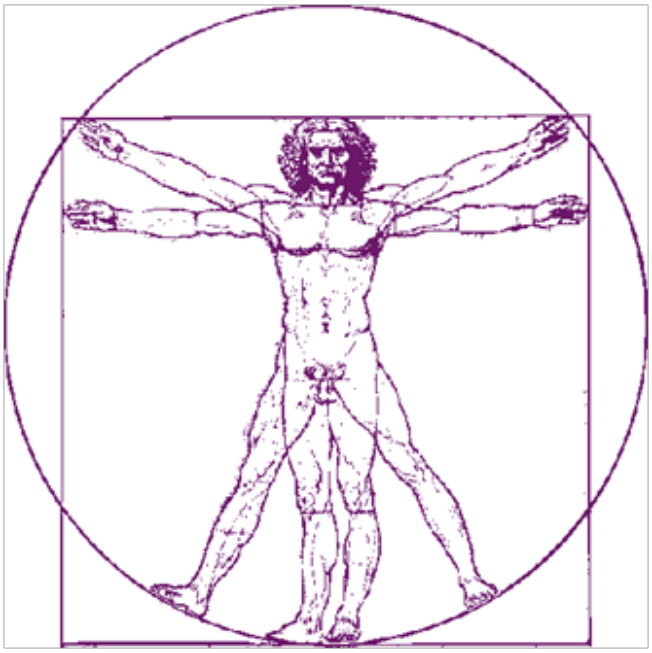
DEPARTMENT OF
HUMAN KINETICS AND ERGONOMICS



HKE Handbook 2022
Undergraduate Students

General Information

Timetables

Course Outlines

Assignments and Exam Information

RHODES UNIVERSITY

Where leaders learn

This handbook contains all relevant organisational information for HKE undergraduate students in 2022. Please study it carefully at the beginning of, and regularly during, the academic year and follow the instructions. No excuse will be accepted for ignorance when rules are violated.

Please note that dates and locations may be subject to change. Please check the departmental notice boards for updated information.

Content

Makhanda, February 2022

Department of Human Kinetics and Ergonomics

Rhodes University

1 General Information

1.1 Department

Location:

The Department, with all its lecture rooms, laboratories and offices, is located in the Human Kinetics and Ergonomics (HKE) building in upper African Street (between Croft Street and Warren Street; before the Sports Administration Building and next to the Rhodes Health Suite; on the University map in Rhodes calendar buildings G2 and G3).

Departmental Staff:

	phone	email
Mrs J McDougall (Office Administrator)	046-603 8471	j.mcdougall@ru.ac.za
Prof C Christie (Associate Professor)	046-603 8470	c.christie@ru.ac.za
Dr S Zschernack (Senior Lecturer & Head of Department)	046-603 8472	s.zschernack@ru.ac.za
Dr J Davy (Senior Lecturer)	046-603 7369	j.davy@ru.ac.za
Mr A Todd (Senior Lecturer)	046-603 8469	a.todd@ru.ac.za
Mrs M Mattison (Lecturer)	046-603 8468	m.mattison@ru.ac.za
Dr Candice MacMillan (Post-doc)	046-603 8471	candicephysio@gmail.com
Mr Devon Barnard (Teaching Assistant)	046-603 8471	barney93021@gmail.com
Mr L Goodenough (Principal Technical Officer)	046-603 7366	l.goodenough@ru.ac.za

Departmental information:

Please obtain further information from the departmental notice boards or from the departmental website: http://www.ru.ac.za/humankineticsandergonomics.

1.2 Access and Security

Entrance to the HKE Department is via the large glass doors from the African Street side. For security reasons these doors will be locked outside of working hours (before 8:30 and after 16:30), during lunch (13:00 to 14:00), as well as during the examination and holiday periods.

To discourage criminals from entering the HKE Department please adhere to the following:

- Avoid using the side door, but if you do use it, ensure that it is properly closed behind you and locked.
- Escort strangers to their point of interest in the Department as well as show them the way out.
- Be vigilant of strangers entering and exiting the Department.
- Report any suspicious people in the Department to the office administrator or academic staff.

1.3 Plagiarism

Plagiarism is a serious offence and Rhodes University has a Plagiarism Policy, which contains information about plagiarism and details the procedures relating to plagiarism. Students are encouraged to familiarize themselves with the latest version of the Rhodes University Plagiarism Policy, which can be accessed on:

https://www.ru.ac.za/media/rhodesuniversity/content/institutionalplanning/documents/policies/Common_Faculty_Policy_and_Procedures_on_Plagiarism.pdf

The staff member in charge of dealing with plagiarism cases in the HKE Department is Dr Zschernack.

What is Plagiarism?

Plagiarism refers to the practice of presenting work / material written by someone else as your own and is thus unethical. Any use of material derived from the work of another person constitutes plagiarism unless the source is clearly acknowledged in the manner described below. You will be guilty of plagiarism if, for example, you hand in an assignment under your own name which, either in part or as a whole:

- is copied from an essay or practical report written by another student,
- is copied from a document downloaded from a website,
- is copied from a published article or book chapter, or
- has been written for you by someone else.

How to avoid plagiarism

Acknowledge the source of the material! When writing an essay or laboratory report in an academic setting it is normal to draw on material written by other people. However, when you do this, it is important that you acknowledge the fact that you have drawn on other people's work. There are standard procedures for doing this - for example, by citing a reference and providing details of the source in a reference list at the end of the assignment. You are expected to do this even where you do not quote directly from your source, but merely express in your own words, ideas, concepts, methodologies or arguments which you have taken from that source. Take note that the source of copied images (photographs, diagrams, graphs, etc.) also need to be acknowledged. In addition, where you quote verbatim from a published source, you must place the quoted material in inverted commas and provide a page number. The only situation in which these rules do not apply strictly is in examinations which are written without access to books and other reference materials. Please refer to section 7 of this handbook (Format Guide) for details on how to reference in an HKE assignment / thesis.

1.4 "Duly Performed" (DP) rule

The "Duly Performed" (DP) rule refers to the minimum requirements a student must fulfil to be allowed to sit for the examinations each semester. The requirements may refer to lecture, practical and tutorial attendance, as well as submission of assignments. Failure to comply with these DP requirements will result in the DP being revoked, meaning that the student may not sit for the semester examinations. Although the "Duly Performed" rule applies to all academic departments at Rhodes, there may be slight variations in the requirements for obtaining the DP.

It is particularly important that students understand that no department is obliged to warn students that their performance is not meeting the requirements of the DP regulations of the department.

Students must be responsible for monitoring their own performance. If a department refuses a DP certificate to a student and the student appeals for reconsideration (in the first instance to the Head of Department, and then to the Dean), no consideration will be given to any claim that the student was unaware that performance was such that it did not meet those requirements.

Students are responsible for determining whether they are satisfying the requirements of the department, by checking with their course coordinator or the Head of Department (HoD) in cases of doubt.

1.4.1 DP Requirements for the HKE Department

In the Department of Human Kinetics and Ergonomics the earning of a DP certificate, and hence being allowed to sit for the examinations, is dependent upon the following requirements:

1. Attendance of **at least 75%** of tutorials for first and second year students
2. Attendance at **ALL** tests and laboratories through the year.
3. Submission of **ALL** assignments (including laboratory write-ups).

Please be aware that **signing on behalf of another person**, even if only for an attendance register, is a fraudulent action and thus a severe violation of law which will be prosecuted, possibly leading to an exclusion from the University.

1.4.2 Leave of Absence (LOA)

In the event of missing a test, a tutorial, a laboratory session or not submitting an assignment, the relevant lecturer or course coordinator must be given a valid reason for the absence or omission by submitting a "Leave-of-Absence" form (LOA), which can be obtained from the HKE Office Administrator's office or by emailing her on j.mcdougall@ru.ac.za. This LOA application must be accompanied with supporting evidence (e.g., original doctor's note, letter from parent / sports admin) and be submitted within a week of the missed activity, unless arranged otherwise with the course coordinator or the office administrator. According to University rules, **illness/medical reasons (including psychological grounds), serious family issues (compassionate grounds), or significant sport, leadership and cultural activities are the only accepted reasons** for having an LOA granted. In case of any doubt, the course co-ordinator or HoD must be consulted **BEFORE** the student misses a test, tutorial, laboratory or assignment deadline. With exception of medical reasons, the LOA must be submitted **BEFORE** missing the tutorial, practical, assessment or assignment.

If no LOA application is received or the LOA is not approved, then a **DP warning** is issued the first time and, in the case of missed tests or non-submission of assignments, the student will be given a mark of 0% for that assessment. The second time the DP rule is transgressed, the **DP will be denied**. If the reason is approved, it is up to the discretion of the individual lecturer whether to request a make-up assignment from the student.

Please note that if a practical requiring a laboratory report was not attended, or an

assignment deadline was missed (for a valid reason as listed above), **submission of the assignment is still required** - the LOA will merely grant an **extension**. It is important that the student consults the relevant lecturer to discuss details relating to this extension.

The University's Policy for Leave of Absence for Students can be found at: https://www.ru.ac.za/media/rhodesuniversity/content/institutionalplanning/documents/Leave_of_Absence_Policy_for_Students.pdf.

1.5 Lecture Attendance & Assessments

Attendance at lectures is not compulsory, but it is **strongly recommended** to attend and participate in **all** lectures. Subsequent lectures mostly relate to each other, so any missed lecture makes it difficult to follow the course content. Lecture materials dispensed by the lecturers or notes from other students cannot replace an own understanding gained from a lecture.

1.6 Assessment of Student Learning

Different modules will set different assessment types to assess student learning and may consist of tests, essays, presentations, practical reports, examinations, etc. Completing all set assessments is compulsory and thus a DP requirement. The last day of each term is set aside for make-up tests and assignments.

