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Title: BIOMATERIALS
Status: Definitive
Code: **6503ICBTBE** (129108)
Version Start Date: 01-08-2021

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

Team	Leader
Katie Evans	Y

Academic Level: FHEQ6 **Credit Value:** 20 **Total Delivered Hours:** 44
Total Learning Hours: 200 **Private Study:** 156

Delivery Options

Course typically offered: Semester 1

Component	Contact Hours
Lecture	33
Tutorial	9

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	Exam	Examination	70	2
Report	Report	Coursework Assignment	30	

Aims

To provide the student a clear understanding about the different biomaterials required for construction of implants and artificial organs. To understand the requirements of a biomaterial before implantation into the body.

Learning Outcomes

After completing the module the student should be able to:

- 1 Analyse the requirements of implant material using in external appliances, materials in prosthetics and materials in orthotics.
- 2 Compare the general characteristics and material properties and biocompatibility.
- 3 Analyse the structure, function and applications of material implants.
- 4 Appraise the Biomedical engineering principles of amputations and prosthetics.

Learning Outcomes of Assessments

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

Examination	1	2	3
Coursework Assignment	4		

Outline Syllabus

Requirements of implant materials

Material implants: metals, ceramics, plastics (UHMWPE), composites, neoligaments, materials in external appliances, materials in prosthetics and materials in orthotics.

General characteristics and material properties and biocompatibility

Characteristics of implant materials – metals, ceramics, plastic and composites.

Structure, function and applications of material implants

Biologic biomaterials, tissue derived biomaterials (collagen), soft tissue replacement: blood interfacing implants, non-blood interfacing implants, hard tissue replacement: bone repair and joint implants, dental implants. The relationship of materials characteristics to biological properties.

Biomedical principles of amputation and prosthetics

Principles of upper limb prosthesis and lower limb prosthesis.

Learning Activities

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

Classroom-based lectures and tutorial sessions will be conducted weekly.

Notes

This module is part of the Level 6 of the BEng(Hons) in Biomedical Engineering