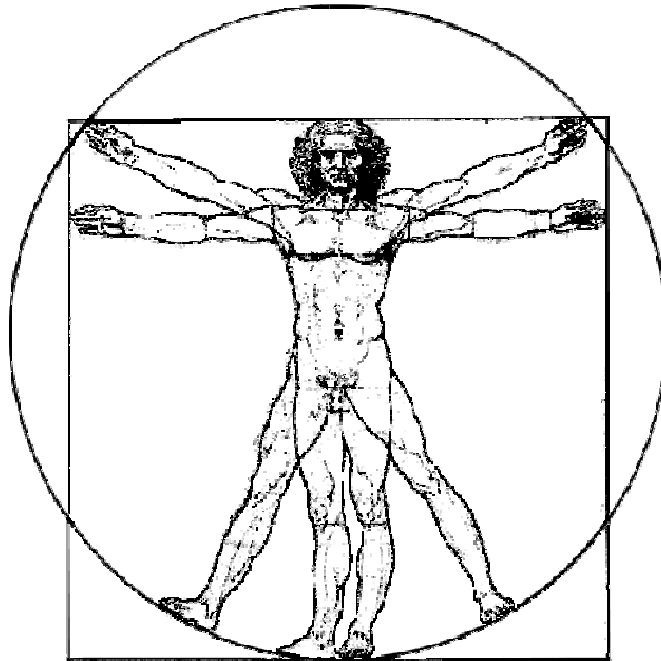


DEPARTMENT OF HUMAN KINETICS AND ERGONOMICS



HKE Handbook 2010 Postgraduate Students

General Information

Timetables

Course outlines

Examination information



RHODES UNIVERSITY
Where leaders learn

This handbook contains all relevant organisational information for HKE postgraduate students in 2010. Please study it carefully at the beginning of the academic year and follow the instructions. No excuse will be accepted for ignorance when rules are violated.

Dates and locations are subject to change. Please check the departmental notice board for updated information.

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Grahamstown, February 2010

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 from the departmental website: <http://www.ru.ac.za/humankineticsandergonomics>

1.1 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).

1.2 Departmental Staff:

Departmental Staff:

	phone	email
Ms J McDougall (Secretary)	046-603 8471	j.mcdougall@ru.ac.za
Professor M Goebel (Head of Department)	046-603 8468	m.goebel@ru.ac.za
Dr C Christie (Senior Lecturer)	046-603 8470	c.christie@ru.ac.za
Dr S Zschernack (Senior Lecturer)	046-603 8472	s.zschernack@ru.ac.za
Mr A Todd (Lecturer)	046-603 8469	a.todd@ru.ac.za
Ms M Mattison (Junior Lecturer)	046-603 8471	m.mattison@ru.ac.za
Mr T Douglas (Technical Officer)	046-603 8471	t.douglas@ru.ac.za
Ms J Nontyi (Department services)	046-603 8471	
Mr C Ngqoyiya (Department services)	046-603 8471	
Fax machine	046-603 8934	

Please feel free to contact the departmental staff members for any query you may have.

Departmental information:

1.3 Access and Security

All postgraduate students are issued with a key to the side door of the HKE Department, allowing access to the department for studying purposes. 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!

For security reasons the keys to the glass doors in the foyer will only be accessible to staff and the doors will be locked outside of working hours (before 8:30am and after 4:30pm), during lunch (12:45pm to 2:00pm), as well as during the exam and holiday periods.

In order to discourage criminals from entering the HKE Department it is each individual's responsibility to ensure that the security of the department is not compromised by:

- Ensuring the side door is always closed and locked after entering and exiting (DO NOT leave the door ajar when, for example, waiting for subjects to arrive).
- Ensuring that the last person leaving the Department activates the alarm code.
- Being vigilant of strangers entering and exiting the Department.
- Escort strangers to their point of interest in the Department (e.g. the person they were looking for) as well as show them the way out.
- Reporting any suspicious people in the Department to the secretary or academic staff.
- Keep your office doors locked at all times if you are not working in it.

Any violation of the access privileges may result in disciplinary action.

1.4 Room Allocation / Workstations

The HKE Department attempts to create an atmosphere that is conducive to study and research activities. Postgraduate students are therefore 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 assistants
2. PhD students
3. 2nd year Masters
4. 1st year Masters.

Exemptions from this rule require valid reasons acknowledged by the HoD.

1.5 Library

The departmental library holds the periodicals for HKE, the past research reports of HKE projects and some further books and brochures. These will however be moved to the new central library upon its completion during the first half of 2010. Please note however that at no time journals may be taken out on loan; journals may only be removed from the library to be photocopied and must be returned immediately.

Furthermore, the departmental library provides some workspace and computers with internet access. Actual books and textbooks for HKE are kept in the central library. Core readings for the various modules have been placed onto shortloan.

2 General Considerations

2.1 Plagiarism

Plagiarism is a serious offence and Rhodes University has updated its Plagiarism Policy. Students are encouraged to familiarize themselves with the Rhodes University Plagiarism Policy which can be accessed on: https://www.ru.ac.za/documents/Academic%20Planning/plagiarism_policy.pdf

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 that is derived from the work of another person constitutes plagiarism, unless the source is clearly acknowledged in the manner described below. You will be guilty of plagiarism if, for example, you hand in an assignment under your own name which, either in part or as a whole:

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

How to avoid plagiarism

Acknowledge the source of the material! When writing an essay or laboratory report in an academic setting it is normal to draw on material written by other people. However, when you do this, it is important that you acknowledge the fact that you have drawn on other people's work. There are standard procedures for doing this - for example by citing a reference and providing details of the source in a reference list at the end of the assignment. You are expected to do this even where you do not quote directly from your source, but merely express in your own words, ideas or arguments which you have taken from that source. 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 as these are written without access to books and other reference materials.

Please refer to the Basic Format Guide in this handbook for details on how to reference in an HKE assignment / thesis. The library website has a useful guide to information literacy and can be accessed on <http://www.ru.ac.za/static/library/infolit/>

Disciplinary action in response to plagiarism

As a University student it is important that you understand and observe the highest standards of ethics, integrity and professional practice in the writing of assignments and laboratory write-ups.

The Department of Human Kinetics and Ergonomics therefore expects these high standards to be adhered to as a matter of course. Many students think that there is no harm in copying sentences from books and articles when composing any written work. However, in terms of the policy stated above, the use of even one sentence without acknowledgement constitutes plagiarism and is not acceptable.

Senate policy on plagiarism

The Senate of the University has adopted an overall policy towards the handling of plagiarism. In terms of this policy:

- Departments are encouraged to address the matter in their teaching, and to train students in the correct procedures for acknowledging the sources of material used for assignments.
- Cases of plagiarism must be addressed by disciplinary procedures within the Department or at University level.
- Disciplinary steps may range from giving a warning (for first time and minor offences), to imposing a mark penalty or in more serious cases, to withdrawing the student's DP.

HKE Department policy

First minor offence: 20% deduction of allocated mark, and student(s)' name(s) noted within department records.

First Major offence: a mark of zero and name sent to the University's Plagiarism Committee.

Any second offence: withdrawal of the student's DP and name sent to the University's Plagiarism Committee.

2.2 "Duly Performed" (DP) rule

Please note that the "Duly Performed" rule applies to all academic departments at Rhodes!

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

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

Students are responsible for determining whether they are satisfying the requirements of the department, by checking with the HOD in cases of doubt.

2.3 Lecture attendance

Attendance at lectures IS compulsory for Honours students and in the case of absence an LOA must be submitted together with supporting documentation. Please note that for Honours students 33.33% (1/3) of the final mark is based on each semester's class work. Please also be aware that it is each individual's responsibility to acquire the knowledge required to pass the exams!