Please note that 40% of the final mark is based on each semester's class work. Also be aware that it is each individual's responsibility to acquire the knowledge required to pass the exams!

1.7 Tutorial System

Tutorials ('Tuts') refer to small formal discussion groups held weekly that each first- and second-year student is obliged to attend. Tuts are designed to complement the lectures by recapping work done in class and answering questions; no new work is covered in the tutorials. The tutorials will help consolidate knowledge by providing students with the chance to discuss any problems experienced with the course, particularly with regards to understanding the principles underlying observations and measurements, and to developing observational, deductive, and interpretive skills.

Each student must attend one tutorial during each week of the term, on an allocated day of the week (this will fit into each student's timetable), unless the tutorial coordinator states otherwise. **Please note that for tutorials a minimum attendance rate per semester of 75% is a DP requirement**. Short tutorial assignments are compulsory and form part of the class mark.

All concerns with regards to tutorials should be addressed to the overall tutorial coordinator Dr Jonathan Davy (j.davy@ru.ac.za).

1.8 Activity Profiling

The HKE Department keeps a record of the HKE-related activities that students choose to be involved in during their time in the Department. These are activities over and above the compulsory activities stated above, and may involve being a class representative, tutoring, participating in consultancies, community engagement projects, or simply administrative assistance. The purpose for keeping such a record is that it provides the HKE staff members with a detailed record of involvement that can be reflected on a reference letter or can be used as motivation when applying for postgraduate studies.

Participation in research activities particularly is considered a huge educational experience, and all undergraduate students are therefore strongly encouraged to participate in at least one postgraduate (Honours, Masters or PhD) research project per year. This can be in the form of a research participant (i.e., a subject), as an assistant to the main researcher in the laboratory, or for data capturing and reduction.

Please note that the onus is on each student to inform the HKE Office Administrator of the activities he/she has been involved in. The required information includes:

1. Student number
2. Student's full name
3. Year of participation
4. Research Participation:
   a) Researcher's name
   b) Research project involved in
   c) Type of involvement (e.g., participant, assistant)
5. Teaching and Learning: e.g., Tutor, teaching assistant, lab assistant
6. Consultancy Projects:
   a) Project (e.g., ergonomics consultancy, medico-legal assessments etc.)
   b) Specifics of project (e.g., name of company/ patient, title of report, etc.)
   c) Tasks (e.g., report writing, assessment etc.)
7. Other Departmental Involvements: Admin tasks (e.g., tidying labs etc.)

1.9 Student Feedback and Participation

Students are asked to actively participate to the Department by providing feedback and suggestions on how to improve and meet student needs. Any comments or requests are welcomed by departmental staff at any time.

Communication

To provide clear and confident communication between students and staff, the course coordinators and the class representatives are advised to meet once each term to exchange information and discuss upcoming problems. Both representatives shall discuss issues with her / his colleagues before and after this meeting to get a broader audience addressed.

Course coordinators:

HKE I:	M Mattison
HKE II:	J Davy
HKE III:	A Todd
HKE Honours:	C Christie
HKE Masters & PhD:	C Christie
Tutorial Coordinator:	J Davy

Performance monitoring

Staff endeavour to provide students with feedback about their performance in tests and assignments within 2 weeks of writing the test or submitting the assignment. Students are encouraged to enquire about their class mark with their course co-ordinator and make use of this opportunity to monitor their own performance regularly and request support early enough.

Students are also encouraged to meet with the relevant lecturer(s) for any questions which may arise during the term or exam preparation. Similarly, the HoD, lecturers and tutors are prepared to provide assistance with working through past exams.

1.10 Communication between staff and students

Each student is issued with a Rhodes University webmail email address. This address is used for **all formal communications** between the HKE Department and individual students. It is the responsibility of each student to **regularly check** his/her email inbox. Failure to check the Rhodes student email address does not constitute a valid excuse for not receiving a message.

The HKE Department also has notice boards for undergraduate students on which timetables, lab schedules, practical groups and other events are announced. It is each student's responsibility to **regularly check** these notice boards in case changes have occurred.

Announcements may also be made during lecture times and students are therefore advised to regularly check all avenues of communication. Again, failure to attend lectures does not constitute a valid excuse for not receiving an announcement.

1.11 Functions / Guest Speakers

Visiting lecturers, guest speakers or functions will be announced via the HKE notice boards and lectures.

1.12 Dates of Terms for 2022

Please note that these dates could be subject to change and students should regularly consult the university or department about any changes.

1st Semester

1st Term: Monday 21 February – Friday 1 April (6 teaching weeks)

2nd Term: Monday 11 April – Friday 24 June (7 teaching weeks)

Term 2 lectures end: Friday 27 May

Swot week: Saturday 28 May – Thursday 2 June

Examinations: Friday 3 June – Friday 24 June

2nd Semester

3rd Term: Monday 11 July – Friday 19 August (6 teaching weeks)

4th Term: Monday 29 August – Friday 18 November (7 teaching weeks)

Supplementary exams Mon 22 August – Friday 26 August

Term 4 lectures end: Friday 14 October

Swot week: Saturday 15 October – Thursday 20 October

Examinations: Friday 21 October – Friday 18 November

2 General Course Information

2.1 Admission to study HKE

Any student accepted by Rhodes University is eligible to register for HKE. Students intending to major in HKE must be registered either in a BSc, BA, BCom or BJourn program. Please consider timetable clashes with other subjects as limiting factors when planning your degree.

2.2 University academic requirements

To obtain a BSc, BA, BCom or BJourn degree, it is each student's responsibility to ensure that the respective faculty requirements must be met (either refer to the 2022 Rhodes University calendar, the faculty website, or consult the Faculty Dean).

2.3 Structure of the HKE undergraduate degree

HKE undergraduate courses (Bachelor's Degree):

All courses comprise of two semester courses (e.g., HKE 101 and HKE 102).

1st year: Human Kinetics and Ergonomics 1 (HKE 1 = HKE 101 + HKE 102)

2nd year: Human Kinetics and Ergonomics 2 (HKE 2 = HKE 201 + HKE 202)

3rd year: Human Kinetics and Ergonomics 3I (HKE 3 = HKE 301 + HKE 302)

To pass from one level to the next (e.g., from HKE 1 to HKE 2) all semester-credits at the lower level are required.

HKE undergrad courses consist of different lecture modules and corresponding laboratory practicals. First and second year students must also attend weekly tutorials. Table 1 provides a break-down of the various modules offered in each of the courses per semester.

Table 1: Module structure of the HKE degree.

HKE 101	**HKE 102**
Integration and Application 101	Biophysical Domain 102: Functional Anatomy of the Upper Extremities
Biophysical Domain 101: Introduction to the Biophysical Domain	Cognitive Domain 102: Human Senses
Physiological Domain 101: Cardiovascular & Respiratory Physiology	Integration and Application 102

HKE 201	**HKE 202**
Integration and Application 201	Physiological Domain 202: Neuromuscular Physiology
Cognitive Domain 201: Information Processing	Cognitive Domain 202: Attention & Situation Awareness
Biophysical Domain 201: Functional Anatomy of the Lower Extremities	Integration and Application 202
Biophysical Domain 201: Linear Kinetics & Kinematics of Human Movement	

HKE 301	**HKE 302**
Students will participate in a year-long group research project which will count towards their class mark	
Integration & Application 301	Physiological Domain 302: Endocrinology
Cognitive Domain 301: Perceptual Motor Control	Biophysical Domain 302: Functional Anatomy of the Trunk & Spine
Physiological Domain 301: Exercise Physiology	Biophysical Domain 302: Angular Kinetics & Kinematics of Human Movement
	Cognitive Domain 302: Human Error & Reliability
	Integration & Application 302

2.4 Postgraduate Studies in HKE

Postgraduate Honours course in HKE

The Honours course in Human Kinetics and Ergonomics is a one-year full-time attendance joint seminar- and thesis-based course. It is aimed at providing graduates with research knowledge and application skills for responsible management and consultancy posts as well as for further academic degrees.

Minimum requirement for admission to HKE Honours is a Bachelor Degree in Human Kinetics and Ergonomics or any other Bachelor course providing the required basic knowledge. Final admission will be based on merit, depending on number of applicants, staffing and laboratory equipment resources. In past years, applicants with marks of at least 60 to 65% in HKE 3 were accepted. It must be noted however, that second year marks are also referred to, as well as involvement in HKE-related activities, such as participation in research, community engagement and/or consultancies (refer to “Activity Profiling” – section 1.7). Staff capacity and senior postgraduate supervision loads are other important considerations.

HKE Masters

Thesis based; 2-year duration full time or 3-year duration part time.

2.5 Departmental infrastructure and services

Photocopying, scanning and printing services

Photocopies (and, if technology permits, printouts from flash stick to the photocopier) are 45c per copy (may be subject to change). **There are NO "I.O.U's**". Please ask the Office Administrator to assist in operating the machine. Count the number of pages you copy and pay your money to the Office Administrator.

Colour printing can be done via the Office Administrator's DeskJet colour printer and is charged at R4.50 per page (may be subject to change). If you intend to use the colour printer, bring your file on a flashstick to the office administrator.

Scanning can be performed using the photocopy machine. Please consult the Office Administrator.

Library

HKE-related books (including textbooks) are kept in the Main Rhodes Library. Core readings for the various modules have been placed in "short-loan" section of the Rhodes University Library.

Furthermore, all periodicals (journals) relating to HKE can be found in the Main Rhodes Library on central campus. Only printed versions of past research reports, projects and theses are held in the Department, many of which are also accessible electronically (either via the Rhodes Library website for more recent MSc and PhD theses, or via the Office Administrator for Honours projects and older MSc and PhD theses). Please see the Department's Office Administrator if you want to gain access to these.

