







**Division of Physiological Sciences  
Department of Human Biology  
Faculty of Health Sciences  
University of Cape Town**

**INFORMATION BOOKLET &  
APPLICATION FORM  
Prospective Research Master's &  
PhD Students in the Division of  
Physiological Sciences**

 <a href="https://health.uct.ac.za/physiological-sciences">https://health.uct.ac.za/physiological-sciences</a>	 <b>Enquiries and Applications:</b> <a href="mailto:HUB-PhysiologicalSciences@uct.ac.za">HUB-PhysiologicalSciences@uct.ac.za</a>
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## A: Introduction

PhD and research Master's degrees (MSc (Med) or MMedSc) are offered in several disciplines within the Division of Physiological Sciences. These include (i) Dietetics, (ii) Exercise Science, (iii) Neuroscience (Physiology), (iv) Nutrition and (v) Physiology. Although not offered as a post-graduate degree, students wanting to specialise in Sleep Science register for a MSc (Med) or PhD in Physiology.

- **Dietetics** is a field in health sciences that focusses on the assessment, diagnoses and treatment of dietary and nutritional problems in individuals or the wider public. In dietetics research, the effect of dietary interventions on performance or prevention and treatment of disease conditions is assessed. Furthermore, nutrition status is determined using various methods including dietary intake, anthropometric, clinical and/or biochemical assessments. Dietetics research aims to improve patient care and outcomes by providing a foundation for evidence-based dietetics practice. At UCT, dietetics research encompasses a variety of projects from a public health nutrition focus to therapeutic dietetics and including disease conditions such as diabetes, gestational diabetes, cancer, HIV, obesity, cardiovascular diseases or adolescent health, breastfeeding and sports nutrition. Only dietetics who are registered or registerable with the Board of Dietetics and Nutrition of the Health Professions Council of South Africa (HPCSA) as a dietitian or dietitian-nutritionist are eligible to apply for a MMedSci or PhD in Dietetics.

**MMedSci and PhD course covenor:** Dr Janetta Harbron

- **Exercise science** is an established area of training and scientific investigation with a large international following. In most institutions, including our own, a multidisciplinary approach is used to acquire an integrated understanding of the effects of physical activity on the body. Exercise Science, Sports and Exercise Medicine, Sports Physiotherapy and Biokinetics courses have been introduced in response to a need expressed by scientists, clinicians and students for proficiency in this field. A combination of physiological,

biochemical, biomechanical and clinical expertise is available to assist postgraduate students who are interested in adding to the body of knowledge in this field through original scientific endeavour. At UCT, postgraduate training in Exercise Science can be undertaken at the Honours, Masters or Doctoral level. Our training and research activities are affiliated with the Sport Science Institute of South Africa (SSISA) (<https://www.ssisa.com/>).

**MSc (Med) and PhD course covenor:** Prof Malcolm Collins

- **Neuroscience** is an interdisciplinary area of scientific and clinical training and research, sharing skills and expertise to improve lives and advance our understanding of the human brain. The Division of Physiological Sciences has a cellular and molecular neurosciences lab which focusses on mechanisms of brain injury during infection, and is affiliated with the Neuroscience Institute (<http://www.neuroscience.uct.ac.za/>). Opportunities are available for postgraduate training for Honours, Masters, Doctoral and Postdoctoral students in neuroinfections and neuroinflammation with access to tissue culture, electrophysiology, neurotranscriptomics and advanced imaging techniques.

**MSc (Med) and PhD course covenor:** Dr Rachael Dangarembizi

- **Nutrition** research at UCT involves investigating the association between food/nutrition and well-being, health and performance of humans or the prevention of disease conditions. Students with an academic background in Sciences or Health Sciences may apply for a research Masters or PhD in Nutrition. At UCT, nutrition research focusses on disease conditions such as diabetes, gestational diabetes, HIV, obesity, cardiovascular diseases or adolescent health and sports nutrition.

