University of the
West of England

MODULE SPECIFICATION

Code: USPJLT-20-3 **Title:** Methods in Neuroscience Research **Version:** 3

Level: 3 **UWE credit rating:** 20 **ECTS credit rating:** 10

Module type: Standard

Owning Faculty: Health and Life Sciences **Department:** Psychology

Faculty Committee approval: Date:

Approved for Delivery by: N/A

Valid from: September 2013 **Discontinued from:**

Pre-requisites:

USPJLC-30-2 Cognitive and Developmental Psychology 2 or
USPJDH-20-2 Aspects of Cognition

Co-requisites:

None

Entry Requirements:

This might be taken up if module developed to MSc/CPD

Excluded Combinations:

None

Learning Outcomes:

The student will be able to:

- critically evaluate cognitive neuroscience research, from a wide range of measures;
- plan, design and collect cognitive neuroscience data from a range of psychophysiological equipment;
- evaluate and contrast the benefits and disadvantages of a range of measures;
- apply theoretical knowledge of experimental design to practical data collection, and in critical analysis of published research;
- use one or more psychology-based experimental packages to programme and run psychophysiological / neurophysiological experiments.

Syllabus Outline:

Course content will vary from year to year depending on the nature of staff interests and expertise. Core content will be taken from the following:

Design of cognitive neuroscience experiments, with particular emphasis on end-analytic data structure; Data analytic techniques and methods will be taught, along with consideration of the issues underlying different comparisons made with different technologies.

Programming relevant experiments in psychology based experimental packages, e.g. Superlab or Eprime;

Knowledge and understanding of key essential experimental paradigms used within cognitive neuroscience;

Practical collection of data from several different sources of equipment including Biopac, EEG (electroencephalography) and Eye-tracking.

Technologies that might be covered without a practical element will be: fMRI (functional Magnetic

Resonance Imaging); MEG (Magnetoencephalography); PET (Positron Emission Tomography); CT (Cortical Tomography); TMS (Transcranial Magnetic Stimulation)

Population sampling, and issues with special populations

Teaching and Learning Methods:

The module will consist of lectures and practical sessions, in which students put into practice the theoretical, practical or experimental issue being taught.

Assessment will consist of a portfolio element from a range of psychophysiologial and computer-based equipment and programmes available.

Reading Strategy:

All students will be encouraged to make full use of the print and electronic resources available to them through membership of the University. These include a range of electronic journals and a wide variety of resources available through web sites and information gateways. The University Library's web pages provide access to subject relevant resources and services, and to the library catalogue. Many resources can be accessed remotely. Students will be presented with opportunities within the curriculum to develop their information retrieval and evaluation skills in order to identify such resources effectively.

Any **essential reading** will be indicated clearly, along with the method for accessing it, e.g. students may be expected to purchase a set text, be given or sold a print study pack or be referred to texts that are available electronically, etc. This guidance will be available either in the module handbook, via the module information on Blackboard or through any other vehicle deemed appropriate by the module/programme leaders.

If **further reading** is expected, this will be indicated clearly. If specific texts are listed, a clear indication will be given regarding how to access them and, if appropriate, students will be given guidance on how to identify relevant sources for themselves, e.g. through use of bibliographical databases.

Indicative Reading List:

Neuroscience an introduction, (2006). J.F.Stein & C.J.Stoodley. Wiley, Chichester

Methods in mind (cognitive neuroscience), (2006) C. Senior. MIT Press, Cambridge MA

Philosophical foundations of neuroscience, (2003) M.R. Bennett and P.M.S. Hacker, Blackwell, Oxford UK (Library class mark:)

Principles of Neural science, (2000), E.R. Kandel, J.H. Schwartz and T.M. Jessel. McGraw-Hill, New York

Principles of Frontal Lobe Function, (2002). D.T. Stuss & R.T. Knight. OUP, New York

Electrophysiology of Mind, (1995) M.D. Rugg & M.G.H. Coles

The Cognitive Electrophysiology of Mind and Brain. (2009). A. Zani & A. Proverbio. Academic Press, Amsterdam

Assessment:

Weighting between components A and B (standard modules only) A: 40% B: 60%

FIRST ATTEMPT

First Assessment Opportunity

Component A *(controlled)*	**Element Wt (Ratio)**
Description of each element	*(within Component)*
CW1 Exam Critical evaluation of seen Research paper (Assessment Period 2)	1

Component B		**Element Wt (Ratio)**
Description of each element		*(within Component)*
CW2	Portfolio of coursework	**Final Assessment** 1

Second Assessment Opportunity (Resit) further attendance at taught classes is not required

Component A *(controlled)*		**Element Wt (Ratio)**
Description of each element		*(within Component)*
CW1	Critical evaluation of a seen Research paper (Assessment Period 3)	1

Component B		**Element Wt (Ratio)**
Description of each element		*(within Component)*
CW2	Critical evaluation of four neuroscience methods, length 2,500-3,000 words	**Final Assessment** 1

<u>EXCEPTIONAL</u> SECOND ATTEMPT Attendance at taught classes is not required.

Specification confirmed by ……Date ……
(Associate Dean/Programme Director)