School of Psychology & Neuroscience

General degree students wishing to enter 3000-level modules and non-graduating students wishing to enter 3000-level, 4000-level or 5000-level modules must consult with the relevant Honours Adviser within the School to confirm they are permitted to enter the module.

Neuroscience (PN) modules

PN3312 Pharmacology

SCOTCAT Credits:	20	SCQF Level 9	**Semester:**	2
Academic year:	2017/8 & 2018/9			
Planned timetable:	Lectures: 11.00 am Mon, Tue and Wed Practicals: to be arranged.			
This module assumes that students are familiar with the material covered in BL2101. The basic principles of pharmacology will be covered, including evidence to support the modern concept that drugs act via specific receptors present on target tissues and our present understanding of laws governing drug-receptor interactions. The concept of agonists, competitive and non-competitive antagonists and the interactions between such classes of drugs will be discussed. The effects of drugs upon the peripheral and central nervous systems and the cardiovascular system will be covered. How these drugs can be used to understand the function of these systems and to correct their malfunctioning in various disease states will be explained. The practical component will cover the principles of drug action and receptor theory and illustrate the use of bioassays in pharmacological investigations. These practical sessions aim to help students build a working knowledge of drug names and actions as well as pharmacological concepts.				
Programme module type:	Compulsory for Neuroscience. Optional for Biochemistry, Biomolecular Science, Molecular Biology, Cell Biology, Biology and all Biology Joint or Major/Minor (i.e. 'with') and Psychology 'with' Degree programmes.			
Pre-requisite(s):	two of: BL2301, BL2302, BL2305 OR BL2306		**Anti-requisite(s):**	BL3312
Required for:	PN4299			
Learning and teaching methods and delivery:	**Weekly contact**: Lectures and tutorials: 27 hours in total, Usually 3 lectures or tutorials (x 11 weeks) Practicals: 2 x 3 hours during the semester.			
	Scheduled learning: 33 hours		**Guided independent study:** 167 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 60%, Practical Examinations = 0%, Coursework = 40%			
	As used by St Andrews: 3-hour Written Examination = 60%, Coursework = 40%			
Re-assessment pattern:	3-hour Written Examination = 100%			
Module coordinator:	Dr G Doherty			
Module teaching staff:	Dr A Butler, Dr G Doherty, Dr W Li, Dr G B Miles, Dr R Ramsay, Dr K Spencer, Dr L Aitken			

PN3313 Neuroscience

SCOTCAT Credits:	20	SCQF Level 9	**Semester:**	1
Academic year:	2017/8 & 2018/9			
Planned timetable:	Lectures: 12.00 am Mon, Tue and Wed Practicals: to be arranged.			
This module covers biochemical, cellular and behavioural aspects of the nervous system in health and disease. It starts with the basic biochemistry of neural membrane proteins such as receptors and channels, and considers the cellular mechanisms of action potential generation and propagation, and synaptic transmission. The physiology of sensory perception is illustrated by examining the visual system, while motor control is considered in terms of vertebrate locomotion. Selected aspects of learning and memory processes are also examined. Students are given extensive hands-on experience of computer simulation as a learning tool in this course. The associated practical work illustrates the lecture course through experiments on the nerve impulse, and mechanisms of neuronal cell loss.				
Programme module type:	Compulsory for Neuroscience. Optional for Behavioural Biology, Cell Biology, Evolutionary Biology, Zoology and all Biology Joint or Major/Minor (i.e. 'with') and Psychology 'with' Degree programmes.			
Pre-requisite(s):	BL2301, BL2305		**Anti-requisite(s):**	BL3313
Required for:	PN4299			
Learning and teaching methods and delivery:	**Weekly contact**: 29 hours of lectures or tutorials in total, 3 x 3-hour practicals and 4 hours of labs during the semester.			
	Scheduled learning: 42 hours		**Guided independent study:** 158 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 60%, Practical Examinations = 0%, Coursework = 40%			
	As used by St Andrews: 3-hour Written Examination = 60%, Coursework = 40%			
Re-assessment pattern:	3-hour Written Examination = 100%			
Module coordinator:	Dr G Miles			
Module teaching staff:	Prof F Gunn-Moore, Prof K Sillar, Dr S Pulver, Dr G Miles, Dr W Heitler, Dr W Li, Dr G Doherty			

