Graduate School of Education

MSc in Neuroscience and Education

(NsE)

Supplement to
M-level Handbook 2013/14

http://www.bris.ac.uk/education/students/masters/neuroscience/

1 Introducing the MSc in Neuroscience and Education

1.1 Aims of the programme

The main aims of the programme are:

- To enrich your knowledge and understanding of education and learning with insights arising from the scientific perspectives of mind and brain.
- To equip you with current, relevant and confident knowledge of the neurobiological mechanisms by which individual grow to maturity and maximise their full potential, including the impact of environmental factors, especially education, on the neural processes underlying cognition, language, social and emotional development.
- To inspire your interest in cognitive neuroscience and its relevance for enhancing the educational experiences of children and adults, and provide understanding of the ways in which discrimination and disadvantage can be counteracted.
- To promote your commitment to critical, scholarly, research-oriented approaches to applying concepts from cognitive neuroscience to educational contexts, and to evidence-based decision making in educational policy and practice that draws on peer-reviewed research from the sciences of mind and brain.
- To develop your skills of description, analysis and evaluation to enable you to read and use research evidence in a principled and systematic way.
- To develop your ability to generate and test ideas and evidence.
- To provide you with basic competence in methods of research (quantitative, qualitative) including ethical issues, design, implementation, statistical and qualitative analysis, strategies for evaluation.
- To develop your understanding and application of theory and practice to each other.
- To enable you to develop frameworks for evaluating and using research knowledge in ways appropriate to your own individual teaching environment.

The approach to teaching and learning will enable you to:

- reflect on your own professional experience and practice
- develop your capacity to plan and manage your own learning confidently and effectively
- develop critical reading, writing and research skills appropriate to future development, including in respect of interpersonal skills in communication, in task definition, and in time management
- enable you to consider how the skills you develop may be facilitated in others

The main aims of this programme are:

- to enable students to make links between theory (drawn from psychology, cognitive science, communications, sociology, education) and the use of ICT in educational settings;
- to enable students to implement a wide range of strategies for using new technologies in effective teaching and learning situations.

1.2 The Programme Team

Programme Co-ordinator:

Dr Paul Howard-Jones, Reader in Neuroscience and Education paul.howard-jones@bris.ac.uk,

Room 114, tel. 0117 3314496

Student Services Office:

Room 108, tel. 0117 3314417 – Jen Williams

MSc NeS email address (this is general for all GSoE masters course – so remember to indicate which course you're on): ed-masters-students@bristol.ac.uk

Tutors

Dr Paul Howard-Jones	Paul.Howard-Jones@bristol.ac.uk
Dr Tim Jay	Tim.jay@bristol.ac.uk
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Dr. Neil Ingram	Neil.ingram@bristol.ac.uk
Dr Jo Rose	Jo.rose@bris.ac.uk

1.3 Course Structure

The programme is based upon a principle of credit accumulation so that students who have gained the 120 credit points from coursework which are needed for Post-graduate Diploma may proceed to the Master of Science degree (MSc) and carry out a dissertation (60 credits).

A total of 180 credits are necessary for students to be awarded the MSc Degree. Alternatively students may opt to study for a Postgraduate Certificate (60 credits) or Postgraduate Diploma (120 credits).

All the taught units in the programme are offered at the same level (Level M) and so count towards the MSc, Post-graduate Diploma and Post-graduate Certificate.

All taught units consist of 20 credit points. A unit of 20 credit points normally has the following components:

- 20 hours contact time (including teaching, tutorials and assignment supervision)
- 180 hours (minimum) of associated study time (reading, individual tutorials, assignment preparation)
- the submission of an assignment (the nature of the assignment will differ from unit to unit but will usually involve a written assignment and/or the production of a piece of digital work).

The dissertation, which should be 15,000 words, contributes the final 60 credit points to the MSc degree. This provides an opportunity for you to work on a one to one basis with a tutor/supervisor exploring a topic of professional relevance in some depth. You will normally focus on a topic related to your specialist area of interest and may conduct a small-scale piece of research as part of the dissertation.

The programme can be taken full time (1 year) or part time (up to 5 years).

Please refer to the main M-level Handbook 2013/14 for more on the structure of Masters courses.

1.4 Elements of the MSc NeS programme

The elements of the programme are:

- 4 Core units (80 credits) as listed below
- 2 Optional units (40 credits) which may be taken from the list below or from elsewhere on the Masters programmes in the GSoE
- Dissertation (60 credits)
- Other optional (non assessed) workshops

1.4.1 Core units

The following 4 units form the core of the degree programme:

* **Brain, Mind and Education** (20 Credits)

* **Cognition and Learning** (20 Credits)

*** Issues in Neuroscience and Education** (20 Credits)

and

* **Introduction to Educational Inquiry** (20 Credits)

1.4.2 Optional units

Those wishing to focus on educational application may wish to include:

* Digital Design for Mind, Brain and Education (20 Credits)

* Social and Socio-cultural Psychology (20 credits)

You are also able to choose optional units from the wide range of Masters-level units available at the Graduate School of Education (see http://www.bris.ac.uk/education/programmes/masters/) and Faculty of Social Sciences in order to further focus your studies on key areas of interest.

Those interested in pursuing further research studies (e.g. MPhil/PhD) may also choose one or more of the following 10 credit units taught by Experimental Psychology:

* Functional Neuroanatomy and Neuroscience Methods (10 Credits)

* Applied Neuropsychology(10 Credits)

* The Magnetic Resonance Imaging (MRI) Summer School (10 Credits)

Students wishing to pursue “Functional Neuroanatomy and Neuroscience Methods” or “Applied Neuropsychology” are expected to already possess degree level expertise in psychology.

Students also have to the option (subject to approval) of pursuing a Supervised Individual Study unit, which involves working independently under the guidance of a tutor on a topic not covered by the available units. These can provide 10 credits or 20 credits. The 10 credit SIS is helpful in allowing you flexibility in choosing from optional units (e.g. if you choose just one, or all three, of the 10 credit units based in Experimental Psychology, you may also be able to choose a 10 credit SIS as well).

The choice of all optional units should be negotiated with your personal tutor at the beginning of the year.

1.4.3 NsE Workshops

These additional programmes of support include weekly workshops and seminars throughout the year. Timetables will posted in Blackboard.

1.4.4 M-BESC seminars

These are seminars organised by the Centre for Mind and Brain in Educational and Social Contexts in the Graduate School of Education and include internal and external speakers. Seminars are advertised on our website: http://www.bris.ac.uk/education/people/group/centre/3125

1.5 Outlines of the Taught Units

The following is a brief overview of all core units on this progamme and recommended optional units. The readings included in the description of each unit will be complemented with other bibliography posted in Blackboard. The tutors will point you to the most relevant readings in the sessions.

1.5 Core Units

1.5.1 EDUCM5404 Brain, Mind and Education

Unit Director: Paul Howard-Jones

Attendance: 10 sessions of 2 hours.

Credits: 20

Aims of the Unit:

During the unit students should be in a position:

- To develop an understanding and critical appreciation of current models of mind/brain/behaviour relationships, focusing particularly upon those issues pertinent to learning in educational contexts.
- To facilitate access to primary neuroscientific literature that is of interest to those involved with education.
- To develop a critical awareness of the insights and limitations of techniques such neuroimaging in the investigation of cognitive mechanisms, developmental disorders and the effects of psychopharmacological drugs.
- To develop awareness of recent research in areas of cognitive neuroscience pertinent to education and its relationship to evidence arising from other disciplines

Learning Outcomes

By the end of the unit students will be able to demonstrate that they can:

- Explain the basic terminology, principles and concepts associated with the central nervous system and neurocognition, including basic neurochemistry and neurophysiology of nerve transmission, the structure and organisation of the CNS, cortical localisation of function, and the biological basis of psychological abnormalities,.
- Explain the current understanding of mind/brain/behaviour relationships, and how their investigation requires a multidisciplinary approach that includes empirical behavioural data, physiological measurements (e.g. neuroimaging), observation and evolutionary perspectives.
- Explain, in terms of neurocognitive function, aspects of perception, attention, learning, memory, motivation & emotion, sleep and arousal, and their significance in developmental and educational contexts.

