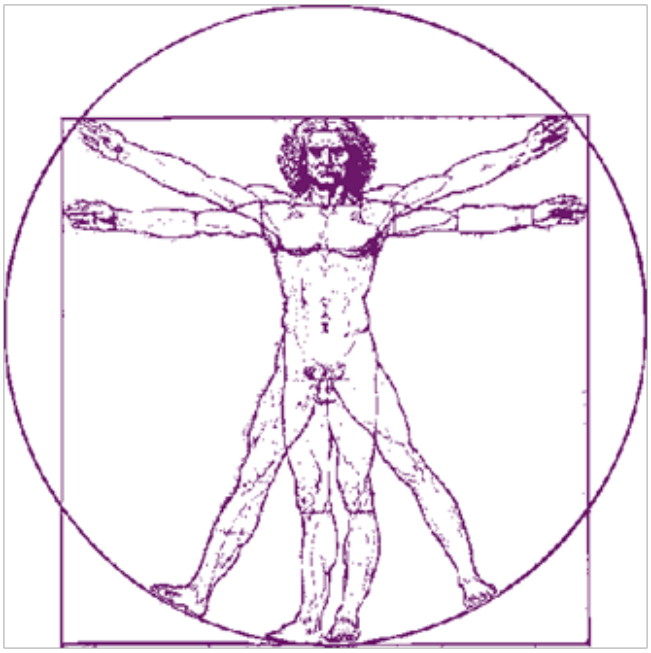
DEPARTMENT OF
HUMAN KINETICS AND ERGONOMICS



Student Handbook 2024

General Information

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RHODES UNIVERSITY

Where leaders learn

This handbook contains all relevant organisational information for HKE undergraduate and postgraduate students in 2024. 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 disregarded.

Please note that some information presented in this handbook may be subject to change. Please check the departmental notice boards for updated information.

Content

Makhanda, January 2024

Department of Human Kinetics and Ergonomics

Rhodes University

1 Departmental Information

This section contains various departmental information. For further information, please regularly consult the departmental notice boards or the departmental website: http://www.ru.ac.za/humankineticsandergonomics.

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:

Table 1: Contact details of HKE 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 Wells (Senior Lecturer & Head of Department – first half of 2024)	046-603 8472	s.wells@ru.ac.za
Dr J Davy (Senior Lecturer)	046-603 7369	j.davy@ru.ac.za
Mr A Todd (Senior Lecturer & HoD second half of 2024)	046-603 8469	a.todd@ru.ac.za
Mrs M Mattison (Lecturer)	046-603 8468	m.mattison@ru.ac.za
Mr L Goodenough (Principal Technical Officer)	046-603 7366	l.goodenough@ru.ac.za

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 8:00 and after 16:30), during lunch (13:00 to 14:00), as well as during the examination and holiday periods. Postgraduate HKE students are issued with a key to the side door of the HKE Department, allowing access to the Department at any time for studying purposes. A **key deposit** of R50 is payable in cash to the office administrator upon receipt of the keys. This will be refunded when the keys are returned upon completion of the degree. Any violation of the access privileges may result in disciplinary action. Any lost keys incur a replacement cost and must be reported to the HKE office administrator for cutting of replacement keys - **DO NOT** have them copied in town!

Postgraduate students are also provided with the alarm code and all staff and students are required to sign in and out on the whiteboard hanging up next to the alarm keypad!

To discourage criminals from entering the HKE Department, it is everyone's responsibility to ensure that the security of the Department is not compromised by:

- Avoiding using the side door (with the exception of staff and postgraduate students), but if you do use it, ensuring that the side door is properly closed behind you and locked. (DO NOT leave the door ajar for any reason).
- Ensuring that the last person leaving the Department activates the alarm code.
- Being vigilant of strangers entering and exiting the Department.
- Escorting strangers to their point of interest in the Department (e.g., the person they were looking for), as well as showing them the way out.
- Reporting any suspicious people in the Department to the Office Administrator or academic staff.
- Keeping your personal possessions either on you in person, or securely locking them away.

1.3 Room Allocation / Workstations

The HKE Department attempts to create an atmosphere that is conducive to learning and research activities. Undergraduate students are welcome to make use of any of the lecture/laboratory venues as workspaces during office times and provided these are not used for research or teaching activities during the time.

Postgraduate students are provided with workstations in the Department. The available offices are assigned according to the following rule: students will have the choice in the order of employee status and academic seniority:

1. Teaching / HoD assistants
2. PhD students

Exemptions from this rule require valid reasons and approval from the HoD.

1.4 Library – Textbooks and Theses

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

Similarly, all printed periodicals can be found in the Main Rhodes Library on central campus. Past MSc & PhD theses can be accessed online via the Rhodes University OPAC system: https://www.ru.ac.za/library/search/ (click on "Theses and Dissertations"). Printed versions of only selected past research reports, projects and theses are held in the Department. Please see the Department's Office Administrator if you want to gain access to these.

1.5 Departmental Infrastructure and Services

1.5.1 Eduroam registration

Private computers of students and staff members may be connected to *Eduroam* WiFi. This can be done by connecting a computer to the WiFi network with the "GetEduroam"

desktop App. The HKE Department's Principal Technical Officer can assist with this.

1.5.2 Cloud Storage

It is strongly recommended that students make use of one or other cloud storage facility, particularly when it comes to storing project data and reports, e.g., Dropbox or Google Drive. The HKE Principal Technical Officer can assist in this matter.

1.5.3 Photocopying, Scanning and Printing

The department has the facilities to print, photocopy and scan documents. There are costs associated with printing and photocopying and may have to be paid in cash to the Office Administrator. Please ask the HKE Office Administrator to assist you with these services. Costs presented may be subject to change.

Photocopies and printouts from flash stick to the photocopier are charged at 45c per single-sided copy/page.

Laser printing: The Department has a laser printer dedicated for student printing. This machine is linked to each student's 'iPrint' account and the costs for printing are automatically deducted. When printing to any other departmental laser printer, the number of pages must be recorded, and the moneys owing paid 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. If you intend to use the colour printer, bring your file on a flash stick to the office administrator.

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

1.6 Research Equipment and Laboratories

The HKE Department boasts a wide selection of equipment, ranging from relatively cheap non-electronic equipment to very expensive and sophisticated technology. Throughout their years of study at HKE, students will be exposed to a selection of different types of equipment. Given some of their costs, it is imperative that **UTMOST CARE** is taken when using this equipment! The Department reserves the right to charge students the cost of repairing or replacing equipment damaged, lost, or stolen due to negligence. If you intend using one of the electronic equipment, please consult the allocated "expert" for assistance.

All equipment and laboratory space must be **booked and signed out** via the Technical Officer and/or Office Administrator. Please note that lectures and practicals have first option on the use of equipment and laboratory space. When in doubt, please consult timetables and/or the relevant lecturers, Technical Officer, and Office Administrator. After use, the equipment **must be returned (cleaned and neatly packed into its bag / case / box) and signed back in**. During data collection a key for the relevant laboratory/room used may be signed out from the Office Administrator for the duration of testing.

2 General Considerations

2.1 Plagiarism & Intellectual Property

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. Also access the guide to Copyright and Plagiarism on: https://www.ru.ac.za/library/coursesupport/copyrightandplagiarism/.

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

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 (even just one sentence) 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, the ideas, concepts, methodologies, or arguments which you have taken from that source. Take note that the sources 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 11 of this handbook (Basic Format Guide) for details on how to reference in an HKE assignment / thesis.

Related to plagiarism is the issue of intellectual property (for the full Rhodes University policy on Intellectual Property, go to: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.ru.ac.za/media/rhodesuniversity/content/institutionalplanning/documents/IP_POLICY_FINAL_2017.pdf). This policy defines intellectual property as "all outputs of creative endeavour in any field that can be

protected statutorily or not, within any jurisdiction, including, without limitation, all forms or copyright, laboratory notebooks, technical or commercial information, computer software, programs, algorithms and documentation, data, rights in databases, research results, documentation, drawings, diagrams, designs, prototypes, improvements, processes, procedures, techniques, specifications and formulations, inventions, patents, developments, additions, trademarks, trade secrets, know-how and the rights attaching thereto, reagents, plant and other biological material and organisms, whether such material is registered or unregistered, and irrespective of whether such material is capable of such registration" (p.7). In short, this means that, amongst others, all lecture, tutorial, laboratories, presentations, recordings, and other academic / teaching and learning materials developed by a staff member during their employ at Rhodes University, remain the university's property and may therefore **NOT** be used for personal or commercial purposes, during or after the duration of one's degree, without express permission from the university and/or content creator.

2.2 "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 between departments in the requirements for obtaining the DP. It is furthermore 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*** and determining whether they are satisfying the requirements of the department, by checking with their course coordinator or the Head of Department.

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.

2.2.1 DP Requirements for HKE Undergraduate Students

In the Department of Human Kinetics and Ergonomics, earning 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 (first- and second-year students only)
2. Attendance at **ALL** tests and laboratories through the year
3. Submission of **ALL** assignments (including laboratory write-ups)
4. A minimum class mark of 40% per semester

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 subsequent course content. Lecture materials dispensed by the lecturers or notes from other students cannot replace an understanding gained from a lecture. It is up to the student to catch.

Please note that a maximum of 3 tutorials and 3 practicals may be missed per semester **even with a Leave of Absence application** (refer to section 2.3)! This is because professional bodies require a certain number of hours of theoretical and practical learning when considering professional certification.

Please be aware that **signing on behalf of another person**, even if only for an attendance register, is a fraudulent action and thus a violation of law which will be prosecuted.

2.2.2 DP Requirements for HKE Postgraduate Students

Attendance at lectures is compulsory for Honours students and, in the case of absence, a Leave of Absence (LOA) application must be submitted together with supporting documentation (refer to section 2.3). For Honours students 60% of the final mark is based on the modules' class (30%) and examination marks (30%), hence attendance at lectures is invaluable.

It is also expected that all postgraduate students are present in the Department during the day outside of lecture times. Regarding attendance at research seminars, please refer to section 2.7.

Postgraduate students should further note that seminars, examinations, and holiday dates ***DO NOT*** necessarily correspond with the university's undergraduate term dates. Non-lecturing dates should not be considered holiday time but be used for research purposes. It is expected that all postgraduate students negotiate their leave/vacation dates with their respective supervisors.

While the DP rule does not directly apply to senior postgraduate students, it is expected of students studying in person to work in the HKE Department and are actively involved in departmental activities, including, but not limited to research seminars, community engagement activities, tutoring, etc.

2.3 Leave of Absence (LOA)

In the event of missing a compulsory activity, (e.g., test, tutorial, practical or assignment deadline), a valid reason for the absence or omission must be provided 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 ***one week*** of the missed activity to the Office Administrator, 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 cases of doubt, the course co-ordinator or Head of Department must be consulted ***BEFORE*** the student misses a test, tutorial, practical, or assignment deadline. With exception of medical reasons, the LOA must be submitted ***BEFORE*** missing the tutorial, practical, assessment or assignment.

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.

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***.

Please note:

- if the reason for missing an assignment deadline is approved, it is up to the discretion of the individual lecturer whether to request a make-up assignment from the student.
- if a practical requiring a laboratory report/worksheet was not attended, or an assignment deadline was missed (for a valid reason as listed above), the lecturer may still request submission of the assignment - the LOA will merely grant an extension.
- it is important that the student consults the relevant lecturer to discuss details relating to this extension.
- Missed tests are caught up via make-up tests at the end of each term. Refer to the tables with the test / assignment dates.