PN4230 Neurodegeneration and Aging

SCOTCAT Credits:	15	SCQF Level 10	**Semester:**	1
Academic year:	2017/8			
Availability restrictions:	BSc Hons Neuroscience students have priority on this module			
Planned timetable:	Seminars: 3.00 pm - 4.00 Mon, 1.00 pm - 2.00 pm Thu (weeks 1-5); Seminars: 12.00 pm - 2.00 pm Thu (weeks 7 and 9-11); Labs: 2.00 pm - 5.00 pm Tues, Wed (week 8)			
In this module, students will develop a detailed understanding of molecular neuroscience. Work will focus at the biochemical and molecular level, so that detailed knowledge of signalling pathways will be gained.The module concentrates on three key areas relating to neurodegenerative processes. 1) How neurons stay alive 2) The aging nervous system: Changes that can 'prime' neurons for degeneration, degenerative disorders - risks, pathology, treatments. Including a practical session 3) How the nervous system responds to neurodegenerative diseases, with particular focus on Alzheimer's disease.				
Programme module type:	Optional for Biochemistry, Cell Biology, Molecular Biology, Neuroscience, Zoology and all Biology Joint or Major/Minor (i.e. 'with') and Psychology 'with' Degree programmes.			
Pre-requisite(s):	PN3313, BL3303		**Anti-requisite(s):**	BL4230
Learning and teaching methods and delivery:	**Weekly contact**: Seminars: up to 2 hours per week (to a total of 18 hours) and 2 x 3-hour practicals during the semester.			
	Scheduled learning: 24 hours		**Guided independent study:** 126 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 66%, Practical Examinations = 0%, Coursework = 34%			
	As used by St Andrews: 2-hour Written Examination = 66%, Coursework = 34%			
Re-assessment pattern:	2-hour Written Examination = 100%			
Module coordinator:	Dr G Doherty			
Module teaching staff:	Prof F Gunn-Moore, Dr G Doherty, Dr M Andrews			

PN4231 Neuromodulation

SCOTCAT Credits:	15	SCQF Level 10	**Semester:**	2
Academic year:	2017/8			
Availability restrictions:	BSc Hons Neuroscience students have priority on this module			
Planned timetable:	Lectures: 11.00 am - 12.00 noon Tue and 10.00 am - 11.00 am Fri. Practicals to be arranged.			
Until recently the nervous system was viewed as a black and white world in which neuronal networks carried out tasks using fast chemical synaptic transmission to produce an appropriate network output. However the output of neuronal networks is not fixed but instead is modifiable under different behavioural or developmental circumstances. A major source of flexibility in the output neuronal networks derives from neuromodulation; a process in which the basic operation of the networks remains the same but the strengths of synaptic connections and the integrative electrical properties of neurons in the networks are changed by the actions of a range of neuromodulators. This module explores the diverse range of neuromodulatory mechanisms and outlines their importance in information processing in the nervous system.				
Programme module type:	Optional for Cell Biology, Neuroscience, Zoology and all Biology Joint or Major/Minor (i.e. 'with') and Psychology 'with' Degree programmes.			
Pre-requisite(s):	PN3313		**Anti-requisite(s):**	BL4231
Learning and teaching methods and delivery:	**Weekly contact**: 2 seminars.			
	Scheduled learning: 24 hours		**Guided independent study:** 126 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 50%, Practical Examinations = 25%, Coursework = 25%			
	As used by St Andrews: 1-hour Written Examination = 50%, Coursework = 50%			
Re-assessment pattern:	1-hour Written Examination = 100%			
Module coordinator:	Dr S Pulver			
Module teaching staff:	Dr S Pulver, Prof K Sillar, Dr G Miles, Dr W Li, Dr W Heitler			