- Explain, in neurocognitive terms, the current understanding of a range of developmental disorders pertinent to education, and the actions of psychopharmacological drugs in terms of their influence upon brain mechanisms (e.g. Methylphenidate in the treatment of ADHD).
- Make links/connections and recognise associations/relationships between the neurocognitive concepts explained in this unit and concepts encountered elsewhere, including those associated with developmental disorders such as dyslexia.

Methods of teaching

The teaching strategy will employ two broad approaches, where appropriate, with the aims of contextualising as well as theorising concepts, developing student autonomy and promoting individualised study and support. These approaches will also encourage development of the oral, written and team-working skills required to discuss and explore concepts in small and larger groups.

Face to face teaching

Large and small group teaching methods will include presentations by staff and students, discussion, analysis of preparatory texts and practical tasks involving anatomical models.

ELearning

ELearning approaches will augment face-to-face teaching to facilitate individualised study and support within the broad parameters of the unit and the pathway. These will include: on-line discussion, online supervision and peer mentoring/feedback.

Unit Syllabus

This unit is aimed chiefly at providing those students pursuing the psychology of education pathway understanding of the complex interrelationship of mind, brain and behaviour. It will include those areas of biological psychology required for BPS accreditation not currently covered by other taught units. It will also provide additional insights into areas of cognition covered in non-biological terms elsewhere, including developmental disorders and the role of psychopharmacological drugs in their management. It will draw heavily upon the new and rapidly developing field of cognitive neuroscience.

Assignment

Assessment begins with a written, multiple-choice question (MCQ) examination on brain anatomy, development and function (~25%). However, the assignment will arise chiefly (~50%) from a written account of a learning experience, developmental disorder or process that is pertinent to education, making appropriate and extensive use of the terminology, principles and concepts associated with the central nervous system and neurocognition. In negotiation with tutors, students will identify an appropriate and individualised context for their assignment by drawing upon their own experiences/interests and exploring their chosen context in terms of neurocognitive function. They will be expected to analyse relevant texts and synthesise concepts from cognitive neuroscience, psychology and education, make links/connections and recognise associations/relationships between these concepts, and draw upon current understanding of mind/brain/behaviour relationships. They will be expected to develop balanced arguments that reflect a multidisciplinary awareness and an ability to contextualise concepts, and draw appropriately upon a wide range of evidence that includes empirical behavioural data, physiological measurements (e.g. neuroimaging), observation and evolutionary perspectives.

To ensure that all students are setting off with an appropriate topic for their essay and have made contact with some rigorous research in their chosen area, a power-point poster is also required that outlines your topic. This preparation for your essay will also be assessed (~25%).

Assessment of the Unit

Each component of the assignment (MCQ test, poster and essay) contributes approximately 25%,

25% and 50% to students' final grade for this unit. Experiencing the assignment in 3 parts has been arranged in order to provide students with valuable formative support to help develop their abilities and direction prior to tackling the essay. The MCQ test chiefly assesses knowledge, and students will receive a score for their MCQ test result during the period of taught lectures. The poster assesses students' initial direction and preliminary understanding of their chosen topic, and some written feedback on the poster will be provided before students must commence writing their essay.

Ultimately, however, students will not receive a breakdown of how each part has contributed to their final grade. Instead, formal assessment of the unit involves a "portfolio" approach, in which assessment of student achievement under each criterion in the handbook (knowledge, understanding, approach etc) draws on evidence from all 3 parts *taken together*. To clarify, you will be provided with a single grade and comments (as with most other units) that reflects your performance on the whole assignment, according to the criteria in this handbook.

Reading List

Howard-Jones, P. (2010) Introducing Neuroeducational Research, Abingdon: Routledge.

Ward, J. (2010) A Student's Guide to Cognitive Neuroscience (2nd Edition). New York: Psychology Press.

Blakemore, S-J and Frith, U. (2005) *The Learning Brain: Lessons for Education*, Oxford: Blackwell Publishing.

Gazzaniga, M.S., Ivry, R.B. and Mangun, G.R. (2002) *Cognitive Neuroscience: the biology of the mind*, NY: WW Norton and Company.

Pinel, J. (2006) *Biopsychology*, 6th edition, New York: Allyn and Bacon.

1.5.2 EDUCM5401 Cognition and Learning

Unit Director: Tim Jay

Credits: 20

Aims of the Unit:

During the unit students should be in a position to:

- develop an understanding of cognitive psychological processes.
- examine how such cognitive processes underpin behaviour in children and adults.
- examine factors associated with cognitive development during childhood.
- review research in cognitive psychology, including the methods by which data are collected, analysed and interpreted.
- develop a critical awareness of theories and models of cognitive processes and the evidence that supports them.
- gain practical experience of carrying out experimental research, both as experimenter and participant.
- develop skills in reading and writing cognitive psychological research.
- make links between the brain, cognition and behaviour.
- apply knowledge of cognitive processes to success and failure in educational domains.

Learning Outcomes

By the end of the unit students will be able to demonstrate that they:

- understand current approaches to studying cognition and cognitive development.

- have practical experience of carrying out research in cognition and preparing a research report.
- are able to critique current theoretical models and theories in cognition and the evidence that supports them.
- are skilled in reading, summarising, critiquing, and writing literature in the area of cognitive psychology.
- are able to reflect on the role of cognition in performance across a range of educational domains.

Methods of teaching

Each session will combine a number of teaching methods including tutor dissemination of key ideas, discussion between students, reviewing relevant literature, plus activities designed to foster skills relevant to cognitive psychology, such as carrying out a research practical.

Unit Syllabus

This unit presents students with fundamental principles and knowledge in the domain of cognitive psychology including: perception; comprehension; conceptual knowledge; learning; skill acquisition and expertise; memory: encoding and retrieval processes, working memory, autobiographical memory, episodic and semantic memory, implicit and explicit memory, memory improvement; thinking and reasoning, problem solving and decision making; language: structure, comprehension, production, reading; information processing and connectionist models of cognition. Students will learn about research methods appropriate to the study of cognition and cognitive development. They will also study key issues in the development of cognition, such as the development of language, number and drawing, cognitive change in the school years, and the role of cognition in educational attainment.

Timetable (May be subject to change)

Week	Date	Topic
1	10th October	Introduction to the course. Overview of research methods in cognitive psychology
2	17th October	Perception
3	24th October	Memory and forgetting
4	31st October	Working memory + writing up experimental method
5	7th November	Applications of memory + doing a literature search
6	14th November	Psychology of language + writing a literature review
7	21th November	Psychology of learning + handling results
8	28th November	Connectionist approaches to learning + writing an introduction
9	5th December	Reasoning + writing an abstract
10	12th December	Mathematical reasoning

Assignment

The assignment for this unit will take the form of a report of a cognitive psychology experiment. Experiments will be conducted in class during the first three sessions of the unit, and you will write up one of these for the assignment. The specific details of these practical sessions and the resulting assignment will be distributed nearer to the time. However, if students are keen to carry

out some preparation for this assignment, they are advised to make themselves familiar with the conventions of writing up quantitative research in psychology.

Reading List

We will not be able to cover *all* of the areas of the syllabus in equal depth during our face-to-face teaching sessions. As Master's students you are expected to carry out independent study to support these teaching sessions. A number of good textbooks on cognitive psychology exist and will provide useful information on topics that were not covered in the sessions as well as those that are. Suggested textbook titles include:

Ashcraft, M.H. (2005). Cognition (4th Ed). Upper Saddle River, NJ: Pearson Prentice Hall. (BF371 ASH)

Eysenck, M.W. & Keane, M.T. (2005). Cognitive Psychology: A Student's Handbook (5th Ed). Hove: Psychology Press. (BF311 EYS)

Matlin, M.W. (2005). Cognition (6th Ed). New York: Wiley. (BF311 MAT)

Other suggested reading

Anderson, J. R. (2007). *How can the human mind exist in the physical universe?* Oxford University Press. ISBN: 978-0-19-532425.

Baddeley, A.D. (1996). *Human memory: Theory and practice*. London: Erlbaum. ISBN: 0-86377-431-8.