HKE 1 (1st year)

Two semester credits: HKE 101 and HKE 102.

Course coordinator: M Mattison (email: m.mattison@ru.ac.za, phone: 046-603 8468)

2.6 Admission into HKE I

Any student accepted by Rhodes University is eligible to register for HKE 1. Students intending to major in HKE must be registered either in a BSc, BA, BCom or BJourn program. A science background is beneficial, but not a requirement.

Students are strongly encouraged to take up Statistics 1 as a credit, as basic statistical knowledge will be required for interpretation and application during assignments such as laboratory reports.

Students without a high school biological or physical science background also stand to benefit from the Physics 1E1 and/or Maths 1S (also known as Maths for Life Science) and Cell Biology 101 course.

2.7 Structure of HKE 1

Please note that in the Covid-19 context, the details of the 2022 HKE 1 course below may be subject to change. Any changes to the activities scheduled for HKE 1 will be communicated to students by the HKE Department.

Lectures

Lectures, laboratories and tutorials take place during the following lecture periods throughout the year.

Mon	9.35 - 10.20	Lecture
Tues	10.30 - 11.15	Lecture
Wed	11.25 - 12.10	Lecture
Fri	8.40 - 9.25	Lecture
Thu / Fri	14.00 - 16.00	Laboratory (students will be allocated to ONE slot)

Lecture terms vary between six and seven weeks per term:
1st term: Mon 21 February – Fri 1 April (6 lecture weeks);
2nd term: Mon 11 April – Fri 24 June (7 lecture weeks);
3rd term: Mon 11 July – Fri 19 August (6 lecture weeks);
4th term: Mon 29 August – Fri 18 November (7 lecture weeks).

Table 2 depicts the various HKE 1 modules taught throughout the year.

Please note that these are provisional dates and may be subject to change. The Department therefore reserves the right to adjust these, as may be necessary throughout the year. Any changes will be communicated to students via the HKE 1 noticeboard and/or via email.

Table 2: Module structure for HKE 1.

	Term	Module	Lecturer	Dates
HKE 101	1	Integration and Application 101	J Davy	Mon 21 Feb – Tue 1 Mar (6 lectures)
		Biophysical Domain 101: Introduction to the Biophysical Domain	A Todd	Wed 2 Mar – Fri 1 Apr (17 lectures)
	2	Physiological Domain 101: Cardiovascular & Respiratory Physiology	D Barnard / C Christie	Mon 11 Apr – Fri 27 May (24 lectures)
	3	Cognitive Domain 102: Sensory perception	S Zschernack	Mon 11 July – Fri 19 Aug (23 lectures)
	4	Biophysical Domain 102: Functional Anatomy of the Upper Extremities	M Mattison	Mon 29 Aug – Tues 4 Oct (22 lectures)
		Integration and Application 102	J Davy	Wed 5 Oct – Fri 14 Oct (6 lectures)

Practicals:

Weekly practical sessions, either on a Wednesday, Thursday or Friday afternoon (please check your allocated day on the HKE 1 notice board), will be held in association with the lectures and for general skills development. Students may be requested to hand in worksheets or write-ups for some practicals. Please consider the format guide (section 7) when writing these documents.

Table 3 contains the provisional topics for HKE 1 practicals. **Please note that these may be subject to change; updated practical schedules will be displayed on the HKE noticeboard, so make a point of checking it regularly!**

Table 3: Preliminary topics of practicals in HKE 1 (please check notice boards in the Department for updates and be prepared for practicals scheduled within the allocated period EVERY Wednesday / Thursday / Friday except for public holidays).

Term	Week of	Module	Lecturer
1	28 Feb	Integration & Application 1	Davy
	7 Mar	Integration & Application 2	Davy
	14 Mar	Biophysical Domain 1	Todd
	21 Mar	Biophysical Domain 2	Todd
	28 Mar	Biophysical Domain 3	Todd
2	11 April	*No practical (Easter weekend)*	-
	18 April	Physiological Domain 1	Barnard/ Christie
	25 April	*No practical (Freedom Day)*	-
	2 May	Physiological Domain 2	Barnard/ Christie
	9 May	Physiological Domain 3	Barnard/ Christie
	16 May	Physiological Domain 4	Barnard/ Christie
	23 May	Physiological Domain 5	Barnard/ Christie
3	11 Jul	Cognitive Domain 1	Zschernack
	18 Jul	Cognitive Domain 2	Zschernack
	25 Jul	Cognitive Domain 3	Zschernack
	1 Aug	Cognitive Domain 4	Zschernack
	8 Aug	Cognitive Domain 5	Zschernack
	15 Aug	Cognitive Domain 6	Zschernack
4	29 Aug	Biophysical Domain 1	Mattison
	5 Sep	Biophysical Domain 2	Mattison
	12 Sep	Biophysical Domain 3	Mattison
	19 Sep	Biophysical Domain 4	Mattison
	26 Sep	Biophysical Domain 5	Mattison
	3 Oct	Integration & Application 1	Davy
	10 Oct	Integration & Application 2	Davy

Tutorials:

Every first-year student has to attend **75% of all tutorials each semester**, which means that missing more than three tutorials per semester will result in that student's DP being jeopardized. Students may only miss more than three tutorials if they have completed a leave of absence (LOA) form, accompanied by a letter stating a valid reason (refer to the Rhodes University Leave of Absence Policy) for their absence, which is to be handed in to the Office Administrator. With exception of medical reasons, the LOA must be submitted **before** missing the tutorial.

With regards to written work, students may have occasional tutorial assignments to hand in each term. All tutorial work must be submitted on the specified date and time. This work may count for marks.

Any complaints or problems that students may have with the tutorials, the work, or the tutors should be brought to the attention of the first-year course coordinator or the tutorial coordinator.

Supplementary Instruction:

Over and above the lectures, practicals and tutorials, supplementary instruction (SI) sessions are offered on request. Students are asked to identify and express the need for such sessions directly to the course or tutorial coordinators, or via the class representatives.

Please note: Supplementary Instruction sessions are NOT intended to be last-minute "cramming" sessions, or opportunities to catch up lecture content from missed lectures. They are small-group discussions during which students can ***clarify*** concepts they do not understand. Students are encouraged to proactively seek support throughout the semester if they feel they do not understand the lecture contents.

2.8 Tests, assignments, and examination in HKE 1

Each module lecturer will set tests and assignments to his/her discretion and dates are depicted in Table will be announced in lectures and via the HKE I notice board. The marks from these assignments will be collated to produce a class mark for each module. The module class marks for the semester will build the class record which contributes 40% to the total semester mark.

The two examination papers (each 3 hrs) at the end of each semester together contribute 60% to the total semester mark (see Table 4).

Table 4: Test and Assignment dates for HKE 1.

Term	Date	Module	Assessment Type	Lecturer
1	Fri 1 April	Biophysical Domain and Integration & Application	Joint assignment	Todd & Davy
2	Fri 13 May	Physiological Domain	Test	Barnard/ Christie
	Wed 25 May	Physiological Domain	Assignment	Barnard/ Christie
3	July - Aug	Cognitive Domain : Sensory Perception	Weekly prac worksheets	Zschernack
	Wed 10 Aug	Cognitive Domain : Sensory Perception	Test	Zschernack
4	Fri 23 Sept	Biophysical Domain : Functional Anatomy	Test	Mattison
	Fri 30 Sept	Biophysical Domain : Functional Anatomy	Assignment	Mattison
	Fri 14 Oct	Integration & Application	Assignment	Davy
Make-up assessment(s): Term 1: Friday 1 April Term 2: Friday 27 May Term 3: Friday 19 August Term 4: Friday 14 October				

Table 5: Mark composition of HKE 1.

		HKE 101		HKE 102	
Class record	(40%)	5%	Integration & Application	15%	Biophysical Domain
		15%	Biophysical Domain	20%	Cognitive Domain
		20%	Physiological Domain	5%	Integration & Application
Examina-tions	(60%)	30%	Paper 1 (3hrs): Integration & Application + Biophysical Domain	30%	Paper 1 (3hrs): Biophysical Domain + Integration & Application
		30%	Paper 2 (3hrs): Physiological Domain	30%	Paper 2 (3hrs): Cognitive Domain
Total	(100%)				

Pass criteria:

A pass mark at Rhodes University is 50% or higher (class record and examinations combined). Admission to the second semester of HKE (HKE 102) requires a sub-minimum mark of 40% in HKE 101. Students with an examination mark of 40-49% are considered for supplementary exams for both semesters (this is only optional for HKE 1).

In order to pass into the next year (i.e., HKE 201) the overall final marks for both semester courses must aggregate (average) to at least 50%, with a sub-minimum of 40% required for each semester (i.e., HKE 101 and HKE 102).

2.9 Course content for HKE 1

The following modules make up the HKE 1 course. Please note that the details listed under each module are a guideline only and may be subject to change.

Integration and Application 101 – Term 1 (J. Davy)

This seven-lecture module aims to introduce students to the Department of Human Kinetics and Ergonomics (HKE) and the department's philosophy (the theories that guide the way teach, research, and generate knowledge). Through this module, students will understand what the terms Human Kinetics and Ergonomics mean and what we, as a discipline focus on studying, and why. In addition, this course will introduce students to systems theory and systems thinking, which forms the basis of how we study humans and the different systems that make up the human body (such as the cardiovascular, musculoskeletal, and nervous systems, for example). Furthermore, the module focuses on giving students an overview of the importance of human movement and why it is important to study humans (in the contexts of work, sport, and activities of daily living), and how and why they move so that we can improve the health and wellbeing of people, no matter the context.