2.4 Tutoring and Research / Laboratory assistance

The HKE Department offers different positions for tutoring and research / laboratory assistance. This enables students to gain additional experience in teaching. Each position requires 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 lab assistants will receive training.

Tutorial System

Tutorials refer to small formal discussion groups and are held weekly for first and second year students and are designed in such a way as to compliment the lectures by recapping work done in class; no new work is covered in the tutorials. The tutorials will help to 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 developing observational, deductive and interpretive skills.

Each 1st and 2nd year student must attend one tutorial session each week of the term, on an allocated day of the week (this will fit into each student's timetable), unless the coordinator of the tutorials states otherwise.

All concerns with regards to tutorials should be addressed to the tutorial co-ordinator, Janet Kelly (janet.kelly78@gmail.com) or 046-603 8471.

Research / Laboratory Assistance

Only Masters and PhD students are eligible for appointment as research assistants and their duties include facilitation of honours laboratory and research work, as well as facilitating HKE 3 laboratory exercises and revising lab reports.

2.5 Research Seminars

The purpose of research seminars is to engage in critical discussions with all academic staff and postgraduate students. Topics for the research seminars may include debates, discussions of current issues in our discipline, exchange of information of research activities within the Department, feed-back from conferences etc.

Research Seminars are co-ordinated by the Department's PhD students and will be held on Thursdays from 9:35am to 11:15am. Please consult the Research Seminar programme which will regularly be communicated to all staff and postgraduate students via e-mail. Attendance is COMPULSORY for all postgraduate students and academic staff and absence from a research seminar requires an LOA submission.

ALL staff and postgraduate students will have to contribute to these seminars as follows:

- One research seminar is allocated to ethics and related research
- Hons: one presentation after methodology is developed (before data collection starts) + one final presentation
- Masters: one presentation on the research concept and one presentation after the development of the methodology. Both are compulsory before starting data collection.
- PhD: one presentation about research (thesis or any other research) per year

- Staff: one research seminar per year
- Guest speakers: the organizers will arrange for 2-4 external guest speakers per year to present on a topic with academic content (no focus on entertainment or celebrities). The dates for these can only be arranged closer to the time and will be communicated to all via e-mail.

2.6 Student feedback and participation

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

Communication

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

Class coordinators:

HKE Honours: M Goebel

HKE Masters & PhD: C Christie

Performance monitoring

Students are given feedback about their performance in tests and assignments as soon as possible. A preliminary class record mark based on the assignments and tests completed is published by the department at the end of each term. Students are asked to make use of this opportunity to monitor their own performance regularly and request support early enough.

2.7 Ethical Approval of Research Projects

All research projects that involve humans as participants have to be approved by the departmental ethics committee. The departmental ethics committee acts on behalf of the Rhodes Ethics Standards committee and consults it whenever necessary. To view the Rhodes Ethics policies and guidelines, please visit: <http://www.ru.ac.za/4960>.

Current HKE ethics committee (elected for Jan 2010 to Dec 2010):

Candice Christie (chair)

Miriam Mattison

Swantje Zschoernack

Every research project has to submit the standardized form obtainable from the secretary before any data collection is started. The application has to be submitted to the chair of the ethics committee who will process the application in consultation with the other committee members normally within two weeks' time. The outcome of the discussion will be communicated to the researcher and his / her supervisor in written form. This might be an approval, an approval with set conditions, a request to rework the application or a rejection of the application (with reasons provided).

2.8 Social Functions

The HKE Department also encourages more informal interactions between undergraduates, postgraduates and staff by organizing the following functions. All HKE students are invited to attend these functions.

- Cocktail function (organized by 2nd years)
- Career Day on 20 April 2009

Other visiting lecturers, guest speakers or functions will be announced via the HKE notice boards.

2.9 IT Infrastructure

2.9.1 Central Registration of Computers

Central registration allows internet access, a shared hard disk ("HKE-common") and printer access.

Private computers of students and staff members may be connected to the departmental network after registration at the IT division. This can be done by connecting a non-registered computer to the network and requesting any website with the used web-browser. The registration form will appear automatically. Tyrone Douglas will provide you with the URL

2.9.2 Mapping Network Drives and Printer Drivers

The secretary's computer (JMCDUGALL) is the department's server computer. In order to register with the server computer, follow these steps:

1. Go to the secretary, June, and register on her computer.
2. Get access to mapped network drive ("HKE-common"):

Open Explorer window and select menu "Extra" and then "Map network drive".

Enter any drive letter and for directory [\\JMCDUGALL\\HKE-common](#).

Click "connect using different user name" if your registered user name on the computer is different from the registered user name on June's computer.

Click the tick box "Reconnect at startup" if you wish to reconnect automatically every time you start the computer. Press the "Finish" button.

3. Install printer driver:

Go to Start menu, click on Printers and Faxes.

Click on "Add Printer".

Add printer wizard comes up.

Click "Next", then select "add network printer or a printer attached to another computer".

Click "Next"

Click on “connect to this printer” (or to a browser for a printer) type in “\\jmcDougall\hp laserjet 2420PCL6”, click “Next”, should find the printer.

The technical officer, Tyrone Douglas, will help if problems occur.

2.9.3 Access to HKE Common Directory

The HKE Common Directory has several folders that students have restricted or unrestricted access to.

Subfolder	Type of Access
Lecturing-material	read only
Management	no access
Photos	read only
Readings	read only
Students	unrestricted
Teaching-Administration	no access
Temp	unrestricted

2.9.4 Photocopying and printing services

Photocopies (and, if technology will work, printouts from flash stick to the photocopier) are 30c per copy.

Instructions: Please ask the secretary for the “access code” and postgraduate printing and photocopy book. Write down the number reading from the machine. Enter the “access code” and then press the “access” button. Make your copies and then write down the number reading again, from the machine. The secretary will sum up the amount due to the Department and inform the students of the cumulated amount each term. Payment can also be done in advance to the secretary.

Operation instructions are displayed above the photocopy machine.

For **Laser printing** any of the Department’s laser printers can be used (30c per page). Ensure that you have installed the correct printer on your PC (refer to 2.9.2). Please enter all printing into the postgraduate printing and photocopy book.

Colour printing can be done via the secretary’s DeskJet colour printer and is charged at R2 per page. Most departmental computers have the DeskJet mapped in their printer selection. Please inform the secretary if you do intend to use the colour printer.

Scanning can be performed using the photocopy machine and the computer set up next to it. Place the page to be scanned on the photocopier, then access the Adobe Acrobat software, click on “file”, “import”, “scan”. Follow instructions from hereon. (Note: for the new Adobe Acrobat Pro, click on “file”, “create pdf”, “from scanner”)

2.10 Research Equipment

Apart from several desktops the HKE Department has 6 laptops (for data acquisition) and a variety of sophisticated as well as non-electronic research equipment. These are stored in the various laboratories of the department or in the technician's office.

This equipment is expensive; hence utmost care is required during its use. If you intend using one of the electronic equipment, please consult the allocated "expert" for assistance (see table below). All equipment removed from their respective rooms / laboratories **MUST** be signed out. Please note that some equipment is also stored in Tyrone's office and managed by him. Please be aware that Tyrone has set consultation times during which he will be in his office to book out equipment. After use the equipment must be returned and signed back in.

A short document on how to use the equipment will be made available; extensive documentation is available with the respective device.

