



Introduction

Welcome

Welcome to the course - Neuroscience for Physiotherapy.

In this course you will gain a basic understanding of how the brain works, in particular the way 'it' produces movement - the interactions with the environment and with other systems that allow us to learn a new movement or retrain an old movement. Clinically this is important in all areas of physiotherapy - whether we are helping people to move out of pain or dysfunction or to be more independent in their daily lives or to resume activities like returning to sport or work. We then look at more specific areas of movement - how we maintain posture, postural control (balance and orientation), walking (gait) and how we use our arms for activity. We will also consider other aspects of brain function from simple behaviours like breathing and eating through to complex like memory and emotions.

Woven through the course are the lifespan implications of neuroscience - in particular the growth and development of babies through to children and teenagers, and the influence of ageing. This helps to consolidate your understanding of how we have come to be adult "movers" as well as how to work with young and older persons in a clinical setting.

We also look at some pathologies that affect movement - the impact of injury and illness on how we function in the world. We particularly look at pathology of the neural system but also acknowledge that dysfunction in the musculoskeletal system (for example pain) also impacts on the way we control our movement (and our behaviour).

Lectures will introduce theory, and practicals will allow you to apply the ideas in a more clinical way. There will also be weekly tutorials to give you the chance to discuss and apply ideas using smallgroup activities and topical papers, plus online quizzes that will help you to consolidate your learning.

We hope you enjoy this introduction to the way we learn and develop using a neuroscience perspective. We will build on your knowledge from first year anatomy and biomechanics, use the information you are gaining in Human Anatomy200, and add the amazing brain processes to bring movement to life!

Academic Work Definitions

Internal mode includes face to face/in person components such as lectures, tutorials, practicals, workshops or seminars that may be offered at a University campus or delivered at another location. Courses delivered in internal mode may also be offered intensively allowing them to be completed in a shorter period of time. There is an expectation that students will be physically present for the delivery of face to face/in person teaching and learning activities.

Tutorial

Student information

A tutorial can be conducted either in person or online in a virtual classroom. A tutorial is a facilitated group discussion, where your tutor leads analyses of issues and/or more detailed explanations related to the topics provided to you in online resources and/or lectures.

All students are expected to be familiar with relevant lecture content and readings prior to a tutorial and to

participate actively in the related activities assigned for preparation. Tutorials may include a range of activities, including problem solving, group work, practical activities, and presentations.

Demonstration/Practical class

Student information

A demonstration/practical class is a session with the primary purpose of demonstrating skills and practising those skills in a supported and guided environment. These classes are critical in developing skills through the application of theory and acquired knowledge in a practical setting.

All students are expected to be familiar with prerequisite knowledge from their program of study, relevant lecture and/or seminar and/or tutorial content, and materials provided and assessments relevant to the demonstration, prior to a demonstration/practical class. All students are expected to actively participate and contribute to the demonstration/practical class where required.

Lecture

Student information

A lecture is delivery of course content either in person, or online in a virtual classroom, that builds on the course readings and pre-lecture requirements for you and other students in the course. The primary purpose of the lecture is to comprehensively describe and explain course content, ideas or skills to provide a foundation on which students build understanding through extended study. Lectures may also be pre-recorded and embedded in online courses.

All students are expected to have undertaken required readings and assigned activities prior to the lecture.

Course Teaching Staff

Course Coordinator:	Dr Brenton Hordacre
Location:	UniSA Allied Health & Human Performance C7-47
Telephone:	+61 8 8302 1286
Email:	Brenton.Hordacre@unisa.edu.au
Staff Home Page:	people.unisa.edu.au/Brenton.Hordacre
Instructor:	Dr Ines Serrada
Location:	UniSA Allied Health & Human Performance C7-56
Email:	Ines.Serrada@unisa.edu.au
Staff Home Page:	people.unisa.edu.au/Ines.Serrada
Lecturer:	Dr Margarita Tsiros
Location:	UniSA Allied Health & Human Performance C7-52
Telephone:	+61 8 8302 1320
Email:	Margarita.Tsiros@unisa.edu.au
Staff Home Page:	people.unisa.edu.au/Margarita.Tsiros

Instructor: Dr Jeric Uy
Location: UniSA Allied Health & Human Performance
C7-68
Telephone: +61 8 8302 1839
Email: Jeric.Uy@unisa.edu.au
Staff Home Page: people.unisa.edu.au/Jeric.Uy

* Please refer to your Course homepage for the most up to date list of course teaching staff.