Upon completion of this module, students should understand the domains or areas through which humans can be studied. These include the Biophysical domain, where students learn about what moves (such as the bones and muscles of the body); the Physiological domain, where students learn how the body moves (with the help of the heart and the lungs that provide oxygenated blood to the muscles to help them move), and the Cognitive domain, where students will learn about why humans move (and how the human senses, the brain, what we think and our beliefs influence the way in which we move). Together, these domains offer the opportunity for learners to study and understand humans and human movement by taking a holistic integrated approach – where holistic refers to looking at a person as a whole and not the sum of their parts (their bones, their lungs, and their brains) and integrated means looking at how the different parts or systems of humans are linked to one another and work together to allow us to move.

Biophysical Domain in HKE 101 (A. Todd)

This module serves as a basic introduction to the biophysical analysis of human movement. It first introduces the study of Anatomy, Biomechanics and Anthropometry, followed by an introduction to kinetic and kinematic concepts and the implications these have for human movement. These considerations include: forms of motion, reference terminology, mechanical loads on the body and their effects, as well as concepts of inertia, mass, force and centre of gravity. The practical and tutorial sessions provide further examples of the application of these principles to activities of daily living, sport and the work environment. By the end of the module, the students will have a sound understanding of the basic nomenclature of the biophysical domain, and how to apply this to basic human movement characteristics.

Physiological Domain in HKE 101 (C. Christie)

This module introduces the subject of physiology and focuses specifically on the structure and function of the cardiovascular and respiratory systems, as well as the concept of energy systems. How these systems respond to physical activity will be a key focus.

The section on cardiovascular physiology focusses specifically on the structure and function of the cardiovascular system and the concept of energy systems:

- Structure and function of the heart
- Hearts blood supply and the conduction system and pacemaker
- Cardiac cycle
- Cardiac output, heart rate and stroke volume
- Hemodynamics
- Resistance to blood flow
- Blood pressure
- Circulatory adjustments
- Energy systems

The respiratory component of this physiology module covers:

- Introduction and anatomy of the system
- Pulmonary ventilation and ventilatory mechanics
- Ventilation and perfusion in the resting lung
- Exchange of O_2 and CO_2; Transport of O_2 and CO_2.
- Control of respiration
- Lung volumes and capacities; Lung function testing
- Asthma and exercise-induced asthma
- Industrial work and lung function and obesity and lung function
- “Ventilation and exercise”

Biophysical Domain in HKE 102 (M. Mattison)

This module introduces the study of musculoskeletal anatomy and focuses on the application of the musculoskeletal system to movement (functional anatomy). Skeletal and soft tissue structures of the upper extremities, more specifically the pectoral girdle, the shoulder joint, elbow joint and wrist, are covered in detail and related to movement capabilities of these articulations. In addition to applying this knowledge to musculoskeletal movement analysis, selected injury mechanisms and overuse injuries are used as examples to understand the limits of the musculoskeletal system, i.e., ‘when things go wrong’. Practicals provide a hands-on opportunity to explore the musculoskeletal system, as well as perform basic functional assessments of the upper extremities.

Cognitive Domain in HKE 102 (S. Zschernack)

The only way to receive information from the environment is through the senses. Sensation and perception are the first steps in human information processing. Accurate sensation and perception of information is a prerequisite for any type of performance. This module will focus specifically on the visual, auditory and body senses. It will provide insight into the anatomical structure of the sensory organ and its physiology, and the physical and chemical characteristics of the stimulus, as well as discuss how sensations are processed in the brain to provide meaning (perception).

Integration and Application 102 (J. Davy)

This short module aims to bring together the modules and content that students have covered during their year in HKE 1 from a biophysical, physiological and cognitive perspective and apply them to some examples from sport, work and everyday activities. Throughout the year, students would have learned about individual human systems, from

anatomy, to the cardiovascular and respiratory systems to the different senses and the ways in which we receive, recognise, and use information in order to move through the environment. This module will demonstrate how these systems (and others that students are still to learn about in HKE 2 and 3 and beyond) work together to enable humans to move. Therefore, this module aims to show students the importance of taking a holistic integrated approach to studying humans.

The module also introduces students to basic human information processing (how we receive, process and use information to make decisions about how we move) as a way of integrating the different human systems. Lastly, during this module, students will be introduced to an important model (a framework for students to use to think in a certain way) called the Work Systems Model (by Smith and Carayon-Sainfort, 1989), which is a useful way to think about how humans interact with different elements of the environment around them and how these interactions can leave both the human and the things they are interacting with, changed. It is important to remember that humans do not exist in a vacuum and that the physical and social environment, other people, the tasks and activities performed, the tools used and how these elements are organized will and do have an effect – sometimes a positive one and sometimes a negative one. Our aim, as human movement specialists, is to ensure that we maximise the positive effects and minimise the negative ones.

2.10 Prescribed books for HKE 1

Hall, S.B. (2014). Basic Biomechanics (7th ed. or earlier). Boston: McGraw-Hill International. (ISBN 9780073522760).

Tortora, G.J., & Derrickson, B.H. (2011). *Principles of Anatomy & Physiology* (13th ed. or earlier). New York: Wiley & Sons. (ISBN: 978 0470929186).
(Please note: the more recent editions have two volumes)

3 HKE 2 (2nd year)

Two semester credits: HKE 201 and HKE 202.

Course coordinator: J Davy (email: j.davy@ru.ac.za, phone: 046 603 7369)

3.1 Admission into HKE 2

An aggregated pass mark for HKE 1 (minimum 50%) is a minimum requirement for admission to HKE II.

3.2 Structure of HKE 2

Please note that in the Covid-19 context, the details of the 2022 HKE 2 course below may be subject to change. Any changes to the activities scheduled for HKE 2 will be communicated to students by the HKE Department.

Lectures:

Lectures, laboratories and tutorials take place during the following lecture periods throughout the year.

Mon	11.25 - 12.10	Lecture
Wed	8.40 - 9.25	Lecture
Thu	9.35 - 10.20	Lecture
Fri	10.30 - 11.15	Lecture

Mon / Wed 14.00 - 17.00 Laboratory (students will be allocated to ONE slot)

Tutorials as per arrangement

Module Structure:

Lecture terms vary between six and seven weeks per term:
1st term: Mon 21 February – Fri 1 April (6 lecture weeks);
2nd term: Mon 11 April – Fri 24 June (7 lecture weeks);
3rd term: Mon 11 July – Fri 19 August (6 lecture weeks);
4th term: Mon 29 August – Fri 18 November (7 lecture weeks).

Table 6 depicts the various HKE 2 modules taught throughout the year.

Please note that these are provisional dates and may be subject to change. The Department therefore reserves the right to adjust these, as may be necessary, throughout the year. Any changes will be communicated to students via the HKE 2 noticeboard and/or via email.

Table 6: Module structure for HKE 2.

	Term	Module	Lecturer	Dates
HKE 201	1	Integration & Application 201	A Todd	Mon 21 Feb – Fri 11 Mar (12 lectures)
		Biophysical Domain 201: Functional Anatomy of the Lower Extremities	M Mattison	Mon14 Mar – Friday 1 April (11 lectures)
	2	Biophysical Domain 201: Linear Kinetics & Kinematics	A Todd	Mon 11 Apr – Fri 6 May (12 lectures)
		Cognitive Domain 201: Information Processing	S Zschernack	Mon 9 May – Friday 27 May (12 lectures)
HKE 202	3	Cognitive Domain 202: Attention & Situation Awareness	S Zschernack	Mon 11 July – Fri 29 July (12 lectures)
		Physiological Domain 202: Neuromuscular Physiology	C Christie	Mon 1 Aug – Fri 19 Aug (12 lectures)
	4	Physiological Domain 202: Neuromuscular Physiology	C Christie	Mon 29 Aug – Wed 21 Sep (14 lectures)
		Integration & Application 202	A Todd	Thu 22 Sept – Fri 14 Oct (14 lectures)

Practicals

Weekly practicals will be held in association with the lectures and for general skills (see Table 7). Students may be requested to hand in worksheets or write-ups for some practicals. Please consider the format guide for the writing of those documents.

Table 7: Preliminary topics of laboratory in HKE 2 (please check notice boards in the department for updates and be prepared for practicals scheduled within the practical periods EVERY Monday/Wednesday (except for public holidays).

Term	Week of	Subject	Lecturer
1	28 Feb	Integration & Application 1	Todd
	07 Mar	Integration & Application 2	Todd
	14 Mar	Biophysical Domain: Functional Anatomy 1	Mattison
	21 Mar	*No practical (public holiday - Human Rights Day)*	-
	28 Mar	Biophysical Domain: Functional Anatomy 2	Mattison
2	11 Apr	Biophysical Domain: Functional Anatomy 3	Mattison
	18/25 Apr	Biophysical Domain: Linear Kinetics & Kinematics 1	Todd
	2 May	*No practical (public holiday - Workers' Day observed)*	-
	9 May	Biophysical Domain: Linear Kinetics & Kinematics 2	Todd
	16 May	Cognitive Domain: Information Processing 1	Zschernack
	23 May	Cognitive Domain: Information Processing 2	Zschernack
3	11 Jul	Cognitive Domain: Attention & Situational Awareness 1	Zschernack
	18 Jul	*No practical (public holiday – Nelson Mandela Day)*	-
	25 Jul	Cognitive Domain: Attention & Situational Awareness 2	Zschernack
	1 Aug	Cognitive Domain: Attention & Situational Awareness 3	Zschernack
	8 Aug	Physiological Domain: Neuromuscular Physiology 1	Christie
	15 Aug	Physiological Domain: Neuromuscular Physiology 2	Christie
4	29 Aug	Physiological Domain: Neuromuscular Physiology 3	Christie
	5 Sep	Physiological Domain: Neuromuscular Physiology 4	Christie
	12 Sep	Physiological Domain: Neuromuscular Physiology 5	Christie
	19 Sept	Physiological Domain: Neuromuscular Physiology 6	Christie
	26 Sept	Integration & Application 1	Todd
	3 Oct	Integration & Application 2	Todd
	10 Oct	Integration & Application 3	Todd

Tutorials:

Every second-year student has to attend 75% of all tutorials each semester, which means that missing more than three tutorials per semester will result in that student's DP being jeopardized. Students may only miss more tutorials if they have filled out a leave of absence form, accompanied by a letter stating a valid reason for their absence (refer to Leave of Absence policy), which is to be handed in to the Office Administrator.