Table I: Electronic equipment available in the HKE Department

Equipment	Room	Expert
Quark b ² – ergospirometry system	24	Christie
K4b ² – portable ergospirometry system	25	Christie
Polar heart rate watches and belts	24	All
Gait Analysis Walkway	20	Todd
V-scope – for 3D motion analysis	20	-
Vienna Test System – for cognitive and psycho-motor testing	29	Zschernack
Dikablis Eye Tracker	25	Goebel
Audiometer and luminance meter	29	Zschernack
Force Platform	30	Zschernack
OSI CA 6000 – measures spinal ROM	30	Mattison
Neurocon Balance Master – specialized rehab force platform	30	Todd
Cybex – isokinetic dynamometer	28	Todd
Lumbar Motion Monitor	25	Todd
Megawin EMG	25	Zschernack
Zebris Motion Analysis system – allows 3D motion analysis	25	Mattison
Chatillon Dynamometers	25	Todd
Data Logger	25	Zschernack
Thermographic camera	25	Goebel
Data Reduction Tool	-	Goebel
Statistica Software	-	Goebel

3 Postgraduate Honours course in HKE

Class coordinator: M Goebel (email: m.goebel@ru.ac.za, phone: 046-603 8468)

3.1 Admission

Minimum requirement for admission is a Bachelor Degree in Human Kinetics and Ergonomics or any other Bachelor course providing the required basic knowledge. Final admission will be based on merit, depending on number of applicants, staffing and laboratory equipment resources. In past years, applicants with marks of at least 60 to 65% in HKE 3 were accepted. It must be noted however that second year marks are also referred to, as well as involvement in HKE-related activities such as participation in research and consultancies.

3.2 Structure of the HKE Honours Degree

3.2.1 Seminar modules

Ten seminar modules provide students with knowledge background. Half-day seminars contain lectures, interactive work and laboratory practicals. Two modules are compulsory (Research Methods 1 & 2) and students have to select 6 more topics from the remaining modules on offer, thereby bringing the total number of modules for the year to 8. Please consult Table II for the various modules on offer and their dates.

The introduction session for the Honours course will be on Wednesday 3 Feb 2010, 9:00am -10:00am.

All seminars will be held at the HKE Department in Rm 26 (former HKE library) at the dates and times shown in Table II. Please check the HKE Honours board for details.

It should also be noted at this point that even though no lectures are scheduled during the Rhodes vacations, it is expected that students dedicate this time to the research projects and may be expected to remain in Grahamstown. Each project's supervisor has to be consulted and informed about leave times.

Table II: Lecture Outline for HKE Honours modules

	Module	Lecturer	Dates	
1 st Term	Research Methods 1 (Compulsory)	M Goebel	Wed 3 Feb – Fri 12 Mar	Wed 8:30 – 10:00 Thu 7:45 – 9:15
	Biomechanics of Human Locomotion	A Todd		Mon 8:30 – 10:00 Tue 10:30 – 12:00
	Usability testing	S Zschernack		Tue & Fri 8:30 – 10:00
	Examinations: 19 March (Research methods), 23 March (Biomechanics), 26 March (Usability testing)			

2 nd Term	Research Methods 2 (Compulsory)	M Goebel	Mon 12 Apr – Fri 21 May	Wed & Fri 8:30 – 10:00
	Physiology	C Christie		Mon 8:30 – 10:00 Tue 10:30-12:00
	Work-related Musculoskeletal Disorders	M Mattison		Tue 8:30 – 10:00 Thu 7:45 – 9:15
	Examinations: 28 May (Research Methods 2), 31 May (Physiology), 4 June (Work-related Musculoskeletal Disorders)			

3 rd Term	No lectures will be held during third term – this term is reserved exclusively for the completion of the research project			
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4 th Term	Design Methods	S Zschoernack	Mon 13 Sep – Fri 22 Oct	Mon 8:30 – 10:00 Fri 11:30 – 13:00
	Work Analysis and Risk Assessment	M Mattison		Thu 7:45 - 9:15 Fri 8:30 – 10:00
	Physiology	C Christie		Tue 8:30 – 10:00 Wed 10:30 – 12:00
	Biomechanics of the Lower back	A Todd		Tue 10:30 – 12:00 Wed 8:30 – 10:00
	Examinations: 29 October (Design Methods), 1 November (Work Analysis and Risk Assessment), 5 November (Physiology) 8 November (Biomechanics)			

3.2.2 Research Project

The objective of the research project is to introduce students to empirical research through the investigation of a kinesiology or ergonomics project. Emphasis is on the conceptual development and the scientific rigour students apply during the course of this project. The length of the report should be restricted to 40-55 pages excluding references and appendices. For a detailed break-down of how to structure a long empirical report, refer to the Basic Format Guide on p.31.

Topics

The research projects will start in the first term with a variety of topics being presented and discussed in the research seminar on 18 February. These topics generally fall in line with research interests of the academic staff. Students will be required to submit three choices of topics by 22 February after which the academic staff will allocate research projects and supervisors to students. Efforts will be made to grant each student his/her primary choice, while also taking teaching, research and supervision loads of academic staff into account.

Intermediate Presentations

Intermediate presentations will be required from all students on their projects' research question. These will be held during research seminar times and students can select their date, as long as it is before end of April.

Data Collection

During the data collection / testing phase students will be requested to book the required laboratory and equipment. This is necessary as all Honours projects run concurrently and many will need to use the same equipment. Due to the limited availability of equipment it may also be required of students to perform their testing during the Rhodes vacation. Consideration of fellow students is required when booking equipment and labs - please only book a slot if you definitely will be testing then.

Final Hand-in

The deadline for the final research report is Friday 10 September by 16h30. Students should print and ring-bind 3 copies – one for the Department's library, one for the supervisor and one personal copy. The date on the project should be the year of study (NOT the year of graduation as for Masters and PhD theses). Students are also required to submit an electronic version of their research projects (in pdf or word format) as well as the raw data.

Please consult the Format Guide on page 31 when structuring your report.

Presentation and Poster

At the end of the year Honours students will be required to present the findings of their research projects to academic staff, postgrads and interested 3rd year students on Thursday 23 September.

The poster presentation deadline is also Thursday 23 September. The Microsoft Publisher template for the poster can be obtained from the secretary. For some useful tips on how to create your poster go to: <http://www.library.uct.ac.za/infolit/comm.htm>

3.2.3 Field trips

Field trips are arranged by the relevant lecturers as part of their modules. Advanced notice of when and where these field trips will be taking place (as these are dependent on the relevant industry) will be given to students closer to the time.

3.2.4 Contribution and support for other departmental activities

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

3.3 Assignments and Examination

Each module will be examined at the end of each term and examinations will consist of either a written exam, a practical exam or a combination of the two. Examinations will be held in-house to allow a suitable timetable arrangement for all students' module choices. Examination results make up another third (33.33%) of the final mark. The final mark for

the honours degree will consist of:

Table III: Mark composition for HKE Honours class.

	Contribution	
Class record	33.33%	All module assignments will contribute to a module mark. The class record is the average mark of all eight modules. All modules carry equal weight.
Examinations	33.33%	Each module will have either a written examination, or a practical exam, or a combination of written and practical. The exact examination requirements for each module will be announced by each lecturer
Research Project	33.33%	The project mark will be a combination of the final project, the process and the final presentation
Final mark	100%	

3.4 Course content

Seminar modules “Research methods”

Lecturer: M. Goebel

This module will focus on the question of how to set up and carry out research in the field of HKE. This is not only important for future researchers in the field, but also for application cases due to the fact that any knowledge application requires careful consideration of the different sources of variance due to the complexity of human responses in real environments.

The 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 (the research purpose) and the set-up of appropriate analysis and evaluation, which is the basis for most types of research projects. This is complemented by reversing the procedure, i.e. studying the conversion of scientific knowledge into practice (e.g. change management).

