



NeurotechEU

The European University of Brain and Technology

D2.5

Learning goals and joint education programmes - Goals

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D2.5 Intended Learning Outcomes for joint education programmes in neurotechnology

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Introduction

The European University of Brain and Technology aims to train the next generation of neuroscience researchers with expertise for a career at the interface between neuroscience and technology: from biology and technology to business, ethics and policy. During phase 2 of the project, the alliance will work towards joint education programmes in neurotechnology in four stages, as described in D2.5 to D2.8. The development of joint education programmes is done in close connection with defining the scientific challenges in neurotechnology (D2.1 till D2.4) to ensure future neurotechnologists are equipped with the competencies to act on current and future neurotechnological challenges in research, innovation, sustainability and societal impact. In this deliverable, D2.5, we define the goals for our joint programmes as a set of intended learning outcomes (ILO).

Within the joint Education and Research & Innovation workgroup, we first collected and compared ILO structures from all alliance partners. Structure and formulation showed significant similarities and commonly followed the three categories of the Dublin descriptors: knowledge, skills and presentation. After discussion in the workgroup, we refined the description of each ILO, specifying it to the field of neurotechnology, leading to the current set. Based on the experience of some of our partners and following discussion within the workgroup, we renamed the ILO set 'presentation' to 'attitude' to better describe the required proactive mindset of future neurotechnologists.

During the creation of joint learning programmes, we will create cross tables for the learning goals of individual courses to cover all ILOs for further accreditation, either on a national or European level. We will monitor this process and update our ILOs whenever necessary.

Intended Learning Outcomes for joint programme in neurotechnology

Goal

The goal of developing a joint Masters' programme in neurotechnology is to train neuroscience researchers with expertise for a career at the interface between neuroscience and technology: from biology and technology to business, ethics and policy.

Knowledge

1. Articulate the knowledge and skills that interface between neuroscience and technology
2. Identify and describe subject-specific knowledge, legal and ethical considerations, and, where relevant, their impact on individual well-being and society at large
3. Identify and describe subject-specific methodologies for data acquisition and analysis

Skills

1. Demonstrate autonomy and teamwork by a) formulating scientifically rigorous research questions; b) selecting appropriate research methodologies; c) establishing objectives, coordinating tasks, and effectively managing time both independently and within team settings; and d) self-assessing and monitoring progress
2. Demonstrate proficiency in assessing, reviewing, and synthesising scientific literature and experimental findings
3. Engage in critical assessment and critique of one's work, performance, and behaviours and that of peers, collaborators, and team members in a way that a) supports the ability to address obstacles and changes, b) supports learning and development processes, and c) guides continuing academic and professional development
4. Integrate technical knowledge and problem-solving skills to generate novel and innovative outputs
5. Plan and assess the implementation of diverse neuroscience and technology applications
6. Identify and apply conflict prevention and resolution strategies to promote productive collaboration and innovation
7. Critically analyse the societal impact of different forms of neurotechnology within diverse social, cultural, and professional contexts
8. Generate and articulate clear, well-structured presentations of subject-specific topics, issues, and data
9. Assess the potential of different forms of neurotechnology to support learning experiences in research, education, and other contexts



Attitudes

1. Embrace the diversity of ideas and approaches within neuroscience and technology
2. Demonstrate respect and appreciation of equity, diversity and inclusivity of diverse perspectives, backgrounds, and experiences (e.g. individual, cultural, and social)
3. Actively engage in collaborative endeavours across disciplinary boundaries
4. Display a reflective and analytical, problem-solving mindset, capable of handling complexities, obstacles, and uncertainties
5. Exhibit intellectual independence and sound judgment in research while upholding the highest standards of scientific integrity and ethical conduct
6. Demonstrate understanding of the possibilities and limitations of neuroscience and technology