2.4 Assessment of Student Learning

Different modules will set different assessment types throughout the semester to evaluate student learning. These assessments may, amongst others, consist of tests, essays, worksheets, presentations, laboratory wite-ups, etc. Students must complete all set assessments as this is a DP requirement. Make-up tests are scheduled towards the end of each term (refer to each year's test/assignment dates).

Examinations are written at the end of each semester. Dates for the examinations are released by the university's examination office.

40% of the final mark is based on each semester's class work, while the examinations contribute 60% towards the semester mark. Student should be aware that it is their responsibility to acquire the knowledge required to pass the exams!

Pass criteria

A pass mark at Rhodes University is 50% or higher (class record and examinations combined). Admission to the second semester of HKE (e.g., HKE 102) requires a sub-minimum semester mark of 40% for the preceding semester (e.g., HKE 101).

To pass into the next year (e.g., to pass from HKE 1 to HKE 2), the final marks for both semester courses must aggregate (average) to at least 50%, with a sub-minimum of 40% required for each semester (e.g., HKE 101 and HKE 102).

Students with examination marks of 40-49% are considered for supplementary exams for both semesters.

2.5 Tutorial System

Tutorials ('tuts') refer to weekly small formal discussion groups that every first- and second-year student must attend. Tuts are designed to complement the lectures by recapping work done in class, discussing concepts, 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 each week of the term, and 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**, which means that missing more than three tutorials per semester will jeopardize that student's DP. Short tutorial assignments may be assigned and are compulsory, thus forming 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) in semester 1, and Dr Wells (s.wells@ru.ac.za) in semester 2.

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 coordinator or tutorial coordinators, or via the class representatives.

Please note 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. Students are encouraged to proactively seek support throughout the semester if they feel they do not understand the lecture contents.

2.6 Activity Profiling

The HKE Department keeps a record of 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 in Section 2.2, and may involve being a class representative, tutoring, participating in consultancies, community engagement projects, or 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 further postgraduate studies.

Participation in research activities particularly is further 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. Any activity logged should be accompanied by a

signature of the relevant person leading the project/activity. 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.)

Tutoring and Practical Assistance

The HKE Department offers different positions for tutoring and research / laboratory assistance. This enables students to gain additional experience in mentoring and teaching in an academic setting. Students are encouraged to apply for such positions as this experience contributes immensely to their personal growth and reflects well in CVs and reference letters. Each position requires about 6 hours of tutoring / lab demonstration per week during term times (26 weeks per year). Students are remunerated according to Rhodes policy. All tutors and laboratory assistants will also receive appropriate training before tutorials commence. Throughout the year tutors will further meet with the respective lecturer and/or the Tutorial & Practical coordinator on pre-arranged days and times.

Third year and postgraduate students are eligible to apply for HKE 1 and HKE 2 tutoring and practical assistance positions. Only Masters and PhD students are eligible for appointment as research assistants for HKE 3 and Honours laboratories and research work.

The overall Tutorial & Practical coordinators are Dr Jonathan Davy (j.davy@ru.ac.za) for semester 1 and Dr Wells (s.wells@ru.ac.za) for semester 2.

2.7 Research Seminars

All HKE postgraduate students are expected to attend weekly research seminars, but undergraduate students are welcome to attend these. The purpose of these seminars is to engage in critical discussions with all academic staff and other postgraduate students about a variety of topics. Activities may include, but are not limited to, debates, discussions of current issues in our discipline, exchange of information of research activities within the Department, feedback from conferences, guest speakers, as well as practical skills training in research methods, use of statistical software, advanced word processing etc.

All seminars will be held on **Thursdays from 11:00am to 12:30 noon**. Please consult the Research Seminar programme, which will be regularly updated and communicated to all staff and postgraduate students via e-mail and will be advertised on the undergraduate

boards in the department. Attendance at the research seminars is **compulsory** for all postgraduate students not *in absentia*; absence from a research seminar requires an LOA submission.

The Research Seminar coordinator is Prof Candice Christie (c.christie@ru.ac.za; 046-603 8470).

2.8 Student Feedback and Participation

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

Communication

Each student is issued with a Rhodes University 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. Failure to attend lectures does not constitute a valid excuse for not receiving an announcement.

Furthermore, to encourage communication between students and staff, it is advised that the course coordinators and the class representatives meet once a term to exchange information and discuss upcoming problems. Both representatives shall discuss issues with their colleagues before and after this meeting to get a broader audience addressed.

Course coordinators:

HKE I:	M Mattison
HKE II:	A Todd
HKE III:	J Davy (1st semester); S Wells (2nd semester)
HKE Honours:	C Christie
HKE Masters & PhD:	C Christie
Tutorial Coordinator:	J Davy (1st semester); S Wells (2nd semester)

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 also encouraged to meet with the relevant lecturer(s) for any questions which may arise during the term or exam preparation. Students are encouraged to regularly check on ROSS about their class mark and meet with their course co-ordinator to discuss concerns and request support timeously, if needed.

2.9 Functions / Guest Speakers

Visiting lecturers, guest speakers or functions will be announced via the relevant HKE communication channels.

2.10 Ethical Approval of Research Projects

All research projects that involve humans as participants must be approved by the Human Ethics Research Committee of the Rhodes University Ethical Standards Committee (RUESC).

Before the commencement of a research project or pilot study, an application for ethical approval must be completed via the online Ethical Review Application System (ERAS). Explorative studies / pre-pilot studies (e.g., for familiarization with equipment) do not require ethical approval but need to be performed with the supervisor's consent and use only senior HKE students as 'participants'. Ethical principles of beneficence, justice and respect must be upheld during these explorative studies.

The ethics review process is as follows: the ethics application must be completed and submitted online once approved by the supervisor (and co-supervisor where applicable). Once submitted, the application is first checked by the HKE ethics representative, who may request some adjustments. The ethics application is then forwarded to RUESC which assigned two ethics reviewers. The outcome of the review will be communicated to the principal researcher and student researchers in written form. This might be an approval, a provisional approval (e.g., on condition that gatekeeper permission is obtained), a request to effect minor or major modifications, or a rejection of the application. The human ethics research committee of RUESC meets once a month to discuss applications, but it is important to note that certain times during the year place a high demand on reviewers and the review process may take longer. One review round may therefore take AT LEAST one month – please take this into consideration in your project planning.

In cases where gatekeeper permission is required, a letter of provisional ethical approval is provided. This letter must be submitted to the gatekeeper and a gatekeeper approval letter be obtained. It is imperative to send the gatekeeper permission letter to the RUESC ethics coordinator and receive a letter stating final ethical clearance. It is only upon such receipt of final ethical clearance that recruitment and testing may begin.

Finally, it is possible that certain changes may occur to the protocol after ethical approval has been received. Any changes to the experimental protocol must be communicated to RUESC and be approved before testing begins. Minor changes to the protocol only require resubmission of the affected part of the application form, but in the case of major changes, a completely new application may be required. Completion of an ethics feedback report is also required for the end-of-year postgraduate report.

The HKE ethics representative is Mrs Miriam Mattison (m.mattison@ru.ac.za). For more information on the Ethical Standards for Research on Human and Animal Subjects, please visit: https://www.ru.ac.za/researchgateway/ethics/.

3 General Course Information

3.1 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.

3.2 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 2024 Rhodes University calendar, the faculty website, or consult the Faculty Dean).

3.3 Dates of Terms for 2024

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 12 February – Wednesday 27 March (7 teaching weeks)

2nd Term: Monday 8 April – Friday 14 June (6 teaching weeks)

Term 2 lectures end: Friday 17 May

Swot week: Saturday 18 May – Thursday 23 May

Examinations: Friday 24 May – Friday 14 June

2nd Semester

3rd Term: Monday 8 July – Friday 16 August (6 teaching weeks)

4th Term: Monday 26 August – Friday 15 November (7 teaching weeks)

Term 4 lectures end: Friday 11 October

Swot week: Saturday 12 October – Thursday 17 October

Examinations: Friday 18 October – Friday 15 November

3.4 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 3 (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 undergraduate courses consist of different modules (consisting of lectures, practicals and tutorials). Table 2 provides a break-down of the various modules offered in each of the courses per semester.

Table 2: Module structure of the HKE degree.

HKE 101	**HKE 102**
Introduction to HKE 101	Sensory Perception 102
Introduction to the Biophysical Domain 101	Anatomy and Biomechanics of the Upper Extremities 102
Cardiovascular & Respiratory Physiology 101	Integration and Application 102

HKE 201	**HKE 202**
Applied Kinanthropometry 201	Neuromuscular Physiology 202
Anatomy and Biomechanics of the Lower Extremities 201	Attention & Situation Awareness 202
Human Information Processing 201	Integration and Application 202

HKE 301	**HKE 302**
Research Project: Students will participate in two semester-long group research projects which will count towards their class mark	
Humans and Systems 301	Endocrinology 302
Exercise Physiology 301	Anatomy and Biomechanics of the Trunk & Spine 302
Perceptual Motor Control 301	Human Error 302
	Integration & Application 302

3.5 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 aims to provide graduates with research knowledge and application skills for responsible management and consultancy posts as well as prepare them for further academic degrees.

Minimum requirement for admission into HKE Honours is a Bachelor's degree with 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 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 1.8). Staff capacity and senior postgraduate supervision loads are other important considerations.

Details about the Honours degree in HKE can be found under Section 7.

HKE Masters

Thesis-based; minimum 2-year duration full time or 3-year duration part time. More information in Section 8.

PhD in HKE

Thesis-based; minimum 3-year duration. More information in Section 8.

4 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)

4.1 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 of benefit for interpretation and application during assignments such as laboratory reports.

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

4.2 Structure of HKE 1

4.2.1 Lectures

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

Mon	9.35 - 10.20	Lecture
Tue	10.30 - 11.15	Lecture
Wed	11.25 - 12.10	Lecture
Fri	8.40 - 9.25	Lecture
Wed / Thu / Fri	14.00 - 17.00	Laboratory (students will be allocated to ONE slot)

Table 3 depicts the various HKE 1 modules taught throughout the year.

Please note that these are <u>provisional dates</u> 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 3: Module structure for HKE 1

	Term	Module	Lecturer	Dates
HKE 101	1	Introduction to HKE 101	J Davy	Mon 12 Feb – Fri 23 Feb (8 lectures)
		Biophysical Domain 101: Introduction to the Biophysical Domain 101	A Todd	Mon 26 Feb – Wed 27 Mar (19 lectures)
	2	Physiological Domain 101: Cardiovascular & Respiratory Physiology 101	C Christie	Mon 8 Apr – Fri 17 May (24 lectures)
HKE 102	3	Cognitive Domain 102: Sensory Perception 102	S Wells	Mon 8 July – Fri 16 Aug (24 lectures)
	4	Biophysical Domain 102: Anatomy and Biomechanics of the Upper Extremities 102	M Mattison	Mon 26 Aug – Tues 1 Oct (22 lectures)
		Integration and Application 102	M Mattison	Wed 2 Oct – Fri 11 Oct (6 lectures)

4.2.2 Practicals

Weekly practical (laboratory) sessions, either on a Wednesday, Thursday or Friday afternoon will be held in association with the lectures and for general skills development. Please check your allocated day on ROSS, the HKE 1 notice board or the HKE Office Administrator. Some practicals require that students hand in worksheets or write-ups for assessment. Please consider the Format Guide (section 11) when writing these documents.

