

| Module Details |                                                   |
|----------------|---------------------------------------------------|
| Module Title   | Advanced MRI Techniques                           |
| Module Code    | RAD7018-C                                         |
| Academic Year  | 2022/3                                            |
| Credits        | 30                                                |
| School         | School of Allied Health Professions and Midwifery |
| FHEQ Level     | FHEQ Level 7                                      |

| Contact Hours                  |       |
|--------------------------------|-------|
| Type                           | Hours |
| Lectures                       | 10    |
| Online Lecture (Synchronous)   | 6     |
| Online Lecture (Asynchronous)  | 4     |
| Tutorials                      | 5     |
| Online Tutorials (Synchronous) | 3     |
| Project Supervision            | 2     |
| Seminars                       | 6     |
| Interactive Learning Objects   | 15    |
| Directed Study                 | 104   |
| Independent Study              | 145   |

| Availability |                                        |
|--------------|----------------------------------------|
| Occurrence   | Location / Period                      |
| BDA          | University of Bradford / Academic Year |

| Module Aims                                                                                                                                                                                                                                                                           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The module is designed to enable Magnetic Resonance Imaging (MRI) radiographers to enhance their current knowledge and understanding of advanced MRI techniques and their applications. It gives you the opportunity to challenge and critically evaluate your professional practice. |

## Outline Syllabus

You will gain an understanding of the physical principles underpinning conventional and emerging advanced sequences, and their potential applications. The module will cover a range of MRI sequences including but not limited to; Perfusion MRI, ASL and Spectroscopy, Advanced acceleration techniques, Quantitative Imaging, fMRI, Cardiac MRI, Reconstructive Techniques, Patient care and Safety in the context of Advanced Imaging.

## Learning Outcomes

| Outcome Number | Description                                                                                                                                                                  |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1              | Critically evaluate the fundamental and physical concepts of advanced Magnetic Resonance Imaging (MRI) sequences and assess appropriate optimisation techniques.             |
| 2              | For a range on examinations, demonstrate the ability to integrate theory and practice through critical evaluation of advanced techniques' current and emerging applications. |
| 3              | Demonstrate initiative, reflective practice, self-direction, evaluate complex issues, propose new developments and apply these where appropriate.                            |
| 4              | Critically review and analyse the evidence base relevant to current and future developments.                                                                                 |
| 5              | Demonstrate ethical, inclusive practice and professional effective communication skills.                                                                                     |

## Learning, Teaching and Assessment Strategy

The module will be taught using a blended learning approach by academic staff and clinical specialists with expertise in Advanced Techniques. Taught sessions will be conducted using a combination of tutorials and synchronous (live) or asynchronous lectures.

Concepts will be introduced using formal lectures, tutorials and invited lectures from the MRI industries. Deeper and better understanding will be developed during tutorials by solving practical scenarios and problems.

Online activities will be completed electronically using VLE (Canvas). Weekly contact with your Personal Academic Tutor will be facilitated via email and Canvas. Interactions with learning objects via this platform will provide students with the relevant materials to develop their reflective practice, self-direction, evaluation skills, analytic skills, ethical, inclusive practice and communication skills.

Assessment of the learning outcomes will through the completion of:

- (1) a seminar presentation demonstrating their underpinning knowledge base and critical thinking (learning outcomes 3, 4, 5); and
- (2) a formal examination (learning outcomes 1, 2) based on the underlying physical concepts and applications.

| Mode of Assessment |                          |                                                                      |           |
|--------------------|--------------------------|----------------------------------------------------------------------|-----------|
| Type               | Method                   | Description                                                          | Weighting |
| Summative          | Presentation             | 30 minutes Individual Seminar presentation. (PASS AT 40%, MUST PASS) | 50%       |
| Summative          | Computerised examination | 75 minutes Computerised Online Exam (PASS AT 40%, MUST PASS)         | 50%       |
| Formative          | Self and Peer Assessment | Peer and Tutor discussions on exam style questions.                  | N/A       |
| Formative          | Self and Peer Assessment | Tutor feedback and supervision related to the presentation.          | N/A       |

| Reading List                                                                                                                                             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| To access the reading list for this module, please visit <a href="https://bradford.rl.talis.com/index.html">https://bradford.rl.talis.com/index.html</a> |

*Please note:*

*This module descriptor has been published in advance of the academic year to which it applies. Every effort has been made to ensure that the information is accurate at the time of publication, but minor changes may occur given the interval between publishing and commencement of teaching. Upon commencement of the module, students will receive a handbook with further detail about the module and any changes will be discussed and/or communicated at this point.*

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