Concerning written work, each student may have occasional tutorial assignments to hand in per term, which may count for marks. The topics for each piece of work will be handed to each student a week before it is due.

Any complaints or problems that students may have with the tutorials, the work or the tutors should be brought to the attention of the second-year laboratory or tutorial coordinator.

Supplementary Instruction:

Supplementary instruction sessions are offered on request. Students are asked to identify and express the need for such sessions directly to the course or tutorial coordinators, or via the class representatives well in advance of the examinations.

Please remember that Supplementary Instruction sessions are **NOT** intended to be last-minute “cramming” sessions, or opportunities to catch up lecture content from missed lectures. They are small-group discussions during which students can ***clarify*** concepts they do not understand. As such they will **NOT** be held during the least week of term or during swot week and students are encouraged to proactively seek support throughout the semester if they feel they do not understand the lecture contents.

3.3 Tests, assignments, and examinations in HKE 2

Each module’s lecturer will set tests and assignments to his/her discretion and as detailed in Table 8. The marks from these assignments will be averaged to produce a class mark for each module. The module class marks for the semester will, in conjunction with the tutorial mark, build the class record, which contributes 40% to the total semester mark.

The HKE 2 examination at the end of each semester exists of two papers (each 3hrs) which together contribute 60% to the total semester mark (see Table 9).

Table 8: Test and Assignment dates for HKE 2.

Term	Date	Module	Assessment Type	Lecturer
1	Fri 18 Mar	Integration & Application	Assignment	Todd
	Thu 31 Mar	Biophysical Domain: Functional Anatomy	Test	Mattison
2	Fri 29 Apr	Biophysical Domain: Linear Kinetics & Kinematics:	Test	Todd
	5 – 27 May	Cognitive Domain: Information Processing	Weekly prac worksheets	Zschernack
	Mon 23 May	Cognitive Domain: Information Processing	Test	Zschernack
3	11 – 29 Jul	Cognitive Domain: Attention & Situational Awareness	Weekly prac worksheets	Zschernack
	Mon 25 Jul	Cognitive Domain: Attention & Situational Awareness	Test	Zschernack
	Fri 19 Aug	Physiological Domain: Neuromuscular Physiology	Test	Christie
4	Tuesday 13 Sept	Physiological Domain: Neuromuscular Physiology	Assignment	Christie
	10 - 14 Oct	Integration & Application	Poster and Presentation during tutorials	Todd
Make-up assessment(s): Term 1: Friday 1 April Term 2: Friday 27 May Term 3: Friday 19 August Term 4: Friday 14 October				

Table 9: Mark composition of HKE 2.

		HKE 201		HKE 202	
Class record	(40%)	10 %	Integration & Application	20%	Physiological Domain
		10%	Cognitive Domain	10%	Cognitive Domain
		20%	Biophysical Domain	10%	Integration & Application
Examina-tions	(60%)	30%	<u>Paper 1 (3hrs):</u> Integration & Application & Cognitive Domain	30%	<u>Paper 1 (3hrs):</u> Physiology
		30%	<u>Paper 2 (3hrs):</u> Biophysical Domain	30%	<u>Paper 2 (3hrs):</u> Cognitive Domain and Integration & Application
Total	(100%)				

Pass criteria:

Admission to second semester HKE 202 requires a sub-minimum of 40% in HKE 201. To pass into the next year the overall final marks for both semester courses must aggregate to at least 50% (average year mark), with a sub-minimum of 40% required for each HKE 201 and HKE 202.

Students have to have obtained a pass for HKE II to be allowed into HKE 3.

Second year students are **NOT** considered for supplementary exams!

3.4 Course content for HKE 2

The following modules make up the HKE II course. Please note that the details listed under each module are a guideline only and may be subject to change.

Integration and Application in HKE 201 (A. Todd)

Integration and Application 201 introduces students to basic components of motor performance and skill, with the intention of capacitating the students to assess human performance in a simple, ethical and professional way. Furthermore, students will be introduced to the fundamental concepts behind design and designing for humans, the importance of data and how to use data to design for humans. The course content is applicable to sport and work contexts and to general areas of everyday life.

Cognitive Domain in HKE 201 (S. Zschernack)

Once information has been perceived, a decision has to be reached before an action can be effected. This module focuses on established models of information procession and, in particular, the so-called central processes of information processing: memory and decision-making. Furthermore, guidelines that support accurate decision making in different settings will be discussed.

Biophysical Domain in HKE 201 (A. Todd & M. Mattison)

This module integrates the functional anatomy of the lower extremities with biomechanical concepts to construct a basic understanding of the key concepts for the mechanical analysis of the human body under static and dynamic conditions. The anatomical (skeletal and soft tissue) structures of the pelvis, hip, knee and foot are covered in detail and related to movement capabilities. Movement analyses of ‘normal’ and pathological development and functioning are covered with selected injuries and disorders. Biomechanical concepts include centre of mass, friction, force, work, power and the concept of energy. These concepts are integrated to show how the biomechanics and anatomy of the lower extremity interact to create locomotory movement. The practicals and tutorials associated with this module will provide further scaffolding to ensure that students have a sound understanding of how the biophysical components interact with each other to support human movement in a variety of contexts. Practical sessions provide hands-on opportunities to perform basic functional assessments of the lower extremities, as well as conducting biomechanical analyses.

Physiological Domain in HKE 202 (C. Christie)

The neuromuscular physiology module of the HKE 2 course module focusses on the structure and function of skeletal muscle tissue, the neuromuscular connection and the process of muscle contraction and relaxation. Adaptations to endurance and strength training as well as different types of muscle contractions will also be covered.

- Histology of the nervous system
- Ion channels
- Resting membrane potentials
- Graded and Action potentials
- Transmission at synapses
- Types of neural circuits
- Physiology of the Autonomic Nervous System
- Reflexes and reflex arcs
- Muscle spindles and golgi tendon organs
- Characteristics, Types, Functions and Gross Anatomy of muscle tissue
- Microscopic Anatomy
- Subcellular Organisation
- Motor units
- Muscle Contraction (ECC)
- Types of muscle contraction
- Sarcoplasmic Reticulum
- Delayed Onset of Muscle Soreness
- Adaptation to endurance training
- Adaptation to strength training
- Deadaptation
- Force-velocity relationship
- Length-tension
- Muscle cramps
- Muscle Fatigue

Cognitive Domain in HKE 202 (S. Zschernack)

The way humans process information is, among other aspects, affected by the way individuals direct their attention and how they are aware of the situation and their environment. The module covers different theories of attention and situational awareness, as well as their application to understanding human performance.

Integration and Application in HKE 202 (A. Todd)

The purpose of this module is to integrate the knowledge gained in HKE 201 and 202 through applied examples. The focus will be on illustrating the application of basic biophysical, physiological and cognitive domain knowledge to the human gait cycle as well as activities of daily living, ergonomics and sports science. Students will gain an understanding of the importance of understanding the interactions between different domains of specialisation within Human Kinetics and Ergonomics and how these interactions impact performance.

3.5 Prescribed books for HKE 2

Bridger, R.S. (2008). *Introduction to Ergonomics* (3rd ed., or earlier). London: Taylor & Francis. (ISBN 9780849373060).

Hall, S.B. (2014). Basic Biomechanics (7th ed. or earlier). Boston: McGraw-Hill International. (ISBN 9780073522760).

McArdle, W.D., Katch, F.I. & Katch, V.L. (2014). *Exercise Physiology: Energy, Nutrition and Human Performance.* (8th ed.,or any earlier edition). Philadelphia: Lea & Febiger. (ISBN 9781451193831).

Tortora, G.J., & Derrickson, B.H. (2011). *Principles of Anatomy & Physiology* (13th ed. or earlier). New York: Wiley & Sons. (ISBN: 978 0470929186).

(Please note: the more recent editions have two volumes)

4 HKE 3 (3rd year)

Two semester credits: HKE 301 and HKE 302.

Course coordinator: A Todd (email: a.todd@ru.ac.za, phone: 046 603 8469)

4.1 Admission into HKE 3

Students must have passed HKE II (aggregated HKE 201 and 202: minimum 50%).

4.2 Structure of HKE 3

Please note that in the Covid-19 context, the details of the 2021 HKE 3 course below may be subject to change. Any changes to the activities scheduled for HKE 3 will be communicated to students by the HKE Department.

Lectures:

Lectures, laboratories and tutorials take place during the following lecture periods throughout the year.

Mon	10.30 - 11.15	Lecture
Tues	11.25 - 12.10	Lecture
	12.20 - 13.05	Lecture
Wed	7.45 - 8.30	Lecture
Thurs	8.40 - 9.25	Lecture
Fri	9.35 - 10.20	Lecture
Tues	14.00 - 17.00	Laboratory practical

Module Structure:

Lecture terms vary between six and seven weeks per term:
1st term: Mon 21 February – Fri 1 April (6 lecture weeks)
2nd term: Mon 11 April – Fri 24 June (7 lecture weeks)
3rd term: Mon 11 July – Fri 19 August (6 lecture weeks)
4th term: Mon 29 August – Fri 18 November (7 lecture weeks)

Table 10 depicts the various HKE 3 modules taught throughout the year.