Table 4 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 4: 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	12 Feb	*No practical*	-
	19 Feb	Introduction to HKE 1	Davy
	26 Feb	Introduction to HKE 2	Davy
	04 Mar	Introduction to the Biophysical Domain 1	Todd
	11 Mar	Introduction to the Biophysical Domain 2	Todd
	18 Mar	*No practical – public holiday*	-
2	8 Apr	Introduction to the Biophysical Domain 3	Todd/Mattison
	15 Apr	Cardiovascular & Respiratory Physiology 1	Christie
	22 Apr	Cardiovascular & Respiratory Physiology 2	Christie
	29 Apr	*No practical – public holiday*	-
	6 May	Cardiovascular & Respiratory Physiology 3	Christie
	13 May	Cardiovascular & Respiratory Physiology 4	Christie
3	8 Jul	Sensory Perception 1	Wells
	15 Jul	Sensory Perception 2	Wells
	22 Jul	Sensory Perception 3	Wells
	29 Jul	Sensory Perception 4	Wells
	5 Aug	*No practical – public holiday*	-
	12 Aug	Sensory Perception 5	Wells
4	26 Aug	Anatomy & Biomechanics of the Upper Extremities 1	Mattison
	2 Sep	Anatomy & Biomechanics of the Upper Extremities 2	Mattison
	9 Sep	Anatomy & Biomechanics of the Upper Extremities 3	Mattison
	16 Sep	Anatomy & Biomechanics of the Upper Extremities 4	Mattison
	23 Sep	Anatomy & Biomechanics of the Upper Extremities 5	Mattison
	30 Sep	Integration & Application 1	Mattison
	7 Oct	Integration & Application 2	Mattison

4.2.3 Tests, assignments, and examination in HKE 1

Each module lecturer will set tests and assignments to his/her discretion and as detailed in Table 5. Note that these may be subject to change – please check the HKE noticeboard and/or your email for communications on updates. New submission dates for missed assignments must be negotiated with the module lecturer and make-up tests are written towards the end of each term. The marks from all module tests and assignments will produce a class mark, which in turn contributes 40% to the total semester mark.

The two examination papers (each 3 hrs) at the end of each semester contribute 60% to the total semester mark (see Table 6).

Table 5: Test and Assignment dates for HKE 1.

Term	Date	Module	Assessment Type	Lecturer
1	Fri 23 Feb	Introduction to HKE	Test/Assignment	Davy
	Fri 15 March	Introduction to the Biophysical Domain	Test	Todd
	Feb - March	Introduction to the Biophysical Domain	Weekly practical worksheets	Todd
2	Fri 26 Apr	Cardiovascular & Respiratory Physiology	Test	Christie
	Wed 8 May	Cardiovascular & Respiratory Physiology	Laboratory Write-up	Christie
3	July - Aug	Sensory Perception	Weekly practical worksheets	Wells
	Wed 7 Aug	Sensory Perception	Test	Wells
4	Fri 20 Sept	Anatomy & Biomechanics of the Upper Extremities	Test	Mattison
	Fri 27 Sept	Anatomy & Biomechanics of the Upper Extremities	Laboratory Write-up	Mattison
	Week of 8 Oct	Integration & Application	Presentations	Mattison
Make-up assessment(s): Term 1: Wednesday 27 March Term 2: Friday 17 May Term 3: Friday 16 August Term 4: Friday 11 October				

Table 6: Mark composition of HKE 1.

		HKE 101		HKE 102	
Class record	(40%)	5%	Introduction to HKE	20%	Sensory Perception
		15%	Introduction to the Biophysical Domain	15%	Anatomy & Biomechanics of the Upper Extremities
		20%	Cardiovascular & Respiratory Physiology	5%	Integration & Application
Exami-nations	(60%)	30%	Paper 1 (3hrs): Intro to HKE + Intro to the Biophysical Domain	30%	Paper 1 (3hrs): Anatomy & Biomechanics of the Upper Extremities + Integration & Application
		30%	Paper 2 (3hrs): Cardiovascular & Respiratory Physiology	30%	Paper 2 (3hrs): Sensory Perception
Total	(100%)				

4.3 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.

Introduction to HKE in HKE 101 (J. Davy)

This short module introduces students to the Department of Human Kinetics and Ergonomics (HKE) and the department's philosophy. 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; the Physiological domain, where students learn the processes supporting movement, and the Cognitive domain, where students will learn about why humans move. Together, these domains offer the opportunity for learners to study and understand humans and human movement by taking a holistic integrated approach – by looking at a person as a whole and not the sum of their parts and as well as how the different parts or systems of humans are linked to one another and work together to allow us to move.

Introduction to the 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 the quantitative and qualitative measurement of the human body (kinetic and kinematic concepts) and the implications these have for human movement. Further considerations include reference terminology, measurement techniques, forms of motion, characteristics of the musculoskeletal system and forces acting upon it, as well as the notion of human variability. Lectures, together with practical and tutorial sessions, will provide students with the building foundational knowledge of the principles of anthropometry, anatomy, and biomechanics, while applying these concepts to activities of daily living, sport, and the work environment.

Cardiovascular & Respiratory Physiology 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 focuses 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 during exercise”

Sensory Perception in HKE 102 (S. Wells)

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 organs and their physiology, the physical and chemical characteristics of the stimulus, as well as discuss how sensations are processed in the brain to provide meaning (perception).

Anatomy & Biomechanics of the Upper Extremities in HKE 102 (M. Mattison)

This module integrates the study of anatomy and biomechanics to highlight the close relationship between the structure of the human body and the mechanics of movement. The module first introduces the skeletal and soft tissue structures of the upper extremities, more specifically the pectoral girdle, the shoulder joint, elbow joint and wrist. Movement capabilities of the different articulations and the role of various soft tissues in effective movement are linked to the biomechanical concepts of musculoskeletal forces and levers. In addition to applying this knowledge to 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 students with hands-on opportunities to explore the musculoskeletal system, perform basic functional assessments of the upper extremities and hone their measurement and analysis skills.

Integration and Application in HKE 102 (M. Mattison)

This module ties together the contents that students have covered during their HKE 1 year from a biophysical, physiological, and cognitive perspective, with the focus of applying this knowledge to examples from sport, work, and everyday activities. Throughout the year, students would have learned about individual human systems, from the musculoskeletal anatomy, to the cardiovascular and respiratory systems, to the different senses and the ways in which we receive, recognise, and process information. The purpose of this module is to understand the importance and interrelatedness of these systems working concurrently in effective human movement.

4.4 Prescribed books for HKE 1

Hall, S.B. (2018). Basic Biomechanics (8th ed. or earlier). Boston: McGraw-Hill International. (ISBN 9781260085549).

Tortora, G.J., & Derrickson, B.H. (2016). *Principles of Anatomy & Physiology* (15th ed. or earlier). New York: Wiley & Sons. (ISBN: 9781119320647).
(Please note: some editions have two volumes)

5 HKE 2 (2nd year)

Two semester credits: HKE 201 and HKE 202.

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

5.1 Admission into HKE 2

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

5.2 Structure of HKE 2

5.2.1 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

Table 7 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 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 7: Module structure for HKE 2.

	Term	Module	Lecturer	Dates
HKE 201	1	Applied Kinanthropometry 201	A Todd	Mon 12 Feb – Fri 1 Mar (12 lectures)
		Biophysical Domain 201: Anatomy & Biomechanics of the Lower Extremities 201	M Mattison	Mon 4 Mar – Wed 27 Mar (15 lectures)
	2	Biophysical Domain 201: Anatomy & Biomechanics of the Lower Extremities 201 (cont.)	J Davy	Mon 8 Apr – Fri 26 Apr (12 lectures)
		Cognitive Domain 201: Human Information Processing 201	S Wells	Mon 29 Apr – Fri 17 May (12 lectures)
HKE 202	3	Physiological Domain 202: Neuromuscular Physiology 202	C Christie	Mon 8 July – Fri 16 Aug (24 lectures)
	4	Cognitive Domain 202: Attention & Situation Awareness 202	S Wells	Mon 26 Aug – Wed 18 Sep (14 lectures)
		Integration & Application 202	A Todd	Thu 19 Sept – Fri 11 Oct (14 lectures)

5.2.2 Practicals

Weekly practicals (laboratories) will be held in association with the lectures and for general skills (see Table 8). Some practicals may request students to submit worksheets or write-ups. Please consider the format guide when writing these documents.

Table 8: Preliminary topics of laboratories 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	12 Feb	*No practical*	-
	19 Feb	Applied Kinanthropometry 1	Todd
	26 Feb	Applied Kinanthropometry 2	Todd
	4 Mar	Applied Kinanthropometry 3	Todd
	11 Mar	Anatomy & Biomechanics of the Lower Extremities 1	Mattison
	18 Mar	Anatomy & Biomechanics of the Lower Extremities 2	Mattison
2	8 Apr	Anatomy & Biomechanics of the Lower Extremities 3	Mattison/Davy
	15 Apr	Anatomy & Biomechanics of the Lower Extremities 4	Davy
	22 Apr	Anatomy & Biomechanics of the Lower Extremities 5	Davy
	29 Apr	*No practical – public holiday*	-
	6 May	Human Information Processing 1	Wells
	13 May	Human Information Processing 2	Wells
3	8 Jul	Neuromuscular Physiology 1	Christie/Todd
	15 Jul	Neuromuscular Physiology 2	Christie
	22 Jul	Neuromuscular Physiology 3	Christie
	29 Jul	Neuromuscular Physiology 4	Christie
	5 Aug	Neuromuscular Physiology 5	Christie
	12 Aug	Neuromuscular Physiology 6	Christie
4	26 Aug	Attention & Situation Awareness 1	Wells
	2 Sep	Attention & Situation Awareness 2	Wells
	9 Sep	Attention & Situation Awareness 3	Wells
	16 Sept	Attention & Situation Awareness 4	Wells
	23 Sept	Integration & Application 1	Todd
	30 Sept	Integration & Application 2	Todd
	7 Oct	Integration & Application 3	Todd

5.2.3 Tests, assignments, and examination in HKE 2

Each module lecturer will set tests and assignments to his/her discretion and as detailed in Table 9. Note that these may be subject to change – please check the HKE noticeboard and/or your email for communications on updates. New submission dates for missed assignments must be negotiated with the module lecturer and make-up tests are written towards the end of each term. The marks from all module tests and assignments will produce a class mark, which in turn contributes 40% to the total semester mark.

The two examination papers (each 3 hrs) at the end of each semester contribute 60% to the total semester mark (Table 10).

Table 9: Test and Assignment dates for HKE 2.

Term	Date	Module	Assessment Type	Lecturer
1	Mon 26 Feb	Applied Kinanthropometry	Laboratory Write-up	Todd
	Fri 17 Mar	Anatomy & Biomechanics of the Lower Extremities	Test	Mattison
2	Tue 30 Apr	Anatomy & Biomechanics of the Lower Extremities	Assignment	Davy
	Wed 15 May	Human Information Processing	Test	Wells
	Mon 29 Apr – Fri 17 May	Human Information Processing	Weekly Practical Worksheets	Wells
3	Mon 22 Jul	Neuromuscular Physiology	Test	Christie
	Thu 8 Aug	Neuromuscular Physiology	Laboratory Write-up	Christie
4	Aug - Sep	Attention & Situational Awareness	Weekly practical worksheets	Wells
	Fri 13 Sep	Attention & Situational Awareness	Test	Wells
	7 - 11 Oct	Integration & Application	Poster and Presentation during tutorials	Todd
Make-up assessment(s): Term 1: Wednesday 27 March Term 2: Friday 17 May Term 3: Friday 16 August Term 4: Friday 11 October				

Table 10: Mark composition of HKE 2.