Contact Details

UniSA Allied Health & Human Performance

Physical Address: Level 8, Centenary Building
UniSA City East Campus
Adelaide 5000
Website: <https://www.unisa.edu.au/about-unisa/academic-units/allied-health-and-human-performance/>

Course Overview

Prerequisite(s)

BIOL 1049 Human Physiology 100
BIOL 1050 Human Physiology 101
REHB 1026 Physiotherapy Studies 100
REHB 1027 Physiotherapy Studies 101
HLTH 2022 Human Anatomy 200

Corequisite(s)

There are no corequisite courses to be completed in conjunction with this course.

Course Aim

The aim of this course is for students to gain knowledge of the neural, physiological, mechanical, cognitive and behavioural influences on the development and control of movement.

Course Objectives

On completion of this course, students should be able to:

CO1. Describe the integration of the structure and function of the human nervous system and its relation to physiotherapy practice.

CO2. Describe the interaction of factors related to the person, the task and the environment in human movement across the lifespan (ICF framework)

CO3. Describe the theories of motor control and motor learning in relation to physiotherapy practice.

CO4. Demonstrate an understanding of developing motor behavior within the context of cognitive, communication and play skills.

CO5. Describe the perceptual, cognitive and action (biomechanical) systems for the production of movement

CO6. Observe, describe and analyse human movement and the influence of injury, abnormalities or disease on movement.

Upon completion of this course, students will have achieved the following combination of Graduate Qualities and Course Objectives:

	Graduate Qualities being assessed through the course						
	GQ1	GQ2	GQ3	GQ4	GQ5	GQ6	GQ7
CO1	•	•	•		•	•	
CO2	•	•	•		•	•	•
CO3	•	•	•		•		
CO4	•	•	•		•	•	
CO5	•	•	•		•		
CO6	•	•	•	•	•	•	

Graduate Qualities

A graduate of UniSA:

GQ1. operates effectively with and upon a body of knowledge of sufficient depth to begin professional practice

GQ2. is prepared for life-long learning in pursuit of personal development and excellence in professional practice

GQ3. is an effective problem solver, capable of applying logical, critical, and creative thinking to a range of problems

GQ4. can work both autonomously and collaboratively as a professional

GQ5. is committed to ethical action and social responsibility as a professional and citizen

GQ6. communicates effectively in professional practice and as a member of the community

GQ7. demonstrates international perspectives as a professional and as a citizen

Course Content

Lifespan perspective of motor development, application of motor control and motor learning into physiotherapy practice; typical human growth and development; causes and mechanisms of atypical movement across the lifespan; neuroplasticity, recovery and function; ICF framework; postural control, gait, upper limb function; movement analysis; motor skills; assessment of substrates of movement (tone, sensation and movement coordination).

Teaching and Learning Arrangements

Lecture	2 hours x 13 weeks
Tutorial	1 hour x 13 weeks
Practical	2 hours x 13 weeks

Unit Value

4.5 units

Student recording of learning activities

Students must seek permission prior to recording any UniSA learning activity. See [A-56 Policy Student recording of learning activities](https://i.unisa.edu.au/siteassets/policies-and-procedures/docs/academic/a56_student-recording-of-learning-activities.pdf) (https://i.unisa.edu.au/siteassets/policies-and-procedures/docs/academic/a56_student-recording-of-learning-activities.pdf)

Breaches of this Policy contravene the principles of academic integrity, and attract the penalties provided in the [Academic Integrity Procedure](https://i.unisa.edu.au/policies-and-procedures/university-policies/) (<https://i.unisa.edu.au/policies-and-procedures/university-policies/>).

