

Edinburgh Imaging

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Neuroanatomy

Semester 1 / Autumn

10 credits (IMSc) / 20 Credits (N14R)

Each Course is composed of Modules & Activities.

Modules:

Major Lobes and Fissures	IMSc	NI4R	MIAA
Ventricles and CSF	IMSc	NI4R	MIAA
Major Vessels Vascular Territories	IMSc	NI4R	MIAA
Major Internal Connections		NI4R	MIAA
Cranial nerve nuclei	IMSc	NI4R	MIAA
Detailed gyral identification		NI4R	MIAA

Each Module is composed of Lectures, Reading Lists, MCQ self-assessments, & Discussion Boards.

These Modules are taught on the following Programmes, or are incorporated into blended Courses which teach students enrolled outwith the Edinburgh Imaging Academy:

- NI4R - Neuroimaging for Research programme
- IMSc - Imaging programme
- MIAA - Medical Imaging and Anatomy - course for MSc Human Anatomy & Dip / Cert Anatomical Sciences

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Modules

Major Lobes and Fissures:

Major Lobes and Fissures

Ventricles and CSF:

Ventricles and basal cisterns

Formation and flow of CSF

Imaging examples

Major Vessels Vascular Territories:

Arterial system of the brain – anterior circulation

Arterial system of the brain – posterior circulation

Venous drainage of the brain

Major Internal Connections:

Major Internal Connections PART 1

Major Internal Connections PART 2

Cranial nerve nuclei:

Cranial nerve nuclei

Detailed gyral identification:

Introduction

Key gyri and sulci

Case studies

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Major Lobes and Fissures

Lecture 1

Title: Major Lobes and Fissures

Description: Basic anatomy

Author(s): Dr Zoe Morris

Learning Objectives

- Name the major lobes of the brain and the fissures which separate them
- Identify some of the more important gyri and sulci
- List five ways of identifying the central sulcus on a brain MRI
- Give some examples of the functions of the different lobes

Ventricles and CSF

Lecture 1

Title: Ventricles and basal cisterns

Description: Outline of the anatomy of the ventricles and basal cisterns – main spaces around the brain

Author(s): Prof. Joanna Wardlaw, assisted by Dr Deepak Subed

Learning Objectives

- Describe the anatomy of the ventricles and spaces overlying the brain

Lecture 2

Title: Formation and flow of CSF

Description: Outline function of CSF, its formation and circulation

Author(s): Prof. Joanna Wardlaw

Learning Objectives

- Describe the pathways of formation and drainage of the cerebral spinal fluid
- Explain the function of the cerebral spinal fluid pathways

Lecture 3

Title: Imaging examples

Description: Typical examples of what ventricles and CSF look like when something goes wrong

Author(s): Prof. Joanna Wardlaw, with assistance from Dr Deepak Subedi, Dr Andrew Farrall and Dr Zoe Morris

Learning Objectives

- Describe and recognise what the spaces in and around the brain look like on imaging in health at different ages and in disease
- Work out where the abnormality is from the pattern of blockage or change in space size

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Major Vessels Vascular Territories

Lecture 1

Title: Arterial system of the brain – anterior circulation

Description: Description of arteries of the anterior circulation and their major branches and territories

Author(s): Dr Deepak Subedi

Learning Objectives

- Identify the major vascular territories of the brain in the anterior circulation
- Identify the major branches of the internal carotid artery and the areas supplied by these branches in anterior circulation

Lecture 2

Title: Arterial system of the brain – posterior circulation

Description: Description of major posterior circulation arteries, their branches and arterial territories

Author(s): Dr Deepak Subedi

Learning Objectives

- Identify the major vascular territories of the brain related to posterior circulation
- Identify the major branches of the vertebral artery and the areas supplied by these branches within the posterior circulation

Lecture 3

Title: Venous drainage of the brain

Description: Major veins and venous sinuses draining the brain will be discussed

Author(s): Dr Deepak Subedi

Learning Objectives

- Describe the venous drainage of the various parts of the brain
- Identify the different intracranial veins and dural venous sinuses

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Major Internal Connections

Lecture 1

Title: Major Internal Connections – PART 1

Description: Introduction

Author(s): Dr Susana Munoz Maniega, Dr Zoe Morris, Prof. Joanna Wardlaw

Learning Objectives

- Describe key connections (white matter tracts) in the brain
- Recognise these connections on imaging
- Find sources of more information on white matter tracts
- Discuss the role of key connections in the brain

Lecture 2

Title: Major Internal Connections – PART 2

Description: Descriptions of association and commissural fibres and sensory, motor and visual pathways

Author(s): Dr Susana Munoz Maniega, Dr Zoe Morris, Prof. Joanna Wardlaw

Learning Objectives

- Describe key connections (white matter tracts) in the brain
- Recognise these connections on imaging
- Discuss the role of key connections in the brain
- Find sources of more information on white matter tracts

Cranial nerve nuclei

Lecture 1

Title: Cranial nerve nuclei

Description: Anatomy of the cranial nerve nuclei

Author(s): Dr. Andrew Farrall

Learning Objectives

- Name the twelve cranial nerves
- Describe the functions of the cranial nerves
- Locate the cranial nerve nuclei

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Detailed gyral identification

Lecture 1

Title: Introduction

Description: Introduction to methods for linking structure, function and histological knowledge

Author(s): Prof Joanna Wardlaw, with assistance from Dr Zoe Morris

Learning Objectives

- Explain contribution of imaging to improved understanding of brain anatomy/function
- Discuss where knowledge is limited on structure/function
- Find information concerning classification systems for gyri

Lecture 2

Title: Key gyri and sulci

Description: Closer examination of localisation of some further primary and secondary gyri

Author(s): Prof Joanna Wardlaw, with assistance from Dr Zoe Morris

Learning Objectives

- Describe key gyri and their functions
- Discuss where knowledge is limited on structure/function

Lecture 3

Title: Case studies

Description: Case studies of gyral variation and its links to function

Author(s): Prof Joanna Wardlaw, with assistance from Dr Zoe Morris

Learning Objectives

- Give an example of gyral variation and its link to function