This module is further devoted to developing the required skills to apply important methods for data acquisition, to apply the mostly used statistical methods used in Human Factors research, and to write scientific reports.

The module is complemented by some particular aspects, such as studying human reliability, data mining and fuzzy decision making.

- Research paradigms
- Basic types of research
- Qualitative and quantitative research methods
- Validity and accuracy of studies
- Statistical methods (e.g. Analysis of (Co-)Variance, Factor-/Cluster Analysis, Canonic correlation)
- Task Analysis
- Analysis, measurement and interpretation of human responses
- Types of study for Human Factor Analysis

- Intervention strategies
- Project Planning
- Report writing
- Human Reliability
- Fuzzy technologies and fuzzy decision making
- Cost benefit analyses

Seminar module 'Advanced Physiology'

Lecturer: C. Christie

Advanced exercise physiology is comprised of two modules and each of those modules is comprised of three mini-modules (6 mini-modules). One module is run in the second term and the other, in the fourth term. Both modules incorporate aspects of both exercise (sports science) and work (ergonomics) physiology although in term 2 a specific mini-module is devoted to sports science (clinical exercise physiology) and in term 4, a specific mini-module is devoted to ergonomics (applied/clinical work physiology).

This year the modules are organized as follows:

Term 2	<ol style="list-style-type: none"> 1. Advanced cardiorespiratory physiology 2. Advanced neuromuscular physiology 3. Clinical exercise physiology
Terms 4	<ol style="list-style-type: none"> 1. Advanced exercise physiology and metabolism 2. Physical activity, health and disease 3. Applied/clinical work physiology

Advanced cardiorespiratory physiology

- The conduction system and electrocardiogram (ECG): ECG: the leads and Einthoven's triangle, ECG tracing – interpretation and meaning, detecting abnormalities, preparing your patient and the exercise stress test
- Heart Disease: Globally and within South Africa, risk factors for heart disease, impact on work/exercise performance
- Lung diseases: General and during work-exposure
- High altitude physiology and training
- Sudden death in athletes

Advanced neuromuscular physiology

- Neuromuscular understanding
- Unique activation strategies for eccentric contractions
- Understanding muscle fatigue
- Neural control of force output
- Recent developments in muscle adaptation to training and detraining
- Recent developments in muscle damage and regeneration

Clinical exercise physiology

- General principles of training and 'tapering'
- Overload and overtraining
- An update on the 'Central Governor Hypothesis' debate

- Banned substances in sport
- Immune response to exercise
- Pacing strategies and performance
- Reproduction and exercise

Physical activity, health and disease

- The South African situation
- Chronic diseases of lifestyle
- Diseases of poverty
- Physical activity as treatment
- ACSM physical activity guidelines for healthy individuals
- Physical activity guidelines for diseased populations (diabetics, hypertensive patients, etc)

Advanced exercise physiology and metabolism

- Carbohydrate metabolism in exercise, health and disease
- Fat metabolism in exercise, health and disease
- Protein metabolism in exercise, health and disease

Applied/clinical work physiology

- Physical ergonomics – link to physiology
- Physically demanding work sites
- Measuring the physiological cost of work
- Current research on physiological work guidelines
- Pre-employment screening
- Work hardening
- Heat stress and work performance
- Regulation of fluid balance

Seminar module 'Biomechanics of the Lower Back'

Lecturer: A. Todd

The Honours modules in biomechanics provide insight into advanced biomechanics focusing on issues specific to both ergonomics and sports science. This particular module will provide a comprehensive understanding of biomechanical considerations of the back as this area is of key concern with regard to injuries at work, sport and for rehabilitation.

- How big a problem is it?
- Models to determine risks
- Calculating forces – Comparison between sport and working environments – implication for task design
- Musculoskeletal system implications
- Risk Factors
- Pathways to lower back disorders
- Biomechanical logic
- Assessment of spinal loading
- Static and dynamic models (Ergo Imager 3D SSPP, Ergo web)
- NIOSH

- Lumbar Motion Monitor
- What really causes injury
- Types of injury
- Prevention of injury

Seminar module 'Biomechanics of Human Locomotion: Economy and Efficiency'

Lecturer: A. Todd

This module will provide students with an advanced understanding of biomechanical considerations in human locomotion. Economy and efficiency of human movement are two biomechanical concepts that are imperative in the optimization of physical performance, regardless of the context. As such an understanding of these concepts is imperative for anyone interesting in sports science and/or ergonomics.

- Mechanics and relationship to energy expenditure
- Walking economy – a practical investigation
 - Energy cost of walking at a constant speed
 - Mechanical models for walking
- Mechanical efficiency
- Running economy – a practical investigation
 - Energy cost of running
- Potential and kinetic energy changes in walking
 - Positive and negative work
 - Force – velocity revisited for negative work
 - Internal and external work
- Impact of load carriage on running efficiency – a practical investigation
- Mechanics of running
 - Mechanical models for running
 - Wasted mechanical work in locomotion
 - Measurement of maximal muscular power during running
- Efficiency of cycling
- Efficiency of cycling – a practical investigation
- Economy of load carriage
- Economy of load carriage – a practical investigation
- Efficiency of stepping

Seminar module 'Usability evaluation'

Lecturer: S. Zschoernack

A common task of an ergonomist is the selection of tools and equipment in all areas of life (e.g. selecting chairs for office workers) and this requires the assessment of the “ergonomic quality” of existing products. In this context the ergonomist often finds him-/herself in the situation that different ergonomics requirements are contradictory (e.g. subjective rating of users vs. expert assessment). In addition, in many cases usability has to be tested with a very limited user group within a limited amount of time.

This module focuses on methods and tools of usability, i.e. methods that assess the

utility of products from the user's point of view and that indicate problems in usage and understanding. Special attention will be paid to constraints and possible disturbances of the tests. Different methods will be presented and applied to different groups of products. Those usability tests will form the class mark. The final assessment at the end of the year will comprise of a combination of written and practical examinations.

Seminar module 'Ergonomics Design Methods'

Lecturer: S. Zschoernack

Ergonomists are required to introduce ergonomics quality during the development process of products and workplaces. While this requires a sound knowledge of ergonomics principles the development follows an iterative problem solving cycle where the result cannot be predicted - there is not one perfect solution. The application of different design principles will rather aid in finding one solution that best fulfils the requirements.

The central theme for the module will be the development cycle of a product from the idea of a product to its final design. Specific emphasis will be placed on development methods as well as the necessary interactions between different people involved in the process: developers as well as users.

The module consists of a theoretical and a practical component. The theoretical component will cover methods of product development (creative as well as systematic methods) which will have to be applied in the project of the practical component. The practical component of the module will require the design of an innovative product (a specific task will be given at the beginning of the module) from the basic product idea to a detailed mock-up (non-functional model). Assessment of the module will include a written exam at the end of the year as well as assessment of the practical component (class mark).