Further Course Information

Students with a current Access Plan or current 'Elite Athlete or Elite Performing Artist' status must contact the Course Coordinator and provide the Access Plan within two weeks of starting the course.

The Access Plan and/or requested adjustments will be reviewed with course requirements, relevant guidelines and policy to develop a course specific plan for the individual student.

Learning Resources

Textbook(s)

You will need continual access to the following text(s) to complete this course. Where possible the Library will make the book available for student use. Please check the Library catalogue before purchasing the book(s). The Library will always seek to purchase resources that allow an unlimited number of concurrent users, however availability is dependent on license arrangements with book publishers and platforms. <http://www.library.unisa.edu.au>

Shumway-Cook A and Woollacott MH (2017). *Motor Control: Translating research into clinical practice* (5th). Lippicott, Williams and Wilkins.

learnonline course site

All course related materials are available on your learnonline course site which you will be able to access from the 'my Current Studies' section in myUniSA (<https://my.unisa.edu.au>).

Access to Previous Courses

You will have access to your previous course sites for a period of 4 years. After this time, the course sites will be archived and will be unavailable.

Note: Course readings provided via the University Library are only made available to current students and staff due to licensing and copyright restrictions. Students may download their course readings while they are enrolled in the course for their personal research purposes only.

Assessment

Academic Integrity

Academic integrity is fundamental to the reputation of UniSA and its staff and students. Academic integrity means all staff and students are committed to producing academic work that accurately reflects authorship, and is created with honesty, trustworthiness, fairness, respect, and responsibility.

The University of South Australia expects students to demonstrate accurately what they have learned so that university qualifications are earned honestly and are trusted and valued by its students and their employers. That means students need to present work that represents what they have learned. Therefore, students must indicate where and how they have used other people's ideas to support their knowledge. Academic integrity requires an honest account of the source of contributions to the work by using correct referencing. Students must not represent the work of others as their own as this does not demonstrate what they have learned. Using another person's work without correct referencing is considered Academic Misconduct.

The approach to academic integrity has many layers.

At the government level, a law exists that specifically states that providing academic cheating services to students of Australian universities is an **offence**, irrespective of whether the service is provided by an Australian or overseas operator (see Tertiary Education Quality and Standards Agency Amendment (Prohibiting Academic Cheating Services) Bill 2019 - <https://www.legislation.gov.au/Details/C2020A00078>). "Academic cheating services" includes providing or undertaking work for students, where that work forms a substantial part of an assessment task.

The University has policies and procedures to promote academic integrity and manage academic misconduct. More information about academic integrity and what constitutes academic misconduct can be found in the Academic Integrity Policy and Procedure (<https://i.unisa.edu.au/policies-and-procedures/university-policies/>). One example is that work submitted electronically by students for assessment will be examined for copied and un-referenced text using the text comparison software Turnitin <http://www.turnitin.com>.

At the course level, your instructor may also provide specific instruction and guidance on whether the use of tools such as translation software, writing aides, and artificial intelligence software is permissible and to what degree in completing learning tasks and assessments. When in doubt, ask your teaching team.

To learn more about academic integrity and how to avoid academic misconduct, please refer to the Academic Integrity Module: <https://lo.unisa.edu.au/mod/book/view.php?id=252142>

Use of generative artificial intelligence

The assessment tasks for this course require you to demonstrate your learning.

It is important to understand that information generated by GenAI tools, such as ChatGPT, Copilot, and DALL-E, may be unreliable, inaccurate, and incorrect. It is your responsibility to comply with the conditions for each assessment task summarised in the assessment description and that any use of GenAI tools is ethical and responsible and adheres to the assessment conditions.

