

ADVANCED DIPLOMA OF BIOMEDICAL ENGINEERING

MODULE DETAILS	MODULE 1: BASIC ELECTRICAL ENGINEERING
	<p>Nominal duration: 4 weeks (48 hours total time commitment)</p> <p>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.</p>
MODULE PURPOSE	To provide participants with a detailed overview of electrical engineering fundamentals including power generation, transmission, distribution, utilization, electromagnetism, lighting and heating.
PRE-REQUISITES MODULE, UNITS / CO-REQUISITES	Nil
ASSESSMENT STRATEGY	To evaluate the achievement of the learning outcomes; written assignments, group projects and practical exercises are set.
SUMMARY OF LEARNING OUTCOMES	<ol style="list-style-type: none"> 1. Examine and discuss the fundamentals of electrical engineering 2. Outline the fundamentals of power systems and electric power generation 3. Assess electrical lighting and heating requirements 4. Examine and discuss concepts related to power electronics and embedded power generation
Learning Outcome 1	Examine and discuss the fundamentals of electrical engineering
Assessment Criteria	<ol style="list-style-type: none"> 1.1 Describe key electricity developments from a historical perspective. 1.2 Discuss the properties of insulators, conductors, semiconductors, and superconductors. 1.3 Outline the basic concepts of electromagnetism. 1.4 Describe electrical measurements and applications in industry

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Learning Outcome 2	Outline the fundamentals of power systems and electric power generation
Assessment Criteria	<p>2.1 Discuss the concepts behind electrical power generation, transmission, distribution and utilization</p> <p>2.2 Explain the fundamentals of electrical power and energy</p> <p>2.3 Explain the fundamentals of electrical networks</p>
Learning Outcome 3	Assess electrical lighting and heating requirements
Assessment Criteria	<p>3.1 Apply the fundamentals of electrical lighting and illumination engineering.</p> <p>3.2 Discuss the application of electrical heating in industry</p>
Learning Outcome 4	Examine and discuss concepts related to power electronics and embedded power generation
Assessment Criteria	<p>4.1 Examine power electronics concepts and their application in electrical engineering</p> <p>4.2 Describe the concepts related to embedded power generation in industry</p>
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).	