		HKE 201		**HKE 202**	
Class record	(40%)	10%	Applied Kinanthropometry	20%	Neuromuscular Physiology
		10%	Human Information Processing	10%	Attention & Situation Awareness
		20%	Anatomy & Biomechanics of the Lower Extremities	10%	Integration & Application
Exami-nations	(60%)	30%	<u>Paper 1 (3hrs):</u> Applied Kinanthropometry + Human Information Processing	30%	<u>Paper 1 (3hrs):</u> Neuromuscular Physiology
		30%	<u>Paper 2 (3hrs):</u> Anatomy & Biomechanics of the Lower Extremities	30%	<u>Paper 2 (3hrs):</u> Attention & Situation Awareness + Integration & Application
Total	(100%)				

5.3 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.

Applied Kinanthropometry in HKE 201 (A. Todd)

The purpose of this module is to provide students with a sound understanding of how to apply anthropometric concepts within the context of activities of daily living, sport, and the work environment. The basic measurements of frame size (Body Mass Index, waist circumference and waist-to-hip ratio) will be covered, keeping the South African context in mind. Thereafter, the basics of body composition will be addressed including the various techniques available to determine and interpret body composition with the intention of capacitating students to assess human characteristics and associated performance in a simple, ethical, and professional manner. Lastly the course will address how an understanding of these kinanthropometric characteristics can be used to drive design decisions.

Anatomy & Biomechanics of the Lower Extremities in HKE 201 (M. Mattison & J. Davy)

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 discussed using selected injuries and disorders. Biomechanical concepts include 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 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 further provide hands-on opportunities to perform basic functional assessments of the lower extremities, as well as conducting biomechanical analyses.

Human Information Processing in HKE 201 (S. Wells)

Once information has been perceived, a decision must be reached before an action can be executed. This module focuses on established models of information procession and, particularly the so-called central processes of information processing: memory and decision-making.

Neuromuscular Physiology in HKE 202 (C. Christie)

The neuromuscular physiology module of the HKE 2 course module focuses 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
- Measurement of muscle activation
- Muscle Contraction (ECC)
- Types of muscle contraction
- Delayed Onset of Muscle Soreness
- Adaptation to endurance training
- Adaptation to strength training
- Deadaptation
- Force-velocity relationship
- Length-tension
- Muscle cramps
- Muscle Fatigue

Attention & Situation Awareness in HKE 202 (S. Wells)

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 situation 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.

5.4 Prescribed books for HKE 2

Bridger, R.S. (2018). *Introduction to Ergonomics* (4th ed., or earlier). London: Taylor & Francis. (ISBN 9781498795944).

Hall, S.B. (2018). Basic Biomechanics (8th ed. or earlier). Boston: McGraw-Hill International. (ISBN 9781260085549).

McArdle, W.D., Katch, F.I. & Katch, V.L. (2023). *Exercise Physiology: Energy, Nutrition and Human Performance.* (9th ed., or any earlier edition). Philadelphia: Lippincott, Williams & Wilkins. (ISBN-10: 1975217292; ISBN-13: 978-1975217297).

Tortora, G.J., & Derrickson, B.H. (2016). *Principles of Anatomy & Physiology* (15th ed. or earlier). New York: Wiley & Sons. (ISBN: 9781119320647).
(Please note: some editions have two volumes)

6 HKE 3 (3rd year)

Two semester credits: HKE 301 and HKE 302.

Course coordinators:
Semester 1: J Davy (email: j.davy@ru.ac.za, phone: 046 603 7369)
Semester 2: S Wells (email: s.wells@ru.ac.za, phone: 046 603 8472)

6.1 Admission into HKE 3

The minimum requirement for admission to HKE II is an aggregated pass mark for HKE 2 (aggregated HKE 201 and 202: minimum 50%).

6.2 Structure of HKE 3

6.2.1 Lectures

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

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

Table 11 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 11: Module structure for HKE 3.

	Term	Module	Lecturer	Dates
HKE 301	1	Humans & Systems	J Davy	Mon 12 Feb – Wed 28 Feb (13 lectures)
		Physiological Domain: Exercise Physiology	C Christie	Thu 29 Feb – Wed 27 Mar (20 lectures)
	2	Physiological Domain: Exercise Physiology (cont.)	C Christie	Mon 8 Apr – Fri 12 Apr (5 lectures)
		Cognitive Domain: Perceptual Motor Control	S Wells	Mon 15 Apr – Fri 17 May (25 lectures)
HKE 302	3	Anatomy & Biomechanics of the trunk and spine	M Mattison & A Todd	Mon 8 Jul – Fri 9 Aug (25 lectures)
		Physiological Domain: Endocrinology	TA	Mon 12 Aug – Fri 16 Aug (5 lectures)
	4	Physiological Domain: Endocrinology (cont.)	TA	Mon 26 Aug – Fri 6 Sep (10 lectures)
		Humans & Systems	A Todd & TA	Mon 9 Sep – Fri 11 Oct (25 lectures)
	1-4	Research Projects	Davy & Mattison	Year-long; 1 lecture per week (26 lectures)

** TA = Teaching Assistant*

6.2.2 Research Project

Throughout the course of the year, students will also be involved in conducting two group-based research studies. One weekly lecture is dedicated to guiding students through the theoretical aspects of the research process. Each group is assigned a supervisor who will regularly meet with the research group (even outside of lecture times, if necessary) to discuss specific aspects of their project. Formative and summative assessments of the research project occur throughout the year.

6.2.3 Practicals

Practicals will be held in association with the lectures and for general skills (see Table 12). Students may be requested to hand in worksheets or write-ups for some practicals.

Table 12: Preliminary topics of practicals in HKE 3 (please refer to notice board for updates and be prepared for practicals scheduled within the practical periods EVERY Tuesday / Thursday (except for public holidays).

Term	Week of	Subject	Lecturer
1	12 Feb	*No practical*	-
	19 Feb	Humans & Systems 1	Davy
	26 Feb	Humans & Systems 2	Davy
	4 Mar	Humans & Systems 3	Davy
	11 Mar	Physiological Domain: Exercise Physiology 1	Christie
	18 Mar	*No practical (public holiday)*	-
	25 Mar	Physiological Domain: Exercise Physiology 2	Christie
2	8 Apr	Physiological Domain: Exercise Physiology 3	Christie
	15 Apr	Physiological Domain: Exercise Physiology 4	Christie
	22 Apr	Cognitive Domain: Perceptual Motor Control 1	Wells
	29 Apr	Cognitive Domain: Perceptual Motor Control 2	Wells
	6 May	Cognitive Domain: Perceptual Motor Control 3	Wells
	13 May	Cognitive Domain: Perceptual Motor Control 4	Wells
3	8 Jul	Anatomy & Biomechanics of the Trunk & Spine 1	Mattison / Todd
	15 Jul	Anatomy & Biomechanics of the Trunk & Spine 2	Mattison / Todd
	22 Jul	Anatomy & Biomechanics of the Trunk & Spine 3	Mattison / Todd
	29 Jul	Anatomy & Biomechanics of the Trunk & Spine 4	Mattison / Todd
	5 Aug	Anatomy & Biomechanics of the Trunk & Spine 5	Mattison / Todd
	12 Aug	Anatomy & Biomechanics of the Trunk & Spine 6	Mattison / Todd
4	26 Aug	Endocrinology 1	TA
	2 Sep	Endocrinology 2	TA
	9 Sep	Humans & Systems 1	Todd
	16 Sep	Humans & Systems 2	Todd
	23 Sep	*No practical (Public holiday)*	-
	30 Sep	Humans & Systems 3	TA
	7 Oct	Humans & Systems 4	TA

** TA = Teaching Assistant*

6.2.4 Tests, assignments, and examinations

Third year students will write a term test at the end of the term for the modules taught that term. Furthermore, each module lecturer will set assignments (essay, laboratory write-up, presentations, etc.) to their discretion and as detailed in Table 13. Note that these may be subject to change – please check the HKE noticeboard and/or your email for communications on updates. New submission dates for missed assignments must be negotiated with the module lecturer and make-up tests are written towards the end of each term. The marks from these tests and assignments will constitute a class mark for each semester, which contributes 40% to the total semester mark. The two examination papers at the end of each semester contribute 60% to the total semester mark (Table 14).

Table 13: Test and Assignment dates for HKE 3.

Term	Date	Module	Assessment Type	Lecturer
1	Fri 8 Mar	Humans & Systems	Assignment	Davy
	Fri 22 Mar	Humans & Systems + Exercise Physiology	Term test	Davy & Christie
2	Fri 22 March	Exercise Physiology	Essay	Christie
	Fri 10 May	Exercise Physiology + Perceptual Motor Control	Term test	Christie & Wells
	Fri 17 May	Perceptual Motor Control	Laboratory Write-up	Wells
3	Weeks of 8 Jul – 12 Aug	Anatomy & Biomechanics of the trunk and spine	Weekly Practical Worksheets	Mattison & Todd
	Fri 26 Jul	Anatomy & Biomechanics of the trunk and spine	Laboratory Write-up	Mattison & Todd
	Fri 16 Aug	Anatomy & Biomechanics of the trunk and spine	Term test	Mattison & Todd
4	Mon 9 Sep	Endocrinology	Laboratory Write-up	TA
	Week of 14 Sep	Humans & Systems	Video/Presentations	Todd
	Fri 4 Oct	Endocrinology + Humans & Systems	Term test	Todd & TA
Make-up assessment(s): Term 1: Friday 12 April Term 2: Friday 17 May Term 3: Friday 30 August Term 4: Friday 11 October				

** TA = Teaching Assistant*

Table 14: Mark composition of HKE III.

		HKE 301		HKE 302	
Class record	(40%)	6.65%	Research Project	6.65%	Research Project
		6.65%	Humans & Systems	6.65%	Endocrinology
		13.3%	Exercise Physiology	6.67%	Human Error
		13.3%	Perceptual Motor Control	6.67%	Integration & Application
				13.3%	Anatomy & Biomechanics of the trunk and spine
Exami-nations	(60%)	24%	<u>Paper 1 (2hrs):</u> Exercise Physiology	24%	<u>Paper 1 (2hrs):</u> Anatomy & Biomechanics of the trunk and spine
		36%	<u>Paper 2 (3hrs):</u> Human Systems & Perceptual Motor Control	36%	<u>Paper 2 (3hrs):</u> Endocrinology + Human Error + Integration & Application
Total	(100%)				

6.3 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.

<u>Humans and Systems in HKE 301 (J. Davy)</u>

This 3rd year module aims to build upon the students' understanding of humans, obtained through the courses covering the Biophysical, Physiological and Cognitive domains during their 1st and 2nd years of study, 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.

Perceptual Motor Control in HKE 301 (S. Wells)

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

Exercise Physiology 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

Anatomy & Biomechanics of the Trunk and Spine 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 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, which 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). Finally, 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.

Endocrinology in HKE 302 (TA)

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 the 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.

Humans & Systems in HKE 302 (A. Todd & TA)

This 3rd-year course, which concludes the undergraduate studies in HKE, focuses on consolidating student understanding of humans and human movement, obtained through the Integration and Application, Biophysical, Physiological and Cognitive domain courses during 1st, 2nd and 3rd year in HKE. With the knowledge around and application of systems thinking, systems theory and appropriate systems models, this final course will allow students to integrate their knowledge of human systems while understanding how human interactions with the immediate context around them influence both the human and that system.

Building on the appreciation of complexity, this course requires students to apply their knowledge of human systems and broader external systems to understand movement in various contexts. The first component of the module introduces the students to the background of human decision-making and how this relates to the potential for "human error". The module provides insights into the basic concepts underpinning human reliability and error, including how the understanding of this concept has evolved over time, how we categorise reliability and error, and how they relate to system performance, regardless of context. Furthermore, the module will unpack methods and models for analysing human reliability and human error, including, but not limited to GEMS, persons versus systems approach, dynamic safety, the Swiss cheese model, 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.

