ADVANCED DIPLOMA OF BIOMEDICAL ENGINEERING

MODULE DETAILS	**MODULE 9: TROUBLESHOOTING ELECTRONICS COMPONENTS AND CIRCUITS**
	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 necessary knowledge and skills to identify problems in electronic circuits, using the circuit schematics to identify the defective part/component, verify the inference of a problem by using appropriate instruments and perform simple procedures to troubleshoot electronic circuits.
PRE-REQUISITES MODULE, UNITS / CO-REQUISITES	Module 3: Fundamentals of Professional Engineering
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 methods for troubleshooting and failure analysis in electronic components and circuits 2 Examine and discuss techniques for troubleshooting discrete components, digital systems and displays 3 Examine and discuss the troubleshooting of power supplies; signal tracing; and dealing with electronic phenomena 4 Describe PCB soldering techniques and maintenance/testing issues
Learning Outcome 1	**Examine and discuss the methods for troubleshooting and failure analysis in electronic components and circuits**
Assessment Criteria	1.1 Describe the basic troubleshooting steps in electronic components and circuits 1.2 Discuss the attributes of failures in electronic circuits

Learning Outcome 2	**Examine and discuss techniques for troubleshooting discrete components, digital systems and displays**
Assessment Criteria	2.1 Examine and discuss techniques for troubleshooting discrete components 2.2 Examine and discuss methods for troubleshooting digital circuits 2.3 Examine and discuss methods for troubleshooting displays
Learning Outcome 3	**Examine and discuss the troubleshooting of power supplies; signal tracing; and dealing with electronic phenomena**
Assessment Criteria	3.1 Examine and discuss the troubleshooting of power supplies and their subsystems 3.2 Explain the procedures for troubleshooting via signal injection and tracing 3.3 Examine and discuss the methods for dealing with electronic phenomena
Learning Outcome 4	**Describe PCB soldering techniques and maintenance/testing issues**
Assessment Criteria	4.1 Describe the procedures for soldering/de-soldering and testing PCBs 4.2 Examine and discuss issues related to the maintenance of electronic circuits
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).	