Garnham, A. & Oakhill, J. (1994). *Thinking and reasoning*. Oxford: Basil Blackwell. ISBN: 0-631-17002-2.

Goswami, U. (Ed.) (2002). *Blackwell handbook of childhood cognitive development*. Oxford: Blackwell. ISBN: 0-631-21841-6.

Meadows, S. (2006). The c*hild as thinker: Development and acquisition of cognition in childhood*. London: Routledge. ISBN: 0-415-01143-4.

Oates, J. & Grayson, A. (2004). *Cognitive and language development in children*. The Open University. ISBN: 1-4051-1045-7.

Where different editions are available, students are advised to read the most recent one.

1.5.3 EDUCM001 - Issues in Neuroscience and Education

Unit Director: Paul Howard-Jones

Credits: 20

Aims of the Unit:

- To develop a critical awareness of how concepts claiming to involve the brain arise in the cultural, social, economic and political discourse around education
- To develop a critical consideration of the validity of arguments involving the brain that are encountered in educational contexts
- To critically analyse recent initiatives, key research findings and current theoretical frameworks in the field of neuroscience and education.
- To review critically the past, present and potential contribution made by neuroscience to educational research, theory, practice and policy.
- To develop students' critical understanding of their own professional practice in relation to current understanding of the brain

Learning Outcomes

By the end of this unit students should be able to:

- Demonstrate an awareness and understanding of how concepts claiming to involve the brain arise in the cultural, social, economic and political discourse around education
- Critically appraise the validity of a range of arguments involving the brain that are encountered in educational contexts
- Demonstrate an awareness of recent initiatives, and an understanding of a range of key research findings and current theoretical frameworks in the field of neuroscience and education
- Critically assess the past, present and potential contribution of neuroscience to educational research, theory, practice and policy
- Critically reflect on their own professional practice in relation to current understanding of the brain

Methods of teaching

A variety of teaching strategies will be used to deliver this unit, which may include whole group lectures, visiting speakers, case studies, critical analysis of key readings, group discussions and student presentations. ELearning approaches will augment face-to-face teaching to facilitate individualised study and support within the broad parameters of the unit and the pathway. These will include: on-line discussion, online supervision and peer mentoring/feedback.

The needs of a wide range of students, including those with disabilities, international students and those from ethnic minority backgrounds have been considered. It is not anticipated that the teaching and assessment methods used will cause disadvantage to any person taking the unit. The Graduate School of Education is happy to address individual support requests as necessary.

Unit Syllabus

Neuroscience is a relatively new but rapidly growing influence upon educational thinking. This unit introduces students to how concepts claiming a brain-basis already feature in the educational discourse around pedagogy (e.g. "brain-based" learning) and policy (e.g. critical periods and early investment). It will enable examination of the validity of such concepts, through an understanding of the relevant research in psychology, neuropsychology and developmental cognitive neuroscience. Students will also encounter a range of current 21st century ethical debates in education involving the brain (e.g. infant screening, adolescent behaviour and responsibility, pharmacological treatment of ADHD, cognitive enhancing drugs for the healthy).

Students will explore recent initiatives, key research findings and current theoretical frameworks at the interface of education with the sciences of mind and brain. Through discussion and critical debate, they will develop the skills to critically review the past, present and potential contribution made by neuroscience to educational research, theory, practice and policy. Students will come to understand the central role of psychology in relating mind, brain and behaviour in these applied contexts. The unit also provides opportunities for students to consider their own professional

practice in relation to current understanding of the sciences of mind and brain.

Assignment

The assessment comprises two parts:

i) Students will be required to provide a presentation identifying an educational practice, theory or policy issue where neuroscientific evidence is, or has been alleged to be, relevant. The presentation will outline the arguments involved, and the scope of the evidence that might be included in developing a multiperspective understanding (attending to experiential, social and biological perspectives as appropriate). (1000 words equivalent)

i) Students must provide 3000 word essay that explores the arguments involved with this topic in detail, drawing on the relevant evidence from neuroscience, psychology, education, and other disciplines as appropriate. Students must develop a balanced appraisal that interrelates evidence to arrive at a clear set of conclusions.

The 3000 word essay should include a 300-500 summary suitable for public communication of the key facts related to the chosen topic.

Reading List

Blakemore, S. J. and Choudhury, S. (2006) Development of the adolescent brain: Implications for executive function and social cognition. *Journal of Child Psychology and Psychiatry*, 47, 296–312.

Catherine, S., Burnett, S., and Blakemore, S. (2008) "Neuroscience of Social Cognition in Teenagers: Implications for Inclusion in Society." *Mental Capital and Wellbeing, State-of-Science Reviews* (London, Government Office for Science).

Della Sala, S., & Anderson, M. (Eds.). (2012). *Neuroscience in Education: The good, the bad and the ugly*. Oxford: Oxford University Press.

Greely, H., Sahakian, B., Harris, J., Kessler, R. C., Gazzaniga, M. S., Campbell, P., et al. (2008). Towards responsible use of cognitive-enhancing drugs by the healthy. *Nature, 456*, 702 - 705.

Heinrichs, J. H. (2012). The promises and perils of non-invasive brain stimulation. [Article]. *International Journal of Law and Psychiatry, 35*(2), 121-129.

Howard-Jones, P.A. (2010) *Introducing Neuroeducational Research*, Abingdon: Routledge.

Hyatt, K. J. (2007) Brain Gym: Building stronger brains or wishful thinking? *Remedial and Special Education*, 28, 117–124.

Kratzig, G. P. and Arbuthnott, K. D. (2006) Perceptual learning style and learning proficiency: A test of the hypothesis. *Journal of Educational Psychology*, 98, 238–246.

Royal Society (2011) *Brain Waves Module 2 Final Report: Neuroscience, Education and Lifelong Learning,* London: Royal Society.

van Gog, T., Paas, F., Marcus, N., Ayres, P. and Sweller, J. (2008) The mirror neuron system and observational learning: Implications for the effectiveness of dynamic learning. *Educational Psychology Review* 21(1), p21-30.

Waterhouse, L. (2006) Multiple intelligences, the Mozart effect, and emotional intelligence: A critical review. *Educational Psychologist*, 41, 207–225.

Weisberg, D.S., Keil, F.C., Goodstein, J., Rawson, E., and Gray, J. (2008) The Seductive Lure of Neuroscience Explanations, *Journal of Cognitive Neuroscience*, 20.3, 470-77.

1.5.4 EDUCM5000 Introduction to Educational Inquiry

Unit Director: Jo Rose

Credits: 20

Aims of the Unit:

- To present the main philosophical and methodological positions within social science research with special reference to research in education
- To appreciate the importance of critically engaging with research literature
- To enable students to understand and to engage with the process of research design and its conduct.
- To introduce students to issues in data collection and analysis
- To help prepare students for undertaking an empirically-based dissertation
- To enable students to enrich their reading and understanding of research literature that they engage with in other Masters courses

Learning Outcomes

By the end of the unit students will be able to demonstrate that they can:

- Read critically, and summarise, research-related documents, which have employed a range of research approaches and methods based on differing epistemologies
- Formulate a research question and an appropriate research design
- Critically engage with issues of ethics, validity, trustworthiness and reliability in relation to research
- Have the skills and confidence to read research and evaluation reports that are work place related
- Have the skills and confidence to be able to conduct research, as may be necessary within their professional capacity
- Have made decisions regarding their future learning needs, in particular in the area of data collection and analysis techniques (this is particularly important for those likely to be undertaking a dissertation)

Methods of teaching

Teaching consists of a one-hour tutor-led lecture session followed by a tutor-facilitated seminar session consisting of group work activities. The tutor led lecture session will take the form of a presentation of key concepts and issues. Wherever possible these will be illustrated with examples of research in the Graduate School of Education.

Within the seminar sessions students will be supported to design a research project in small groups, enabling them to get a more ‘hands on’ feel to doing research.

Unit Syllabus

This course provides an introduction to the variety of methods used to conduct research in education. It engages students in the key debates surrounding educational research and its importance in developing educational policy and improving educational processes. The question of what constitutes good educational research is addressed and students will be encouraged to develop strategies to better understand and critique the immense variety of educational research reported in books and journals.

