



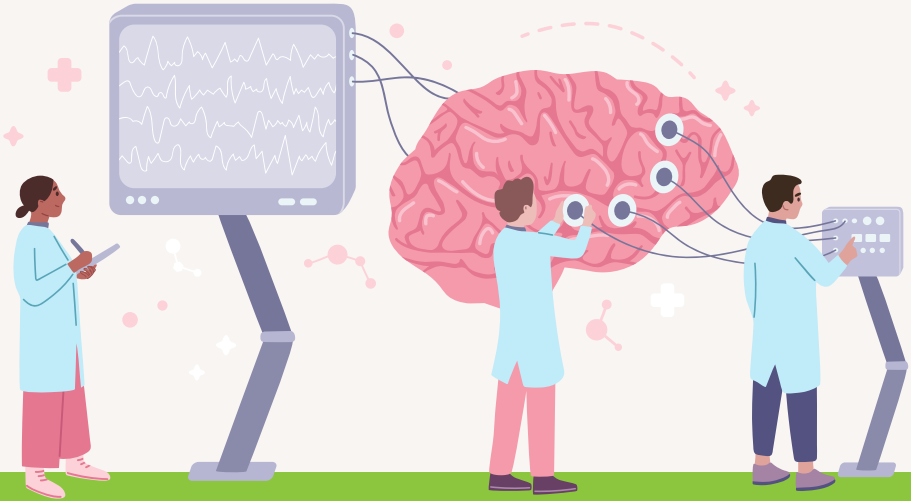
NEUROTECH EU

INSTITUTUL
RoNEURO
CENTRU DE
CERCETARE SI DIAGNOSTIC
AL BOLILOR NEUROLOGICE



UMF
UNIVERSITATEA DE
MEDICINA SI FARMACIE
IULIU HATIEGANU
CLUJ-NAPOCA

BRAIN PRODUCTS
Solutions for neurophysiological research



NEUROTECH EU SUMMER SCHOOL OF QEEG

DATES: 17TH - 21ST JULY 2023

"IULIU HATIEGANU" UNIVERSITY
OF MEDICINE AND PHARMACY CLUJ-NAPOCA



Co-funded by the
Erasmus+ Programme
of the European Union

NEUROTECHEU SUMMER SCHOOL OF QEEG

"IULIU HATIEGANU" UNIVERSITY OF MEDICINE AND PHARMACY CLUJ-NAPOCA | DATES: 17TH - 21ST JULY 2023

PROGRAM

Monday, 17TH July 2023

MEET & GREET. NEUROTECHNOLOGY: EEG BASICS

RoNeuro Institute, 37 Mircea Eliade Street

DAY 1 - BRAIN TECHNOLOGY & EEG BASICS

- | | |
|---------------|--|
| 09:00 - 9:30 | Welcoming participants
Professor Dafin F. Mureşanu, Lecturer Livia Popa |
| 9:30 - 10:00 | Paradigm of Brain Technology and Neuroscience
Professor Dafin F. Mureşanu |
| 10:00 - 10:30 | Neurobiology of EEG Signals
Dr. Diana Chertic |
| 10:30 - 10:45 | Coffee break |
| 10:45 - 11:45 | Overview of EEG Basics
(Montage selection, Signal acquisition, Identifying patterns, Types of activity, Artifacts, Clinical applications) – Part I
Lecturer Livia Popa |
| 11:45 - 12:00 | Coffee break |

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- 12:00 - 13:00 **Overview of EEG Basics**
(Montage selection, Signal acquisition, Identifying patterns, Types of activity, Artifacts, Clinical applications) – Part II
Lecturer Livia Popa
- 13:00 - 14:00 **Lunch break**
- 14:00 - 15:30 **Signal Acquisition – EEG live registration**
Lecturer Livia Popa
EEG Technician Gabriela Perde
- 15:30 - 15:45 **Coffee break**
- 15:45 - 17:00 **Initial Technical Setup**
(Brain Vision Analyzer, Brainstorm – MATLAB)
Teamwork Initiation
Lecturer Livia Popa, Dr. Hanna Dragoş, Dr. Victor Dăbală,
Dr. Diana Chertic, Stud. Vlad Chelaru
- 19:00: **Intercultural Dinner:** get to know the Local Team
& Romanian Cuisine

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"IULIU HATIEGANU" UNIVERSITY OF MEDICINE AND PHARMACY CLUJ-NAPOCA | DATES: 17TH - 21ST JULY 2023

