

ADVANCED DIPLOMA OF BIOMEDICAL ENGINEERING

MODULE DETAILS	MODULE 17: BIOMECHANICS AND ASSISTIVE TECHNOLOGY
	<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	This module provides the basic understanding of biomechanics which allows the study of forces and their effects on the musculoskeletal system under static and dynamic conditions.
PRE-REQUISITES MODULE, UNITS / CO-REQUISITES	<p>Module 3: Fundamentals of Professional Engineering</p> <p>Module 6: Anatomy and Physiology for Engineering</p> <p>Module 10: Biomedical Instrumentation</p> <p>Module 12: Software Programming</p> <p>Module 13: Embedded Microcontrollers</p>
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 basics of assistive technology and biomechanics 2 Examine and discuss the applications of biomechanics 3 Examine and discuss the application of hardware and software in assistive technology 4 Examine and discuss developments in assistive technology
Learning Outcome 1	Examine and discuss the basics of assistive technology and biomechanics
Assessment Criteria	<ol style="list-style-type: none"> 1.1 Examine and discuss the salient aspects of assistive technologies 1.2 Examine and discuss ergonomics and kinesiology as applied to the musculoskeletal system 1.3 Examine and discuss the basic attributes of biomechanics

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Learning Outcome 2	Examine and discuss the applications of biomechanics
Assessment Criteria	<p>2.1 Examine and discuss the application of biomechanics with specific reference to:</p> <ul style="list-style-type: none"> (a) Clinical and gait analysis (b) Cardiovascular dynamics (c) Mathematical modelling of joints (d) Rehabilitation biomechanics (e) Strength and conditioning
Learning Outcome 3	Examine and discuss the application of hardware and software in assistive technology
Assessment Criteria	<p>3.1 Examine and discuss the software tools available for assistive purposes</p> <p>3.2 Examine and discuss the hardware entities available for assistive purposes</p>
Learning Outcome 4	Examine and discuss developments in assistive technology
Assessment Criteria	<p>4.1 Discuss current assistive technologies in:</p> <ul style="list-style-type: none"> (a) Personal emergency response (b) Sports (c) Orthotics <p>4.2 Discuss future trends in assistive technology</p>
Delivery Mode	
<p>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).</p>	