**MMedSci and PhD course covenor:** Dr Janetta Harbron

- **Physiology** offers opportunities to focus on cardiovascular pathophysiology, a key area linked to systemic diseases such as diabetes mellitus. Aspects of interactions between the cardiac tissue and other cardiac remodelling signaling systems such as neural innervation provide additional components. The facilities available enable the study the heart at organ and cellular levels, through the use of tissue culture, electrophysiological measurements, and molecular assays.

**MSc (Med) and PhD course covenor:** Assoc Prof Asfree Gwanyanya

- **Sleep Science** is an emerging global field in human health, encompassing multiple disciplines ranging from basic science to psychology. At UCT, training in Sleep Science at Master's and Doctoral levels is a Physiology speciality which equips students with practical and scientific research skills aimed at furthering our understanding of healthy sleep as well as the consequences of disordered sleep.

**Academic contact:** Dr Dale Rae

## **B: Research Master's and PhD Degrees**

The Master's and PhD programmes are all research based. Master's and PhD students are required to submit a dissertation or thesis, respectively, which is examined by external examiners. The requirements and process for applying are slightly different for each discipline.

Selection for all courses is made on the basis of academic merit and identification of a supervisor, who has accepted to supervise the degree. Some consideration is also given to work experience.

Graduates with a:-

- (i) BMedScHons or BSc(Hons) degree in human, health or biological sciences (e.g. Physiology, Exercise Physiology, Biochemistry), or
- (ii) MBChB degree, or
- (iii) 4-year degree in Dietetics, or
- (iv) Veterinary Science degree, or
- (v) an equivalent degree approved by the UCT Senate

are eligible to apply for:-

- MSc (Med) in Exercise Science (HUB5005W) or
- MSc (Med) in Neuroscience (Physiology) (HUB6005W) or
- MSc (Med) in Physiology (HUB5004W) or
- MSc (Med) Physiology (specialising in Sleep Science) (HUB5004W) or
- MMedSc in Nutrition (HUB5015W)

Graduates with a 4-year or Honours Biokinetics degree, or a degree in Physiotherapy can also apply for MSc (Med) in Exercise Science and Physiology (specialising in Sleep Science), while only graduates with 4-year degree in Dietetics who are also registered or registerable with the Board of Dietetics and Nutrition of the Health Professions Council of South Africa (HPCSA) as a dietitian or dietitian-nutritionist are eligible to apply for a MMedSci in Dietetics (HUB5014W).

Graduates with an appropriate Master's degree can apply for a **PhD** in

- (i) Dietetics (HUB7008W),
- (ii) Exercise Science (HUB7006W),
- (iii) Neuroscience (Physiology) (HUB7010W),
- (iv) Nutrition (HUB7007W),
- (v) Physiology (HUB6001W) or
- (vi) Physiology (specialising in Sleep Science) (HUB6001W)

Students with one year of full-time registration as a Master's student are also eligible for the PhD degree. A proven aptitude and proficiency for research is also required.

#### **Other Master's and PhD Criteria:**

- Depending on prior learning, MMedSci and PhD in **Dietetics** students' may be expected to complete a non-credit bearing postgraduate course in nutrition science and biostatistics
- Depending on prior learning, MMedSci and PhD in **Nutrition** students' may be expected to complete a non-credit bearing postgraduate course in nutrition science and biostatistics.
- All newly enrolled MSc (Med) and PhD students in **Exercise Science** who have not completed the UCT Honours course in Exercise Science will be required to attend certain lectures with the Honours students and pass the associated assignments and/or class tests. Potential supervisors and additional information can be found on the following web site: [www.hpals.uct.ac.za](http://www.hpals.uct.ac.za)
- Depending on prior learning, MSc (Med) and PhD in Physiology with a **Sleep Science** focus students may be expected to complete a non-credit bearing postgraduate course in sleep science and biostatistics. Potential supervisors can be found at the Sleep Science website: [www.sleepscience.co.za](http://www.sleepscience.co.za)
- Potential MSc (Med) and PhD in **Neuroscience (Physiology)** supervisors and additional information can be found the Neuroscience Institute website: [www.neuroscience.uct.ac.za](http://www.neuroscience.uct.ac.za)
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### **C: Applications**

