

Current Issues in Clinical Neuroscience 2024

Theme: Neural Interface Technology and Human Application

Dates: 17/09/2024 (Tuesday) to 20/09/2024 (Friday)

Location: [UMC Utrecht](#)

Abstract: In the last decades Neurotechnology has made a significant impact on society. What was then science-fiction is now a vivid reality of brain-powered technology. In this course you will learn the basics of brain electrophysiology, how to read information from the brain and how to write information back into the brain. We will put your brains to the test with interactive practicals and societal brain-teasers. Are you interested in learning more about the current status and impact of Neurotechnology? Then this course is just the one for you!

Day 1 (tu 17/09): Neurobasics and Neurotechnology

Program:

08.30-08.45 Walk-in

08.45-09.00 Intro (Mariska Vansteensel)

09.00-09.40 Keynote on basics of electrophysiology (Anouck Schippers, UMC Utrecht)

09.40-10.20 Keynote on Magnetic Resonance Imaging (Mathijs Raemaekers, UMC Utrecht)

10.20-10.45 Break

10.45-12:00 Trends session on...

10h45-11h10 Electrocochleography (Hans Thomeer, UMC Utrecht)

11h10-11h35 Optogenetics (Frank Meye, UMC Utrecht)

11h35-12h00 Laminar fMRI (Wouter Schellekens, Donders Institute)

12.00-13.00 Lunch

13.00-13.40 Keynote on ultrasound neuroimaging (Pieter Kruizinga, Erasmus MC)

13.40-14.20 Keynote on translational work in TMS and stroke (Jord Vink, UMC Utrecht)

14.20-14.45 Break

14.45-16.00 Trends session on...

14h45-15h10 Brain preclinical work (Dara Niknejad, mouse neuropixels/FUS, UMCU)

15h10-15h35 Stroke model in mice (Eric Dijkema, UvA)

15h35-16h00 Epilepsy in dogs (Tim Denison, Oxford University)

Day 2 (we 18/09): Brain reading

Program:

08.45-09.00 Walk in

09:00-12.00 Practical

12.00-13.00 Lunch

13.00-14:15 Trends session on...

13h00-13h25 High-frequency Oscillations (Maryse Klooster, UMC Utrecht)

13h25-13h50 ALS+EEG (Stefan Dukic, ALS Center)

13h50-14h15 Neonatal EEG/MRI (Manon Benders, UMC Utrecht)

14.15-14.45 Break

14.45-15.25 Keynote on BCI, speech and stereo (Christian Herff, Maastricht University)

15.30-16.10 Keynote on Epilepsy and sleep (Vaclav Kremen, Mayo Clinic)

Day 3 (th 19/09): Brain writing

Program:

08.45-09.00 Walk in

09.00-09.40 Keynote on visual cortex stimulation (Pieter Roelfsema, NIN)

09.40-10.20 Keynote on Cochlear implants (Hans Thomeer, UMC Utrecht)

10.20-10.30 Break

10.30-13.30 Practical

13.30-14.00 Lunch

14.00-15.40 Trends session on...

14h00-14h25 Focused ultrasound-mediated blood-brain barrier opening (Akke Bakker, UMC Utrecht)

14h25-14h50 Cortical electrical stimulation therapy in epilepsy (Dorien Blooijs, UMC Utrecht)

14h50-15h15 Neuroprosthetic interface systems for restoring motor functions (NEUWalk, Henri Lorach, EPFL)

15h15-15h40 Intracortical stimulation for restoring sense of touch (Jennifer Collinger, Pittsburg University)

Day 4 (fr 20/09): Neurotech impact

Program:

08.45-09.00 Walk in

09.00-09.40 Keynote on impact/regulations cochlear implant in children (Hiske Helleman, UMCU)

09.40-10.20 Keynote on ethics (Odile van Stuijvenberg, UMCU)

10.20-10.45 Break

10.45-12:00 User panel

12.00-13.00 Lunch

13.00-14.00 Practical

14.00-15.00 Pitch round

15.00-16.00 Prize and Drinks

Practical 1 – Spell a sentence with EEG signals

Hands-on activity with a real EEG-BCI system (Day 2 or 3; 3 hours in total)

In groups, you will record brain signals, process them and use them to control an spelling application on the screen. This practical is sponsored by [ANT Neuro](#). The practical will consist of an introduction followed by spelling of a sentence.

Practical 2 - A research proposal on Neurotechnology

Write your own grant proposal (Day 2 or 3, and Day 4; 4 hours in total)

In this practical you will come up with a research project idea and write a grant proposal to apply for funding. A jury of critical reviewers will evaluate each idea.