Once this grounding has been achieved, the module focuses on why the understanding is shifting away from "human error" building knowledge of the systemic factors contributing to the system's failure. The module introduces students to various models that allow us to understand and conceptualise the various system failures and to put mitigating actions in place. Furthermore, the course will delve deeper into what is meant by psychosocial risks and how these risks, in conjunction with other biophysical, physiological, cognitive, and broader systemic factors, influence human well-being and performance. This is supplemented with additional content and theories in lectures and workshops.

6.4 Prescribed books for HKE 3

Bridger, R.S. (2018). *Introduction to Ergonomics* (4th ed., or earlier). London: Taylor & Francis. (ISBN 9781498795944).

Hall, S.B. (2018). Basic Biomechanics (8th ed. or earlier). Boston: McGraw-Hill International. (ISBN 9781260085549).

McArdle, W.D., Katch, F.I. & Katch, V.L. (2023). *Exercise Physiology: Energy, Nutrition and Human Performance.* (9th ed., or any earlier edition). Philadelphia: Lippincott, Williams & Wilkins. (ISBN-10: 1975217292; ISBN-13: 978-1975217297).

Tortora, G.J., & Derrickson, B.H. (2016). *Principles of Anatomy & Physiology* (15th ed. or earlier). New York: Wiley & Sons. (ISBN: 9781119320647).
(Please note: some editions have two volumes)

7 Honours Course in HKE

Course coordinator: C Christie (email: c.christie@ru.ac.za, phone: 046-603 8470)

7.1 Admission

Minimum requirement for admission is a bachelor's 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 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. Staff capacity and senior postgraduate supervision load are other important considerations.

7.2 Expectations of an Honours Student

7.2.1 NQF Requirements

Pursuing postgraduate studies requires developing certain skills and competencies that offset a postgraduate student from an undergraduate student. In accordance with the South African National Qualifications Framework, the HKE Department expects an Honours student (NQF Level 8) to develop the following learning outcomes *(adapted from the South African Qualifications Authority – Level Descriptors for the South African National Qualifications Framework; November 2012)*.

The student should be able to:

- Demonstrate knowledge and engagement in an area in the forefront of the discipline, understand the theories, research methodologies, methods, and techniques relevant in the field and understand how to apply such knowledge in a particular context
- Interrogate multiple sources of knowledge and evaluate them (knowledge literacy)
- Select, apply, and transfer appropriate standard procedures, processes, or techniques to unfamiliar problems
- Demonstrate the ability to use a range of specialized skills to identify, analyse and address complex or abstract problems (problem-solving)
- Identify and address ethical issues
- Access, process and manage information
- Present and communicate academic, professional, and occupational ideas and information
- Demonstrate the ability to operate effectively within a system
- Apply, in a self-critical manner, learning strategies which address his/her professional and on-going learning needs (life-long learning)
- Demonstrate the ability to take full responsibility for his / her own work, decision-making and use of resources (self-responsibility).

7.2.2 HKE Requirements

The HKE Honours year will commence with compulsory orientation sessions from **7-9 February 2024**, while seminars start on **12 February 2024** and will be held in person in the HKE Department.

The DP rule still applies for Honours students. Any absence from compulsory activity (i.e., lectures, practicals, field trips, assignment deadlines etc.) requires a formal Leave-of-Absence (LOA) application. This form can be obtained from the HKE Office Administrator. Foreseeable absences (e.g., sports tournament) must be applied for **in advance**, while LOA applications due to unforeseeable circumstances (e.g., illness) must handed to the office administrator as soon as possible upon return to the department.

Even though there are compulsory lecture/seminar times, it is expected that students are **physically present** in the HKE Department for the **full day**. The afternoons should be dedicated to assignments and project work.

It should further be noted that even though no lectures are scheduled during the Rhodes vacations, it is expected that students dedicate this time to their research projects and may be expected to remain in Grahamstown. Each student's project supervisor must be consulted and informed about intended leave dates.

7.3 Structure of the HKE Honours Degree

The HKE Honours course consists of 5 compulsory seminar modules, as well as a service-learning module and a research project.

7.3.1 Seminar Modules

Half-day seminars consist of lectures, interactive work and practicals, and provide students with a knowledge background. The modules are taught face-to-face throughout the year and are compulsory. Although lecture times may vary slightly from one lecturer to another, the times allocated to lectures are generally Mondays – Fridays from 8:30 – 13:00. Table 15 details the various modules on offer and their dates.

Table 15: Lecture Outline for HKE Honours modules.

Term	Module	Lecturer	Dates
1-4	Service learning		Year-long
1	Research Methods	S Wells	Mon 12 Feb – Wed 27 Mar
	Physiology	C Christie	Mon 12 Feb – Wed 27 Mar
2	Ergonomics Assessment	M Mattison	Mon 8 Apr – Fri 17 May
Examinations:	*Research Methods: Wed 22 May 2024* *Physiology: Tue 28 May 2024* *Ergonomics Assessment: Tue 4 June 2024*		
3	Systems	A Todd (+visiting lecturer)	Mon 8 Jul – Fri 16 Aug
4	Biomechanics & Chronobiology	A Todd (+visiting lecturer)	Mon 26 Aug– Fri 11 Oct
Examinations:	*Systems: Wed 16 October 2024* *Biomechanics & Chronobiology: Wed 23 October 2024*		

7.3.2 Service-learning Module

In addition to the seminar modules, Honours students are required to participate in a service-learning module, which focuses on the application of undergraduate and postgraduate knowledge within a community setting, and which entails gaining work experience in various community projects the HKE Department has partnered with. The type of work/experience will vary from year to year depending on the current community-based projects that the department is involved in. The purpose of this module is to provide students with opportunities to apply their theoretical knowledge within a practical setting, while simultaneously providing a service to the broader community. Over the course of the year, students will be responsible for developing a portfolio of evidence on the work that they have conducted, which will form part of the Honours class mark.

The outcome of the module is consistent with those of typical service-learning courses, and the portfolio of evidence should demonstrate the following three objectives:

1) contributing to local human and community development;

2) improving the quality of academic learning within the discipline; and

3) improving the leadership/civic/character development of students.

7.3.3 Further Training Seminars

All Honours students are expected to attend the seminars offered by the Rhodes University Centre for Postgraduate Studies. Additional in-house seminars offered by the HKE Department focussing on practical skills training, e.g., the use of statistical methods, statistical software, advanced Word and Excel skills, reference managers, ethics, etc. may be scheduled from time to time and will be communicated to students.

7.3.4 Research Project

The objective of the research project is to introduce students to empirical research through the investigation of a kinesiology or ergonomics study. Emphasis is on the conceptual development and the scientific rigour students apply during this project. Throughout the year, students will be assessed on various 'phases' of the projects, the final product, as well on the process (by their supervisor), i.e., how they conducted themselves during the project's duration.

The length of the report should be in the format of an extended manuscript / journal article, following the format of the Journal of the Ergonomics Society of South Africa, and be restricted to 25 pages, excluding references and appendices.

Topics

The research projects will start at the beginning of the first term with a variety of topics being presented and discussed during the HKE Postgraduate Orientation (**7-9 February 2024**). These topics generally fall in line with research interests of the academic staff. Students will be required to submit three choices of topics after which the academic staff will allocate a research project and supervisor to each student. Efforts will be made to grant each student their primary choice, while also taking teaching, research and supervision loads of academic staff into account.

Interim Presentation and Submission

During the research seminar of **25 April 2024**, Honours students will present their project progress (background, problem statement and hypotheses) during an extended research seminar. The presentation will be assessed by the supervisor and a second member assigned to each project from the HKE staff cohort. The mark will be based on the quality of the presentation as well as how the student engages with the comments.

The first three sections / "chapters" of the research projects (introduction, review of literature and methodology) must be submitted on **Friday 6 May 2024, by 4:00pm** via email to: j.mcdougall@ru.ac.za (with copy to the supervisor).

Ethics Application

Shortly after the May presentation, but prior to a project's pilot studies and data collection, students are required to submit an Ethics Application to the Human Ethics Research Committee of the Rhodes University Ethical Standards Committee (RUESC) for approval. The link to the online form to be completed as well as more information about RUESC can be found on: https://www.ru.ac.za/researchgateway/ethics/. Please refer to section 2.10 for more details on research ethics and its application process or ask the HKE Ethics representative. Processing takes **at least one month** and often requires modifications, or even resubmission. It can therefore take a few weeks for final ethical approval to be granted, so take this into consideration for your project's time management.

Data Collection

During the data collection / experimentation phase students will be requested to book the required laboratory and equipment. This can be done via the Principal Technical Officer (for equipment) and Office Administrator (for laboratory keys). Please refer to

section 1.6 in this handbook. Keys and equipment need to be signed out and returned in the same **clean and neat state** as they were received as soon as possible after testing has been completed.

Intended use of laboratory space must be reported to the Principal Technical Officer and Office Administrator. This is necessary as, at times, undergraduate practicals, Honours projects, and sometimes Masters' research, run concurrently and may need to use the same equipment and / or laboratory space. Due to the limited availability of equipment, it may even be necessary for students to perform their testing during the Rhodes vacation or after hours (evenings or weekends). Consideration of fellow students is required when booking equipment and labs - please only book a slot if you will definitely be testing then. Also note that venue and equipment requirements for undergraduate lectures and practicals take preference over postgraduate testing. Please consult the timetable and relevant lecturers if you foresee challenges in this regard.

Project & Poster Hand-in

The submission deadline for the research report is **Monday 11 November 2024** by **4:00pm**. Students should each submit their project in electronic format (MSWord and PDF) to the HKE Office Administrator (j.mcdougall@ru.ac.za) and the student's supervisor copied into the email. The following should be submitted with the final project report:

- Final ethics documents (e.g., final ethics approval, feedback to participants, signed participant consent forms)
- Photographs of data collection
- ALL raw data (paper and electronic)
- Statistics files

The date on the Honours project report should be the year of study (NOT the year of graduation as for Masters and PhD theses). The project report will be marked by the supervisor and/or another member from the HKE staff cohort, while the only supervisor will provide a "process mark".

In addition to the research report, students will prepare a poster based on their projects. The Microsoft Publisher template for the poster can be obtained from the HKE Office Administrator.

The deadline for the poster submission is **Monday 11 November 2024** by **4:00pm** to the office administrator (j.mcdougall@ru.ac.za, and with the supervisor copied in).

Assessment Criteria

Assessment of the research project is based on a number of criteria and 'milestones' reached during the project process. These include marks allocated for the interim presentation and initial submission of the first three sections / "chapters", the final report and poster presentation, as well as the student's conduct during the research process.

Process criteria include: self-responsibility of the student, original contributions from the student, rigour in data collection and processing, amount of supervisor feedback required, requirements for supervisor intervention, timing and resource allocation.

Assessment criteria for the project report include: problem identification, methodological set-up, rigour in data collection, rigour in data analysis, interpretation of results/discussion, formal correctness and writing (spelling and grammar), poster. Table 16 provides a break-down of the components making up the research project mark.

7.3.5 Fieldtrips

Fieldtrips are arranged by the relevant lecturers as part of their modules. Advanced notice of when and where these fieldtrips will be taking place will be given to students closer to the time, as these are dependent on the relevant industry.

