Short Course Schedule:

Applications of EEG and MRI in Brain disorders

Friday 17th October 2104
Venue: TCIN, Lloyd Institute, Trinity College Dublin

Morning Session	
9.00 – 10.30	**Session 1** Lecture 1: The basis of MRI and fMRI signals (Arun Bokde) Lecture 2: What does MRI imaging tell us about the (aging) brain and Neurodegenerative disease? (Arun Bokde)
10.30 – 11.00	**Workshop 1** Visit to the MRI scanner facilities (Arun Bokde)
11.00– 11.30	Coffee/Tea Break
11.30 – 13.00	**Session 2** Lecture 3: Basic EEG recording, signal processing & interpretation (Paul Dockree) Lecture 4: An update on current EEG research in patients with schizophrenia (Edmund Lalor)
13.00 – 13.30	**Workshop 2** Visit to the EEG facilities (Paul Dockree/Edmund Lalor)

Registration and payment:
http://www.eventbrite.ie/e/applications-of-eeg-and-mri-in-brain-disorders-tickets-13159752173

Short course Programme

CPD Short Course: Applications of EEG and MRI in Brain disorders
Friday 17th October, 2014 from 9:00am
The Lloyd Building, Trinity College Dublin

Accredited for CPD by the Royal College of Physicians of Ireland (RCPI approval reference:
4842, CPD credits allowed: 4)
This CPD Recognition is accepted by all Irish Postgraduate Training Bodies

Our understanding of the Brain and Brain health has been transformed in recent years by real-time imaging investigations of disease progression and cognitive processes. Importantly we have seen breakthroughs in understanding of basic neural circuits replicated from the simplest biological systems at an in-vitro level and in-vivo level. We have also seen developments in the understanding of the complex biochemical systems underpinning neural circuitry. MRI and EEG studies of the brain are the key tools in elucidating normal and abnormal brain function. EEG also provides a complementary technique to MRI because of its excellent temporal resolution.

EEG has also found increasing applications in a range of conditions beyond its traditional and wide use in epilepsy and the speakers today will examine its use in the evaluation of conditions ranging from schizophrenia to neurodegeneration and aging.

Lecture 1 & 2: These lectures will show how state of the art imaging modalities may be used in conjunction with cognitive and biological assessments to build up an understanding of normal and abnormal brain processes and to assist in clinician diagnoses. A longer lived population has increased the significance of neurodegenerative diseases in medical case load and has profound and distinct patient care and health economic impacts.

Early investigations by imaging technologies may facilitate less costly preventative interventions that delay the onset of neurodegenerative diseases. These interventions include neurotherapeutic and cognitive development programmes 'exercising the brain', as well as exercise and nutrition approaches.

Lecture 3: This lecture will provide an introduction to electroencephalographic (EEG) recordings and common derived brain signals from EEG including Event Related Potentials and spectral oscillatory activity. An introduction to this analysis techniques will be given along side illustrative clinical examples (e.g., from stroke and traumatic brain injury) to demonstrate the utility of these electrophysiological techniques for understanding mechanisms of impairment in different clinical conditions.

Lecture 4: This lecture will discuss the use of the electroencephalogram (EEG) – as well as functional Magnetic Resonance Imaging (fMRI) and psychophysics – to identify clinically useful biomarkers of neurological and psychiatric disorders. We will focus primarily on efforts to improve the sensitivity and specificity of easily measurable indices of sensory processing in patients with schizophrenia and bipolar disorder. We will also discuss the search for EEG biomarkers using sophisticated functional connectivity methods both when subjects are engaged in sensory processing tasks and when they are at rest.

Brief descriptions of the speakers:

Dr Arun Bokde is the SFI Stokes Lecturer in Neuroimaging and is affiliated to TCIN and the Department of Psychiatry, School of Medicine, Trinity College Dublin.
http://www.tcd.ie/Neuroscience/partners/PI%20Profiles/Arun_Bodke2.php

Dr Paul Dockree is an Assistant Professor in the School of Psychology and Trinity College Institute of Neuroscience.
http://www.tcd.ie/Neuroscience/partners/PI%20Profiles/Paul_Dockree2.php

Dr Edmund C Lalor is an Assistant Professor in the School of Engineering, Trinity Centre for Bioengineering and Trinity College Institute of Neuroscience.
http://www.mee.tcd.ie/neuraleng/People/Ed