Unit Outline (Higher Education)

Institute / School:	Institute of Health and Wellbeing
Unit Title:	ADVANCED MOTOR CONTROL AND LEARNING
Unit ID:	EXSCI2177
Credit Points:	15.00
Prerequisite(s):	EXSCI1703
Co-requisite(s):	Nil
Exclusion(s):	EXSCI3171
ASCED:	069903

Description of the Unit:

This unit considers the theoretical underpinnings of the nature and cause of movement across the lifespan. It enables students to develop analytical and situational skills for utilising motor control information from both a behavioural and physiological perspective. This unit also focuses on the changes in motor function or motor performance that may occur with ageing, injury and fatigue and highlights the interaction existing between motor control and other sport science disciplines.

Grade Scheme: Graded (HD, D, C, P, MF, F, XF)

Work Experience:

No work experience

Placement Component: No

Supplementary Assessment: Yes

Where supplementary assessment is available a student must have failed overall in the Unit but gained a final mark of 45 per cent or above, has completed all major assessment tasks (including all sub-components where a task has multiple parts) as specified in the Unit Description and is not eligible for any other form of supplementary assessment.

Course Level:

Level of Unit in Course	AQF Level of Course					
	5	**6**	**7**	**8**	**9**	**10**
Introductory						
Intermediate						
Advanced			✔			

Learning Outcomes:

Knowledge:

K1. Describe the neuro-motor basis for motor control.

K2. Critique the common theoretical models proposed to explain motor control.

K3. Examine how the sensory components of motor control influence the control of human movement and the limits they place on human motor skill performance.

K4. Appraise the organisation and contribution of the neural sub-systems to the control of gait, reach-to-grasp skills and postural control.

K5. Define and critically evaluate impairments associated with pathophysiology of the motor cortex, cerebellum and basal ganglia within the action systems, sensory/perceptual systems and cognitive systems.

K6. Compare and contrast the changes in motor function or motor performance that may occur with ageing, injury and fatigue.

Skills:

S1. Implement some of the common methods used for assessing coordination, somatosensory, visual, cognitive/perceptual impairments in a laboratory setting.

S2. Explore motor strategies used for stance postural control.

S3. Explore the use of anticipatory postural adjustment in lifting task.

S4. Examine and critically evaluate how properties of task affect reach-to-grasp.

Application of knowledge and skills:

A1. Apply concepts from a motor-program based theory and the dynamical systems theory to identify the motor performance problems a person currently has and would need to improve.

A2. Evaluate posture and balance utilizing electromyography to quantify muscle function.

A3. Integrate knowledge of and skills in motor control and learning with other study areas of exercise science.

Unit Content:

Neuro-motor basis for motor control; Relevant theoretical models of motor control; How the sensory components of motor control influence the control of human movement; Movement control mechanisms for gait, reach-to-grasp skills and postural control; Neural origin of common motor disorders and associated impairments/deficits; Changes in motor function or motor performance that may occur with ageing, injury and fatigue.

FEDTASKS

Federation University Federation recognises that students require key transferable employability skills to prepare them for their future workplace and society. FEDTASKS (**T**ransferable **A**ttributes **S**kills and **K**nowledge)

provide a targeted focus on five key transferable Attributes, Skills, and Knowledge that are be embedded within curriculum, developed gradually towards successful measures and interlinked with cross-discipline and Co-operative Learning opportunities. *One or more FEDTASK, transferable Attributes, Skills or Knowledge must be evident in the specified learning outcomes and assessment for each FedUni Unit, and all must be directly assessed in each Course.*

FEDTASK attribute and descriptor	Development and acquisition of FEDTASKS in the Unit	
	Learning Outcomes (KSA)	Assessment task (AT#)
FEDTASK 1 Interpersonal	Students will demonstrate the ability to effectively communicate, inter-act and work with others both individually and in groups. Students will be required to display skills in-person and/or online in: • Using effective verbal and non-verbal communication • Listening for meaning and influencing via active listening • Showing empathy for others • Negotiating and demonstrating conflict resolution skills • Working respectfully in cross-cultural and diverse teams.	Not applicable	Not applicable
FEDTASK 2 Leadership	Students will demonstrate the ability to apply professional skills and behaviours in leading others. Students will be required to display skills in: • Creating a collegial environment • Showing self -awareness and the ability to self-reflect • Inspiring and convincing others • Making informed decisions • Displaying initiative	Not applicable	Not applicable
FEDTASK 3 Critical Thinking and Creativity	Students will demonstrate an ability to work in complexity and ambiguity using the imagination to create new ideas. Students will be required to display skills in: • Reflecting critically • Evaluating ideas, concepts and information • Considering alternative perspectives to refine ideas • Challenging conventional thinking to clarify concepts • Forming creative solutions in problem solving.	Not applicable	Not applicable
FEDTASK 4 Digital Literacy	Students will demonstrate the ability to work fluently across a range of tools, platforms and applications to achieve a range of tasks. Students will be required to display skills in: • Finding, evaluating, managing, curating, organising and sharing digital information • Collating, managing, accessing and using digital data securely • Receiving and responding to messages in a range of digital media • Contributing actively to digital teams and working groups • Participating in and benefiting from digital learning opportunities.	Not applicable	Not applicable

FEDTASK attribute and descriptor		Development and acquisition of FEDTASKS in the Unit	
		Learning Outcomes (KSA)	Assessment task (AT#)
FEDTASK 5 Sustainable and Ethical Mindset	Students will demonstrate the ability to consider and assess the consequences and impact of ideas and actions in enacting ethical and sustainable decisions. Students will be required to display skills in: • Making informed judgments that consider the impact of devising solutions in global economic environmental and societal contexts • Committing to social responsibility as a professional and a citizen • Evaluating ethical, socially responsible and/or sustainable challenges and generating and articulating responses • Embracing lifelong, life-wide and life-deep learning to be open to diverse others • Implementing required actions to foster sustainability in their professional and personal life.	Not applicable	Not applicable

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K1-K6, S1-S4, A2-A3	Attendance and participation in laboratory sessions to complete formative assessments of practical skills.	90% attendance required to satisfy ongoing formative assessments.	Satisfactory/Unsatisfactory
K4-K6, A3, S1	Design an intervention for an individual with motor function changes due to impairments, ageing, or injury, including suitable pre- and post-assessment tools.	Written report.	20-40%
K1-K6, S1, A1-3	Practical Assessment. Students will be assessed on their ability to perform a relevant test of motor or cognitive function.	Practical assessment	20-40%
K1-K6, A1, S4	Self-directed study of unit content	Test	25-45%

Adopted Reference Style:

APA ()

Refer to the library website for more information

Fed Cite - referencing tool