7.3.6 Contribution and support for other departmental activities

The HKE Department is also involved in various “expert services”, such as community engagement, high performance testing, ergonomics consultancies, training courses and office ergonomics, etc. Interested students are encouraged to become involved in these activities as they may arise. (Refer to section 2.6 on “Activity Profiling”).

7.4 Assignments and Examinations

The final Honours mark is a combination of marks from the seminar modules, the service-learning portfolio, as well as the research project. Honours seminar modules will be assessed using assignments set during class, as well as the examination at the end of either the first or second semester (Table 16). Examinations will consist of either a written exam, a practical examination, or a combination of the two. The service-learning component will form part of the Honours class mark. Each lecturer will announce the exact assignment and examination requirements for their module.

Table 16: Mark composition for HKE Honours class.

	Contribution	
Class record	30%	All modules (including the service-learning module) carry equal weight (5% each) and consist of the class record and the service-learning component.
Examinations	30%	All modules (excluding service-learning) carry equal weight towards the exam mark (6% each).
Research Project	40%	The project mark itself consists of the following components: ● Interim presentation ● First submission of introduction, literature review and method ● Final submission of full report ● Poster ● Process mark
Final mark	**100%**	

7.5 Course content

Honours seminar module 'Research Methods' (S. Wells)

This module focuses on the question of how to set up and carry out research of human responses. Such knowledge is not only important for research, but also for the application of human factors considering the complexity of human responses in real environments. This module highlights the basic theories of scientific research and their implications on the way we study the Human Factor. It builds a link between the practical question and the set-up of appropriate analysis and evaluation, starting from relatively immediate responses to more complex effects, such as cumulative effects on health, coping effects with overload and fatigue, studying human reliability etc. This is complemented by an extended view on human factors analysis methods that are necessary to ascertain human responses in vivo. Furthermore, this module includes practical considerations of carrying out basic and applied research as well as intervention programs.

Honours seminar module 'Advanced Physiology' (C. Christie)

One part of the Advanced Physiology module focuses on physical activity and health in all populations and sectors. The other part of the module looks at sports science including high performance sport, enhancing performance, and strength and conditioning.

Honours seminar module 'Ergonomics Assessment' (M. Mattison)

This module focuses on the practical execution of performing work analyses and ergonomics assessments in a variety of workplaces. The module starts off with theoretical considerations of developing and implementing an ergonomics programme, legal requirements, and professional conduct. Following this is a dominant focus on the assessment of risk for musculoskeletal disorders at a micro-ergonomic level; however, physiological, cognitive, and environmental factors are also considered during the assessment of workplaces. Students are first introduced to ergonomics assessments via walk-about surveys, and task analysis methods (time-and-motion, work sampling). Further ergonomics tools include a range of questionnaires and rating scales to quantify

musculoskeletal discomfort and perceived exertion, tools for assessing working postures (e.g., REBA and RULA), hand-intensive tasks (Job Strain Index), office workstations (ROSA) and manual materials handling activities (NIOSH Lifting equation, Liberty Mutual Tables). In this module, emphasis is laid on practical competence, and fieldtrips and fieldwork form an integral part of this module.

Honours seminar module 'Systems, Biomechanics and Chronobiology - Integration of core concepts' (A. Todd & visiting lecturer)

This course is the first integrated honours level course in the Department of Human Kinetics and Ergonomics. The goals of the course are multifaceted. Firstly, to provide students with a deeper understanding of the biomechanical and chronobiological considerations associated with human performance and health within both a work and sporting context. Secondly, to allow students to integrate their knowledge from these two supposedly separate domains (i.e., to see how biomechanical factors interact and affect chronobiological factors, and vice versa). Thirdly, to push students to understand the broader systems context that both sub-disciplines form part of, and lastly, to take the systems approach and apply it within real-world contexts so that they gain a sound understanding of the systemic nature of human performance.

- Introduction to systems theory: the value of acknowledging the components of a system and their interactions
- Introduction to the Wilson's six notions of HFE
- Introduction to sports science integration (Balague *et al.* and the grand unified theory)
- Introduction to shifting perspective to a multidisciplinary approach in sports science and ergonomics
- Focus on HKE speciality: human systems
- Nomenclature for biomechanics and chronobiology
- Putting the mechanics and chronobiology into a system
- System factors that affect sleep and circadian physiology: thinking global to local
- System factors that affect biomechanics and performance
- Building the links between chronobiology and biomechanics
- Building perspective: introduction to the rest of the system and how it influences human ability, performance, and health. Discussions and presentations on the biomechanical and chronobiological risk factors in different sporting and working contexts
- Broadening the perspective further: Introduction to systems of systems, complex systems and systems challenges and drivers.

8 Masters and PhD in HKE

8.1 Degree structure

The Rhodes University "*Higher Degrees Guide"* provides detailed information regarding higher degrees studies, including, but not limited to: (re)registration, research proposals, supervision, submissions, examination processes, financial matters, resources, etc.

The Rhodes University Postgraduate Gateway can be found at: https://www.ru.ac.za/postgraduategateway/. In particular the Rhodes University Higher Degrees Guide is an essential reading for those considering further postgraduate studies (https://www.ru.ac.za/media/rhodesuniversity/content/postgraduategateway/documents/HDG_Guide_2019.pdf).

Postgraduate coordinator: C Christie (email: c.christie@ru.ac.za, phone: 046-603 8470)

8.2 Admission

8.2.1 Admission for Master's Studies

The normal requirement for admission to a Master's degree at Rhodes University is a four-year qualification of an acceptably high standard, i.e. usually a three-year Bachelor's degree, plus a good Honours degree in a relevant subject (taken from the Rhodes University official calendar). Minimum requirement for admission is a Bachelor's Degree with Honours in Human Kinetics and Ergonomics or any other course providing the required basic knowledge.

The admission process is specific to the Department and is based on the following criteria (where applicable):

- Availability and willingness of a staff member to supervise the student and/or research project (it is recommended that interested students approach HKE staff and discuss areas of interest).
- Honours module marks (minimum Honours mark between 65-70%)
- Honours research project mark (process and content)
- Letter of recommendation from Honours research supervisor
- Demonstration of interest and reliability in the HKE Department and field of study, via tutoring, participation and/or assistance in research projects, conduct during research seminars etc. (refer to "Activity Profiling" in section 2.4). A good track record is important.
- A letter of motivation/proposal from the prospective student on the work they intend to conduct, and reasons for pursuing a Master's degree.
- An academic writing sample (for external applicants)
- Staff consensus.

8.2.2 Admission for PhD Studies

In practice, most PhD candidates have a Master's degree. However, Senate may, on the recommendation of the Faculty concerned, convert the registration of a candidate for the Master's degree to registration for a PhD degree. Such conversions require the Head of Department and prospective supervisor to be satisfied that the student's completed work is of a standard expected of a doctoral student, that the student is capable of completing a doctoral degree and that the project is of a level and scope expected of a PhD study.

For further information on the University's policy of Master's and PhD admissions, please visit the Rhodes University Postgraduate Gateway at: https://www.ru.ac.za/postgraduategateway/.

PLEASE NOTE FOR BOTH MASTERS AND PHD APPLICATIONS:

Completion of an Honours or Master's degree does ***NOT*** automatically guarantee acceptance for a Masters or PhD degree respectively. It is recommended that students interested in pursuing further postgraduate studies approach members of staff to determine their research interests and supervision capacity. Final admission is however dependent on staff consensus and is based on the criteria listed under section 8.2.1 (or selected relevant ones for PhD applications).

The application deadline for further postgraduate studies is only around April, but it is strongly recommended that you apply early to ensure that departmental resources and staff capacities are not allocated elsewhere.

In addition, the application form for Master's and PhD requires identifying a supervisor and defining a topic by submitting a proposal to the HKE Postgraduate Coordinator, who will forward it to staff for perusal and discussion. A more precise research topic must then be refined and be made available at the end of the first term (2nd term at the very latest). All research proposals must be reviewed and approved by the Higher Degrees Committee of the Faculty of Science. Further information can be found at: https://www.ru.ac.za/media/rhodesuniversity/content/postgraduategateway/documents/HDG_Guide_2019.pdf ("The formal research proposal").

8.3 Expectations from Master's and PhD students

It cannot be emphasized enough that Master's or PhD studies should be regarded as **full-time work** (i.e. Mondays – Fridays from 8:00-5:00) for the full year. Vacations and time off should be discussed with the supervisor well in advance.

In accordance with the South African National Qualifications Framework, the HKE Department expects an MSc and PhD students (NQF Levels 9 & 10) to develop the following learning outcomes *(adapted from the South African Qualifications Authority – Level Descriptors for the South African National Qualifications Framework; November 2012)*.

The anticipated outcomes as a Master's student are the following:

- Demonstrating specialist knowledge to enable engagement with and critique of current research or practices, as well as advanced scholarship or research in a

particular field (critical thinking).
- Being able to evaluate current processes of knowledge production and choose and appropriate process of enquiry for the area of study (critical thinking).
- Being able to design, select and apply appropriate methods, techniques, processes or technologies to complex practical and theoretical problems (mastering the scientific practice & time management).
- Using a wide range of specialized skills in identifying, conceptualizing, designing and implementing methods of enquiry to address complex and challenging problems and to understand the consequences of any solutions generated within a specialized context (problem-solving)
- Demonstrating the ability to make autonomous ethical decisions
- Accessing, processing, and managing information
- Producing and communicating information by using academic and professional resources and defending substantial ideas that are the product of research (e.g., through journal submission, presentation at conferences or workshops).
- Being able to make interventions at an appropriate level within a system, based on an understanding of hierarchical relations within the system, and the ability to address intended and unintended consequences of interventions.
- Developing his/her own learning strategies which sustain independent learning and academic or professional development (self-reflection & life-long learning), and can interact effectively within the learning or professional group as a means of enhancing learning (ability to transfer knowledge to others)
- Being able to take full responsibility for his/her own work (accountability, independence & self-responsibility)

The anticipated outcomes as a PhD student are the following:
- Demonstrate expertise and critical knowledge in an area at the forefront of a field or discipline and the ability to conceptualize new research initiatives and create new knowledge or practice (being a self-responsible researcher).
- Contribute to scholarly debates around theories of knowledge and processes of knowledge production, i.e., be able to challenge paradigms and theories.
- Be able to develop new methods, techniques, processes, systems, or technologies in original, creative, and innovative ways.
- Apply specialist knowledge and theory in critically reflexive, creative, and novel ways to address complex and theoretical problems (problem-solving).
- Identify, address, and manage emerging ethical issues and to advance processes of ethical decision-making.
- Make independent judgments about managing incomplete or inconsistent information or data in an iterative process of analysis, synthesis.
- Produce substantial, independent, in-depth, and publishable work which meets international standards, is considered to be new or innovative by peers, and makes a significant contribution to the discipline.
- Be able to develop a communication strategy to disseminate and defend research, strategic and policy initiative and their implementation to specialist and non-specialist audiences (e.g., through tutoring/lecturing, publication of journal articles, presentation at conferences and workshops, consultancy work).
- Understand the theoretical underpinnings in the management of complex systems to achieve systemic change, and the ability to independently design, sustain and

manage change within a system.
- Demonstrate intellectual independence, research leadership and management of research and research development.
- Take full responsibility for his/her own work and lead, oversee and be held accountable for the overall governance of processes and systems.

8.4 Departmental Activities

8.4.1 Postgraduate Orientation

A postgraduate orientation will be held during the mornings of **7-9 February 2024**, with the purpose to jointly (staff and students) discuss each other's expectations of postgraduate conduct and work in the HKE Department, as well as some practical hints and tips about how to plan for postgraduate studies.