PROGRAM

Tuesday, 18TH July 2023

NEUROTECHNOLOGY: THEORETICAL FOUNDATIONS OF QEEG

UMF, Department of Modern Languages Applied to Medicine, 6 Pasteur Street

DAY 2 - FROM STANDARD EEG TO BRAIN MAPPING USING QEEG. HANDS-ON SESSIONS

- 9:00 - 10:30 **Introduction to QEEG: Data preprocessing, Artifact rejection and reduction (Complex demodulation, Infinite Impulse Response (IIR) filters, Band-rejection filters)**
Lecturer Livia Popa
- 10:30 - 10:45 **Coffee break**
- 10:45 - 11:45 **Independent Component Analysis (ICA).
Principal Component Analysis (PCA)**
Dr. Diana Chertic
- 11:45 - 12:00 **Coffee break**
- 12:00 - 13:00 **Frequency and Time-Frequency Domain Analysis**
Dr. Victor Dăbală
- 13:00 - 14:00 **Lunch break**

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- 14:00 - 16:30 **QEEG Signal Preprocessing (Hands-on)**
Lecturer Livia Popa, Dr. Hanna Dragoş, Dr. Victor Dăbală,
Dr. Diana Chertic, Stud. Vlad Chelaru
- 17:00 - 19:00 **Visit to "Alexandru Borza" University Botanical Garden**

Wednesday, 19TH July 2023

NEUROTECHNOLOGY: QEEG ANALYSES

UMF, Department of Modern Languages Applied to Medicine, 6 Pasteur Street

DAY 3 - BRAIN CONNECTIVITY. HANDS-ON SESSIONS

- 9:00 - 9:45 **Time-domain Connectivity (Correlation, Mutual Information, Cross-Correlation, Granger Causality, Transfer Entropy)**
Dr. Hanna Dragoş
- 9:45 - 10:00 **Coffee break**
- 10:00- 11:15 **Frequency-domain Connectivity (Coherence, Phase Locking Value, Phase Slope Index, Parametric and Non-Parametric Granger Causality)**
Dr. Hanna Dragoş
- 11:15 - 11:30 **Coffee break**
- 11:30 - 12:30 **Source Analysis**
Dr. Diana Chertic

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- 12:30 - 13:00 **Data – from Brainstorm to R**
Stud. Vlad Chelaru
- 13:00 - 14:00 **Lunch break**
- 14:00 - 16:00 **QEEG Feature Extraction (Hands-on)**
Lecturer Livia Popa, Dr. Hanna Dragoş, Dr. Victor Dăbală,
Dr. Diana Chertic, Stud. Vlad Chelaru
- 16:30 **City Guided Tour**

Thursday, 20TH July 2023

NEUROTECHNOLOGY: QEEG AND OTHER TECHNOLOGIES

UMF, Department of Modern Languages Applied to Medicine, 6 Pasteur Street

DAY 4 – QEEG AND OTHER TECHNOLOGIES. HANDS-ON SESSIONS

- 9:00 - 10:00 **QEEG & Functional Magnetic Resonance Imaging (fMRI),
Functional Near-Infrared Spectroscopy (fNIRS), Transcranial
Direct Current Stimulation/ Transcranial Alternating Current
Stimulation (tDCS/tACS), Magnetoencephalography (MEG)**
Dr. Irina Maria Vlad
- 10:00 - 10:15 **Coffee break**
- 10:15 - 10:45 **QEEG & Transcranial Magnetic Stimulation (TMS)**
Dr. Anca Demea

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- 10:45 - 11:15 **QEEG & Eye Tracking (ET)**
Dr. Emanuel Ștefănescu
- 11:15 - 11:30 **Coffee break**
- 11:30 - 13:00 **Projects coordination**
Lecturer Livia Popa, Dr. Hanna Dragoș, Dr. Victor Dăbală,
Dr. Diana Chertic, Stud. Vlad Chelaru
- 13:00 - 14:00 **Lunch break**
- 14:00 - 17:00 **Teamwork (Hands-on)**
Lecturer Livia Popa, Dr. Hanna Dragoș, Dr. Victor Dăbală,
Dr. Diana Chertic, Stud. Vlad Chelaru

Friday, 21ST July 2023 Projects presentation
IMOGEN, Conference Room, 43 Victor Babes Street

DAY 5 - Final Evaluation

- 9:00 - 12:00 **Projects presentation & Assessments of participants**
Lecturer Livia Popa, Dr. Hanna Dragoș, Dr. Diana Chertic,
Dr. Victor Dăbală, MSc. Diana Chira
- 12:00 - 12:30 **Coffee break & Final discussions**
- 13:00 - 14:00 **Closing Ceremony**
Location: IMOGEN, Conference Room, 43 Victor Babes Street

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