Seminar module 'Work-related Musculoskeletal Disorders'

Lecturer: M. Mattison

This module aims at exploring the issue of work-related musculoskeletal disorders (WMSDs) generally and on a more detailed level by addressing the following topics:

- The nature of injuries – acute vs. overuse injuries
- What are WMSDs?
- Types of WMSDs
- Approaches to studying WMSDs
- Theories / models of WMSDs
- Tissue mechanics
 - Concepts of stress, strain and stiffness
 - Fatigue, recovery and tissue failure
 - Discomfort and pain in MSDs
 - The role of inflammation
- Epidemiological evidence
- Intervention Research

Seminar module 'Work Analysis and Risk Assessment'

Lecturer: M. Mattison

This module focuses on the practical execution of performing work analyses in industry. First the role of the ergonomist is explored within an IDC and more specifically the South African context. Then, health risks due to sub-optimal ergonomics design are determined via risk assessments and finally, productivity-related issues are investigated by analysing the work processes that occur within the greater physical environment. Emphasis is laid on practical competence and fieldtrips form an integral part of this module. Topics include:

Part 1: The Role of the Ergonomist

- Ergonomics in Industrially Advanced vs. Industrially Developing Countries
- Ergonomics vs. Occupational Health and Safety
- Ergonomics Legislation in South Africa

Part 2: Job and Worksite Analysis

- Overview of the work system
- Describing & determining task requirements
- The risk assessment approach
- Quantifying risk using industrial records
- Walk-through surveys
- Risk screening tools
- Intervention Strategies
- MSD Management and Injury Prevention Programs
- Historical developments and current pressures in manufacturing
- Process analysis methods: work flow analyses, network analyses, time line analyses, error identification
- Optimization principles

4 Masters and PhD in HKE

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

4.1 Admission

The following admission criteria have been taken from the Rhodes University official calendar.

4.1.1 Admission for Masters studies

The normal requirement for admission to a Masters degree at Rhodes is a four-year qualification of an acceptably high standard, i.e. usually a three-year Bachelors degree, plus a good Honours degree in a relevant subject.

Minimum requirement for admission is a Bachelor Degree with Honours in Human Kinetics and Ergonomics or any other course providing the required basic knowledge. Final admission will be based on merit, depending on number of applicants, staffing and laboratory equipment resources.

4.1.2 Admission for PhD studies

In practice, most PhD candidates have a Masters degree. However, Senate may, on the recommendation of the Faculty concerned, convert the registration of a candidate for the Masters degree to registration for a PhD degree. Such conversions require the Head of Department and supervisor to be satisfied that the student's completed work is of a standard normally 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 Masters and PhD admissions, please consult the Rhodes University Higher Degrees Guide by visiting: <https://www.ru.ac.za/documents/Faculty%20of%20Humanities/higherdegreessguide.pdf>

4.2 Departmental Activities

Participation in Honours Modules

Although Masters 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 Masters 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).

Field trips:

Field trips are arranged by the relevant lecturers as part of the Honours modules. Advanced notice of when and where these field trips will be taking place (as these are dependent on the relevant industry) will be given to students closer to the time. Masters

and PhD students are welcome to join these fieldtrips, provided the logistics allow it.

Contribution and support for other departmental activities

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

4.3 Degree structure

The following information has been taken from the Rhodes University Higher Degrees Guide. For more detailed information please refer to this guide which can be found at: <http://www.ru.ac.za/documents/Research/higherdegreesguide.pdf>

Research Proposals

Candidates registered with the Faculty of Humanities are required to submit research proposals within three to six months of registration for consideration by the relevant Faculty Higher Degrees Committee which recommends acceptance or otherwise to the relevant Faculty Board. Guidelines for the structure of a research proposal can be found in the RU Higher Degrees Guide.

Candidates registering for a Masters or PhD degree in the Faculties of Science should consult the faculty with regards to specific requirements for the research proposal.

Duration of a Masters Degree

Normally a Masters degree in HKE takes two years complete (full-time). If a candidate has not completed a Masters degree within three years from first registration, the registration will be cancelled unless the Senate is approves an extension.

Duration of a PhD degree

The minimum period for which a candidate may be registered for the PhD degree is three years if the candidate holds an Honours degree, or two years if the candidate holds a Masters degree.

If a candidate has not completed a PhD within five years from first registration (whether the degree is being taken full or part-time, and whether in attendance or not), the registration will be cancelled unless the Senate is satisfied that an extension is warranted.

4.3.1 (Re)Registration

All higher degree candidates are required to re-register each year until the completion of the degree. Failure to re-register before 15 February in a given year will result in the cancellation of registration and the candidate may be required to reapply for admission.

4.4 Supervision

Senate appoints at least one, and occasionally more than one supervisor, for each higher degree candidate. If more than one supervisor is appointed, one of the supervisors will be designated as the principal supervisor.

Students' and supervisors' expectations and understandings of what constitutes supervision are often very different also and the one-on-one relationship of student to supervisor can compound such difficulties. The Rhodes University Higher Degrees Guide lists the responsibilities of supervisors and students. For a complete list of responsibilities, please consult the Higher Degrees Guide which can be accessed on <http://www.ru.ac.za/documents/Research/higherdegreessguide.pdf>.

4.5 Examination

4.5.1 Criteria for the award of a higher degree by thesis

Senate has set the following guidelines for the award of higher degrees by thesis (taken from the RU Higher Degrees Guide)

Masters

A thesis for **the degree of Master** must show that the candidate:

- (a) is sufficiently acquainted with the appropriate methods and techniques of research;
- (b) is sufficiently acquainted with the relevant literature;
- (c) has both satisfactorily understood the nature of the problem or topic and assessed the significance of the findings;
- (d) has satisfactorily presented the results of independent research for the award of the degree in a manner which is satisfactory as to literary style and presentation, and free from grammatical and typographical errors.

When the award of the degree *with distinction* is under consideration, examiners are asked to look for evidence of real methodological and conceptual skills, clarity of exposition and development of argument, sound judgement, originality of approach, and some contribution to knowledge, and require that the thesis should reflect literary skills appropriate to the subject.

PhD

A thesis for the degree of **Doctor of Philosophy** must show that the candidate:

- (a) is sufficiently acquainted with the appropriate methods of research;
- (b) is sufficiently acquainted with the relevant literature;
- (c) has satisfactorily presented the results of independent research for the award of the degree;
- (d) has made a substantial and original contribution to knowledge in the discipline, the substance of which is worthy of publication in a scholarly journal or book. (A Doctoral thesis differs from a Masters thesis particularly in respect to this point). In addition, the thesis must be satisfactory as to literary style and presentation. A PhD thesis cannot be merely a collection of published papers, nor may such published papers be included as annexures or inserts.

Submission of the thesis

It is the responsibility of candidates to decide when they are ready to submit their theses (subject, of course, to the rule concerning the period of registration). In general, a candidate will be expected to submit the thesis only when their supervisor agrees to its

submission, but the University will not insist on the approval of the supervisor before accepting submission of the thesis. It must be noted, however, that a thesis may be submitted for examination only once, though in certain circumstances the examiners may invite a candidate to revise and re-submit the thesis.

Intention to Submit

A thesis may be submitted at any time during the year, but candidates must indicate their intention to submit a thesis by writing to the Registrar at least two months prior to submission for Masters and for Doctoral theses.

Candidates who intend to submit a thesis for examination for consideration of the award of the degree at an April graduation ceremony must submit their thesis to the Registrar not later than 15 December. If a candidate cannot meet the annual deadline for submission, the University may be unable to have the examination completed in time for the next set of graduation ceremonies, which normally takes place in April each year.

Candidates will be supplied with a "Supervisors statement" form, an examination entry form, a declaration form and a thesis electronic access approval form which should accompany the thesis when it is submitted.

Declaration of Originality

A thesis must be accompanied by a declaration on the part of the candidate as to the extent to which it represents their own work. Candidates are also required to submit a statement certifying that the thesis has not been submitted for a degree at any other university. A standard form for this purpose will be issued when candidates inform the Registrar that a thesis is to be submitted for examination. This form should be completed and returned when the thesis is submitted for examination. It should not be bound into the thesis itself.

