

| Module Details | |
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| Module Title | Clinical Diagnostics |
| Module Code | MHT7014-B |
| Academic Year | 2021/2 |
| Credits | 20 |
| School | Department of Biomedical and Electronics Engineering |
| FHEQ Level | FHEQ Level 7 |

| Contact Hours | |
|----------------|-------|
| Type | Hours |
| Lectures | 16 |
| Tutorials | 16 |
| Directed Study | 159 |
| Laboratories | 9 |

| Availability | |
|--------------|-------------------------------------|
| Occurrence | Location / Period |
| BDA | University of Bradford / Semester 2 |

| Module Aims |
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| <p>This module aims to engender specialist knowledge and understanding of clinical signals measurements and analysis both in theory and in practice. It also aims to develop mathematical and software skills in relation to clinical signals and an understanding of the body as an electrical machine.</p> |

| Outline Syllabus |
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| <p>The physiological origin of electrical activity.</p> <p>Electromyography (EMG). Electrical activity in the musculoskeletal system. EMG Laboratory.</p> <p>The electrocardiogram (ECG). Electrical activity of the heart. ECG Laboratory.</p> <p>The electroencephalogram (EEG). Electrical activity in the brain. EEG Laboratory.</p> |

Learning Outcomes

| Outcome Number | Description |
|----------------|--|
| 01 | Measure and analyse clinical signals from a diagnostic perspective |
| 02 | Describe the principles and techniques underlying the analysis |
| 03 | Understand the physiological basis and clinical relevance of various signal types |
| 04 | Critical evaluate data in a clinical context |
| 05 | Analyse and critically evaluate the clinical significance of electrical signals arising from physiological processes |
| 06 | Solve problems of clinical data analysis in a coherent and systematic manner. |

Learning, Teaching and Assessment Strategy

Core content will be delivered through key lectures and directed reading, providing students with the opportunity to acquire the information to enhance their knowledge and understanding of subject LO 1,2,3,4,5,6. This will be complemented by group discussions and tutorials to allow students to apply this learning to specific issues.

Discipline skills will be developed in laboratory classes, tackled by working in small groups supported by members of academic staff LO 1,2,3,4,5,6.

Directed study provides students with the opportunity to undertake guided reading and to develop their own portfolio of learning to enhance transferable skills and knowledge LO 1,2,3,4,5,6.

The VLE will be used to provide access to online resources, lecture notes and external links to websites of interest.

100% Coursework portfolio of lab work, results and analysis together with an individual mini-project.

This module satisfies the below Learning Outcomes as specified by the Accreditation of Higher Education Programmes: Third Edition (AHEP3) as published by The Engineering Council in-line with the UK Standard for Professional Engineering Competence (UK-SPEC). These outcomes specify six key areas of learning: Science and Mathematics (SM), Engineering Analysis (EA), Design (D), Economic, Legal, Social, Ethical and Environmental Context (EL), Engineering Practice (P) and Additional General Skills (G).

SM1m, SM2m, SM3m, SM5m, SM6m, EA1m, EA2, EA3m, EA4m, EA6m.

Further details of these learning outcomes can be found at <https://www.engc.org.uk/>.

Mode of Assessment

| Type | Method | Description | Weighting |
|-----------|----------------------|---|-----------|
| Summative | Coursework - Written | Mini project on an aspect of clinical diagnostics approved by the lecturer (1200 words) | 30% |
| Summative | Coursework - Written | Report including results, analysis and discussion on the lab sessions (2800 words) | 70% |

Reading List

To access the reading list for this module, please visit <https://bradford.rl.talis.com/index.html>

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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