PN4234 Synaptic Transmission

SCOTCAT Credits:	15	SCQF Level 10	**Semester:**	2
Academic year:	2017/8			
Availability restrictions:	BSc Hons Neuroscience students have priority on this module			
Planned timetable:	Lectures: 11.00 am - 12:30 pm Wed and 12.00 noon - 1.00 pm Fri. Practicals to be arranged.			
Extensive and versatile communication between nerve cells using special junctions called synapses endows the nervous system with many complex functions like learning and memory. This module will cover important recent progress in understanding the morphology and ultrastructure of synapses, neurotransmitter corelease and recycling mechanisms, retrograde signalling, synaptic plasticity, the role of glial cells and the development of neurotransmission. Some laboratory work will provide students with hands-on experience of advanced research methods.				
Programme module type:	Optional for Behavioural Biology, Cell Biology, Neuroscience, Zoology and all Biology Joint or Major/Minor (i.e. 'with') and Psychology 'with' Degree programmes.			
Pre-requisite(s):	PN3313		**Anti-requisite(s):**	BL4234
Learning and teaching methods and delivery:	**Weekly contact**: A total of 6 x 1.5 hour seminars, 7 x 1 hour lectures and 2 x 3 hour practicals over 10 weeks			
	Scheduled learning: 22 hours		**Guided independent study:** 128 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 60%, Practical Examinations = 20%, Coursework = 20%			
	As used by St Andrews: 2-hour Written Examination = 60%, Coursework = 40%			
Re-assessment pattern:	2-hour Written Examination = 100%			
Module coordinator:	Dr W Li			
Module teaching staff:	Dr W Li, Dr S Pulver, Dr G Miles			

PN4235 Motoneurons: From Physiology to Pathology

SCOTCAT Credits:	15	SCQF Level 10	**Semester:**	1
Academic year:	2017/8			
Availability restrictions:	BSc Hons Neuroscience students have priority on this module			
Planned timetable:	Lectures : 2.00 pm - 3.00 pm Mon and 9.00 am - 10.30 am Fri. Practicals to be arranged.			
This module aims to provide in depth knowledge of key aspects of neuronal function and potential dysfunction by focussing on one of the most studied and best characterised classes of neurons in the central nervous system, motoneurons. The module will cover topics such as: the history of motoneurons in neuroscience research; the genetics controlling motoneuron development, the intrinsic electrical properties of motoneurons; synaptic inputs received by motoneurons; motoneuron recruitment; and motoneuron disease.				
Programme module type:	Optional for Behavioural Biology, Cell Biology, Biology, Neuroscience, Zoology and all Biology Joint or Major/Minor (i.e. 'with') and Psychology 'with' Degree programmes.			
Pre-requisite(s):	PN3313		**Anti-requisite(s):**	BL4235
Learning and teaching methods and delivery:	**Weekly contact**: 10 hours of seminars, 6 hours of lectures and 6 hours of practical over the semester.			
	Scheduled learning: 22 hours		**Guided independent study:** 128 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 60%, Practical Examinations = 0%, Coursework = 40%			
	As used by St Andrews: 2-hour Written Examination = 60%, Coursework = 40%			
Re-assessment pattern:	2-hour Written Examination = 100%			
Module coordinator:	Dr G Miles			
Module teaching staff:	Dr W Li, Prof K Sillar, Dr G Miles, Dr W Heitler			

PN4299 Neuroscience Research Project

SCOTCAT Credits:	60	SCQF Level 10	**Semester:**	Whole Year
Academic year:	2017/8 & 2018/9			
Planned timetable:	To be arranged with the supervisor.			
This project will involve extensive laboratory or field research to investigate a defined problem broadly within biology, psychology, or neuroscience appropriate to the degree programme being studied by each student. The project will involve diligence, initiative and independence in pursuing the literature, good experimental design, good experimental and/or analytical technique either in the field or the laboratory, and excellent record keeping. The project will culminate in the production of a high-quality report that demonstrates a deep understanding of the chosen area of research. Students will be allocated to a member of staff within the School of Psychology and Neuroscience or the School of Biology who will guide and advise them in research activities throughout the academic year.				
Programme module type:	PN4299 or BL4200 is compulsory for Neuroscience.			
Pre-requisite(s):	PN3312, PN3313		**Anti-requisite(s):**	BL4200, BL4201, PS4050, PS4299, PS4796, PS4797
Learning and teaching methods and delivery:	**Weekly contact**: Meetings with supervisor			
	Scheduled learning: 33 hours		**Guided independent study:** 567 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 35%, Coursework = 65%			
	As used by St Andrews: Practical Examination = 35%, Coursework = 65%			
Re-assessment pattern:	Practical Examination = 35%, Coursework = 65% re-assessment may include collecting further data			
Module coordinator:	Dr G H Doherty			
Module teaching staff:	Individual Supervisors across the School of Psychology and Neuroscience or the School of Biology			