Module Information

MSc Neuroscience

Academic Year
2012-13

MODULE EXAMINATION SCHEDULE 2011-12

MODULE CODE	MODULE NAME	EXAM	WEIGHT	COURSE WORK	WEIGHT
ANATG002	Developmental Neurobiology	Unseen One hour written	50.00%	One essay (2,000 words)	50.00%
ANATG005	Systems Neuroscience	Unseen One hour written	50.00%	One essay (2,000 words)	50.00%
ANATG006	Neurobiology of Degeneration and Repair	Unseen One hour written	50.00%	One essay (2,000 words)	50.00%
ANATG007	MSc Neuroscience: Journal Club	Unseen Three hour written	100.00%		
ANATG008	Receptors and Synaptic Signalling	Unseen One hour written	50.00%	One essay (2,000 words)	50.00%
ANATG009	Cognitive Systems Neuroscience	Unseen One hour written	50.00%	One essay (2,000 words)	50.00%
ANATG010	Systems and Circuit Neuroscience	Unseen One hour written	50.00%	One essay (2,000 words)	50.00%

MSc in Neuroscience Credit Structure 90:90
Taught: 90 credits; Research Project: 90 credits

Compulsory modules are indicated in red

During term 2 students take a combination of:

Systems Neuroscience <u>or</u> Systems & Circuits Neuroscience

<u>AND</u>

Neurobiology of Degeneration and Repair <u>or</u> Cognitive Systems Neuroscience

TERM 1	TERM 2		TERM 3
Developmental Neurobiology, 15 credits	Systems Neuroscience, 15 credits	E X A M S	PROJECT 90 Credits
Journal Club, 30 credits	Systems and Circuits Neuroscience, 15 credits		
Receptors and Synaptic Signalling, 15 credits	Neurobiology of Degeneration and repair, 15 credits		
	Cognitive Systems Neuroscience, 15 credits		
	Journal Club, 30 credits		

Part time students study all of the taught modules in year 1 and do the project in the second year.

Module Title	**Developmental Neurobiology**
Module Code	**ANATG002**
Module Organizer	**Dr Andrew Batchelor**
Short description	The course will cover early development of the nervous system (including induction and initial patterning of the CNS, neural progenitors, and genetic analysis of laterality in the developing CNS), origin of neural phenotypes (including organizer patterning in the CNS, migration of cortical neurons and motor circuitry in the developing spinal cord), peripheral development (including neurogenesis and neuron-glial switch, and regulation of Schwann cell development and differentiation), and axons, synapses and circuits (including axon guidance in the visual system of Drosophila, axon outgrowth: Ca2+ in growth cones, and early motor neurone-target interactions).
Module aims	To expose the students to the world-class research in the development of the nervous system as it is done at UCL.
Module Objectives	The students will become familiar with the cutting edge research done at UCL into Developmental Neurobiology. They will grasp and understand the knowledge of the research in this field as it progresses. They will learn about the initial patterning of the nervous system, neuronal differentiation and specification, axon guidance mechanisms and the initial formation of synapses during development. The module will be organized roughly in accordance with the ontogeny of development itself.
Module assessment (percentage)	Essay 50%
Written examination (percentage)	Unseen 1 hour exam 50%
Evaluation	Course tutor will be observing teaching activities and provide feedback to lecturers Course tutor meeting with students on course whilst it's in progress to get feedback Anonymous student questionnaire A written report showing results of quality monitoring and feedback will be submitted for perusal and discussion to the Board of Examiners meeting.

Module Title	Systems Neuroscience
Module Code	ANATG005
Module Organizer	Dr Andrew Batchelor
Short description	The module discusses sensory transduction from periphery to the central nervous system. It integrates knowledge in each part of sensory processing to provide a coherent outlook on how different sensory modalities are perceived by the nervous system. The sensory modalities included are pain and somatosensation, audition & vision. Additionally, the course will introduce the topic of the autonomic nervous system and discuss whole animal physiology in relation to this important branch of neuroscience.
Module aims	To expose the students to the world-class research in systems neuroscience as it is done at UCL
Module Objectives	The students will become familiar with the cutting edge research done at UCL into Systems Neuroscience. They will grasp and understand the knowledge of the research in this field as it progresses. They will learn about all sensory transduction, with the exception of olfaction, focusing first on peripheral transduction, then central information processing. The students will gain knowledge and understanding of how the nervous system operates as a whole to take multiple cues and integrate them to form a clear decision on how to act on external stimuli.
Module assessment (percentage)	Essay 50%
Written examination (percentage)	Unseen 1 hour exam 50%
Evaluation	Course tutor will be observing teaching activities and provide feedback to lecturers Course tutor meeting with students on course whilst it's in progress to get feedback Anonymous student questionnaire A written report showing results of quality monitoring and feedback will be submitted for perusal and discussion to the Board of Examiners meeting.

