**Summer School of Brain Mapping and Stimulation Techniques**

**Blended Intensive Program in the framework of NeurotechEU**

**9th – 13th of September 2024**

**PROGRAM**

**Monday, 9th of September 2024 Meet & Greet**

*Location:* ***Department of Modern Languages Applied to Medicine,*** *6 Louis Pasteur Street*

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| **Day 1 - Intercultural Comprehension. Teamwork**  |
| 09:00 | Welcoming Participants and Registration |  |
| 09:30 | Let's break the ice! Discussion on the Romanian Language with Teachers from the Department of Modern Languages  | Lecturer Maria-Alexandrina Tomoioagă |
| 11:30 | *Coffee break* |  |
| 11:45 | Short Introduction to Romanian Culture | Lecturer Horațiu Crișan |
| 13:45 | *Lunch break (to go)* |  |
| 14:00-19:00**: Trip to Turda Salt Mine & Get to know the Local Team** |

**Tuesday, 10th of September 2024 EEG Basics and QEEG Fundamentals**

*Location:* ***Department of Modern Languages Applied to Medicine,*** *6 Louis Pasteur Street*

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| **Day 2 - From Standard EEG to Brain Mapping using QEEG**  |
| 09:00 | Paradigm of Brain Technology and Neuroscience | Professor Dafin Mureșanu |
| 09:30 | EEG Basics – Part I (Signal Acquisition, Montage Selection, Activation Methods) | Lecturer Livia Popa |
| 10:30 | *Coffee break* |  |
| 10:45 | EEG Basics – Part II (Artifacts, Normal and Pathological EEG Activity) | Lecturer Livia Popa |
| 11:45 | *Coffee break* |  |
| **QEEG Signal Preprocessing** |
| 12:00 | Introduction to QEEG: Data preprocessing, Artifact rejection and reduction (Complex demodulation, Infinite Impulse Response (IIR) filters, Band-rejection filters) | Lecturer Livia Popa,Dr. Hanna Dragoș |
| 13:30 | *Lunch break* |  |
| **Brain Mapping and Brain Connectivity** |
| 14:00 | Independent Component Analysis (ICA) | Dr. Victor Dăbală |
| 14:30 | Frequency and Time-Frequency Domain Analysis. Fast Fourier Transform (FFT). Spectral Analysis | Dr. Victor Dăbală |
| 15:30 | *Coffee break* |  |
| 15:4517:15 | Time-domain Connectivity (Correlation, Mutual Information, Cross-Correlation, Granger Causality, Transfer Entropy) | Dr. Hanna Dragoș |
| **19:00 Intercultural Dinner: Get to know Romanian Cuisine** |

**Wednesday, 11th of September 2024 QEEG Hands-on Session. Eye Tracking in Neurology**

*Location:* ***RoNeuro Institute,*** *37 Mircea Eliade Street*

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| **Day 3 - Brain Connectivity. Hands-on Session**  |
| 09:00 | Frequency-domain Connectivity (Coherence, Phase Locking Value, Phase Slope Index, Parametric and Non-Parametric Granger Causality) | Dr. Hanna Dragoș |
| 10:15 | *Coffee break* |  |
| 10:30 | QEEG Feature Extraction (Hands-on, Teamwork) | Lecturer Livia Popa, Dr. Victor Dăbală, Dr. Hanna Dragoș |
| 12:30 | *Lunch break* |  |
| **Eye Tracking in Neurology** |
| 13:15 | Eye Tracking Essentials | Dr. Emanuel Ștefănescu |
| 14:30 | *Coffee break* |  |
| 14:4515:45 | Eye Tracking and Other Technologies | Dr. Emanuel Ștefănescu |
| **18:00 City Guided Tour** |

**Thursday, 12th of September 2024 Eye Tracking & Brain Stimulation Techniques**

*Location:* ***RoNeuro Institute,****37 Mircea Eliade Street*

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| **Day 4 - Eye Tracking in Neurology. Hands-on Session**  |
| 09:0010:00 | Eye Tracking Applications in Clinical Neurology | Dr. Olivia Verișezan Roșu |
| 10:00 | *Coffee break* |  |
| 10:10 | Eye Tracking Workshop (Hands-on) | Dr. Emanuel Ștefănescu,Dr. Olivia Verișezan Roșu |
| 11:10 | *Coffee break* |  |
| **Brain Stimulation Techniques. Theoretical Aspects** |
| 11:20 | Transcranial Magnetic Stimulation (TMS) | Dr. Anca Grigore |
| 12:20 | Transcranial Direct Current Stimulation (tDCS) | Dr. Bianca Crecan Suciu |
| 13:10  | *Lunch break* |  |
| **Brain Stimulation Techniques. Hands-on Session** |
| 13:45 | TMS and tDCS Workshop (Hands-on) | Dr. Anca Grigore, Dr. Bianca Crecan Suciu |
| 14:4516:45 | Projects Coordination. Teamwork | Lecturer Livia Popa, Dr. Hanna Dragoș, Dr. Emanuel Ștefănescu, Dr. Bianca Crecan Suciu |
| **17:00 – 19:00 Visit to Pharmacy Museum**  |

**Friday, 13th of September 2024 QEEG and Other Technologies**

*Location:* ***Multimedia Hall,*** *8 Victor Babeș Street*

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| **Day 5 - QEEG and other technologies**  |
| 09:00 | QEEG & Functional Magnetic Resonance Imaging (fMRI), Functional Near-Infrared Spectroscopy (fNIRS), Magnetoencephalography (MEG) | Dr. Irina Vlad |
| 09:40 | *Coffee break* |  |
| 09:50 | Projects Presentation & Assessments of Participants | Lecturer Livia Popa, Dr. Victor Dăbală, Dr. Hanna Dragoș, Dr. Emanuel Ștefănescu, Dr. Bianca Crecan Suciu |
| 12:30 | *Coffee break & Final discussions* |  |
| **13:00 – 14:00 Closing Ceremony**  |