

LF267-15 Neurobiology of Disease

20/21

Department

Life Sciences

Level

Undergraduate Level 2

Module leader

Bruno Frenguelli

Credit value

15

Module duration

5 weeks

Assessment

Multiple

Study location

University of Warwick main campus, Coventry

Description

Introductory description

This module will cover the neuropathology, anatomy and pathophysiology of diseases involving the nervous system. It will provide insight into both the structure and function of the brain, upper motor neurones, lower motor neurones, the neuromuscular junction and the peripheral sensory nervous system. The aim of the module is to introduce the students to how physiological processes can be disrupted and the clinical consequences these disruptions cause.

Module aims

LO1 Demonstrate understanding of anatomy of the nervous system

LO2 Demonstrate understanding of the physiology and pathophysiology of the brain

LO3 Demonstrate understanding of the physiology and pathophysiology of upper motor neurones

LO4 Demonstrate understanding of the physiology and pathophysiology of lower motor neurones

LO5 Demonstrate understanding of the physiology and pathophysiology of the neuromuscular junction

LO6 Demonstrate understanding of the physiology and pathophysiology of skeletal muscle

LO7 Demonstrate understanding of the physiology and pathophysiology of the sensory nervous system

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

1 Anatomy to the nervous system (i)

Basic review of the anatomy of the brain, spinal cord.

1. Anatomy to the nervous system (ii)

Basic review of the anatomy of the neuromuscular junction and muscle

1. Pathophysiology of the brain (i)

Disease framework (signs, symptoms, diagnosis, cause, prognosis and potential treatment) of frontal temporal lobe dementia

1. Pathophysiology of the brain (ii)

Disease framework (signs, symptoms, diagnosis, cause, prognosis and potential treatment) of tauopathies

1. Pathophysiology of motor neurones (i)

Disease framework (signs, symptoms, diagnosis, cause, prognosis and potential treatment) of Amyotrophic lateral sclerosis (ALS)

1. Pathophysiology of motor neurones (ii)

Disease framework (signs, symptoms, diagnosis, cause, prognosis and potential treatment) of spinal muscular atrophy (SMA) and spinal bulbar muscular atrophy (SBMA)

1. Pathophysiology of motor neurones (iii)

Disease framework (signs, symptoms, diagnosis, cause, prognosis and potential treatment) of myasthenia gravis (MG)

8. Pathophysiology of motor neurones (iv)

Disease framework (signs, symptoms, diagnosis, cause, prognosis and potential treatment) of multiple sclerosis (MS)

1. Pathophysiology of the skeletal muscle (i)

Disease framework (signs, symptoms, diagnosis, cause, prognosis and potential treatment) of Duchenne and Becker muscular dystrophy (DMD and BMD)

1. Pathophysiology of the skeletal muscle (ii)

Disease framework (signs, symptoms, diagnosis, cause, prognosis and potential treatment) of limb girdle muscular dystrophy (LGMD)

1. Pathophysiology of the skeletal muscle (iii)

Disease framework (signs, symptoms, diagnosis, cause, prognosis and potential treatment) of emery dreyfus muscular dystrophy (EDMD)

1. Pathophysiology of the cardiac muscle (i)

Disease framework (signs, symptoms, diagnosis, cause, prognosis and potential treatment) of primary AL Amyloidosis

1. Pathophysiology of the cardiac muscle (ii)

Disease framework (signs, symptoms, diagnosis, cause, prognosis and potential treatment) of cardiac autonomic neuropathy (CAN)

1. Pathophysiology of the cardiac muscle (ii)

Disease framework (signs, symptoms, diagnosis, cause, prognosis and potential treatment) of cardiac autonomic neuropathy (CAN)

1. Pathophysiology of the sensory neurones (i)

Disease framework (signs, symptoms, diagnosis, cause, prognosis and potential treatment) of sensory neuropathy (SN)

1. Pathophysiology of the sensory neurones (ii)

Disease framework (signs, symptoms, diagnosis, cause, prognosis and potential treatment) of sensory neuron disease (SND)

Learning outcomes

By the end of the module, students should be able to:

- Level 5 understanding of the anatomy of the nervous system
- Level 5 understanding of the physiology and pathophysiology of the brain
- Level 5 understanding of the physiology and pathophysiology of upper motor neurones
- Level 5 understanding of the physiology and pathophysiology of lower motor neurones
- Level 5 understanding of the physiology and pathophysiology of the neuromuscular junction
- Level 5 understanding of the physiology and pathophysiology of skeletal muscle
- Level 5 understanding of the physiology and pathophysiology of the sensory nervous system

Indicative reading list

Bear, Connors and Paradiso, Neuroscience – Exploring the Brain, 3rd edn. (Lippincott Williams and Wilkin, 2007).

Kandel, Schwartz, Jessell and Hudspeth, Principles of Neural Science, 5th edn. (McGraw-Hill, 2012).

Subject specific skills

LO1 Demonstrate understanding of anatomy of the nervous system

LO2 Demonstrate understanding of the physiology and pathophysiology of the brain

LO3 Demonstrate understanding of the physiology and pathophysiology of upper motor neurones

LO4 Demonstrate understanding of the physiology and pathophysiology of lower motor neurones

LO5 Demonstrate understanding of the physiology and pathophysiology of the neuromuscular junction

LO6 Demonstrate understanding of the physiology and pathophysiology of skeletal muscle

LO7 Demonstrate understanding of the physiology and pathophysiology of the sensory nervous system

Transferable skills

Adult learning

Self directed learning

Quantitative skills and data handling skills

Study

Study time

Type	Required
Lectures	15 sessions of 1 hour (7%)
Practical classes	3 sessions of 6 hours (8%)
Private study	117 hours (52%)
Assessment	75 hours (33%)
Total	225 hours

Private study description

Self directed learning and revision

Costs

No further costs have been identified for this module.

Assessment

You do not need to pass all assessment components to pass the module.

Assessment group D

	Weighting	Study time	Eligible for self-certification
In-module laboratory	30%	30 hours	No
3 x 6hr laboratory sessions- students will submit a report after the third session			
End of Year Exam	70%	45 hours	No
45 min SAQ paper / 45 min essay paper			

- Online examination: No Answerbook required

Assessment group R

	Weighting	Study time	Eligible for self-certification
In-person Examination - Resit	100%		No
45 min SAQ paper / 45 min essay paper			

- Answerbook Green (8 page)

Feedback on assessment

Person tutor in 1-2-1 tutorial

[Past exam papers for LF267](#)

Availability

Courses

This module is Core for:

- Year 2 of ULFA-B140 Undergraduate Neuroscience (BSc)
- Year 2 of ULFA-B142 Undergraduate Neuroscience (MBio)
- Year 2 of ULFA-B143 Undergraduate Neuroscience (with Industrial Placement) (MBio)
- Year 2 of ULFA-B141 Undergraduate Neuroscience (with Placement Year) (BSc)