Use of GenAI tools that extends beyond the stated assessment conditions will be considered a breach of academic conduct, as per the [Academic Integrity Policy \(AB-69\)](#).

Important information about all assessment

All students must adhere to the University of South Australia's [procedures about assessment](http://i.unisa.edu.au/policies-and-procedures/codes/assessment-policies/): <http://i.unisa.edu.au/policies-and-procedures/codes/assessment-policies/>.

Assessment Details

Details of assessment submission and return are listed under each assessment task. Assessment tasks will be returned to you within 15 working days of submission.

Cover sheets

A cover sheet is not required for assessment tasks submitted via learnonline, as the system automatically generates one.

If the Course Coordinator allows submissions in hard copy format, you will be required to attach an Assignment Cover Sheet which is available on the learnonline student help (https://asklearnonline.unisa.edu.au/app/answers/detail/a_id/2222/kw/coversheet) and in myUniSA.

Assessment Descriptions

Assessment 1

Single		25% of Course Total			Objectives being assessed:CO1, CO2, CO3, CO4		
Title	Team work	Length	Duration	Due date (Adelaide Time)	Submit via	Re-Submission	Re-Marking
Essay	No	1500 words	N/A	13 Sep 2024, 11:59 PM	learnonline	No	Yes

Further information on re-marking and re-submission is available in the academic policy, AB-68 P4 Re-marking and Re-submission Procedure

This assessment will be in the form of a 1500 word essay. Ability to articulate evidence and clinical reasoning in written form is a core skill of physiotherapists. For example, clinicians may have to write a short report to justify treatment choice to NDIS for client funding. The inclusion of an essay as an assessment item was chosen to reflect this clinical skill.

Topics will be allocated early in the course and will include a variety of current neuroscience ideas and clinical scenarios. Essays will conform to standard UniSA style and formatting, and will be submitted and returned electronically. The word count is strict and inclusive of all in text references, but tables and the reference list are in addition to the word limit.

This essay is worth 25% of the overall course.

Assessment 2

Single		25% of Course Total			Objectives being assessed:CO4, CO5, CO6		
Title	Team work	Length	Duration	Due date (Adelaide Time)	Submit via	Re-Submission	Re-Marking
Online prac test	No	-	30 mins	29 Oct 2024, 9:00 AM	learnonline	No	Yes

Further information on re-marking and re-submission is available in the academic policy, AB-68 P4 Re-marking and Re-submission Procedure

Students will be randomly allocated case studies online. They will be required to observe a patient (either video or still image) and document the impairments and strategies they see as detailed in the provided cases. All content from practicals is assessable. Each student will have 30 minutes to complete this assessment which will be completed remotely and submitted online. Content will be made available at 8:10am, with submission closing at 9:00am on day of assessment.

This assessment is worth 25% of the overall course grade.

Assessment 3

Single		50% of Course Total			Objectives being assessed:CO1, CO2, CO3, CO4, CO5, CO6		
Title	Team work	Length	Duration	Due date (Adelaide Time)	Submit via	Re-Submission	Re-Marking
Examination	No	-	3 hours	Scheduled in exam period	TBA	No	Yes

Further information on re-marking and re-submission is available in the academic policy, AB-68 P4 Re-marking and Re-submission Procedure

The in-person, closed-book, invigilated, written exam will cover all the content taught in the lectures, tutorials and practicals in this course. The aim of this assessment item is to ensure a comprehensive understanding of theoretical framework of movement and knowledge of assessment and rehabilitation of movement across the lifespan. The exam will be invigilated, and scheduled within the official SP5 examination period. Students are responsible for keeping up to date with exam timetabling.

Feedback proformas

The feedback proforma is available on your course site.

Further Assessment Information

The assessment tasks for this course require you to demonstrate your learning. It is important to understand that information generated by GenAI tools, such as ChatGPT, Copilot, and DALL-E, may be unreliable, inaccurate, and incorrect. It is your responsibility to comply with the conditions for each assessment tasks summarised in the assessment description and that any use of GenAI tools is ethical and responsible and adheres to the assessment conditions. Use of GenAI tools that extends beyond the stated assessment conditions will be considered a breach of academic conduct, as per the [Academic Integrity Policy](#) (AB-69).

