



**Fundamentals &
Applications of tES
Workshop**

13 - 15 December
2022

DAY

1

12:30

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 setup
- 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: **Considerations for tES Study Designs**

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

17:00

End Workshop Day One

DAY

2

- 13:00** Lecture: **Introduction to Current Flow Modelling**
- Introduction of different modelling approaches, why these are relevant, and why to use current flow modelling
- 15:00** Break
- 15:10** Demonstration/Practical: **Current Flow Modelling**
- Neurophet current modelling for tACS
 - ROAST current modelling for tDCS
 - How to use and inspect models of current flow for both systems
- 16:30** Open-ended Modelling Support
- 17:00** End workshop day two

DAY

3

13:00

Lecture: **Integrated Multimodal Applications (Using tES with MRI, EEG, TMS, or NIRS)**

14:30

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

15:00

Wrap up session: **Methods Lab and Group Discussions**

- Discuss and review delegates' concepts and ideas
- Discuss the potential and relevance of tES in future research projects

17:00

Wrap Up & Workshop Close