EUtempe-RX MPE07:

Undertaking and understanding quantitative measurements in digital radiography

Module aims and outcomes

Aim: This module aims to help the future MPE (Diagnostic Radiology) acquire the knowledge, skills and competences necessary to:

measure modulation transfer function (MTF), noise power spectra (NPS) and detective quantum efficiency (DQE)

Learning outcomes

Able to:

1. Discuss in detail image quality metrics such as MTF, NPS and DQE.
2. Evaluate the performance of a detector using quantitative techniques such as MTF and NPS.
3. Comparison of systems using DQE.
4. Understand the noise sources in imaging.
5. Discuss how the results of quantitative measurements relate to the image quality of a system.
6. Take responsibility for improving the quality of radiological examinations.

Pre-requisite experience: The participants should be familiar with the standard quality control methods for general radiography and/or mammography systems.

Part 1: e-learning course

Course will be online from 29th August 2023

The majority of the course will be undertaken online. The course will consist of screencasts, videos and interactive content. There will also be video conferencing and a online forum.

Online course requires 35 hours.

Online only Option is available to cover face to face part

Online material available for 1 year.

Online course content

Introductory concepts

- Mathematical concepts such as Fourier transforms
- Designs of radiographic detectors

Quantitative measurements

- Signal transfer properties
- Beam quality
- Understanding and measuring of MTF, NPS and DQE
- Use of quantitative measurements
- Application of quantitative measurements to quality control and research

Further course information:

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Part 2: Face to face course

Mon. 9th to Tue. 10th October 2023

Education Centre, Royal Surrey County Hospital, Guildford, GU2 7XX, UK

The course will consist of seminars and practicals. There will be opportunities to talk with experts in quantitative measurements,.

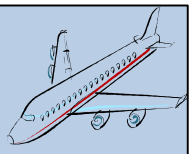
Participants **must**:

- complete the online part of the course before the face-to-face meeting.
- take a laptop to course

Costs

Course: £420 includes teas, coffee breaks;
Online only: £340
Fee for lunches subsidised £5 per day
Course dinner £28.
The participants will meet the cost of travel, accommodation and other meals.

Travel



Guildford is an old market Town located to the south west of London. There are regular fast trains from central London (Waterloo station) to Guildford.

London Gatwick is the closest airport with direct trains. **London Heathrow** is linked by airbus. **London City, Luton and Stansted airports** are not close, participants would need to travel via central London.
There are regular **Eurostar trains** from Paris, Brussels and Amsterdam to central London (St Pancras station).

Face to face course content

Seminars

- Clinical image quality by a radiologist
- Quantitative measurements
- Adaption of images

Practicals

- Calculation of MTF, NPS and DQE
- Setting up QC
- Understanding faults detected using quantitative measurements

Post course assessment:
Online 2-hour written paper:
Mon 16th October 2023

Participants who pass the exam will receive certificates and EBAMP CPD

Food

Course dinner: 9th October.

Suggested accommodation

Holiday inn, 1 km; from £150 per night (www.holidayinn.com)

Travelodge, 2.5 km; from £35 per night (www.travelodge.co.uk/hotels/287/Guildford-hotel)

Tourist information: Vibrant shopping area, beautiful Surrey Hills in Autumn colours, Guildford Cathedral and Castle, easy access to London.

Electrical Sockets: Remember to bring a Europe to UK socket adapter for your laptop

Weather

Average high temperatures of 15˚C in October.