In this course, students are introduced to the entire process of conducting educational research from the initial stages of thinking about research questions to designing a project, choosing particular methodologies and methods. Students are encouraged to look at this from a political and

philosophical as well as an educational perspective and also to consider and reflect on the key issues that educational researchers face, including how it is possible to ensure good ethical practice.

Assignment

All students are required to write a 4,000-word research report of the qualitative project carried out during the unit.

Reading List

Brown A. & Dowling P. (1998) Doing Research / Reading Research: A mode of interrogation for Education, London: Falmer Press.

Coleman, M. & Briggs, A.R. (eds) (2002) Research Methods in Educational Leadership and Management, London: Paul Chapman Publishing.

Clough, P. & Nutbrown, C. (2002) A Student's Guide to Methodology: justifying enquiry, London: Sage.

Crotty, M. (1998) The Foundations of Social Research: meaning and perspective in the research process, London: Sage.

Denscombe, M. (2003) The Good Research Guide: for small-scale social research projects, Maidenhead: Open University Press.

Punch, K.F. (2001) Introduction to Social Research: quantitative and qualitative approaches, London: Sage.

Punch, K.F. (2009) Introduction to Research Methods in Education. London: Sage

Robson, C. (2002) Real World Research: a resource for social scientists and practitioner-researchers 2nd ed. Oxford: Blackwell

1.6 Other Units (including recommended optional units)

1.6.1 Digital Design for Mind, Brain and Education – EDUCM5811

Unit Director: Paul Howard-Jones

Credits: 20

Aims of the Unit:

- To develop an awareness of how current models of learning can support the design of technology aimed at supporting learning.
- To develop a critical awareness of the many, complex and interacting factors influencing effective design of technology aimed at supporting learning.

Learning Outcomes

By the end of the unit students will be able to demonstrate that they can:

- Follow a user-based process in the design and development of a learning resource for implementation on a computer platform.

- Integrate user feedback, concepts from educational research and knowledge regarding human-computer-interaction to make reflective and cogent design decisions regarding educational technology.
- Reflect critically upon processes and outcomes arising from attempts to design and implement educational technology, demonstrating a critical awareness of the relationship between design and learning in context.

Methods of teaching

The course will be taught face-to-face, but will be supported by a virtual online learning environment (e.g. to communicate with fellow students, with the lecturing staff, to obtain administrative details about the course, to access course materials and submit coursework).

Students will work in groups to support collaborative learning, applying feedback on their design idea and their plans for a suitable design process by which to develop it. The principle teaching and learning methods will include the following:

- Lectures: to present the main concepts of the syllabus.
- Workshops: to reinforce ideas and encourage understanding through individual and group work, and through interaction with examples of educational technology design
- Case studies: to ground the work within the professional context and provide real life examples
- Engagement with online resources: to reiterate face-to-face activities, to supplement and support, to provide revision or associated materials and resources, and to offer extension activities and links to further sector-specific information.

Unit Syllabus

This unit will introduce students to the design of technology for learning. Through critical analysis of existing products and case studies that provide insights into design processes, the unit offers engagement with the many interacting factors that contribute to effective and innovative applications of technology within educational contexts. It will bring together concepts spanning education and the sciences of mind and brain to help students acquire fresh insights into learning with educational technology. As well as concepts from psychology and neuroscience, it will introduce the principles of effective user-based design and issues of Human Computer Interaction (HCI), and draw upon insights from non-educational contexts such as gaming.

The unit will: introduce students to the processes of designing effective computer-based learning environments such as virtual learning environments and web-based resources; provide students with an understanding of pedagogical issues influencing the successful design, development and implementation of technology intended to support learning; provide students with the knowledge and skills required to design, develop and evaluate computer-based learning environments

Session	**Content** *(milestones in italics = work to be completed between sessions)*
	300 word Initial Idea for Session 1 and 3-4 key questions about your design idea that might be answered by including users
1	**Current trends and designing with users** Within your group, you will discuss your initial idea, collecting questions
	Develop a learning brief (100 words)
2	Social and Cognitive Perspectives on Design Write down your learning brief and, from your group, collect feedback on it. Also during this session, you will identify some research areas that are relevant to your design process, collect “leads” on other literature

	Identify relevant research, be able to provide a 250 word summary for Session 3
3	Neural and Integrated perspectives on Design Within your group, you will present areas of research considered relevant to your design process. Also during this session, you will identify some research areas that are relevant to your design process, collect "leads" on other literature
	Amend your 250 word summary of relevant research. Plan content, develop a mock-up or prototype of your idea
4	**Concept Workshop, Usability & Evaluation** You will: present your poster and mock up to your group. You will start developing and presenting plans during the session for a concept workshop, and collect feedback on these plans
	Prepare for Games Day. *Start producing a plan for investigating how users might interact with your proposed type of concept in Session 7*
5	**Games Day** (You will help organise, have fun!)
	Complete planning to investigate how users interact with your proposed type of concept in Session 7
6	**Case Study** – by visiting speaker
7	**Concept workshop** You will: carry out a workshop of your own – collect workshop data + your reflections on generating, eliciting & refining ideas using a mock up
	Prepare to report on concept workshop report
8	You will: **Report on concept workshop** – outline your Design Process
	Prepare to present ideal design process
9,10	Within your group, you will present "**My ideal Design Process** for my idea"

Assignment

The assignment will arise from a reflective account (4000 words or equivalent) of your attempt to develop a user-based design process for the design and development of your own idea for a technology-based learning resource. This account should detail how the design process integrates user feedback, concepts from educational research and knowledge regarding human-computer-interaction, with details about how the various design decisions will be made along the way. Your account should demonstrate a critical awareness of the relationship between design and learning in the chosen context, and provided a balanced appraisal of the final process in these terms.

Reading List

Boyle, T. (1997) Strategic Approaches to educational multimedia Design, in "Design for Multimedia Learning", Hemel Hempstead: Prentice Hall.

Druin, A. (2002). The Role of Children in the Design of New Technology, Behaviour and Information Technology, 21(1) 1-25.

Guha, M., Druin, A., Fails, J. (May 2008) Designing with and for children with special needs: An

inclusionary model *To appear in Interaction Design and Children,* June 2008.

Facer, K. and Williamson, B. (2004) Designing technologies to support creativity and collaboration, Bristol: NESTA Futurelab.

Facer, K. and Williamson, B. (2004) Designing educational technologies with users, Bristol: NESTA Futurelab.

Howard-Jones, P.A. (2009) Neuroscience, Learning and Technology (14-19), report for 14-19 Deep Learning Project, BECTA.

Preece, J., Rogers, Y., Sharp, H. (2002) Chapter 8: Design, Prototyping and Construction in "Interaction Design: Beyond Human Computer Interaction", NY: John Wiley and Sons, Inc.

Sorden (2005) A Cognitive Approach to Instructional Design for Multimedia Learning, Informing Science 8, 263-279.

1.6.2 EDUCM5405 Social and Socio-cultural Psychology

Unit Director: Sara Meadows

Credits: 20

Aims of the Unit:

During the unit students should be in a position:

- To develop an understanding and critical appreciation of current approaches to social and socio-cultural psychology.
- To review research on important topics in social and socio-cultural psychology
- To examine the relationships between facets of social and socio-cultural psychology, drawing on psychological approaches
- To consider the social and cultural construction of psychology
- To develop a critical awareness of claims about social and socio-cultural psychology in the educational literature
- To explore implications of psychological research and theory concerning children and their social worlds for the wider aims and methods of education

Learning Outcomes

By the end of the unit students will be able to demonstrate that they:

- Understand key concepts in current study of social and socio-cultural psychology
- Have developed skills in the evaluation and interpretation of psychological research on social and socio-cultural psychology
- Understand the importance of biological, social and psychological factors in social and socio-cultural psychology
- Have explored the way in which different approaches to social and socio-cultural psychology relate to and complement each other
- Are able to critically interrogate claims about social and cultural influences on childhood in the educational literature
- Understand the implication of recent social and socio-cultural psychological research for classroom practice
- Are able to evaluate the relevance of social and socio-cultural psychology for educational policy and innovation

Methods of teaching

The course will be delivered through whole group lectures and discussion led by research-active members of the Graduate School.