Number of copies

The number of copies required by the University for examination depends on the number of examiners appointed. For Masters theses at least two examiners are appointed and Senate requires that at least three examiners be appointed for a PhD.

Normally three copies will be required for a Masters degree and four for a PhD. The Registrar will advise the candidate of the number of copies required. These copies should be suitably bound. Ring binding is the norm.

Upon completion of the examination procedure (once the examination results have been received), two or three loose-leaf copies, depending on Faculty requirements, are required by the library. Submission of an electronic copy on disk is also required and should be prepared in Adobe Acrobat Portable Document Format (PDF). These copies should only be produced once all corrections have been made and approved by the Faculty Board or the COA. Loose leaf and electronic final copies must be accompanied by a letter signed by the principal supervisor and/or Head of Department, stating that these copies are the full and final versions of the thesis.

Another bound copy is required for the departmental library. The Copy should be hard-bound in navy blue leather. Lettering for both the cover and the spine is in gold-leaf – 5mm.

Cover: Title (shortened if necessary, but as approved by HOD). Title appears on the cover only, below which the author's first and surname(s) appear. (Second names can appear in full, or in initials).

Spine: Degree – Space - Author's names (one Christian name only plus initials, followed by surname) – Space – Year of submission (i.e. the year of the candidate's graduation).

Length of the Thesis

The normal upper limit for Masters degree theses is 50 000 words of text (approximately 150 A4 pages of one-and-a-half spaced typing excluding footnotes, illustrative material and appendices), but this may vary depending on the type of project.

4.5.2 Examination Process

Attempts are made to complete the examination process in as short a time as possible and in time for the next set of graduation ceremonies. However, the primary consideration is an entirely fair yet comprehensive examination of the thesis, with emphasis on the maintenance of high standards. The University is also unable to guarantee that the examiners will submit their reports by the recommended date.

The Registrar will contact candidates immediately of the outcome of the examination process is known and it must be stressed that the University does not undertake to reach a decision on the award of a degree by any specific date. Interference in the examination process in any way could invalidate the entire examination and the award of the degree. Not even the nomination of examiners will be discussed with, or disclosed to candidates. Only when a decision has been made about the award of the degree, will the names of the examiners be made known to candidates, and then only if the outcome is a positive one and provided the examiners have given their consent. Similarly, after a decision has been made, all or part of an examiners report may be made known to candidates only if the examiner agrees to this.

Examination Process for Masters

TWO examiners, external to the University, are appointed by the Faculty Board for each candidate. Normally, at least one of the examiners should be a member of academic or research staff at a University or recognised research institute and, preferably and where appropriate, at least one should be from outside South Africa or have demonstrated an international research standing.

The nomination of examiners may NOT be discussed with or disclosed to the candidate.

The recommendations open to examiners include:

- (a) Acceptance of the thesis and award of the degree, with or without distinction.
- (b) Acceptance of the thesis once minor corrections and/or revisions have been made (to the satisfaction of the supervisor or the Head of Department).
- (c) Requirement of clearly specified major revisions to the thesis and reexamination of the revised thesis.
- (d) Rejection of the thesis.

In addition, examiners will be asked for a formal report on the thesis which should be sufficiently detailed to allow the Dean to reach an informed judgement.

Normally the Head of Department (or, where the HoD is directly involved a supervisor and/or examiner, the Dean) will collate the examiners' reports and make a formal recommendation to the Dean or Deputy Dean of the Faculty on the result of the examination. The Registrar shall advise the examiners of the outcome and, where the Vice-Chancellor decides this should be done, the reasons for the decision.

If there is unanimity amongst the examiners and no reason to refer the thesis back to the candidate for revision, the Dean (or Deputy Dean) of the Faculty may accept the recommendations and approve the award of the degree, with or without distinction, on behalf of the Faculty Board.

The thesis may also be returned to the candidate for minor or major revisions. In the latter case the thesis may have to be re-submitted for examination.

Examination Process for PhD Theses

The Registrar will call for the nomination of at least THREE examiners, external to the University. In all cases the most appropriate examiners should be chosen, and with particular care when the thesis is multidisciplinary, or has some local applicability. Normally two of the examiners should be members of academic or research staff at a University or recognised research institute and, preferably and where appropriate, at least two should be from outside South Africa or have demonstrated an international research standing.

The nomination of examiners should not be discussed with or disclosed to the candidate.

Examiners will be asked for a recommendation on the thesis by indicating one of the following:

- (a) that the candidate be awarded the degree and no corrections need be made to the thesis;
- (b) that the candidate should be awarded the degree after minor corrections and/or specified changes have been made to the satisfaction of the supervisor and/or Head of Department;
- (c) although the thesis does not meet the required standard, the candidate should be invited to do further work if necessary, revise and resubmit the thesis for reexamination by the examiners;
- (d) the degree should **not** be awarded to the candidate.

In addition, examiners will be asked for a formal report on the thesis which is sent to the Committee of Assessors (COA).

When all the examiners' reports have been received, the Registrar will collate and send them to the relevant Dean or Dean's nominee who shall summarize these and forward the reports and summary to the COA for their recommendation.

The COA should report to the Registrar and Vice-Chancellor within two weeks of receipt of the examiners' reports. The report must list one of the following recommendations:

- (a) the degree be awarded;
- (b) the degree be awarded but that minor corrections be made to the thesis. Those corrections should not delay the award of the degree;
- (c) the candidate should be awarded the degree subject to completing any specified changes to the thesis, to the satisfaction of the relevant supervisor and/or Head of

Department with the final approval by the Chair of the COA;

- (d) although the thesis does not meet the required standard, the candidate should be invited to do further work if necessary, revise and resubmit for re-examination by the examiners; (it must be pointed out to the candidate that this may be done only once);
- (e) the degree should **not** be awarded to the candidate.

The report, together with the examiners' reports must be submitted by the Registrar to the Vice-Chancellor for approval on behalf of Senate or put to a meeting of Senate for its consideration.

The thesis may also be returned to the candidate for minor or major revisions. In the latter case the thesis may have to be re-submitted for examination.

5 Publications

The University encourages the publication of work done for higher degrees (for both Masters and PhD with the supervisor as joint author, where appropriate). There is little point in doing non-classified research unless the findings of the research are communicated to other workers 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.

5.1 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 however be reflected in the thesis' reference list.

5.2 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). If a student writes the abstract/paper on his/her research project, the supervisor should be a co-author if he/she has made a contribution to the research and/or the abstract/paper (this includes work such as conceptualization, methodological ideas, reviewing/editing, etc). Then there may be other authors too if projects/papers are joined. In cases of doubt consult one of the academic staff.

6 Recommended Books for HKE

	HKE I	HKE II	HKE III	Hons	MSc
American College of Sports Medicine (1995). <i>Guidelines for Exercise Testing and Exercise Prescription</i> . 5th Edition or latest edition. Philadelphia: Lea & Febiger. (ISBN 0-8121-0524-9).			X	X	X
Bridger RS (2003). <i>Introduction to Ergonomics</i> . 2 nd edition. New York: Taylor and Francis. (ISBN 0-415-27378-1).		X	X	X	X
Haslegrave CM, Chaffin DB and Delleman N J (2004). <i>Working Postures and Movements: Tools for Evaluation and Engineering</i> . (ISBN: 9780415279086) CRC Press		X	X		
Helander M (2006). <i>A Guide to Human Factors and Ergonomics</i> . Taylor and Francis, 2 nd edition.		X	X	X	X
Noakes T (1992). <i>Lore of Running</i> . (3rd Edition). Cape Town: Oxford University Press Southern Africa.			X	X	X
Oatis C A (2004). <i>Kinesiology – The Mechanics and Pathomechanics of Human Movement</i> . 1 st Edition. Lippincott Williams and Wilkins (ISBN 978-0-7817-5513-9).		X	X		
Pheasant S and Haslegrave CM (2006). <i>Bodyspace</i> . 3 rd edition. Taylor and Francis, London.		X			
Sanders M S and McCormick E J (1993). <i>Human Factors in Engineering and Design</i> , 7 th edition, New York: McGraw-Hill.				X	
Stanton N, Hedge A, Brookhuis K, Salas E and Hendrick H (2005). <i>Handbook of Human Factors and Ergonomics Methods</i> . CRC Press.				X	X
Wilson, J R and Corlett E N (1995). <i>Evaluation of Human Work: A practical ergonomics methodology</i> . 2 nd edition Taylor and Francis, London.				X	X

7 Format Guide

Prefaces: 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.