8.4.2 Participation in Honours Modules

Although Master's and PhD studies do not have a coursework component, postgraduate students are welcome to participate in Honours modules of their interest. Once they have indicated their interest in partaking in selected modules, Master's and PhD students must commit to the same DP rules and regulations as the Honours students and complete all assignments and exams for that/those module(s). Candidates who pass the module requirements will receive an accreditation for that/those module(s).

8.4.3 Field Trips

Field trips are arranged by the relevant lecturers as part of the Honours modules. Advanced notice of when and where these fieldtrips will be taking place will be given to students closer to the time, as these are dependent on the relevant industry. Master's and PhD students are welcome to join these fieldtrips, provided the logistics allow it.

8.4.4 Further Training Seminars

All senior postgraduate students are strongly encouraged to attend seminars offered by the Rhodes University Centre for Postgraduate Studies. Additional in-house seminars offered by the HKE Department focussing on practical skills training such as the use of statistical methods, statistical software, advanced Word and Excel skills, reference managers, ethics etc. may be scheduled from time to time and will be communicated.

8.4.5 Contributions to and Support for other Departmental Activities

The HKE Department is also involved in various "expert services", such as community engagement, high performance testing, ergonomics consultancies, training courses and office ergonomics. Interested students are encouraged to become involved in these activities.

9 Further Book Suggestions for HKE

The books in Table 18 are recommended as additional resources. These can be found in the Rhodes University library.

Table 17: Recommended readings for HKE

	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. (2018). *Introduction to Ergonomics* (4th ed., or earlier). London: Taylor & Francis. (ISBN 9781498795944).		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. (2015). *Evaluation of Human Work: A practical ergonomics methodology* (4th ed.). London: Taylor and Francis. (ISBN: 9781466559615).			X

10 Publications

The University encourages the publication of work done for higher degrees (for both Master's and PhD with the supervisor as joint author, where appropriate). There is little point in conducting non-classified research unless the findings of the research are communicated to other workers, athletes, or researchers in the field for their information and assessment. Every attempt should thus be made to publish as much of the thesis material as possible.

Some theses may be suitable for publication in full as books. More often, papers will have to be prepared from suitably edited sections of the thesis. Where papers are submitted for publication in journals, every attempt should be made to have the papers published in recognized and accredited journals. These are journals which are recognized by the Government's Department of Education for subsidy purposes. They nearly always use peer review as the criterion for publication. A list of these journals may be obtained from the Research Office.

10.1 Publishing thesis content

It is accepted for postgraduate students to publish (parts of) their research during the time of their studies, i.e., before the examination process. These publications, if written with co-authors, should be reflected in the thesis' reference list.

10.2 Authorship

For submitting abstracts for international and local conferences and / or journals use the following as guidelines on authorship:

Firstly, if an abstract/paper is written by a student on his/her research (honours, MSc, PhD), then he/she is the first author. However, if someone else writes the abstract/paper then the person who writes the majority of the paper is first author, even if it is a student project (e.g., it could be the supervisor). Furthermore, if a student writes the abstract/paper on his/her research, the supervisor should be a co-author as he/she has contributed to the research and/or the abstract/paper (this includes work such as conceptualization, methodological ideas, reviewing/editing, etc.). There may be other authors too if projects/papers are joined. In cases of doubt consult one of the academic staff. Finally, all co-authors need to approve a paper before it is submitted.

11 Basic Format Guide

This format guide describes some general formal rules of scientific writing and is, in this form, sufficient for undergraduate laboratory or project reports etc. Postgraduate students are requested to consider additionally the extended (postgraduate) format guide.

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.

11.1 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 question / create an argument, 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. If you want to point the reader's attention to the hot temperatures, better write "It cannot be excluded that the hot weather had an additional impact on the participants".

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. Make use of grammar and spell checks and even ask a more senior student to critically review your writing.

11.2 Structure of scientific papers and assignments

Scientific papers and assignments take many forms. They can be short or long, empirical (data are gathered) or literature research, and they can be structured or unstructured. The following will help you prepare your research project / thesis report to suit these various formats. Note that although this is the preferred way of structuring a research project, there are instances where another format may be more suitable. The supervisor should approve of any modifications to the standard format.

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, and should you employ references, use the prescribed format (refer to section 11.3). 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.

11.2.1 Literature Research

Both short and long literature research projects or assignments should be presented in sections appropriate to the topic. These sections might progress from the general towards the specific, 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 7.3.4).

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.

11.2.2 Short Reports of Empirical Data Collection

Short reports are usually used at an undergraduate and Honours level. Laboratory or experimental project reports should contain the following information, in this order:

Title Page

See section 7.3.1 for example format.

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 7.3.4 on referencing).

Methods

Detailed description of 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 interpret the results found and how they relate 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.

11.2.3 Long Reports of Empirical Data Collection

Long empirical reports are appropriate for theses at a Master's and PhD level. While Honours research projects are expected to take on the form of a journal article, the main components of a scientific report, as described below, still hold.

Having said that, due to the large diversity of research projects conducted in the HKE Department, it may not be suitable to follow the same format for each project. As a guideline, reports of major projects which involve data collection should contain the following information in this order, but *this is dependent on the type of project, and is up to the discretion of the student and his / her supervisor.* It is further recommended to make use of the "Styles" function in Word to ensure a consistent formatting style throughout the thesis.

Title Page

See section 7.3.1 for example format

Abstract

A very short (maximum 200 words / 1 page) summary of the research. Briefly, eliminating all redundant words, inform the reader the purpose of your research, how and with what method you undertook the research, the results and their significance, and your conclusions.

Preface or Acknowledgements

Optional

Table of Contents

Contains the headings of chapters / sections of the thesis and the page numbers where they begin.

List of Tables

Separate page, following the Table of Contents

Contains the exact title of each table and the page on which it appears.

Each table in text should have a caption at the **top** (Arabic or Roman numerals as long as numbering is applied consistently) that tells concisely just what it contains.

Where tables appear, they are numbered sequentially through the text, using Roman numerals ahead of the caption.

All textual references to specific tables must be caps. Thus: “It is clear from Table XVII that …” This rule applies to textual references to the figures as well.

All tables need to be referred to in the main text.

List of Figures

Contains the exact title of each figure and the page on which it appears.

Each figure should have a caption at the **bottom** (Arabic or Roman numerals) that concisely describes the figure.

Where figures appear, they are numbered sequentially through the text, using Arabic numerals.

While use of illustrative material (e.g., photographs) is encouraged, candidates are warned that “show and tell” pictures must do more than just pad the thesis. Each must add substantially to the reader’s understanding of the test ambience; orientation of equipment used; characteristics of the subjects. Please note that pasted photographs or hand-drawn figures are generally not acceptable.

PC-generated colour graphics are optional if they enhance the presentation. All graphs and charts should also be clear and intelligible in black and white, since it is in this form that they would appear in most journals.

All figures have to be referred to in text.

Chapter I - Introduction

The introductory section gives the background to the study, detailing the reasoning leading up to the research hypothesis / purpose of the study. This chapter consists of:

a) Background to the study leading to the statement of the problem, and the resultant research question or general hypothesis
   Please note that depending on the type of research project, the hypothesis can either be either the statistical hypothesis or the research hypothesis, depending on what is more appropriate for that project.
b) Brief overview about the study concepts and, if applicable, hypotheses to give the reader an idea what will be focused before getting into details in the following chapters. This part contains:
   - Research hypothesis (if suitable, depending on the project) preferably as a "null" hypothesis of what you expect to happen (in the present tense).

     Scope of the study (delimitations) – also depends on the project, as it may

also suitable in the method or discussion

- Uncontrolled variables which may limit the applicability of the findings (limitations) – again this may also be described elsewhere

Hypothesis:

Often hypotheses repeat themselves with different parameters. Instead of filling pages with repeating the same basic hypothesis just with different parameters, you may use the following terms from the theory of sets:

Ho: $\mu_{B1} = \mu_{B2}$ where B = {speed, accuracy, response delay}

This aggregation should however only be used for variable that are part of a bigger set, e.g. different performance parameters or different parameters of Heart Rate Variability.

Chapter II - Review of Related Literature

A detailed, logically sequenced discussion of specific issues both directly and more remotely related to your topic, based on a thorough review of relevant literature.

Do not start with a sub-heading titled “Introduction”. Also, do not repeat your first chapter again; merely include a brief paragraph that points the reader towards what can be expected in this chapter (known as “signposting”).

Please note at the outset that what is required in Chapter II is NOT a review of literature. This may sound paradoxical in view of the common title of Chapter II in postgraduate theses, but the idea behind the research project is to demonstrate **creative** research. There is no (or very little) creativity about copying a summary of what others have had to say. What is required is not a review of literature, so much as a **critical review** of the literature. This does not mean repeating everything that other researchers had to say. It does, however, mean **evaluating** what other researchers have had to say. Your evaluation requires, as a first step, reviewing the literature: but as a second, more sophisticated step you should produce an **appraisal of the state of knowledge** in the particular area reviewed, and not just a neutral review (copy) of what has been said.

A second warning is important if you aspire to act on the basis of your theoretical knowledge. Do not fall into the trap of believing that lengthy corroboration establishes truth. All that you show by citing 100 authors who have corroborated a particular theory is that a particular theory has not collapsed under repeated testing. This **may** be a good reason to go along with the theory; but it is **not** evidence of truth. Citing strings of corroborating authors shows you have done an extensive library search: it does not demonstrate that you have critically evaluated what you have been reading.

Further consider:

- The format for referencing appears in section 7.3.10.
- Secondary sources are undesirable and must thus be avoided or, at least, be kept to a minimum.
- Quotations of 3 lines or less do not require changes in layout and do not

include page number(s) indicating the source. These are enclosed in quotation marks and cited as one would any other text reference. ONLY in the case of long quoted passages is it necessary to indicate, after the quote (which should be single spaced and indented), the source and the page numbers. Keep in mind that a review is not critical if it is no more than a selection of long passages lifted from the works of others. Inclusion of long quoted passages is permitted only in exceptional circumstances.

- Where exactly the same author(s) [in the same order] have produced more than one paper per year, you must number these as in the following example:

  Smith *et al.*, (1986a, 1986b, 1986c) and in the reference list:
  Smith … 1986a
  Smith … 1986b
  Smith … 1986c

- Citing from the web requires a re-think of your role as a researcher. Why do you think scholarly journals have editorial boards and insist that all submissions be peer-reviewed? What guarantee is there that the "information" you have gleaned on the internet has been critically appraised and endorsed by leaders in the field? If such guarantees are not in place, then the propositions involved have no more relevance in a scholarly context than do the claims of TV adverts.

Chapter III - Methods

In this section describe your project in sufficient detail to allow someone else to repeat it. It should include the "what", "how", and "who" of an experiment:

a) Research hypothesis and statistical hypothesis / hypotheses (if applicable and if not already included in Chapter I)

b) Research design (including the scope of the study (delimitations), if not already discussed elsewhere)

c) Variables (independent variables, dependent variables, and variables of no interest)

d) Uncontrolled variables which may limit the applicability of the findings (limitations) – if not already discussed elsewhere.

e) Tools and Materials

f) Participant characteristics - number of participants, inclusion/exclusion criteria. Recruitment of participants

g) Ethical considerations

h) Procedures

i) Statistical treatment(s) used (data mining / data reduction, descriptive data, inferential data analysis methods).

You are reminded that this is **your** thesis: even in the methods chapter, where you are most likely to be applying well-established methods derived by others, you should strive to "individualize" your presentation. However, wherever possible,

relegate mundane method-related materials (e.g. common rating scales) to the appendices, unless personally developed.

