Computed Tomography

Module Code: RAD7007-C
Academic Year: 2018-19
Credit Rating: 30
School: School of Allied Health Professions and Midwifery
Subject Area: Radiography
FHEQ Level: FHEQ Level 7 (Masters)

Pre-requisites:
Co-requisites:

Contact Hours

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>Lectures</td>
<td>70</td>
</tr>
<tr>
<td>Tutorials</td>
<td>26</td>
</tr>
<tr>
<td>Directed Study</td>
<td>204</td>
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Availability Periods

<table>
<thead>
<tr>
<th>Occurrence</th>
<th>Location/Period</th>
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<tbody>
<tr>
<td>BDA</td>
<td>University of Bradford / Semester 1 (Sep - Jan)</td>
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Module Aims

To enable the student to gain a comprehensive understanding of the physical principles and technology that underpins the acquisition, production and presentation of computed tomographic (CT) images and to develop the students ability to critically analyze and evaluate a broad range of CT imaging applications and protocols.

Outline Syllabus

The syllabus will include: the physical principles underlying x-ray generation in CT, attenuation and beam quality; detector systems, collimators and filtration; scan modes; exposure parameters and their impact on image appearances; image reconstruction and quality; artefacts and artefact reduction; Hounsfield values and windowing; post processing techniques. To include 2D, 3D and virtual endoscopy; radiation dose and safety issues;
Module Learning Outcomes

On successful completion of this module, students will be able to...

1. Critically reflect on the relationship between the physical principles of computed Tomography (CT) and the design and applications of CT technology.

2. Critically appraise a broad range of CT applications and protocols.

3. Demonstrate independent thought in the critical analysis of CT images.

4. Critically evaluate published research and literature in CT imaging.

5. Critically evaluate CT protocols and reflect on their clinical suitability.

6. Communicate effectively with peers in writing in a professional manner.

7. Evaluate complex issues in a systematic and creative manner.

8. Critically reflect on own professional practice in order to recognise [their] own continuing professional development needs.

Learning, Teaching and Assessment Strategy

Lectures will introduce the students to the physical principles of CT technology and the clinical applications of CT. Additional lectures by recognised experts will expose the students to current CT technology and its applications in clinical practice and challenge the students thinking on existing practice. The student’s understanding will be further enhanced by problem solving and questioning during group tutorials. Directed study based on critiquing up to date literature and practice will be used to further stimulate the students learning. The VLE will be used to support the student’s learning and to facilitate sharing and collaboration in problem solving. Achievement of the learning outcomes will be demonstrated through the completion of a written examination based on the physical principles (learning outcomes 1, 2, 3, 6, 7), an OSE style exam to assess knowledge of image appearances and applications (learning outcomes 2, 3, 5), and a work-based project/case study (learning outcomes 1, 4, 6, 7, 8). OSE style assessment is a University based assessment, which will involve the students responding to questions based on case studies with accompanying medical images.

Mode of Assessment
<table>
<thead>
<tr>
<th>Type</th>
<th>Method</th>
<th>Description</th>
<th>Length</th>
<th>Weighting</th>
<th>Final Assess'</th>
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</thead>
<tbody>
<tr>
<td>Summative</td>
<td>Examination - closed book</td>
<td>Technology and principles of CT</td>
<td>1.75 hours</td>
<td>40%</td>
<td>No</td>
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<tr>
<td>Summative</td>
<td>Coursework</td>
<td>1500 word assignment</td>
<td>0 hours</td>
<td>20%</td>
<td>No</td>
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<tr>
<td>Summative</td>
<td>Computer-based assessment</td>
<td>Objective structured image viewing examination (OSIVE) with the use of a computer</td>
<td>1.75 hours</td>
<td>40%</td>
<td>No</td>
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Legacy Code (if applicable)
HRP-701T

Reading List
To view Reading List, please go to rebus:list.