

Liverpool John Moores University

Title: MEDICAL INSTRUMENTATION
Status: Definitive
Code: **5501ICBTBE** (127047)
Version Start Date: 01-08-2021

Owning School/Faculty: Pharmacy & Biomolecular Sciences
Teaching School/Faculty: ICBT, Colombo

Team	Leader
Alison Cotgrave	Y

Academic Level: FHEQ5
Credit Value: 15
Total Delivered Hours: 65
Total Learning Hours: 150
Private Study: 85

Delivery Options

Course typically offered: Semester 1 and Summer

Component	Contact Hours
Lecture	45
Off Site	6
Seminar	6
Tutorial	6

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	Exam	Formal written exam	70	2
Essay	Essay	Essay (1500 words)	30	

Aims

This module is intended to provide learners a comprehensive idea about working principle, operation and characteristics of electronic and electronic components, Digital Electronics and Communication Systems in Medical Devices and to understand the basic principles, working of biomedical instruments.

Learning Outcomes

After completing the module the student should be able to:

- 1 Evaluate the different types of bio potential recorders and physiological assist devices available.
- 2 Identify the wireless methods used along with the medical devices to transmit.
- 3 Evaluate cardiovascular and respiratory related diagnostic equipment.
- 4 Identify the basic functions of medical devices available in the following hospital environment via a hospital visit (operation theatre, intensive care unit, radiology unit, dental unit).
- 5 Troubleshoot small scale medical devices.

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Formal Written Exam	1	2	3
Essay	4	5	

Outline Syllabus

1. *Bio potential Recorders: Characteristics of the recording systems, ECG, EEG, EMG, ERG, EOG, PCG,*
2. *Physiological Assist devices: General Introductions, Haemodialysis Machine, Pacemakers, Defibrillators*
3. *Operation Theatre Equipment: General Introduction, Electrosurgical Devices, Diathermy, Ventilators, Oximeters*
4. *Cardiovascular and Respiratory Related diagnostic Equipment: Blood pressure monitoring, ECG Measurement, Plethysmograph, Spirometers*
5. *Bio telemetry and Telemedicine : Elements and Design of bio-telemetry system, Radio telemetry system, Wireless Telemetry, Single Channel Telemetry Systems, Multi-channel Wireless Telemetry Systems, Multi-patient Telemetry, Implantable Telemetry Systems, Telemedicine*

Learning Activities

Students will be supported in their learning, to achieve the above learning outcomes, in the following ways:

- By a series of lectures and tutorials and through participation within practical sessions for problem solving.
- Self-managed investigative study to analyse cases related to the industry
- In-class participation and case studies are key features of this module.
- A recommended resource list - indicating key reading, internet support and physical learning assistance, is provided to help enable students to undertake self-directed study.

Notes

Learners will need access to appropriate library, IT facilities and tutorials.