7.1 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. A “nice to read” type of writing style is, although beneficial, secondary to clear and logic writing. Use the third person singular, past tense in such writing.

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

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

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

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

Also consider the following:

- And don't start a sentence with a conjunction

- Always avoid annoying alliteration
- Be more or less specific
- Paranthetical remarks (however relevant) are (usually) unnecessary
- Do not be redundant; do not use more words than necessary; it's highly superfluous
- One should never generalize
- Eschew ampersands & abbreviations, etc.
- One word sentences? Eliminate!
- Eliminate commas, that are, not necessary. Paranthetical words however should be enclosed in commas.
- Never use a big word when a diminutive word would suffice
- Use the apostrophe in it's proper place and omit it when its not needed.
- Cut the hyperbole; not one writer in a million can use it correctly.
- Who needs rhetorical questions?
- Exaggeration is a million times worse than understatement.
- Proofread carefully to see if you any words out.

For further tips on writing reports, presentations and posters go to:
<http://www.library.uct.ac.za/infolit/comm.htm>

7.2 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 non-structured. The following will help you prepare your research project / thesis report to suit these various formats. Please 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 (see section 7.3.2), and should you employ references, use the prescribed format (see section 7.3.10). 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.

7.2.1 Literature Research

Both short and long literature research projects should be presented in sections appropriate to the topic. These sections might progress from the specific towards the general, or they might simply be representative of the various aspects of the topic.

Regardless what the content is, the ideas should combine and flow logically to present a complete picture of the topic. The report should have a Title Page (see section 7.3.2) and all references should follow the prescribed format (see section 7.3.10).

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

7.2.2 Long Reports of Empirical Data Collection

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 up to the discretion of the student and his/her supervisor:

Title Page

Short and to the point (see page 39 for example format)

Abstract

A very short (maximum 200 words) summary of the research. Briefly, eliminating all redundant words, inform the reader of why, how and with what method you undertook the research. The significance of the results and your conclusions should be stated.

Preface or Acknowledgements

Optional, but please note that the Department requires that these are approved by the supervisor **before** the thesis goes to the printer.

Table of Contents

Contains the headings of divisions 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 should have a caption at the **top** (Roman numerals) 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.

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 numerals) that concisely describes the figure

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

While liberal 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 recommended as these enhance the presentation, but 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.

Chapter I - Introduction

The introductory section gives the background to the study performed and details the reasoning leading up to the research hypothesis. This chapter consists of two subparts:

- a) Background and statement of the problem, 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 understanding.

- b) Brief overview about the study performed to give the reader an idea what will be focused before getting into details in the following chapters. This part contains:

- Research hypothesis (and statistical hypothesis) preferably as a "null" hypothesis of what you expect to happen (in the present tense).
- Scope of the study (delimitations)
- Number and type of subjects
- Number and type of techniques employed
- Uncontrolled variables which may limit the applicability of the findings (limitations)

Chapter II - Review of Related Literature

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

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 think about it: the idea behind the research Project is to demonstrate **creative** research. There is nothing (or very little) creative 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 gainsaying everything that other researchers have 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 all 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.

- The format for referencing appears on page 42.
- Note the required small print under the REFERENCES heading; ALL secondary sources MUST be identified by an asterisk and cross-references as show on p.**Error! Bookmark not defined.** Use of such secondary sources must be kept to a minimum.
- If a BIBLIOGRAPHY is included, note the required small-print statement under its headings (see p.44).
- 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 mark 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. 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.*, 1986(a);(b);(c) and in references list them:
Smith ... 1986 (a)
Smith ... 1986 (b)
Smith ... 1986 (c)
- 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 WWW 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 - Method

In this section describe your project in sufficient detail to allow someone else to repeat it. Include:

- a) experimental design (control and special conditions)
- b) subject characteristics (note: subject characteristics describe experiment-relevant conditions, not experimental results. They are “category” IDVs, not experimentally-manipulated responses. Clearly, if you are experimentally changing the % fat content of a sample, the pre-existing % fat data are subject characteristics, while the altered % fat levels are subject responses)
- c) procedures, instrumentation and independent variables
- d) measurement of dependent and independent variables
- e) statistical treatment(s) to be used

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. If you used an anthropometric scale, a picture of it in Chapter III would probably be trivial, since scales of this sort are a commonplace. Wherever possible, relegate mundane method-related material (other than methods you have personally developed) to the appendices.

Chapter IV - Results

Summarise your results using, as appropriate: graphs, figures, tabulations, etc. of means and standard deviations for each experimental condition (see section 0 for formal 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 C.V.

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.

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

Describing your findings is a means, **NOT** an end: you have barely begun when you experimental findings are carefully elucidated. What follows 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 measure of your scholarship.

Chapter VI - Summary, Conclusions and Recommendations

Summarise your procedures

Summarise your results

Draw specific conclusions based on your results

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



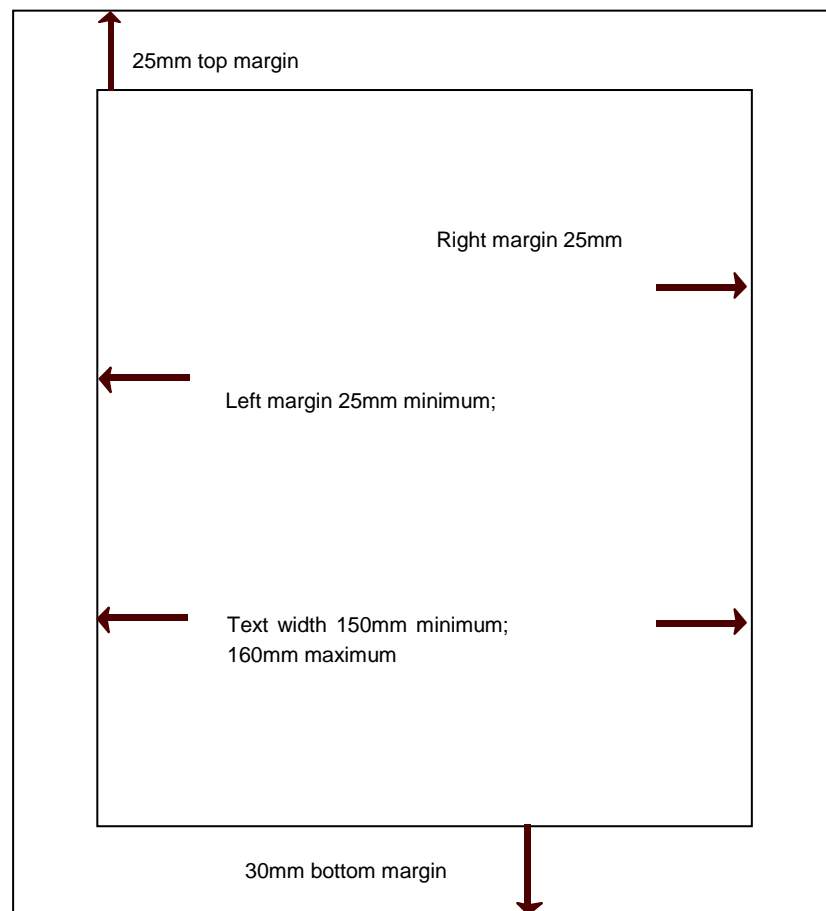
7.3 General formats

For any long empirical report / assignment, please use the following HKE format. An MS-Word template can be copied from the departmental secretary or from the HKE website.

