ADVANCED DIPLOMA OF BIOMEDICAL ENGINEERING

MODULE DETAILS	MODULE 16: BIOMEDICAL IMAGE PROCESSING
	Nominal duration: 4 weeks (48 hours total time commitment) This time commitment includes the preparation reading, attendance at each webinar (1 hour plus 15-30 minutes for discussion), and the time necessary to complete the assignments and further study.
MODULE PURPOSE	To provide the fundamental concepts of medical image acquisition, processing, reconstruction and archiving of medical and radiological images. It includes the basic understanding of the systems operation of X-ray, tomography, ultrasound, magnetic resonance, and other imaging modalities.
PRE-REQUISITES MODULE, UNITS / CO-REQUISITES	Module 3: Fundamentals of Professional Engineering Module 6: Anatomy and Physiology for Engineering Module 10: Biomedical Instrumentation Module 12: Software Programming
ASSESSMENT STRATEGY	To evaluate the achievement of the learning outcomes; written assignments, group projects and practical exercises are set.
SUMMARY OF LEARNING OUTCOMES	1. Examine and discuss the basics of computerized imaging and the medical application thereof 2. Examine and discuss image processing techniques 3. Examine and discuss biomedical imaging 4. Examine and discuss X-ray, radioisotope and magnetic resonance equipment
Learning Outcome 1	**Examine and discuss the basics of computerized imaging and the medical application thereof**
Assessment Criteria	1.1 Discuss imaging basics 1.2 Examine and discuss the biomedical applications of computerized imaging

Learning Outcome 2	**Examine and discuss image processing techniques**
Assessment Criteria	2.1 Examine and discuss image processing tools and file formats 2.2 Examine and discuss image processing techniques 2.3 Discuss the application of image processing techniques
Learning Outcome 3	**Examine and discuss biomedical imaging**
Assessment Criteria	3.1 Examine and discuss the equipment used for medical imaging 3.2 Examine and discuss the principles of operation and application of ultrasound imaging
Learning Outcome 4	**Examine and discuss X-ray, radioisotope and magnetic resonance equipment**
Assessment Criteria	4.1 Examine and discuss the principles of operation and application of X-ray and radioisotope equipment 4.2 Examine and discuss the properties and application of magnetic resonance imaging
Delivery Mode	
A combination of asynchronous and synchronous e-learning delivery comprising a judicious mix of interactive online web conferencing, simulation (virtual labs) software, remote online labs, online videos, PowerPoints, notes, reading and study materials (in pdf, html and word format) accessed through the Moodle Learning Management System (LMS).	