Additional assessment requirements

There are no additional assessment requirements identified for this course.

Penalties for late submission

Late submission of assessment tasks policy

Late submission of assessment tasks in this course will result in a penalty unless an extension has been granted or the student can provide evidence of unexpected or exceptional circumstances as defined by Section G of ab-68-p2-variations-to-assessments-procedure.

The penalty for late submissions will be:

1. a deduction of 10% of the available marks, for each day (or part thereof) that the assignment is late up to a maximum of 5 days.

Thus, for an assessment item that is one day late the maximum mark available will be 90%, and for two days late 80% etc. By way of example, if a student achieved a mark of 65% for an assignment that was submitted one day late, their adjusted mark would be 65% of a total available mark of 90%, so the mark would be adjusted to 58.5%.

2. assignments which are more than 5 days late may not be assessed and will be assigned a zero grade inclusive of non-graded pass work. Whether or not an assignment that is more than 5 days late will be assessed will be at the discretion of the Course Coordinator.

Rationale for Late submission of assessment tasks policy

If unexpected or exceptional circumstances (as defined by Section G of ab-68-p2-variations-to-assessments-procedure) occur that result in late submission, or if an extension has been granted for an assessment item, there will be no penalty.

However, where no extension has been granted, and there were no unexpected or exceptional circumstances that resulted in late submission a penalty will be applied. This is to prevent students from seeking to obtain an unfair advantage, compared with their peers, by having more time to complete an assessment item.

It was considered that if a student were to work on an assessment item for one day they might be able to improve their mark by 10%, so a 10% penalty has been applied to offset any such advantage that might be gained.

The 10% deduction will be from the available mark rather than the achieved mark to ensure equity between students. By way of example:

1) If a student achieved a mark of 77 (Distinction), but the assessment item was submitted two days late, their grade becomes 77% of 80 = 61.6 which is a true 20% reduction.

If the 20% deduction were applied to the achieved mark this would be $77\% - 20\% = 57\%$, which would actually

represent a 26% reduction of their achieved grade.

2) If a student achieves a mark of 54 (P2) and is 2 days late in submitting the assessment item, their grade becomes 54% of 80 = 43.2 which is a true 20% reduction. If the 20% deduction were applied to the achieved mark this would be 54% - 20% = 34% which represents an actual 37% reduction of their achieved grade.

Thus, if the deduction were applied to the achieved mark both students would experience a different real deduction depending on the actual mark they achieved. Thus, in the interest of student equity the deduction will be taken from the available mark.

Exam Arrangements

This course includes a face-to-face examination as the nature of the assessment submission cannot be replicated in the online environment, or specialist teaching spaces are required to complete the exam.

Students will receive advance notice of scheduled examinations. All exams will be scheduled in South Australian time. All students are required to sit their examination at the scheduled South Australian date, time and location irrespective of any conflict with a planned holiday or special event or regular work commitment, including students sitting in other time zones in Australia or internationally.

(Examination Procedure A3 <http://i.unisa.edu.au/policies-and-procedures/codes/assessment-policies/>).

Deferred Assessment or Examination

Deferred assessment or examination is available for this course.

Supplementary Assessment

Supplementary assessment or examination offers students an opportunity to gain a supplementary pass (SP) and is available to all students under specific conditions unless supplementary assessment or examination has not been approved for the course.

Specific conditions and further information is available in the Variations to Assessment Procedure <http://i.unisa.edu.au/policies-and-procedures/codes/assessment-policies/>

This course applies the standard supplementary assessment policy for the written examination only. Time to be advised.