7.3.1 Page format

Leave:

- 25 mm top margin,
- 25-35 mm left margin (depending on how much space is required for binding),
- 25 mm right margin and
- 30 mm bottom margin (page number centred)



7.3.2 Title Page

<p>[TITLE OF PAPER]</p> <p>BY</p> <p>[AUTHORS NAME]</p> <p>PROJECT / THESIS / DISSERTATION [print only the appropriate type]</p> <p>Submitted in fulfilment of the requirements for the [Course or Degree]</p> <p>[Name of course or Degree]</p> <p>Department of Human Kinetics and Ergonomics</p> <p>Rhodes University, 2000</p> <p>Grahamstown, South Africa</p>

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

7.3.3 Text format

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

7.3.4 Pagination

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

- All pages preceding Chapter I are numbered in small Roman numerals
- The first page of Chapter I is page 12 and Arabic numerals continue throughout the remainder of the thesis

7.3.5 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 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).

7.3.6 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 useage).

When you say: "McMaster *et.als*' (1991) study ..." you're advertising several facts; that you don't know how to use abbreviations and that you don't read much, are two of the more obvious.

Departmental style does not recognise (&), the ampersand.

7.3.7 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 .	

7.3.8 Text headings and sub-headings

At the outset decide on a format for headings, sub-headings etc. and apply it consistently. The Department, perhaps injudiciously, has not imposed a format on thesis writers, because it is felt that this might impact negatively on the flow of each individuals' means of expression. Some for example, find that numbering (with decimals indicating sub- and sub-sub-headings) facilitates systematic presentation: others find this method stultifying. 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.

Headings may not be underlined. They must appear in **bold type**.

7.3.9 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 permitted in the grid outline format. Use solid vertical and horizontal grids, avoiding excessively wide bold grid-lines.

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

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

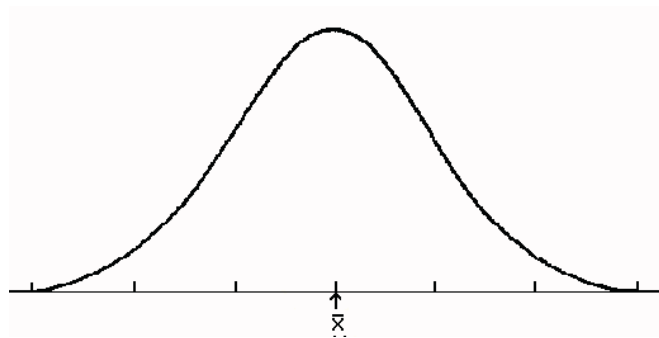


Figure 2: Example of a Normal Distribution.

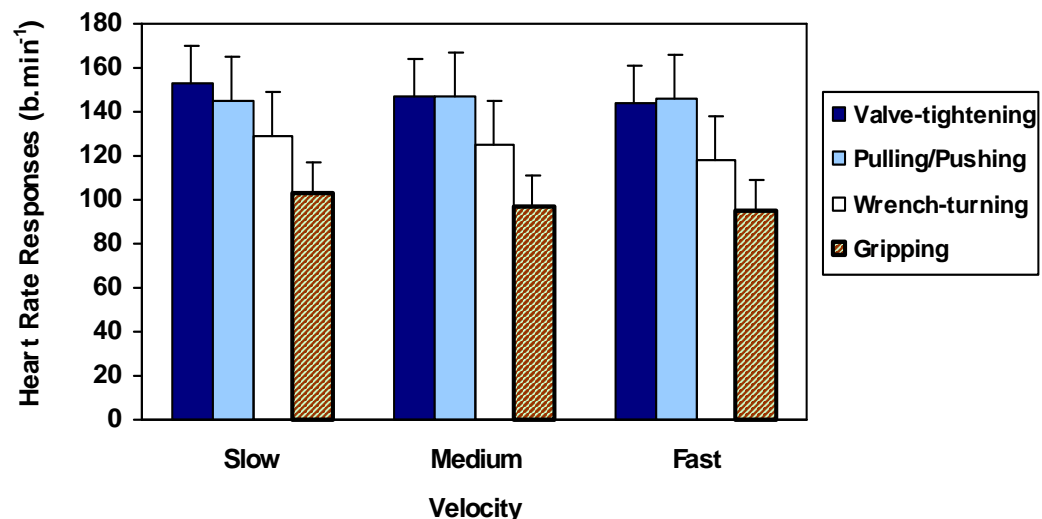


Figure 3: Mean heart rate responses.

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 IV: Laboratory Test (LT) responses at Slow Isokinetic Speed ($30^{\circ} \cdot s^{-1}$): comparisons across joints tested. (Means, with SD in brackets). *

Joint	Motion	Peak Torque (Nm.kg ⁻¹)	Total Work (J.kg ⁻¹)	Average Power (W.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

Equations are numbered in parenthesis right to the equation and referenced accordingly. Equations do not have a caption or heading.

Example:

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

7.3.10 Referencing

* Please note that from 2010 onwards, the HKE Department will comply with the APA standard of referencing.

General rules

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

In-text Referencing

Nothing is more boring than an apparently endless stream of:

"Smith (1967) says and Brown (1993) **agrees** while Jones (1995) **disputes** the theory that..." etc.

Try to vary the manner in which authors are cited in the body of your text. **One** useful way to get the readers' focus on **what** has been said, rather than on **who** said it, is to make the statement and follow it with the author(s) to whom it is attributed, in brackets.

Table 5: 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 it can 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). If two sources with the same date are referenced then these sources are listed in alphabetical order.

Some examples:

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

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

"One experiment (Gordon *et al.*, 1983)"

"It is widely accepted (Marras *et al.*, 1995; Wilson and Corlett, 1995; Salvendy, 2006) that"

Listing primary sources

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

Books:

Spencer, R.F. and Johnson, G.T. (1999). *Applied Physiology*. Second Edition. Cape Town: Harper and Collins Publishers.

Chapters in edited volumes:

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

Journal Articles:

Cann RL and 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. and 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. and 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.

Departmental notes and material:

Department of Human Kinetics and Ergonomics (2001). *First Year Practical and Tutorial Manual*. Grahamstown: Rhodes University.

World wide web:

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

Referencing secondary sources

Secondary sources are references which were not directly consulted, but only gathered (re-cited) from primary sources. Wherever possible, go to the original reference rather than someone else's interpretation of the reference. But you are allowed to use secondary sources if you indicate this correctly; however secondary sources should be kept to a 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 alike a primary source, e.g. "MacKinnon (as cited in Stevens, 2000) stated that".

In the reference list you then include only the secondary source, i.e. in this example: Stevens, F. (2000). EMG activity and work related stress. *Ergonomics*, 11(1): 1200-1211.

Bibliography

In a section titled BIBLIOGRAPHY, directly below the header, you place the following note:

Note: The following sources were consulted by the author during the conceptual growth of this dissertation. While not specifically cited, these works did play an important role in establishing the basis upon which this research was developed.

7.3.11 Appendices

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

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

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