Please note that these are provisional dates and may be subject to change. The Department therefore reserves the right to adjust these, as may be necessary, throughout the year. Any changes will be communicated to students via the HKE 3 noticeboard and/or via email.

Table 10: Module structure for HKE 3.

	Term	Module	Lecturer	Dates
HKE 301	1	Integration & Application	J Davy	Mon 21 Feb – Tue 8 Mar (12 lectures)
		Physiological Domain: Exercise Physiology	C Christie	Wed 9 Mar – Fri 1 Apr (17 lectures)
	2	Physiological Domain: Exercise Physiology cont.	C Christie	Mon 11 Apr – Fri 22 Apr (8 lectures)
		Cognitive Domain: Perceptual Motor Control	S Zschernack	Mon 25 Apr – Fri 27 May (23 lectures)
HKE 302	3	Physiological Domain: Endocrinology	J Davy	Mon 11 Jul – Wed 27 July (13 lectures)
		Biophysical Domain: Functional Anatomy of the Trunk & Spine	M Mattison	Thu 28 July – Mon 15 Aug (12 lectures)
		Biophysical Domain: Biomechanics – Angular Kinematics & Kinetics	A Todd	Tue 16 Aug – Fri 19 Aug (4 lectures)
	4	Biophysical Domain: Biomechanics (cont.)	A Todd	Mon 29 Aug – Thu 8 Sep (9 lectures)
		Cognitive Domain: Human Error & Reliability	A Todd	Fri 9 Sep – Tue 27 Sept (13 lectures)
		Integration & Application	J Davy	Wed 28 Sep – Fri 14 Oct (13 lectures)
	1-4	Research Project	Davy & Mattison	Year-long; 1 lecture per week (26 lectures)

Research Project:

Throughout the course of the year, students will also be involved in conducting a group-based research study. One weekly lecture is dedicated to guiding students through the theoretical aspects of the research process. In addition, each group is assigned a supervisor who will regularly meet with the research group outside of lecture times to discuss specific aspects of their project. Regular formative and summative assessments of the research project occur throughout the year, including the examination.

Practicals:

Practicals will be held in association with the lectures and for general skills (see Table 11). Students may be requested to hand in worksheets or with write-ups for each practical. Please consider the format guide (section 9) for writing.

Table 11: Preliminary topics of practicals in HKE 3 (please check displays at the department for updates and be prepared for practicals scheduled within the practical periods EVERY Tuesday (except for public holidays).

Term	Week of	Subject	Lecturer
1	28 Feb	Integration & Application 1	Davy
	07 Mar	Integration & Application 2	Davy
	14 Mar	Integration & Application 3	Davy
	21 Mar	Cognitive Domain: Perceptual Motor Control 1	Zschernack
	28 Mar	Cognitive Domain: Perceptual Motor Control 2	Zschernack
2	11 Apr	Cognitive Domain: Perceptual Motor Control 3	Zschernack
	18 Apr	Cognitive Domain: Perceptual Motor Control 4	Zschernack
	25 Apr	Physiological Domain: Exercise Physiology 1	Christie
	02 May	Physiological Domain: Exercise Physiology 2	Christie
	09 May	Physiological Domain: Exercise Physiology 3	Christie
	16 May	Physiological Domain: Exercise Physiology 4	Christie
	23 May	Physiological Domain: Exercise Physiology 5	Christie
3	11 Jul	Physiological Domain: Endocrinology 1	Davy
	18 Jul	Physiological Domain: Endocrinology 2	Davy
	25 Jul	Physiological Domain: Endocrinology 3	Davy
	01 Aug	Biophysical Domain: Functional Anatomy 1	Mattison
	08 Aug	*No practical (public holiday - National Women's Day)*	-
	15 Aug	Biophysical Domain: Functional Anatomy 2	Mattison
4	29 Aug	Biophysical Domain: Biomechanics 1	Todd
	05 Sep	Biophysical Domain: Biomechanics 2	Todd
	12 Sep	Cognitive Domain: Human Error & Reliability 1	Todd
	19 Sep	Cognitive Domain: Human Error & Reliability 2	Todd
	26 Sep	Cognitive Domain: Human Error & Reliability 3	Todd
	03 Oct	Integration & Application 1	Davy
	10 Oct	Integration & Application 2	Davy

Tutorials / Supplementary Instruction

There are **no** formal tutorials for third year students. However, supplementary instruction sessions can be arranged on demand of the students.

4.3 Tests, assignments, and examinations in HKE 3

Each module's lecturer will set tests and assignments to his/her discretion and as detailed in Table 12. The marks from these assignments will be averaged to produce a class mark for each module. The module class marks for the semester will build the class record which contributes 40% to the total semester mark. The three examination papers (each 2 hrs) at the end of each semester contribute 60% to the total semester mark (Table 13).

Table 12: Test and Assignment dates for HKE 3.

Term	Date	Module	Assessment Type	Lecturer
1	Tue 8 Mar	Integration & Application	Assignment	Davy
	Fri 1 Apr	Physiological Domain: Exercise Physiology	Test	Christie
2	Wed 20 Apr	Physiological Domain: Exercise Physiology	Assignment	Christie
	Mon 25 Apr – Fri 27 May	Cognitive Domain: Perceptual Motor Control	Weekly prac worksheets	Zschernack
	Thu 12 May	Cognitive Domain: Perceptual Motor Control	Test	Zschernack
3	Tue 26 Jul	Physiological Domain: Endocrinology	Test	Davy
	Thu 11 Aug	Biophysical Domain: Functional Anatomy	Test	Mattison
4	Fri 2 Sep	Biophysical Domain: Biomechanics	Assignment	Todd
	Fri 7 Oct	Cognitive Domain: Human Error & Reliability and Integration & Application	Joint Assignment	Todd & Davy
Make-up assessment(s): Term 1: Friday 1 April Term 2: Friday 27 May Term 3: Friday 19 August Term 4: Friday 14 October				

Table 13: Mark composition of HKE III.

		HKE 301		HKE 302	
Class record	(40%)	13.3%	Integration & Application (incl. Research Project)	13.3%	Integration & Application (incl. Research Project)
		13.3%	Cognitive Domain	6.67%	Physiological Domain
		13.3%	Physiological Domain	6.67%	Cognitive Domain
				13.3%	Biophysical Domain
Examina-tions	(60%)	20%	Paper 1 (2hrs): Physiological Domain	20%	Paper 1 (2hrs): Biophysical Domain
		20%	Paper 2 (2hrs): Cognitive Domain	20%	Paper 2 (2hrs): Physiological Domain + Cognitive Domain
		20%	Paper 3 (2hrs): Integration & Application (incl. Research Project)	20%	Paper 3 (2hrs): Integration & Application (incl. Research Project)
Total	(100%)				

Pass criteria:

The overall final marks for both semester courses must aggregate to at least 50% (aggregated year mark), with a sub-minimum of 40% required for each HKE 301 and HKE 302. Admission to second semester HKE 302 requires a sub-minimum of 40% in HKE 301. Third year students are ***NOT*** considered for supplementary exams!

4.4 Course content for HKE 3

The following modules make up the HKE III course. Please note that the details listed under each module are a guideline only and may be subject to change.

Integration & Application in HKE 301 (J. Davy)

This 3rd year module aims to build upon student understanding of humans, obtained through the Biophysical, Physiological and Cognitive domain courses during 1st and 2nd years, by expanding the focus to understanding humans as part of systems. Using systems thinking, systems theory and appropriate systems models, this course will provide an opportunity for students to continue to integrate their knowledge of human systems, while understanding how human interactions with the immediate context around them, influences both the human and that system. Part of understanding humans in context is to appreciate the complexity of studying humans. To build a better understanding of such complexity, students are introduced to the different levels (micro, meso and macro) at which human-system interaction can be understood and intervened. Students learn to appreciate the complexity of studying humans through discussions and examples from working, sporting, and everyday contexts, such as how injuries happen and why back pain develops. Finally, students should also be able to model a system, using the appropriate tools and use the knowledge they have gained to assist in recognising and recommending

areas of improvement, no matter the context. In short, this module aims to consolidate student knowledge of human and build student capacity on how to think about understanding humans in context. The module also offers an opportunity to apply prior knowledge towards mapping a real work system and the interactions within it.

Cognitive Domain in HKE 301 (S. Zschernack)

This module integrates the functional aspects of force production, sensory and cognitive control as well as metabolic support to a holistic concept of human motor performance. It aims to deliver a fundamental description of human performance for all types of human actions, in sports as well as in work life.

- Types of movements and movement classification
- Composition of complex movements and reaction behaviour
- Organisation of the motor system
- Generation of movement pattern
- Sensory and autonomous movement control
- Learning and training of complex movements
- Movement production with motor programs
- Principles of motor control and movement accuracy

Physiological Domain in HKE 301 (C. Christie)

This module on exercise physiology will focus on the concept of energy expenditure, including how it is measured and typical energy cost values during different activities. Physiological responses to activities of varying intensities and durations will be discussed, as well as substrate utilisation and the concept of fatigue. The energy balance equation will be introduced and over- and under-nutrition will be covered.

- Overview of the energy systems
- Measurement of energy expenditure (EE)
- EE at rest and daily rates of EE
- EE during physical activities
- Exercise domains
- Regulation of CHO and fat metabolism during exercise
- Concept of maximal oxygen consumption
- Limitations to maximal exercise
- Limitations to submaximal exercise
- Predicting performance
- Physiological models – Fatigue
- The concept of energy balance
- Principles of everyday eating
- Energy intakes (diets) of South Africans – affluent and rural
- Energy balance and obesity
- Obesity and the risk for cardiovascular disease
- Energy balance and eating disorders
- Physical activity guidelines for healthy individuals

Physiological Domain in HKE 302 (J. Davy)

This 3rd-year module introduces students to the endocrine system, which, together with other systems such as the nervous system, serves as a fundamentally important system for the maintenance of homeostasis within the body. This is relevant since many of the critical processes necessary for health and general function (such as sleep, digestion and blood sugar control, responses to stress, reproduction) are largely governed by the effects of the endocrine system and synergistic human systems. This content builds on student knowledge of human systems from HKE 1, 2 and part of their 3rd year, and provides a more holistic understanding of how the endocrine system (in conjunction with other human systems) may influence human health, wellbeing, and performance in a sporting, working and activities of daily living context.