Chapter IV - Results

Summarise your results using, as appropriate, graphs, figures, tabulations, etc. of means and standard deviations for each experimental condition (see section 7.3 for format rules). If non-parametric statistics (which consider medians, not means) are used, medians should be included in the tables. Where different classes of variable appear in a table, standard deviations cannot be compared, so include the coefficient of variation.

Briefly describe (but not discuss) your results.

Chapter V - Discussion

Relate your results to the literature:
- Do they support or contradict the literature? Why?
- Comment on reasons for unexpected results
- Speculate on theoretical or practical implications of your results.

This section may also include the limitations and delimitations of the study

Support **ALL** statements made in discussion of results by reference to the published literature.

Describing your findings in the results section is a means, **NOT** an end: you have barely begun when your experimental findings are carefully elucidated. What follows in the discussion chapter is the intellectual hub of the whole thesis – what do these findings **mean**? To what extent do they confirm, modify or refute existing doctrine? To what extent do the various facts of your multi-disciplinary investigation interrelate? These are the meaningful questions your thesis should address – these are the measures of your scholarship!

Chapter VI - Conclusions and Recommendations

Draw specific conclusions based on your results. Ensure that these conclusions are based on your data.

Include verification / rejection of hypotheses, if relevant.

Provide recommendations for further study based on your findings.

So often these are summarily dismissed. But for the very senior candidate this raises the question why put yourself through all this toil, for so meagre an outcome? Surely to merit the appellation Doctor of Philosophy, you should have a great deal to say on the basis of your results, and a great deal to recommend to those interested in this area. Candidates for less senior degrees should, likewise, aspire to making reasonably profound propositional statements that could not have been made prior to conducting the study.

References

Refer to section 7.3.10 for details

Appendices

Refer to section 7.3.11 for details

11.3 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.

11.3.1 Page format

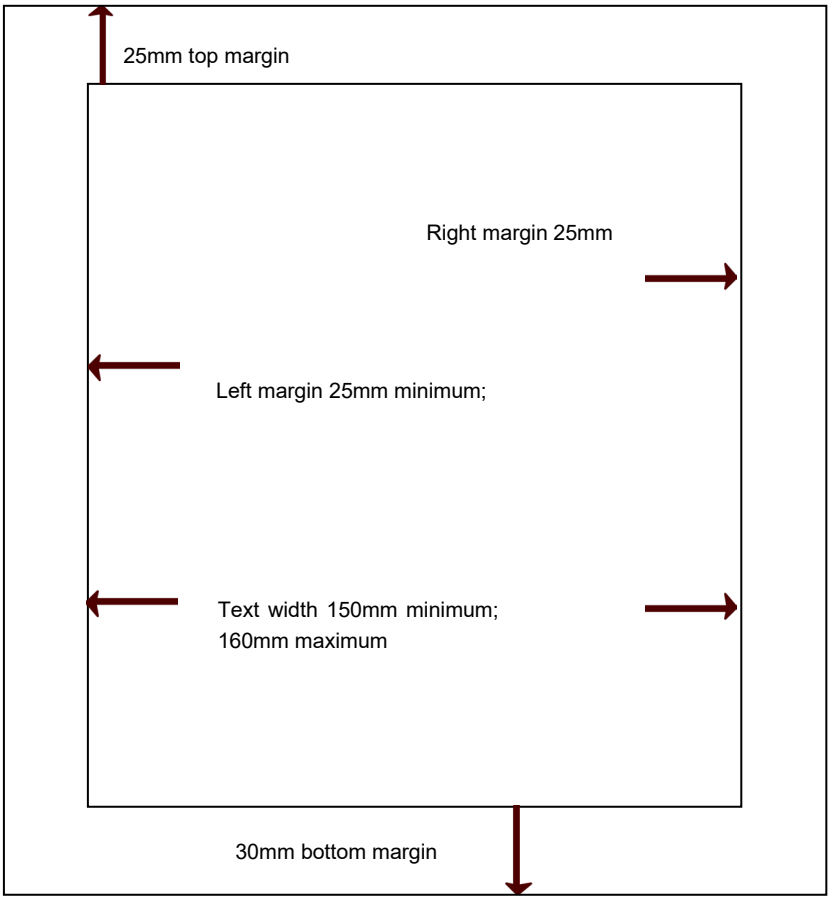
Margins:

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)



11.3.2 Title Page

[TITLE OF PAPER]

BY

[AUTHORS NAME]

PROJECT / THESIS / DISSERTATION
[print only the appropriate type]

Submitted in [partial] fulfilment of the requirements for the [Course Honours in Human Kinetics and Ergonomics] or [Degree Master of Science]

[Name of course or Degree]

Department of Human Kinetics and Ergonomics

Rhodes University, 2024

Makhanda, South Africa

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

11.3.3 Text format

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

11.3.4 Pagination

Every page following the title page in a thesis is assigned a number which appears, centred, at the foot of the page.

- The title page contains no page number
- All pages preceding Chapter I are numbered in small Roman numerals
- The first page of Chapter I is page 1 and Arabic numerals continue throughout the remainder of the thesis

11.3.5 Quotations

Format for quotations taking more than two or three lines or involving more than one sentence:

Indent both sides. Single-space. Omit inverted commas. At the end of the quoted passage, state author(s); date; p (or pp) numbers(s).

If the quotation is only one sentence or part of a sentence and takes up less than 3 lines: don't indent; don't single-space; place quotation in inverted commas; cite author(s) in the normal way, without indicating page number(s).

11.3.6 Unacceptable abbreviations; symbols

You may not start a sentence with an abbreviation or with arabic numerals. Don't use: *Ibid; Idem; Op cit; Loc cit.* (Reason: the modern scientific journals, in ours and related disciplines, avoid this usage).

When you say: "McMaster *et.als'* (1991) study ..." you're advertising several facts; that you don't know how to use abbreviations.

11.3.7 Line breaks

Units of measurement must, along with the numbers involved, be self-contained within a line; do not allow line-breaks to split, as in the examples below:

..... 50 kg.min^{-1}

..... 50 kg.min^{-1}.

..... 50 kg. min^{-1}.

11.3.8 Text headings and sub-headings

At the outset decide on a format for headings, sub-headings etc. and apply it consistently. Using the Styles function in Word is a valuable tool in assisting with this. The Department does not impose a format on thesis writers, as this might impact negatively on the flow of each individual's means of expression. Some, for example, find that numbering (with decimals indicating sub- and sub-sub-headings) facilitates systematic presentation: others find this method stifling. Candidates are advised to take their lead from the literature and to apply their chosen scheme systematically.

However, if a numbering system is used it may not go beyond the use of two sub-headings *e.g.:*

Heading	=	1
Sub-heading	=	1.1
Sub-sub-heading	=	1.1.1; 1.1.2; 1.1.3; ..... *etc.*

11.3.9 Figures, tables and equations

The layout of tables and figures in the project / thesis must be compatible with the examples depicted on the following pages.

Tables are to be constructed as in the examples on the next two pages. Note carefully that "fancy artwork" is not desirable and can appear overwhelming to the reader. A "less is more" approach forces the researcher to think about the essence of the findings presented in a graph.

Also carefully consider the use of colour – a very obvious contrast in colour may not be so when printed in black and white.

All figures and tables have to be referred to in the main text.

Each ***figure*** should have a numbered caption at the bottom that concisely describes the figure. Figures taken from other sources have to be acknowledged in the figure heading.

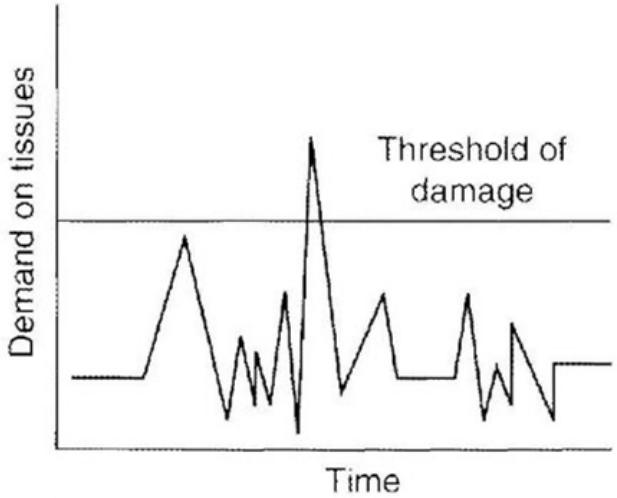


Figure 2: Load-tolerance relationship (taken from Bridger, 2009, p.57).

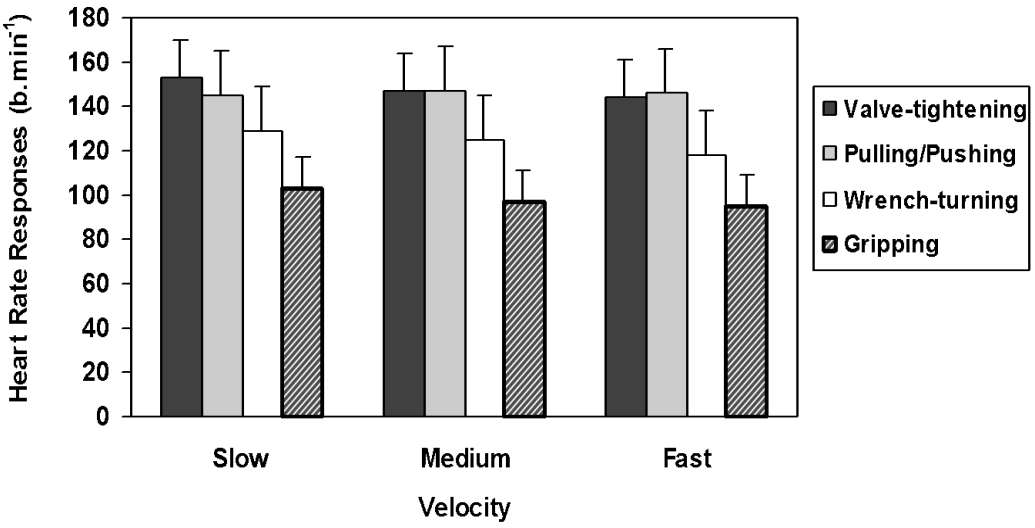


Figure 3: Mean heart rate responses under three experimental conditions.

Each ***table*** should have a numbered caption at the top that tells concisely just what it contains. As an option, arabic or roman numbers might be used for tables (but have to be applied consistently throughout the paper).

Table 18: Laboratory Test (LT) responses at Slow Isokinetic Speed (30o·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. Equations do not have a caption or heading.

Example:

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

Graphs and figures from external sources:
Graphs, figures or whatever may be copied from external sources in its original form if they are correctly referenced. No redrawing or so for the sake of changing the outfit only is required (this is more and more considered as plagiarism if the content is not changed). For reports and theses no permission form authors is required as well. However, publications in journals and books will often require permission of the copyright owners.

11.3.10 Referencing

The HKE Department complies with the APA standard of referencing. More detailed information can be found on http://www.APA.org.

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 19: 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)

For citing more than two authors use the abbreviation *et al.* For example: Smith, James, Jones and Brown would be shortened in text to Smith *et al.* (2000). Note that *et al.*, must only one full stop (after "al.") and be in italics (not bold).

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), alphabetical order, or in order of importance (but be consistent). If two sources with the same date are referenced then these sources are listed in chronological order (i.e. in ascending order of their dates), 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 ....."

Listing primary sources

Generally, list all authors and mark book names and journal titles in (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. 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.

11.3.11 Appendices

An appendix or appendices includes any material supportive 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.