Cardiovascular Imaging

Semester 2 / January 10 Credits

Each Course is composed of Modules & Activities.

Modules:
Cardiac basics IMSc
CT coronary angiography IMSc
Imaging of ischaemic heart disease IMSc
Cardiac and pericardial anomalies IMSc
Vascular imaging IMSc
Pulmonary vascular imaging IMSc

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:

- IMSc - Imaging programme
Modules include:

**Cardiac basics:**
   Cardiothoracic radiology: overview

**CT coronary angiography:**
   Coronary CT calcium scoring
   Cardiac CT overview
   Cardiac CT: image acquisition

**Imaging of ischaemic heart disease:**
   MR & ischaemic heart disease
   CT & ischaemic heart disease

**Cardiac and pericardial anomalies:**
   Cardiovascular anomalies

**Vascular imaging:**
   CT & MRI imaging of the aorta

**Pulmonary vascular imaging:**
   Pulmonary embolism
Cardiac basics

Lecture 1
Title: Cardiothoracic radiology: overview
Description: Radiology of the chest: CXr, CT, MR, Nuc Med. Common chest pathologies
Author(s): Prof Edwin van Beek
Editor(s): Dr Andrew Farrall
Learning Objectives
- Give an overview of different chest imaging modalities
- Describe how these different modalities are applied
- Discuss examples of common chest pathologies

CT coronary angiography

Lecture 1
Title: Coronary CT calcium scoring
Description: CAC, scan protocols, scoring CT scans; interpretation
Author(s): Dr Saeed Mirsadraee
Editor(s): Dr Andrew Farrall
Learning Objectives
- State the significance of coronary artery calcification
- Describe a scan protocol
- Score a coronary CT scan
- Interpret the calculated scores

Lecture 2
Title: Cardiac CT: overview
Description: Cardiac CT & CT angiography: technology, strengths & limitations
Author(s): Prof Edwin J.R. van Beek
Editor(s): Dr Andrew Farrall
Learning Objectives
- Describe basic CT principles
- Explain the challenges of cardiac CT / CT angiography
- State the principles of cardiac CTA
- Discuss ECG gating: prospective or retrospective
- Explain considerations around radiation dose
CT coronary angiography contd..

Lecture 3
Title: Cardiac CT: image acquisition
Description: Cardiac CT & CT angiography: patient preparation, clinical protocols, role of contrast, image acquisition
Author(s): Prof Edwin J.R. van Beek
Editor(s): Dr Andrew Farrall
Learning Objectives
- Describe patient preparation
- Discuss clinical protocol selection
- Explain the role of a pre-contrast scan
- Outline a contrast administration protocol
- Give an overview of cardiac CT angiography acquisition

Imaging of ischaemic heart disease

Lecture 1
Title: MR & ischaemic heart disease
Description: Overview of ischaemic heart disease, SPECT imaging & the rise of MR techniques.
Author(s): Prof Edwin J.R. van Beek
Editor(s): Dr Andrew Farrall
Learning Objectives
- Give an overview of myocardial infarct (MI) pathology
- Describe modalities for investigating IHD
- Outline limitations of SPECT
- Outline benefits & limitations of MR imaging
- Discuss applications of MR imaging in IHD / MI e.g.
  - Infarct size evaluation
  - Myocardial viability assessment
  - Perfusion determination

Lecture 2
Title: CT & ischaemic heart disease
Description: Overview of CT techniques in the evaluation of ischaemic heart disease.
Author(s): Prof Edwin J.R. van Beek
Editor(s): Dr Andrew Farrall
Learning Objectives
- Give an overview of CT development for coronary angiography
- Describe coronary artery anomalies
- Outline CT assessment of coronary plaque
- Outline CT assessment of cardiac viability
- Discuss the global cardiac CT process
Cardiac and pericardial anomalies

Lecture 1
Title: Cardiovascular anomalies
Description: Non-invasive imaging of coronary artery anomalies
Author(s): Dr Saeed Mirsadraee
Editor(s): Dr Andrew Farrall

Learning Objectives
- State frequency of coronary artery anomalies
- List associations with anomalous coronary arteries
- Describe normal coronary artery anatomy
- Classify various coronary artery anomalies
- State the significance of coronary artery anomalies

Vascular imaging

Lecture 1
Title: CT & MRI Imaging of the Aorta
Description: Imaging aortic anatomy, aortic aneurysm, & acute aortic syndromes
Author(s): Dr Christopher James Rofe
Editor(s): Dr Saeed Mirsadraee, Dr Andrew Farrall

Learning Objectives
- List key features for review on aortic imaging
- Discuss the role of multi-detector CT in aortic imaging
- Compare multi-detector CT with MR imaging strategies
- State key anatomical aortic divisions
- Describe imaging of:
  - Aortic aneurysm
  - Acute aortic syndromes
    - Dissection
    - Intramural haematoma
    - Penetrating ulcer
Pulmonary vascular imaging

Lecture 1
Title: Pulmonary embolism
Description: Pulmonary embolism imaging techniques
Author(s): Prof Edwin van Beek
Editor(s): Dr Andrew Farrall

Learning Objectives
- Explain the importance of diagnosing pulmonary embolism
- Describe different diagnostic tests which allow diagnosis of pulmonary embolism
- Discuss diagnostic management pathways which minimise patient risk & optimise workflow