

brainbox

initiative

**Fundamentals & Applications of
tES**

Sample Programme

13:00

Welcome & Introduction

13:00

Lecture: **Basic Principles of tES**

- Participants' expectations and experience
- tES: Why use it and when?
- Overview of the history of tES and how it is applied
- Using tES to study brain function and behaviour
- Covering tDCS, tACS, tRNS, and HD-tDCS
- Basic electrophysiology of tES

14:00

Demonstration: **Introduction to tES Devices**

- Brief familiarisation with hardware and setup:
- Familiarisation with user interface and settings
- Familiarisation with electrode options
- Requirements for combining with imaging techniques

15:00

Break

15:10

Lecture: **Considerations for tES Study Designs**

- tES as a tool in cognitive neuroscience and clinical studies
- How to deal with outcome variability
- Experimental design
- Replicability
- Ethics and safety

16:10

Demonstration: **HD-tDCS and Multi-Electrode Montage Setup**

- Single-channel stimulators
- Dedicated multi-channel stimulators
- Concentric ring stimulator setups
- Choosing the right electrodes

17:00

End workshop day one

March 23

13:00

Lecture: **Introduction to Current Flow Modelling**

- Introduction of different modelling approaches, why these are relevant, and why to use current flow modelling

14:00

Demonstration/Practical: **Current Flow Modelling**

- Delegates are encouraged to bring, if available, their own laptop with SimNIBS installed and their own anatomical MRI data:
- Neurophet current modelling for tACS
- ROAST current modelling for tDCS
- SimNIBS current modelling for tDCS
- How to use and inspect models of current flow for both systems

17:00

End workshop day two

March 24

- 13:00** Lecture: **Integrated Multimodal Applications (Using tES with MRI, EEG, TMS, or NIRS)**
- 14:00** Demonstration: **Using Neuronavigation Techniques in Conjunction with tES**
- Demonstration of how to use neuronavigation to identify electrode locations with respect to average or subject-specific MRI
- 15:00** Break
- 15:10** Wrap up: **Methods Lab & Group Discussion**
- Discuss and review delegates' concepts and ideas
 - Discuss the potential and relevance of tES in future research projects
- 17:00** Workshop close

March 25