

## Module Specification

### Module Summary Information

<b>1</b>	<b>Module Title</b>	Neuroscience
<b>2</b>	<b>Module Credits</b>	20
<b>3</b>	<b>Module Level</b>	6
<b>4</b>	<b>Module Code</b>	BMS6005

<b>5</b>	<b>Module Overview</b>
<p>The World Health Organisation stated recently that “There is ample evidence that pinpoints to neurological disorders as one of the greatest threats to public health”. This module is designed to introduce you into the exciting world of neuroscience, by giving you a clear understanding of basic principles of neuronal (inter)action, learning and memory, emotion and motivation, necessary for your contribution to research in brain disorders like multiple sclerosis, Parkinson’s disease, epilepsy, dementia, anxiety and depression. This module will build upon the basic understanding obtained in the modules, Introduction to Human physiology, Fundamentals of Cell biology, Pharmacology and Research methods, and will equip you to critically appraise recent developments in brain disease research across all levels of analysis, and evaluate various exciting therapeutic approaches.</p> <p><b>Alignment with Programme Philosophy and Aims:</b>          You will gain an understanding of the design and function of the nervous system, as well as the causes of brain disease at all levels of analysis and appreciate the impact of brain disease at the whole organism level.          To address neuroscience research effectively it is essential that you will develop skills in critically analyse Neuroscience literature in tutorials and journal clubs. In this module, you will apply your knowledge and research skills in hands-on practicals and learn to succinctly formulate a well-structured argument to address a scientific question.          You will explore the links with other disciplines like pharmacology and mental health studies. By stimulating creative thinking guided by tested scientific principles, this module will provide a solid base that allows you to get involved in neuroscience research across the globe and contribute to finding solutions for neurological disorders.</p> <p><b>Learning and Teaching Strategy:</b>          You will be taught using a blended approach of lectures (where engagement is facilitated by the use of in-session polling technology), workshops and on-line activities. Your learning will be supported by Moodle web pages dedicated to prepare yourself for the sessions for optimising the impact of the taught sessions. The online resources provided will challenge you to dig deeper into issues discussed in the lectures and tutorials. The Moodle web pages will also provide opportunities (e.g. quizzes) to identify gaps in your knowledge and areas for improvement. You will be involved in developing MCQs related to taught sessions that use PeerWise. This collaborative activity facilitates deeper learning and questions from the question bank developed and answered by your peers and you will be used in the exam. Active and informed participation through pre- &amp; post-session work will be an integral component of the module. Such engagement will enhance the learning experience of you and your peers.</p>	

To help you understand the detailed functioning of neurons we will use a computer based tutorial based on a mathematical model of a neuron. To consolidate and apply issues learned in lectures and tutorials and further quantitative analytical skills, you will do hands-on practicals.

To achieve the required 20 credits for this module, you will need to dedicate at least 200 hours studying the module material. For this module, the time is broken down in an approximately 25:75 ratio (directed: self-directed). The scheduled learning activities will include lectures, tutorials, practical sessions and facilitated discussions; approximately 20% of this learning will take place in an online environment.

**Assessment Strategy:**

The exam will have three sections. One third of the mark will test your knowledge and comprehension with MCQs (some of which will be taken from the question bank developed by your peers and you through PeerWise) and two thirds will be answering two out of four essay-style questions, which allow you to demonstrate your ability to appraise the complexity of the nervous system and evaluate factors involved in brain disease and therapy.

6	Indicative Content
	Functional Neuro-anatomy. Voltage-gated channels. Action potential generation Action Potential practical Synaptic transmission Simple networks and reflexes Motor function and dysfunction Parkinson's disease Multiple sclerosis Electromyography practical Synaptic plasticity and learning Hippocampal memory Dementia Emerging network functions Epilepsy Electroencephalography practical Anxiety Depression

7	Module Learning Outcomes
	<b>On successful completion of the module, students will be able to:</b>
	<b>1</b> Explain the key principles that underpin the workings of the nervous system on the cellular, network and system level.
	<b>2</b> Relate the pathophysiology with aetiology, and symptomatology of a selection of neurological and mental brain disorders.
	<b>3</b> Critically evaluate the therapeutic approaches employed in brain disorders

8 Module Assessment			
Learning Outcome			
	Coursework	Exam	In-Person
1,2,3		X	

9 Breakdown Learning and Teaching Activities	
Learning Activities	Hours
<b>Scheduled Learning (SL)</b> includes lectures, practical classes and workshops, peer group learning, Graduate+, as specified in timetable	40
<b>Directed Learning (DL)</b> includes placements, work-based learning, external visits, on-line activity, Graduate+, peer learning, as directed on VLE	70
<b>Private Study (PS)</b> includes preparation for exams	90
<b>Total Study Hours:</b>	200