Unit Syllabus

The unit provides an opportunity for students to examine research and theory on social and socio-cultural psychology and the socialisation of children within the family, the school and the community. Topics include:

Psychology as a social science. Social perception and social cognition, person perception, attitudes, attribution. Social group processes; inter-group processes including: prejudice, inter-group conflict, social identification, small group processes including norms, leadership, decision making, productivity; conformity and obedience, majority and minority influence, friendship, dominance, aggression. Social and relationship issues: parent-child, sibling and peer relationships, the social worlds of school, adolescence, delinquency; developmental psychopathology, sex roles and sex stereotyping, interpersonal attraction, aggression; pro-social behaviour, altruism, moral development. Socio-cultural psychology: Bronfenbrenner, Vygotskian theory.

Assignment

1. Presentation of the results of a systematic online literature search
2. An essay of 3000 words, or a research report.

In negotiation with tutors, students will be expected to analyse relevant texts and synthesise concepts from social and socio-cultural psychology, make links/connections and recognise associations/relationships between these concepts, and draw upon current understanding of social and socio-cultural psychology. They will be expected to develop balanced arguments that reflect a multidisciplinary awareness and an ability to contextualise concepts, and draw appropriately upon a wide range of psychological evidence. They will develop research skills appropriate to the area.

Reading List

Dunn, J. (2004) *Children's friendships*. Oxford: Blackwell

Franzoi, S. (2006) *Social psychology,* New York: McGraw-Hill

Goldberg, S. (2000) *Attachment.* London: Arnold

**Meadows, S. (2010) *The Child as Social Person*. London: Routledge

Pellegrini, A., and Blatchford, P. (2000) *The child at school.* London: Arnold

Rutter, M. Giller, H. and Hagell, A. (1998) *Antisocial behaviour in young people*. Cambridge: Cambridge University Press

Schneider, B. (2000*) Friends and enemies*. London: Arnold

1.6.3 PSYCM0016 Functional Neuroanatomy and Neuroscience Methods (School of Experimental Psychology)

Unit Director: Ute Leonards

Credits: 10

Aims of the Unit: to provide a thorough grounding in human functional neuroanatomy and in techniques employed to study the brain.

Learning Outcomes

The course will stress how knowledge of functional neuroanatomy is crucially related to a range of methodological techniques, applied at varying levels within cerebral organisation (from single neuron recordings to whole brain imaging techniques)

Methods of Teaching

Teaching will consist of lectures given by research active staff members, with a strong seminar-style interactive component. For the last two lectures, students will be expected to prepare short Powerpoint presentations in which each student applies different neuroimaging techniques to an area of neuroscience.

Unit Syllabus

This Unit firstly provides a review of the functional neuroanatomy of the human brain. Second, it provides a comprehensive review of techniques and methods employed to study the human brain. The Unit will revolve around ten seminar presentations, and each will focus upon a specific cerebral system. Methods and techniques employed to study each specified system will form a key focus of each seminar. A major feature of the Unit will be focus upon spatially and temporally distributed processing in the brain. This is in order to counteract the mistaken view that cognitive and affective processes are localised to discrete spatial regions. Research-active members of the Department of Experimental Psychology will lead the seminars.

Assignment

- Powerpoint group presentation (10%)
- Unseen examination that assesses the level and depth of background knowledge (90%)

Reading List

Gazzaniga, M. S., Ivry,R. B & Mangun, G. R. (2009). Cognitive neuroscience: the biology of the mind (3rd ed.). London: Norton.

Kolb, B., & Wishaw, I.Q. (2009). Fundamentals of Human Neuropsychology. Worth Publishers, New York (6th Edition).

Cabeza, R., & Nyberg, L. (2000). Imaging cognition II: An empirical review of 275 PET and fMRI studies. Journal of Cognitive Neuroscience,12(1), 1-47.

Cabeza, R., & Kingstone, A. (2006). Handbook of functional neuroimaging of cognition. (2nd ed.). Cambridge, Mass. : MIT Press.

Brodal, P. (2010). The central nervous system. 4th Ed., Oxford University Press.

1.6.5 PSYCM0017 Applied Neuropsychology

Unit Director: Dr. Kit Pleydell-Pearce

Credits: 10

Aims of the Unit: The aim of the unit is to provide a thorough grounding in applied Clinical Neuropsychology

Learning Outcomes

Students will learn how knowledge of neuropsychological theory, functional neuroanatomy and technical approaches to studying the brain are used within a medical context. In addition, the Unit will provide insights into clinical practice, and will be valuable for all who wish to pursue a clinical career, or who wish to pursue research that involves interaction with patients.

Methods of Teaching

Teaching will involve seminars that will be led by research-active and clinically active members of Frenchay Hospital Department of Neuropsychology (although the course coordinator is a member of the School of Experimental Psychology). In addition to lecturer-led tuition, students are expected to take turns in providing weekly summaries of relevant background reading, providing a starting point for structured discussion

Unit Syllabus

This Unit provides students with an opportunity to partake in seminars provided by active clinicians who work in an NHS Neuropsychology Department. The Unit will cover a range of

neuropsychological syndromes and will focus upon neuropsychological assessment procedures. In addition, the unit will examine the manner in which Neuropsychologists must interact with other medical departments (e.g. neurosurgery, rehabilitation and radiography departments). While the unit has an applied component, seminars will also reinforce knowledge in functional neuroanatomy and theories of cerebral function.

Assignment

Coursework essay which requires students to provide evidence of critical understanding of a topic in applied neuropsychology (100%)

Reading List

Lezak, M. (1995). Neuropsychological Assessment. Oxford University Press.

Kolb, B. and Wishaw, I.Q. (2003). Fundamentals of Human Neuropsychology. Worth Publishers, New York (5th Edition).

Feinberg, T. E. & Farah, M. J., editors (2003). Behavioural Neurology and Neuropsychology. New York: McGraw-Hill (Second Edition).

Richards, D., Clark, T. & Clarke, C. (2007). The Human Brain and its disorders. Oxford University Press.

White, C. Cognitive behaviour therapy for chronic medical problems (2001). Wiley

Trevor Powell (2004). Head Injury: A practical guide.

Andrewes, D. (2002) Neuropsychology: From theory to practice. Psychology Press, Taylor & Francis.

Vanderploeg, R.D. (Ed.). (2000) Clinician's guide to neuropsychological assesment. Oxford University Press.

1.6.6 PSYCM0031Magnetic Resonance Imaging Summer School

Unit Director: Risto Kauppinen

Credits: 10

Aims of the Unit: This unit provides a deep insight into current state-of-the art use of magnetic resonance imaging (MRI) in scientific and clinical research into the functioning of the human brain. Beside oral presentations/lectures/seminars by MR specialists, this unit will give students the opportunity to see the scanner at work and experience data handling first-hand.

Learning Outcomes

By the end of the unit students will possess

- A deeper understanding of the advances in magnetic resonance imaging in scientific research and current limitations of the technique.
- A capacity to think independently and generate novel theoretical positions.
- An appreciation of the relationship between scientific and clinical research.
- An understanding of mechanisms underlying brain function.

Methods of Teaching

15 lectures will be delivered by the course leader and invited speakers from the field of MRI. There will be a hands-on session on the CRIC 3 T scanner (up to 7 students per session) followed by an image analysis session on the CRIC work stations.

Unit Syllabus

The unit provides students with a critical perspective and understanding of magnetic resonance-based brain imaging techniques in the context of neuropsychological and neurological research.

This module not only provides students with theoretical knowledge and concepts in this domain, but allows them hands-on experience with the MR scanner as well as data analysis. It fosters original thought because each student is invited to develop their own theoretical position on usefulness and limitations of the techniques for their particular area of research interest.

Assignment

Summative assessment is based on a 2000-word essay written from selected topics covered by the teaching sessions.

Coursework will be completed over a three-week period, beginning at the end of the summer school.