- The role of the endocrine system in the maintenance of homeostasis
- An overview of the endocrine glands, the role of hormones and how hormones are transported
- The role of the hypothalamus for endocrine function and hormone release mechanisms
- The pituitary gland and its relationship with the hypothalamus
- Structure, function and effects of particular glands and organs (with applied examples of relevance for some) including: anterior pituitary gland hormones, posterior pituitary gland hormones, adrenal gland, pancreas, gonads, pineal gland, thyroid gland
- Application of endocrine system function to the field of chronobiology and how the circadian rhythms of certain hormones drive certain aspects of sleep wake behaviour.
- The impact of sleep loss on certain endocrine systems and the resultant impact on health and wellbeing.

Biophysical Domain in HKE 302 (M. Mattison & A. Todd)

The biophysical domain continues the study of musculoskeletal anatomy by concentrating on the structure and functioning of the skeletal and soft tissues of the trunk, particularly the vertebral column and trunk. The anatomy component of the module extends to the analysis of postural alignment and movement capabilities under ‘normal’ conditions and during selected injuries / disorders. The biomechanical component of the biophysical domain introduces students to more advanced concepts relating to the biomechanical, anatomical, and anthropometric characteristics of human movement. Firstly, the course provides students with an overview of the biomechanical analysis of the kinematic and kinetic aspects of spinal movement. This includes aspects such as biomechanical logic, revisiting the concept of load tolerance and the dynamic nature of the forces involved in spinal movement. The course then provides a specific focus on integrating the modern understanding of the biopsychosocial nature of lower back pain and how this integrates with the analysis of forces acting at the lower back (compression, shear and torsional forces). Lastly, the module illustrates the impact of this understanding on the implementation of biomechanics within the workplace to ensure the effective design of ergonomics programmes that consider not just biomechanical factors, but how these interact with individual, organisational and social factors.

Cognitive Domain (Human Error) in HKE 302 (A. Todd)

This module acknowledges the importance of understanding human reliability and error and how they relate to system performance, regardless of context. The course will provide insights into the basic concepts underpinning human reliability and error, including how we categorise reliability and error and performance shaping factors. Furthermore, the module will unpack methods and models for analysing human reliability and human error, including, but not limited to, THERP, GEMS, CREAM, etc. By the end of the course, students will have a sound understanding of the multiplicity of human reliability and error and the practical implications that this has.

Integration & Application in HKE 302 (J. Davy)

This 3rd year module, which concludes the undergraduate studies in HKE, focuses on consolidating student understanding of humans, obtained through the Integration and Application, Biophysical, Physiological and Cognitive domain modules over the 1st, 2nd, and 3rd year, mainly through a case study-based short course. With the knowledge around and application of systems thinking, systems theory and appropriate systems models, this final module will provide an opportunity for students to integrate their knowledge of human systems, while understanding how human interactions with the immediate context around them, influences both the human (health, well-being) and that system (overall system performance). Building on the appreciation of complexity and through a brief recap of the Integration and Application 301 module where the concepts of levels within a system (micro, meso and macro) were introduced, this module requires students apply their knowledge of humans and systems to understanding, dissecting, and interpreting a case study, considering the enabling and challenging aspects of a system. Finally, students learn how to model a system, using the appropriate tools and use the knowledge they have gained to assist in recognising and recommending areas of improvement, no matter the context. As a result, students should integrate their knowledge from different domains of study to make recommendations on how to improve human well-being and safety, and performance, no matter the context.

4.5 Prescribed books for HKE 3

Bridger, R.S. (2008). *Introduction to Ergonomics* (3rd ed., or earlier). London: Taylor & Francis. (ISBN 9780849373060).

Hall, S.B. (2014). Basic Biomechanics (7th ed. or earlier). Boston: McGraw-Hill International. (ISBN 9780073522760).

McArdle, W.D., Katch, F.I. & Katch, V.L. (2014). *Exercise Physiology: Energy, Nutrition and Human Performance.* (8th ed.,or any earlier edition). Philadelphia: Lea & Febiger. (ISBN 9781451193831).

Tortora, G.J., & Derrickson, B.H. (2011). *Principles of Anatomy & Physiology* (13th ed. or earlier). New York: Wiley & Sons. (ISBN: 978 0470929186).
(Please note: the more recent editions have two volumes)

5 Further Book Suggestions for HKE

The following books are recommended as additional resources. These can be found in the Rhodes University library.

	HKE I	HKE II	HKE III
American College of Sports Medicine (1995). *Guidelines for Exercise Testing and Exercise Prescription* (5th ed. or latest edition). Philadelphia: Lea & Febiger. (ISBN 0-8121-0524-9).			X
Bridger, R.S. (2008). *Introduction to Ergonomics* (3rd ed., or earlier). London: Taylor & Francis. (ISBN 978-0849373060).		X	X
Baumgartner & Jackson (2014). *Measurement for evaluation in physical education and exercise science* (7th or earlier edition). Boston: McGraw-Hill. (ISBN 978-0321935168)	X	X	X
Currell, G., & Dowman, A. (2009). Essential Mathematics and Statistics for Science (2nd ed. latest edition). Chichester: Wiley-Blackwell. (ISBN 978-0470694480).	X	X	X
Haslegrave, C.M., Chaffin, D.B., & Delleman, N.J. (2004). *Working Postures and Movements: Tools for Evaluation and Engineering*. Boca Raton: CRC Press. (ISBN: 978-0415279086)		X	X
Helander, M. (2006). *A Guide to Human Factors and Ergonomics* (2nd ed.). Boca Raton: CRC Press. (ISBN: 978-0415282482)		X	X
Noakes, T. (2002). *Lore of Running*. (4th ed. or earlier). Cape Town: Oxford University Press Southern Africa.			X
Oatis, C.A. (2008). *Kinesiology – The Mechanics and Pathomechanics of Human Movement* (2nd ed.). Lippincott Williams and Wilkins. (ISBN: 978-0781774222).	X	X	X
Pheasant, S., & Haslegrave, C.M. (2006). *Bodyspace*. 3rd edition. London: Taylor and Francis. (ISBN: 978-0415285209).		X	
Sanders, M.S., & McCormick, E.J. (1993). *Human Factors in Engineering and Design* (7th ed.). New York: McGraw-Hill. (ISBN: 978-0070549012).			X
Schmidt, R.A., & Wrisberg, C.A. (2000*). Motor learning and performance.* (2nd edition or later). Champaign: Human Kinetics. (ISBN: 0880115009)			X
Stanton, N., Hedge, A., Brookhuis, K., Salas, E., & Hendrick, H. (2005). *Handbook of Human Factors and Ergonomics Methods*. Boca Raton: CRC Press. (ISBN: 978-0415287005).			X
Wilson, J.R. and Corlett, E.N. (1995). *Evaluation of Human Work: A practical ergonomics methodology* (2nd ed.). London: Taylor and Francis. (ISBN: 978-0748400843).			X

6 Basic Format Guide

Preface: This format guide describes some general formal rules of scientific writing and is, in this form, sufficient for undergraduate laboratory or project reports etc.

Different disciplines may use slightly different formal rules, e.g. for referencing, so do not be surprised if you find minor differences between this guide and other papers. However, this guide is to be considered as standard for any HKE documentation.

6.1 Style of writing

The main purpose of writing a report is to communicate clearly and simply what you have done, why you have done it, and what the results mean.

Writing style is very important. Think before you write and group related ideas together in a logical sequence. Use the third person singular, past tense in such writing. Clearly distinguish between logic and facts, information of other sources (e.g. literature) and your own point of view. All those types of information are allowed and welcome if they help to answer a research question, but the reader must be made aware which type of information you are dealing with. The most frequent mistake of this type is to postulate an own opinion in a style that it appears as a fact to the reader. Do not write "The hot weather was fatiguing the subjects" if this is just your thinking and you do not have any evidence for this statement. Better write "It cannot be excluded that the hot weather had an additional impact to the subjects" if you want to point the reader's attention to the hot temperatures.

Write the report as if it is to be read by an intelligent and very sceptical peer. Do not make unsupported assertions. Do not hide behind jargon - if you use a technical term new to you include a brief explanation.

The ten Commandments of Good Writing (according to Howard G. Knuttgen):

1) Each pronoun should agree with their antecedent.
2) Just between you and I, case is important.
3) A preposition is a poor word to end a sentence with.
4) Verbs has to agree with their subjects.
5) Don't use no double negatives.
6) A writer mustn't shift the readers point of view
7) When dangling, don't use participles.
8) Join clauses good, like a conjunction should.
9) Don't write a run-on sentence because it is difficult when you got to punctuate it so it makes sense when the reader reads what you wrote.
10) About sentence fragments.

6.2 Structure of scientific papers and assignments

Scientific papers and assignments take many forms. They can be short or long, empirical (when data are gathered) or literature research, and they can be structured or unstructured. The following will help you prepare your report to suit these various formats.

a) Structured Assignments

These are assignments in which specific questions are asked or specific requirements are to be met. The easiest way to deal with this is sequentially, with a clear labelling of your responses to the questions or requirements. The report should have a Title Page (see section 7.3.1), and should you employ references, use the prescribed format (see section 7.3.5). In summary, the structure of the assignments will dictate the format of the report.

b) Unstructured Assignments and Project Reports

These are assignments for which there is no specific structure, as it is also the case for any type of reports. Where the structure is not completely specified use one of the following formats.

