRMB  
Membership is already  
available from € 25!

Visit [www.esmrm.org](http://www.esmrm.org) for more information on MAGMA, ESMRMB's membership types and benefits as well as membership application.

**SIEMENS**



# Simultaneous Multi-Slice

Accelerate advanced neuro applications for clinical routine

[siemens.com/sms](http://siemens.com/sms)

Simultaneous Multi-Slice is a paradigm shift in MRI acquisition – helping to drastically cut neuro DWI scan times, and improving temporal resolution for BOLD fMRI significantly.

<sup>1</sup> MAGNETOM Prisma, Head/Neck 64

Simultaneous Multi-Slice helps you to:

- reduce imaging time for diffusion MRI by up to 68%<sup>1</sup>
- bring advanced DTI and BOLD into clinical routine
- push the limits in brain imaging research with acceleration factors up to 8<sup>1</sup>

## Check out the ESMRMB Event Calendar



Use our new online tool to find MR-related courses, workshops and congresses. Promote your events on our brand-new platform.

[www.esmrm-b-eventcalendar.org](http://www.esmrm-b-eventcalendar.org)



# ESOR 2016

## OVERVIEW OF ACTIVITIES IN EUROPE

### GALEN Foundation Course

**Neuroradiology**  
May 12-14, Warsaw/Poland

**LEVEL I+II**

### GALEN Advanced Courses

**Oncologic Imaging**  
May 26-27, London/United Kingdom

**LEVEL II+III**

**Cardio-Thoracic Cross-Sectional Imaging**  
June 23-24, Moscow/Russia

**LEVEL II**

**Paediatric Imaging**  
September 8-9, Paris/France

**LEVEL II**

**Abdominal Imaging**  
September 22-23, Budapest/Hungary

**LEVEL II**

### ESOR Courses for EDiR

**LEVEL II**

**Neuroradiology**  
October 27, Vienna/Austria

**Head and Neck Radiology**  
October 28, Vienna/Austria

**Hybrid Imaging**  
October 29, Vienna/Austria

**Abdominal Imaging**  
November 3, Vienna/Austria

**Paediatric Radiology**  
November 4, Vienna/Austria

**Musculoskeletal Radiology**  
November 5, Vienna/Austria

**Chest Imaging**  
November 10, Vienna/Austria

**Cardiac Imaging**  
November 11, Vienna/Austria

**Breast Imaging**  
November 12, Vienna/Austria

### ASKLEPIOS Courses

**Multimodality**  
May 19-20, Dublin/Ireland

**LEVEL II**

**Imaging in Vascular Diseases**  
June 2-3, Suzdal/Russia

**LEVEL I+II**

**Hybrid Imaging**  
September 1-2, Vienna/Austria

**LEVEL III**

**Advanced Oncologic Imaging**  
September 30 - October 1, Kazan/Russia

**LEVEL II+III**

**Cardio-Thoracic Imaging**  
October 12-14, Graz/Austria

**LEVEL I+II**

**Symposium on Imaging Hallmarks of Cancer**  
October 28-29, Lisbon/Portugal

**LEVEL III**

**Multidisciplinary Approach to Cancer Imaging**  
November 10-12, Amsterdam/The Netherlands

**LEVEL III**

**Body Imaging Biomarkers**  
December 12-13, Valencia/Spain

**LEVEL III**

### Visiting Professorship Programmes within the ESR Support Initiative

**Imaging Neoplastic Diseases in GI Tract** **LEVEL II+III**  
**National Conference of Radiology and Medical Imaging**  
October 6, Iasi/Romania

**Body Oncologic Imaging** **LEVEL II+III**  
**Balkan Congress of Radiology**  
October 13, Thessaloniki/Greece

### Tutorials

**Graz Tutorial**  
October 10-14, Graz/Austria

**LEVEL I+II**

### Visiting Scholarship Programmes (3 months)

**LEVEL II**

### Exchange Programmes for Fellowships EUROPE/USA (3 months/6 months)

**LEVEL III**

### One-year Fellowships

**LEVEL III**

Please note that programmes are marked with a logo to indicate their classification according to the European Training Curriculum.

**LEVEL I** First three years of training

**LEVEL II** Fourth and fifth years of training (general radiologist standard)

**LEVEL III** Subspecialty training standard

For the full list of ESOR activities, please visit [myESR.org/esor](http://myESR.org/esor).

