Applied Neuroscience

Module Information

2022.01, Approved

Summary Information

Module Code	7103BRAIN
Formal Module Title	Applied Neuroscience
Owning School	Psychology
Career	Postgraduate Taught
Credits	20
Academic level	FHEQ Level 7
Grading Schema	50

Teaching Responsibility

LJMU Schools involved in Delivery
Psychology

Learning Methods

Learning Method Type	Hours
Lecture	26
Practical	6
Workshop	10

Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
JAN-CTY	CTY	January	12 Weeks

Aims and Outcomes

Aims	To provide an understanding of methods in neurophysiology and psychophysiology from the perspective of applied research. To provide students with a technical background in signal treatment and analyses for these methods and examples of their application in the real-world.

After completing the module the student should be able to:

Learning Outcomes

Code	Number	Description
MLO1	1	Understand the basis of neurophysiological and psychophysiological methods with respect to biological underpinning, technical apparatus and signal analyses.
MLO2	2	Critically assess the use of neurophysiological and psychophysiological methods for applied research.

Module Content

Outline Syllabus	This module focuses on methodologies from neurophysiology and psychophysiology and how these methods can be applied to research in the real-world. Specifically, the module is constructed around four methodologies, one derived from neurophysiology: Electroencephalograph (EEG) and three from psychophysiology: Electrocardiography (ECG), Pupillometry and facial Electromyography (fEMG). The module will provide a detailed description of each method, associated apparatus and the protocol for signal analyses. Lectures will be paired with practical sessions where students will be able to gain hands-on experience with apparatus and associated data. The module will consider these methodologies from the perspective of applied research via examples drawn from a number of real-world applications, such as: transportation human factors (aviation, driving, maritime), brain-computer interfaces, listening effort and assessment of emotions for marketing.
Module Overview	This practical module introduces you to research methods used in neurophysiology (EEG) and psychophysiology (ECG/fEMG). Lectures will be paired with practical sessions where students gain hands-on experience with apparatus and associated data. You will learn how these research methodologies are being applied in the real world in areas such as transportation, brain-computer interfaces and marketing.
Additional Information	Building on what they have learned about the design and analysis of neuro-scientific studies in semester 1, this module will introduce students to additional neuro-physiological and psychophysiological techniques and emphasise the additional technical challenges of conducting this research outside the laboratory in real world settings.The module is designed to provide students with a technical grounding in four neuro/psychophysiological methods, from the underpinning biological processes to the treatment of signals. The module will allow the students to develop a critical perspective by introducing them to methodological issues surrounding data capture, such as electrical noise, physical artefacts etc, and the process of inference, i.e. how to accurately interpret these data.

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Presentation	Presentation	25	0	MLO1, MLO2
Report	Research Proposal	75	0	MLO1, MLO2

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
Stephen Fairclough	Yes	N/A

Partner Module Team

Contact Name	Applies to all offerings	Offerings