Reading List

McRobbie D.W., Moore E.A., Graves M.J. & Prince M.R.(2004). MRI: From Picture to Proton. Cambridge University Press.

Jezzard P., Matthews P.M. & Smith S.M. (2002). Functional MRI; An Introduction to Methods. Oxford University Press.

Selected peer reviewed scientific papers will be used as teaching material.

1.6.7 EDUCM5010, EDUCM5020 (10, 20 credits) Supervised Individual Study (SIS)

This programme enables students to pursue independently the study of a topic of interest, with the guidance of an appropriate tutor. No SIS involves any formally taught sessions[1].

The SIS framework has been developed to permit course participants to:

- Pursue particular areas of professional interest
- Undertake a small scale inquiry which may have a practical or research base
- Engage with an area of intellectual interest that is not covered by the taught programmes

Undertaking a SIS can only be agreed to if:

- It does not substantively replicate an area for which a student has already been assessed
- It does not overlap with a taught course that is running
- There is a supervisor who is willing and has sufficient expertise to support a student
- The student can offer a rationale for undertaking such an assessed piece of work
- The student can demonstrate sufficient skills as an independent learner to be able to manage this form of assessment.

Normally, students will be allowed to substitute a maximum of one SIS (20 or 10 credits) for one of their taught units, though students should be aware of the demands that will be placed on them to be self-motivated and skilled independent learners.

SIS Proposal

Students seeking to work in this way should critically explore this possibility with their Personal Tutor in the first instance and then contact the SIS Unit coordinator (Sally Barnes) to test the feasibility of what they are proposing.

If a SIS seems reasonable in light of the above criteria then the student should, following a

[1] Given the potential isolation of working on an SIS, supervisors are encouraged to think how SIS students may access other intellectual opportunities within or beyond the GSOE.

preliminary discussion, **complete a proposal outline in all its parts** (see Appendix 1 – the form can be downloaded from Blackboard) **and email it to** ed-masters-students@bristol.ac.uk. Once agreed with the supervisor, this will form the basis of the SIS.

If, at the stage of preparing the proposal, the supervisor feels that the SIS is not workable, the student will be counselled to reconsider what they are intending to do, or to consider again their own aptitude for independent study.

SIS Supervision

A student will be entitled to four meetings for a 20 credit SIS (two meetings for a 10 credit SIS). This will include one meeting at the initial stage to test the proposal and the final meeting to review the draft of the SIS. The student should be prepared to undertake 80 hours of independent work for a 20 credit SIS, and 40 hours of work for a 10 credit SIS.

SIS Assessment

The SIS is a more individually customised unit of assessment. The final outcome may therefore take a form other than an assignment, if this other form more appropriately reflects the purpose of the SIS undertaken.

Outcomes may include:

- Professional logs
- Action research projects
- Digital or other media
- Training or teaching resources
- A small-scale research project

The assessment piece must be able to be scrutinised by external or other examiners.

All outcomes will be marked at Masters level and subject to the Grade Criteria as published in Section 3 of this Handbook. The outcomes should therefore take such criteria into account.

The outcomes a student is proposing to achieve through a SIS must be clearly stated in the proposal form.

Possible SIS projects

A range of SIS projects can be undertaken. The following is only an indicative list:

- Projects including site visits to organisations, drawing on interviews or observations
- A project that tracks a particular function in an organisation, or investigates a particular event or change in an organisation
- The creation and testing of training or other development materials
- Short term attachments to educational or other organisations and critical report of such an attachment
- A literature or other media review
- An in-depth investigation of a particular issue, e.g. quality assurance; evaluation research; formative assessment
- An action research project.

1.7 Virtual Learning Environment - Blackboard

The MSc is a face-to-face taught Master's that makes use of the University's Blackboard Virtual Learning Environment. Blackboard includes unit materials, discussion groups for each unit, announcements about the course, virtual classrooms and other facilities. As soon as students have registered with the University computer service, they should register with Blackboard, by visiting

https://www.ole.bris.ac.uk/webapps/portal/frameset.jsp.

In order to ensure the effective use of Blackboard throughout the course, students should visit the site on a regular basis, checking relevant discussion groups and announcements. The information contained in Blackboard complements the Student Handbook.

All up-to-date information concerning units, meetings and all forms needed for the course, will be stored in Blackboard.

1.8 MSC NsE timetables 2013-14

During Orientation Week, you will choose your taught units for 2013/14. This will be done online, via Online Unit Registration.

Once you have registered for your units, you are expected to check your online personalised timetable on a regular basis. You can do this via MyBristol (the student portal) at: http://www.mybristol.bris.ac.uk/portal

It is important that you check your timetable on a regular basis. During the year, it may become necessary to reschedule or cancel classes, or to move them to another room. Your personalised timetable will have details of any changes.

Timetables for all Masters programmes can be found at: http://www.bris.ac.uk/education/students/newstudents/timetables.html Please refer to these for guidance only, at the beginning of the year.

2 Support for Participants

2.1 Your early days on the programme

An Orientation Programme has been structured in the first week to help you become familiar with:

- what is expected of you as a student
- what you can expect of the GSoE and its staff
- the MSc and its key elements
- the facilities and resources open to you (ICT facilities, the Education Library)
- each other and the support fellow students can offer .

By the close of your first week you should have:

- sorted out which units you are taking in the first term and have a clear idea of which ones you will take during the year
- registered with the University
- sorted out your accommodation
- have your library card
- registered as a University email user
- registered with the University Health Service
- met, or arranged to meet, with your Personal tutor
- read through the M-level Handbook and this supplement for the MSc
- logged on to the NsE blackboard pages (**NOTE:** currently on the Med blackboard site).

You should also have an idea of the resources that are available, the International Student Advisory Service, the Centre for English Language and Foundation Studies, the Student Counselling Service and some social and sporting activities that are on offer.

2.2 ICT support

The MSc in Neuroscience and Education assumes that students have a basic familiarity with ICT. There are Open Learning training sessions offered in the Main Arts and Social Sciences Library Open Learning Centre. The centre is staffed from 10.00 – 16.45 each weekday.

If you are interested in developing your ICT skills, courses for all students are provided by University of Bristol Information Services, for further details see

http://www.bris.ac.uk/studentskills/cobs/course_list - g2.

Documentation for these courses is provided on line in the form of self study guides – see http://www.bristol.ac.uk/is/learning/documentation.

Microsoft themselves provide training on many of their products see http://office.microsoft.com/en-gb/training/default.aspx

and there is a Virtual Training Suite tutorial on using the Internet for education at http://www.vts.intute.ac.uk/he/tutorial/education/.

Workshops on the use of specific software for design and data analysis are offered as research training workshops in the spring and summer terms.

2.3 Other forms of support

Please check the M-level Programmes Blackboard (M-level Handbook) site for further sources of support for students.

2.4 Opportunities to provide feedback

There are a number of ways in which feedback is collected from students:

- *Unit questionnaires* to be completed at the end of each unit. These are available in Blackboard and will have to be completed before submitting the relative assignment.
- *Student feedback meetings* are organised once per Term if required.
- *Personal tutorials* include an opportunity to pass on your experience.
- *A student representative* reports to the M-level Committee.
- *An exit questionnaire* to be completed at the end of the course in Blackboard before submitting the dissertation.

Further information about student representatives is to be found in the M-level Handbook 2013-14.

3 The assessment process

Assessed pieces of work are required for each assessed unit that you undertake. Each 20 credit unit requires a 4,000 word assignment or *equivalent piece of work*.

A dissertation will also be required. More information about the dissertation process will be in a separate Dissertation Handbook available in Blackboard.

Please read this section in conjunction with the M-Level Handbook.

3.1 The purpose of assignments

A taught unit of 20 credit points normally has these components:

- 20 hours contact time
- 180 hours (minimum) of associated study time (reading, individual tutorials, assignment preparation)
- The submission of a coursework assignment (usually in written form – up to 4,000 words)

The assessment process is more than simply gaining an award.

We take the assessment of your work very seriously and we believe that the assignments you write are central to the learning process. Assessment has a dual role: it is both formative, helping students in the learning process, and summative, providing the Exam Board with information it needs to make final decisions about whether and what award should be made to a student.

