UNIVERSITY of BRADFORD

Module Descriptor

Module Details	
Module Title	Clinical Diagnostics
Module Code	MHT7014-B
Academic Year	2022/3
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

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.

Outline Syllabus

The physiological origin of electrical activity.

Electromyography (EMG). Electrical activity in the musculoskeletal system. EMG Laboratory.

The electrocardiogram (ECG). Electrical activity of the heart. ECG Laboratory.

The electroencephalogram (EEG). Electrical activity in the brain. EEG Laboratory.

The clinical need for diagnostics; the ethics of physiological measurement; the impact of clinical diagnostics.Clinical signal analysis.

Learning Outcomes	
Outcome Number	Description
01	Measure and analyse clinical signals from a diagnostic perspective
02	Describe the principles, practices 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	Laboratory 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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