Module Title	**Neurobiology of Degeneration and Repair**
Module Code	**ANATG006**
Module Organizer	**Dr Andrew Batchelor**
Short description	The module will cover damage, regeneration and repair, pathology of the nervous system and neurological disease (including sodium channels and epilepsy, mitochondria and neurodegenerative disease, brain and spinal cord injury: use of glial cells as reparative bridges, and use of stem cells in animal models of CNS disorders); genetics and mechanisms involved in mood disorders such as schizophrenia.
Module aims	To expose the students to the world-class research in the science of damage, repair and pathology of the nervous system as it is done at UCL.
Module Objectives	The students will become familiar with the cutting edge research done at UCL into neural degeneration, pathology and damage. They will grasp and understand the knowledge of the research in this field as it progresses. They will learn about neurodegenerative disorders, including huntingtons disease and alzheimers, abnormal neural tube closure, retina degeneration, stroke and ion chanelopathies. They will further gain knowledge and understanding of possible therapies, including the use of stem cells, to aid in combating the effects of these disorders and pathologies.
Module assessment (percentage)	Essay 50%
Written examination (percentage)	Unseen 1 hour exam 50%
Evaluation	Course tutor will be observing teaching activities and provide feedback to lecturers Course tutor meeting with students on course whilst it's in progress to get feedback Anonymous student questionnaire A written report showing results of quality monitoring and feedback will be submitted for perusal and discussion to the Board of Examiners meeting.

Module Title	MSc Neuroscience: Journal Club
Module Code	**ANATG007**
Module Organizer	**Dr Andrew Batchelor**
Short description	The module aims to help students to read and understand research papers effectively and critically. Introductory lectures will be provided that cover the basic areas of the field to be discussed during the journal club. All students will be provided with either one or two journal papers a week in advance of the journal club, and each week two students will give an introductory presentation on the paper(s). The papers will be either relevant to the topic which is being taught that week, or will be very recent papers covering the most recent advances in neuroscience research.
Module aims	To develop critical thinking and understanding of published research, to improve presentation (both visual and spoken) and to develop skills of being able to explain complex concepts clearly and precisely.
Module Objectives	Critical understanding of research in Neuroscience, its techniques and methodologies. Understanding of key issues in presentation of complex concepts to peers.
Module assessment (percentage)	
Written examination (percentage)	Unseen 3 hour exam 100%
Evaluation	Course tutor will be observing teaching activities and provide feedback to lecturers Course tutor meeting with students on course whilst it's in progress to get feedback Anonymous student questionnaire A written report showing results of quality monitoring and feedback will be submitted for perusal and discussion to the Board of Examiners meeting.

Module Title	Receptors and Synaptic Signalling
Module Code	ANATG008
Module Organizer	Dr Andrew Batchelor
Short description	How the world of ion channels, neurotransmitters and their receptors contribute to neuronal processing will be explored. From the biophysical properties of ion channels to exploring their role in synaptic plasticity and neuropathologies.
Module aims	To expose the students to the world-class research in the neuroscience of synaptic transmission and ion channel function as it is done at UCL.
Module Objectives	The students will become familiar with the cutting edge research done at UCL into synaptic transmission and ion channel function. They will grasp and understand the knowledge of the research in this field as it progresses. They will learn about individual ion channel families and how their expression and pharmacological properties influence the firing capacity of individual neurons within neuronal circuits.
Module assessment (percentage)	Essay 50%
Written examination (percentage)	Unseen 1 hour exam 50%
Evaluation	Course tutor will be observing teaching activities and provide feedback to lecturers Course tutor meeting with students on course whilst it's in progress to get feedback Anonymous student questionnaire A written report showing results of quality monitoring and feedback will be submitted for perusal and discussion to the Board of Examiners meeting.

Module Title	Cognitive Systems Neuroscience
Module Code	ANATG009
Module Organizer	Dr Robin Hayman
Short description	The module discusses cognitive systems and processing in the central nervous system. As well as teaching how the central nervous system processes sensory information (visual, auditory and olfactory), higher-level perceptual and cognitive systems including language processing, face processing, the role of attentional systems, spatial representation and the use of fMRI to examine visual consciousness are also described.
Module aims	To expose the students to the world-class research in clinical neuroscience
Module Objectives	The students will become familiar with the cutting edge research into Cognitive Neuroscience. They will grasp and understand the knowledge of the research in this field as it progresses. Neuroimaging techniques including fMRI, structural MRI, EEG and MEG will be taught in the context of higher-order perceptual and cognitive processes. A comprehension of how the brain constructs abstract models of the external world including object recognition, spatial representation, planning processes and the role of consciousness will be gained.
Module assessment (percentage)	Essay 50%
Written examination (percentage)	Unseen 1 hour exam 50%
Evaluation	Course tutor will be observing teaching activities and provide feedback to lecturers Course tutor meeting with students on course whilst it's in progress to get feedback Anonymous student questionnaire A written report showing results of quality monitoring and feedback will be submitted for perusal and discussion to the Board of Examiners meeting.

Module Title	Systems and Circuit Neuroscience
Module Code	ANATG010
Module Organizer	Dr Robin Hayman
Short description	The module discusses systems and circuit analysis using a variety of techniques from optogenetics in Drosophila to human neuroimaging and computational modeling. The systems covered span from the generation and maintenance of circadian rhythms, reinforcement and learning in the striatum, to somatosensation and synaptic plasticity and memory.
Module aims	To expose the students to the world-class research in systems neuroscience
Module Objectives	The students will become familiar with the cutting edge research into Systems and Circuit based analysis in Neuroscience. They will grasp and understand the knowledge of the research in this field as it progresses. They will learn about a variety of systems in the central nervous system spanning a range of model organisms from Drosophila and zebrafish to human neuroimaging work and computational models of memory.
Module assessment (percentage)	Essay 50%
Written examination (percentage)	Unseen 1 hour exam 50%
Evaluation	Course tutor will be observing teaching activities and provide feedback to lecturers Course tutor meeting with students on course whilst it's in progress to get feedback Anonymous student questionnaire A written report showing results of quality monitoring and feedback will be submitted for perusal and discussion to the Board of Examiners meeting.