3.2 The grading of assessed work

Assignment tasks may take a number of forms: a written assignment, the design of a learning environment, the production of resources and materials, or the production of video, audio or other media. Each unit will specify what assignment you are required to produce. Some assignments may have separate notes of guidance for their completion and assessment criteria. However, the following are the features that we would expect most assignments to exhibit in order to attain a particular grade.

Individual pieces of coursework and dissertations are graded on a 4-point (A-D) scale.

3.2.1 Guide Criteria for Producing and Marking Assignments

These criteria are intended only as a guide for staff and students. There will always be individual issues of quality that cannot be fully represented in this way, especially since the aims and content of each unit differ from each other. For these reasons, grades are ultimately at the discretion and professional judgment of the 1st and 2nd markers. However, it is hoped that the following guide is helpful in understanding the types of issues that are considered when assessing your work.

	D → A		
1. Structure & Presentation	**D**	**C/B**	**A**
a. Length	less than 3500 words or more than 4500 words	3500-3800 words or 4200-4500 words	3800-4200 words
b. Structure	No attempt made to structure assignment logically	Clear structure, coherent progression of ideas.	Thoughtfully structured in a way that aids understanding.
c. Formatting	Very little evidence of appropriate use of tables, sub-headings, fonts, bullet points. Formatting of references incorrect and inconsistent. No introduction or conclusions	Evidence of some appropriate use of tables, sub-headings, fonts, bullet points. Formatting of references mostly correct. Appropriate introduction and conclusion.	Skillful use of tables, sub-headings, fonts, bullet points. Formatting of references correct. Introduction is well focused and provides a clear indication of rationale, key literature base and how the work is organised. Conclusion sets out insights and helpfully summarises outcomes.
d. Spelling and grammar	Many errors restrict the reader`s understanding.	A limited number of errors.	Appears to have been carefully proof-read with no significant errors.
e. Readability	Quality of expression hampers understanding.	Style and quality of expression is generally appropriate and provides no significant barriers to understanding.	Style and quality of expression enhances understanding and makes for an enjoyable read. Concise and well-edited

	D → A			
2. How was theory used in the assignment?	**D**	**C**	**B**	**A**
a. Reading	Little or no evidence of background reading. Limited attempt made to cite sources or incorrect system used.	Evidence of background reading, with some limited searching demonstrated, correct presentation of citations and list of references.	Extensive background reading utilising a wide range of sources. Evidence of high-level independent search skills.	Extensive reading around the topic, and which exceeds what might be reasonably expected for this area, creatively exploiting knowledge from other areas.
b. Evidence of knowledge and understanding of concepts cited	Limited use of literature, not integrated with reflection. Unfocussed or superficial discussion.	Limited use of literature, with some evidence of selectivity and interpretation within the context of the assignment. Some evidence of having understood most of the concepts and terms introduced on the unit.	Effective selection, interpretation, comparison, evaluation and integration of material from a variety of sources. Evidence of good understanding the concepts introduced on the unit.	Very effective selection, interpretation, comparison, evaluation and integration of material from a variety of sources, resulting in unusual and valuable insights. Demonstrates excellent knowledge of topic that goes well beyond essential content and reading for the unit.
c. Appraisal of theory	Little or unsuccessful attempt to appraise theory.	Limited evidence of critical and perceptive appraisal of literature, but limited in scope or depth.	Some in-depth, critical and perceptive appraisal of literature, with reference to associated evidence, epistemologies, perspectives & limitations.	In-depth, critical and perceptive appraisal of literature, with insightful reference to associated evidence, epistemologies, perspectives & limitations.
d. Use of theoretical tools	No theoretical tools referred to or no meaningful and explicit links of the theory with the context of the assignment are presented.	Appropriate theoretical tools referred to with some meaningful and explicit links to the context of the assignment. Some links made between theory and practice.	Appropriate theoretical tools referred to and used to provide a variety of insights. Effective links made between theory and practice.	Original and appropriate application of theoretical tools to produce novel and valuable insights relating to practice

	D → A			
3. What did the assignment achieve?	**D**	**C**	**B**	**A**
a. Learning outcomes met	No or limited attempt made to relate assignment to learning outcomes of the module.	Most of the learning outcomes covered.	Good coverage of learning outcomes.	Comprehensive coverage of learning outcomes with learning gained in areas additional to those covered by the unit.
b. Reflection	Little or no personal reflection or reflection lacking purpose and focus.	Limited reflection, inconsistent in application and/or lacking evidence of personal development.	Some in-depth reflection, showing some evidence of personal development.	Detailed, insightful and original reflection, showing personal development.
c. Evidence of learning and professional development (& learning from the module)	No or limited evidence of learning and/or professional development.	Limited learning or development demonstrated, but restricted in scope/depth.	Evidence of learning and development demonstrated, with some suggestions for improvement.	Evidence of dynamic, reflective development, likely to result in exemplary practice.
d. Originality	No originality or creativity of thought.	Limited originality or creativity of thought, although ideas still require greater scrutiny and development.	Some originality or creativity of thought, with effective and original ideas produced.	Innovative and original ideas proposed with rigorous engagement with theory, leading to novel conclusions.

3.3 Formal Requirements for Assignments

You should refer to the M-level Handbook to find out more about the requirements for assessed work.

3.3.1 Word count

Writing within the word limitation is important. Being able to analyse what you have read and experienced, to offer evidence for your academic argument and to develop your case coherently and concisely are important academic skills that you are expected to develop.

You are required to put the word count on written components of your assignment and the cover sheet. If the work is more than 10% over the prescribed length it may get a lower grade.

3.3.2 Plagiarism

Plagiarism (stealing the thoughts or writings of others and presenting them as your own) is a very serious offence. The University's Examination Regulations define plagiarism in the following way:

"Plagiarism is the unacknowledged inclusion in a student's work of material derived from the published or unpublished work of another. This constitutes plagiarism whether it is intentional or unintentional. 'Work' includes internet sources as well as printed material. Examples include:

- Quoting another's work "word for word" without placing the phrase(s), sentence(s) or paragraph(s) in quotation marks and providing a reference for the source.
- Using statistics, tables, figures, formulae, data, diagrams, questionnaires, images, musical notation, computer code, etc., created by others without acknowledging and referencing the original source. This list is not intended to be exhaustive.
- Summarising, or paraphrasing the work or ideas of another without acknowledging and referencing the original source. "Paraphrasing" means re-stating another author's ideas, meaning or information in a student's own words.
- Copying the work of another student, with or without that student's agreement.
- Collaborating with another student, even where the initial collaboration is legitimate, e.g., joint project work, and then presenting the resulting work as one's own. If students are unclear about the extent of collaboration which is permitted in joint work they should consult the relevant tutor.
- Submitting, in whole or in part, work which has previously been submitted at the University of Bristol or elsewhere, without fully referencing the earlier work. This includes unacknowledged re-use of the student's own submitted work.
- Buying or commissioning an essay or other piece of work and presenting it as a student's own." (Section 3.2, Examination Regulations)

You can read more about what plagiarism is on the University Website at http://www.bristol.ac.uk/is/library/findinginformation/plagiarism/

If you reproduce from the work of others, such as a book or article, it absolutely essential that you make it clear where the quote has come from.

It is also an important part of a student's academic development to acquire judgement by drawing on the work of others. However, the ability to précis a writer's views (rather than copy them word-for-word or paraphrase) is an important and essential skill. Students are expected to exercise judgement in reproducing the structure of a writer's argument in their essays, and to avoid becoming unduly dependent upon one or two items of reading. It is not the case that to avoid plagiarism students have to produce a complete set of original ideas for their essays; rather, a

good essay is a careful balance between your own views and those of established authorities, with the phrasing and structure of an essay being entirely of your own creation. Obviously, the copying of another student's work, either in part or in whole, also constitutes plagiarism.

When submitting work, you will be required to authorise the analysis of your work by anti-plagiarism software that can automatically detect evidence of plagiarism.

Plagiarism in an assignment or dissertation can result in a lower grade being awarded, including a fail grade. In more serious cases, University Regulations may be invoked leading to the application of more severe sanctions.