Special Consideration

Variations to assessment tasks

Details for which variation may be considered are discussed in the Variations to Assessments Procedure (<http://i.unisa.edu.au/policies-and-procedures/codes/assessment-policies/>). Variation to assessment in unexpected or exceptional circumstances should be discussed with your course coordinator as soon as possible.

More information about variation to assessment is available in the Variations to Assessments Procedure (<http://i.unisa.edu.au/policies-and-procedures/codes/assessment-policies/>).

Students with disabilities or medical conditions please refer to **Students with disabilities or medical conditions**.

Students with disabilities or medical conditions

Students with disabilities or medical conditions or students who are carers of a person with a disability may be entitled to a variation or modification to standard assessment arrangements. See the [Variations to Assessment Procedure](http://i.unisa.edu.au/policies-and-procedures/codes/assessment-policies/) at: <http://i.unisa.edu.au/policies-and-procedures/codes/assessment-policies/> and Policy C7 [Students with Disability](https://i.unisa.edu.au/policies-and-procedures/university-policies/corporate/c-7/) at: <https://i.unisa.edu.au/policies-and-procedures/university-policies/corporate/c-7/>

Students who require variations or modifications to standard assessment arrangements must first register for an Access Plan with the UniSA Access & Inclusion Service. It is important to contact the Access & Inclusion service early to ensure that appropriate support can be implemented or arranged in a timely manner.

Students who wish to apply for an Access Plan must book an appointment with a UniSA Access & Inclusion Advisor by contacting Campus Central or via the Online Booking System in the Student Portal. For more information about Access Plans please visit: <https://i.unisa.edu.au/students/student-support-services/access-inclusion/>

Once an Access Plan has been approved, students must advise their Course Coordinator as early as possible to ensure that appropriate supports can be implemented or arranged in a timely manner.

Students are advised there are also strict deadlines to finalise Access Plan arrangements prior to examinations. Further information is available at: http://i.unisa.edu.au/campus-central/Exams_R/Before-the-Exam/Alternative-exam-arrangements/

Action from previous evaluations

Previous evaluations confirm this is a rigorous, knowledge-based course, that begins to apply this knowledge to an emerging Physiotherapy skill base. Successful students note that ongoing study is required throughout the study period in order to achieve high grades in the final exam. Students who do not keep up with the material (i.e. leave study until SWOTVAC) find it difficult to assimilate all the knowledge in an applied way for the exam.

Attendance at tutorials was previously low - these sessions are there to aid learning and assimilation of knowledge. In order to promote attendance we will be ensuring that content covered in the tutorials will appear in the final examination.

In response to feedback online quizzes have been added to the course. Timetabling has been planned more carefully to ensure public holidays do not interrupt the sequencing of lectures and pracs. An essay preparation tutorial has been added and the essay topics have been reviewed in line with feedback.

Students identified that there were unclear expectations of the workbook assignment. A rubric will be provided this year and clearer instructions to markers with moderation procedures in place.

Course coordinators will meet with all teaching staff prior to SP5 2022 to focus on the expectation of providing a supportive education environment where students are encouraged to ask questions.

LOL site to be organised via weeks rather than dates as requested.

Course Calendar

Study Period 5 - 2024

	Weeks	Topic	Assessment Details (Adelaide Time)
	08 - 14 July	Pre-teaching	
	15 - 21 July	Pre-teaching	
1	22 - 28 July		
2	29 July - 4 August		
3	05 - 11 August		
4	12 - 18 August		
5	19 - 25 August		
6	26 August - 1 September		
7	02 - 8 September		
8	09 - 15 September		Essay due 13 Sep 2024, 11:59 PM
	16 - 22 September	Mid-break	
	23 - 29 September	Mid-break	
9	30 September - 6 October		
10	07 - 13 October		
11	14 - 20 October		
12	21 - 27 October		
13	28 October - 3 November		Online prac test due 29 Oct 2024, 9:00 AM
	04 - 10 November	Swot-vac	
	11 - 17 November	Exam week	
	18 - 24 November	Exam week	