6.2.1 Literature Research

Both short and long literature research projects should be presented in sections appropriate to the topic. These sections might progress from the specific towards the general, or they might simply be representative of the various aspects of the topic. Regardless of the content, the ideas should combine and flow logically to present a complete picture of the topic. The report should have a Title Page (see section 7.3.1) and all references should follow the prescribed format (see section 7.3.5).

Long literature research projects should also have an Abstract and a Table of Contents following the Title Page. The Abstract is a very short (~200 words) summary of the research.

6.2.2 Short Reports of Empirical Data Collection

Laboratory or experimental project reports should contain the following information, in this order:

Title Page

See section 7.3.1.

Purpose/Introduction

Briefly spell out why you did the project (what were you trying to discover; what was the research question), introducing the reader to the topic addressed.

Review of Literature

A critical and logically sequenced discussion of directly and indirectly ***related***

topics.

Often you will need to refer to someone else's work to justify something you are saying (see section 7.3.5 on referencing).

Methods

Details how data collection was conducted (in case of assignments only if it was not specified in an assignment, or if it differed from that specified in the assignment).

Specify equipment used and data collected.

Results

Present all results in summary form (or other appropriate statistics) as Tables or Figures (see section 7.3.3) and written summaries in order to make a results section more meaningful. In this section the results are only ***described, not discussed!***

Discussion

Use this section to discuss the results found as well as to relate the results to reviewed literature.

This section of a report is probably the most important. It is here that one discusses the results obtained i.e. give possible reasons for one's findings substantiated by findings from the relevant literature.

In laboratory exercises there may be a "COMMENTARY" in which you are asked certain questions about what you found. These questions should be addressed under this heading, but should not be dealt with in merely a question/answer form. The questions are there to guide your thinking.

Conclusions

Draw conclusions based on the results found.

6.3 General formats

Please note that this is only a general recommendation. Changes might be required depending on the subject, the type of report, or as required by the lecturer.

6.3.1 Page format

Leave

25 mm top margin,

25-35 mm left margin (depending on how much space is required for binding),

25 mm right margin and

30 mm bottom margin (page number centred)

TITLE OF PAPER

BY

AUTHOR'S NAME (or several authors if a group assignment)

PHYSIOLOGY ESSAY /
ERGONOMICS LABORATORY WRITE-UP
[*print only the appropriate module and type of assignment*]

Submitted in partial fulfilment of the requirements for the Course Human Kinetics and Ergonomics [*insert appropriate course, e.g. 101, 302 etc*.]

Department of Human Kinetics and Ergonomics

Rhodes University, 2022

Makhanda/Grahamstown, South Africa

Figure 1: Title page layout (text in squared brackets: fill in the appropriate information).

6.3.2 Text format

Use ARIAL font 12pt size and a line spacing of 1.5 as standard.

6.3.3 Figures, tables and equations

All figures, tables and equation need to be referred to in the main text.

Each ***figure*** should have a numbered caption at the bottom that concisely describes the

figure. An example is provided in Figure 2.

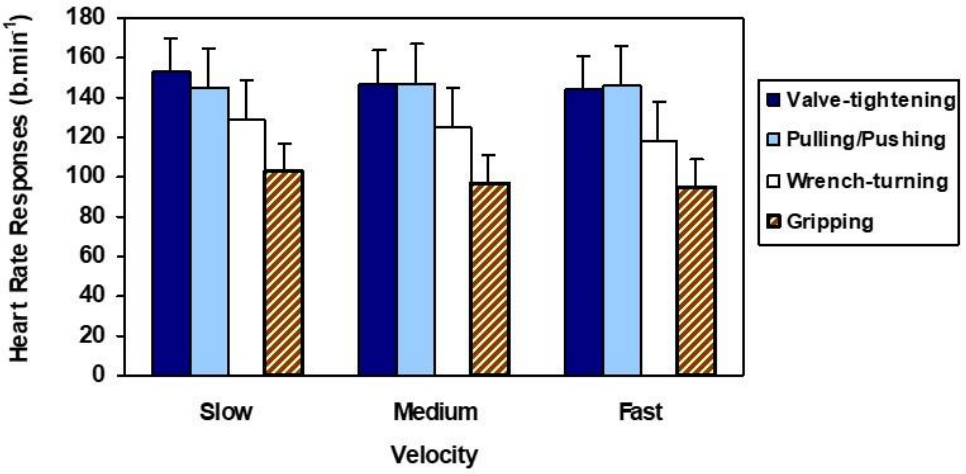


Figure 2: Mean heart rate responses.

Each ***table*** should have a numbered caption at the top that tells concisely just what it contains. Example:

Table XI: Laboratory Test (LT) responses at Slow Isokinetic Speed ($30^{o} \cdot s^{-1}$): comparisons across joints tested. Means (±SD). *****

Joint	Motion	Peak Torque ($Nm \cdot kg^{-1}$)	Total Work ($J \cdot kg^{-1}$)	Average Power ($W \cdot kg^{-1}$)
Trunk	Extension	3.82 (±0.78)	4.77 (±0.82)	1.22 (±0.26)
	Flexion	3.26 (±0.46)	4.63 (±0.49)	1.19 (±0.16)
Hip	Extension	3.23 (±0.78)	3.94 (±1.01)	1.11 (±0.28)
	Flexion	1.93 (±0.36)	2.00 (±0.34)	0.56 (±0.11)
Knee	Extension	3.34 (±0.48)	3.11 (±0.49)	0.90 (±0.17)
	Flexion	2.09 (±0.35)	2.39 (±0.43)	0.72 (±0.15)

***** None of these tests involved gravity-correction

As an option, Roman or Arabic numerals may be used for tables, as long as the numbering applied is consistent throughout the paper.

Equations are numbered in parenthesis right to the equation and referenced accordingly. Example:

$$A + B = C \qquad \text{(eq. 1)}$$

Equations do not have a caption or heading.

6.3.4 Appendices

In an appendix or appendices any material supportive should be included which would interfere with the flow of the report if contained within the body of the report, such as:

- raw data
- lists of items too lengthy to include in results
- supportive letters
- ancillary information

Each new type of material should be contained within its own appendix. Label Appendix A / Appendix B etc.

6.3.5 Referencing

The HKE Department complies with the APA standard of referencing.

General rules

- ALL references used must be included in the report / documentation
- References must be listed in ALPHABETICAL ORDER in the reference list.
- Do NOT number the references.

In-text referencing

Table 14**:** Examples of reference citations in the text.

Direct quote	(Bradley, 1998, p. 276) or Bradley (1998, p. 276)
Paraphrasing with one author	(Bradley, 1998)
Paraphrasing with two authors	(Bradley and Calhoun, 1998)
Paraphrasing with more than two authors	(Bradley *et al*., 1998)

When referencing more than one source in-text, the sequence of authors is listed in chronological order (i.e. in ascending order of their dates), or in order of importance. If two sources with the same date are referenced then these sources are listed in alphabetical order or in order of importance.

Some examples:

"It has been identified (De Vries, 1980) that ..."

"Astrand and Rodahl (1977) point out that ..."

"One experiment conducted by Gordon *et al.* (1983) ....."

"Several authors (Marras *et al.,* 1995; Wilson and Corlett, 1995; Salvendy, 2006) agree that ....."

Note that *et al.*, must be in italics with only one full stop (after “al.”).

Listing primary sources

Generally, list all authors and mark book names and journal titles italics (or bold). In the following, examples of different sources are outlined.

Books:

Spencer, R.F., & Johnson, G.T. (1999). *Applied Physiology* (2nd ed.). Cape Town: Harper and Collins Publishers.

Chapters in edited volumes:

Spencer, R.F., & Johnson, G.T. (1997). The basic principles of Applied Physiology. In T. Cohen, & R. Godman (Eds), *Early studies into work physiology* (pp. 120-125). New York: Harper and Row Publishers.

Journal Articles:

Cann, R.L., & Brown, W. (1991). Acceleration and speed as factors in human performance. *American Journal of Sports Medicine, 21(1)*, 120-125.

Brage, S., Ekelund, U., Brage, N., Hennings, M.A., Froberg, K., Franks, P.W., & Wareham, N.J. (2007). Hierarchy of individual calibration levels for heart rate and accelerometry to measure physical activity. *Journal of Applied Physiology*, 103, 682-692.

Conference proceedings:

Scott, P.A., & Charteris, J. (1995). Lifting in South African Industry. *Proceedings: Joint IEA World Conference and 2nd South African Congress. Cape Town, 12-20 July 2000*, 500-520.

Theses:

Almeida, D.M. (1990). *Father's anticipation of family work*. Unpublished Master's thesis, University of Victoria, British Columbia, Canada.

World wide web:

Christie, C.J. (2001). *Case Study: Aerobic Capacity*. URL: http://www.ru.ac.za/aerobic. Last accessed: 17 August 2008.

Referencing secondary sources

Secondary sources are references which were not directly consulted, but only gathered (re-cited) from primary sources. Wherever possible, go to the original reference rather than someone else's interpretation of the reference. But you are allowed to use secondary sources if you indicate this correctly; however secondary sources should be kept to an absolute minimum and used only when the original article is not available.

If you are using a secondary source in your work, you must use the following format:

Within the text you acknowledge the author/s and date of the secondary source like a primary source, e.g. "McGill (2002, as cited in Bridger, 2009) stated that .....".

In the reference list you then include only the primary source, i.e. in this example: Bridger, R.S. (2009). *Introduction to Ergonomics* (3rd ed.). Boca Raton: CRC press.