Students can find information about the Internet Detective, a self-study tutorial resource to help you evaluate the nature and quality of the material you find on the Internet at http://www.vts.intute.ac.uk/detective/.

3.4 Assignment Submission Guidelines

Submission of all assignments for GSoE units on the MSc is through the use of Blackboard's Assignments tool. This tool saves your assignment directly into the Blackboard Gradebook. You are required to complete the unit evaluation form before being able to access the assignment submission point in Blackboard. Please see instructions for electronic submission on Blackboard, under Assignments -> Assignments – Information for Students

Please never send assignments by email unless specifically requested to do so.

4 The dissertation

The dissertation for the MSc in Neuroscience and Education will provide you with the experience of designing and conducting a small-scale research project in an area which is of relevance to your own professional practice. You will be supported to develop a set of coherent research aims which link theory, methodology and empirical work. The dissertation gives you the opportunity to develop a field of inquiry which has been inspired by your work within the course units. It is an opportunity to read extensively with a focus and to develop a systematic framework of analysis. Through working with a dissertation supervisor you will learn about the process of conducting research in the social sciences. You will also learn to communicate research in a coherent and cogent manner.

In particular, the objectives of the dissertation are:

- To provide experience of designing and conducting a small scale research study in the field of Neuroscience and Education
- To enable you to develop a set of coherent research aims and questions which link theory, methodology and empirical work
- To enable you to conduct a substantial literature review in your chosen field of study
- To enable you to select appropriate research methods and tools (including the use of new technologies) to conduct research
- To facilitate your development as independent and critical readers and practitioners of research
- To provide experience of producing a research report to account for your work.

Examples of dissertation topics suitable for Neuroscience and Education students are:

- How do young students understand the relationship between mind and brain?
- Can an exercise regime improve executive function and response time in a maths test?
- What are the attitudes of teachers and students in an urban comprehensive school to smart drugs?

- What is the relationship between teenage attitudes to sleep and their use of gaming technology?
- How does reward uncertainty influence emotional response as measured by skin conductivity?
- Can audio-visual entrainment of brain rhythms improve creativity?

4.1 Types of dissertation

Most dissertations for the MSc in Education, Technology and Society are likely to be one of two types:

- Empirical study
- Literature-based study

The written component of any dissertation should not exceed 15,000 words, excluding references and appendixes. If you go over 10% of the word limit, your dissertation may not be marked. Each form of dissertation is described in more detail below.

4.1.1 Empirical study

You conduct a small-scale research project concerning some aspect of the course. Your dissertation broadly consists of:

- an account of the process of designing the study, including motivation, questions and suitable connection with appropriate literature,
- discussion of a theoretical framework,
- an account of the collection of your data,
- presentation and analysis of data,
- critical reflection on the study and conclusions.

Example

You are interested in the role of exercise in enhancing executive function amongst post-graduate students. Based on your reading and review of suitable literature you formulate your research questions. Drawing on suitable theory and due ethical consideration, you design a small-scale study involving the completion of a two week exercise regime (30 minutes a day) by 16 fellow students. You measure executive function before and after the regime, and also ask participants to complete a brief questionnaire that collects additional information about potential extraneous factors (health before and during the intervention, lifestyle, information that might influence outcomes and measurements). You carry out a statistical analysis on the measurements, and reflect on the outcome (aided by your original review of the literature and the information from the questionnaire) relating these results back to your original questions.

4.1.2 Document-based study

You conduct an analysis of literature and policy documents on a particular topic, whether substantive, methodological or theoretical. Your dissertation broadly consists of:

- the development of suitable research questions and their location in the literature,
- discussion of a theoretical framework,
- an account of your document analysis, including selection and analysis of relevant literature,
- critical reflection on the analysis and conclusions.

Example

You are interested in comparing government-funded approaches to bringing neuroscience and education together. Based on your reading of research literature and policy documents you formulate suitable questions. You develop a suitable theoretical framework with which to organise, analyse and compare policies and initiatives in different countries. You collect policy documents from countries where government initiatives have taken place and analyse them, relating your analysis back to your original questions.

4.2 The dissertation process

Please refer to the M-level Handbook (available on Blackboard) for further information about the dissertation process, structure and submission.

Appendix 1. Referencing and Bibliographies

Harvard System (adapted)

Here the author's surname and date of publication are used to identify a reference in the text, with the full references listed alphabetically by surnames at the end of the work.

Examples of references tagged in the text:

'Some interesting results were obtained (White, 1985) showing...', or 'White (1985, p.13) has obtained results'

Example of how to write the full references at the end of the work:

A textbook

Record author(s) surname(s) and initial(s), date of publication, title of book, edition (except the first), place of publication and publisher. Include page numbers if mention has been made to specific parts of the book.

Adams, W.R. (1977) *Developing Reading Versatility*. 2nd ed. New York: Holt, Rinehart and Winston.

A book with chapters written by different authors

Many books have chapters written by different author(s), and the whole book is edited by someone else. If you wish to refer to just one of the chapters in such a book record the author(s) surname(s) and initial(s), title of chapter, the date of publication, title of chapter, title of book, editor(s) of book, place of publication, publisher of book, and the inclusive page numbers for the chapter.

Cox, K. (1972) Minerals and rocks, in: *Understanding the Earth: A Reader in the Earth Sciences*, I.G. Gass, Peter J. Smith, R.C.L. Wilson (2nd ed.) Horsham: Artemis Press p.13-40.

An article/paper in a journal/periodical/serial

Record author(s) surname(s) and initial(s), date of publication, title of article, title of the journal, volume (and issue number if applicable) and inclusive page numbers.

Davies, A. (1996) Assessment and transferable skills in art and design. *Journal of Art & Design Education*, 15, 327-331

A thesis

Record author(s) surname(s) and initial(s), the date of publication, title of thesis, degree awarded and academic institution awarding the degree.

Edwards, Nigel John (1989) *Dynamically Reconfigurable Systems.* Ph.D. thesis. Bristol: University of Bristol.

A report

Record author(s) surname(s) and initial(s), date of publication, title of report, report number, place of publication and publisher. Also, if possible, mention details of availability - reports can be difficult to track down.

Gustafsson, H. (1990) *Building materials identified as sources for indoor air pollution.* Report SP-RAPP-1990:25. Boras, Sweden: Kem. Anal., Statens Provingsanst. (Available NTIS, order no. PB91-135202).

A paper in the proceedings of a conference/symposium/meeting

Record author(s) surname(s) and initial(s), date of publication, title of paper, title of conference, venue and date of conference, editor(s) of the proceedings, volume (if appropriate) and page numbers of the paper, place of publication and publisher.

Haenni, W. et al. (1998). Diamond-sensing microdevices for environmental control and analytical applications. In: Diamond 1997: *Proceedings 8th European Conf. on Diamond, Diamond-like and Related Materials.* Edinburgh, Scotland, Aug 3-8, 1997 (eds. Bonnot, A.-M. et al.) Lausanne : Elsevier, 1998. p.569-574.

Internet/WWW address

Record author(s) surname(s) and initial(s), date of publication if known, title of paper, and the URL (Universal Resource Locator) together with the date the page was viewed. NB: the URL needs to be copied precisely, including capitals and lower case.

Hodsdon, B. (1996) *A Different Kind of Cinema: The Silent Years.* National Library of Australia. at URL: http://www.cinemedia.net/NLA/csilent.html (viewed 28/6/98).

Other methods of quoting references that you may come across:

Footnotes system

This uses abbreviated references as footnotes on each page of text, with the full list of full references at the end of the work.

Alphabetical-numerical system

The references are listed alphabetically by the surname of the author at the end of the work, but are then numbered. The numbers are used in the text.

Please be familiar with:

Use of the word **ibid** which means the same book, or journal, referring to the previously mentioned reference;

op.cit. is used when referring to a reference which has been mentioned earlier in the text, for instance ‘Fordham, *op. cit.* p.322’;

et al is used sometimes where there are more than three authors for a reference, and replaces all but the first named author. However, the names of all authors must be in full in the reference list at end of assignment.