The application process involves the following steps:

1. After reading through the information in this booklet and visiting the Divisional (<https://health.uct.ac.za/physiological-sciences>), Health through Physical Activity, Lifestyle and Sport Research Centre ([HPALS](http://www.hpals.uct.ac.za)), Neuroscience Institutes ([NI](http://www.neuroscience.uct.ac.za)) and [Sleep Science](http://www.sleepscience.co.za) web sites, determine under which staff member(s) and

research area(s) you wish to do your Master's or PhD research project. There is a profile of each staff member and their body of research on the websites.

**Complete steps 2 to 4 is you are applying for Exercise Science and Neuroscience (Physiology) disciplines. For the other disciplines complete step 4.**

2. Once you have identified a potential supervisor, contact the staff member and find out whether that staff member has the capacity to supervise you should your application be successful. It is important to point out that the staff member will need to have a research budget to support your planned studies. Thus you will have to discuss with the staff member what potential research project you could do that falls within his or her research interest and area of expertise, for which there is funding.
  3. Once you have established there is a willing supervisor who has funding for your proposed work, you will be asked to write a short description of the proposed research project on the attached application form.
  4. Complete the attached internal application form and e-mail it together with the other required supporting documents as **a single PDF file to For Attention: Ms Ayesha Hendricks at [HUB-PhysiologicalSciences@uct.ac.za](mailto:HUB-PhysiologicalSciences@uct.ac.za)**. Your application "package" should include the completed internal application form, CV, and transcripts of the degrees you have completed. Exercise Science and Neurophysiology applicants should also include a letter from your potential supervisor saying that they are willing to supervise you and that they have funding available for the work to be done.
- Your application will be reviewed by an internal selection committee. If you fulfil the criteria, you will be invited to apply formally through the Faculty of Health Sciences to register as a Master's or PhD student within the Division Physiological Sciences.

- Eligible applicants should log onto the UCT website (<http://applyonline.uct.ac.za/>) to complete and submit the online Master's/PhD application forms.
- This submitted UCT application form will go directly to the Faculty Office for processing.

## **D: Objectives: Research Master's/PhD**

A Master's degree is frequently a student's first encounter with real research. Its primary function is training in research. It is a clearly described piece of work that the supervisor feels confident can be undertaken within, or close to, the minimum time period (generally within two years). The skills imparted, and which the candidate hones through the process, include posing a research question, undertaking a relevant literature review, engaging rigorously with research methods, drawing valid conclusions and communicating findings in a clear, logical and scholarly way. Importantly, the work does not have to contain original findings – it must simply demonstrate a mastery of the methods of research.

The degree of Doctor of Philosophy, on the other hand, demands that the candidate is able to conduct independent research on his/her own initiative. Through the thesis the candidate must be able to demonstrate in his/her thesis that he/she is at the academic forefront in the topic selected, that the work is original and that it advances knowledge.

Each student has a main supervisor and another 1 or 2 co-supervisor(s) can be appointed by the student and the main supervisor. To achieve the goals of the thesis or dissertation, the student works closely with the supervisor(s), who will (i) guide the student through the process of planning, experimenting and writing and (ii) encourage the student to progress as independently as possible.



It is recommended that the Master's student should submit the research to a journal prior to graduation and that major portions of the research for a PhD should be published in peer-reviewed journals prior to submission of the thesis.

## **E: Programme structure**

To achieve the goals set out in the previous section, we have structured some specific tasks and responsibilities for both research Master's and PhD students. These are all applicable to full-time students and are applicable to part-time students unless noted otherwise in section VI.

### **1) Non-credit bearing postgraduate course**

- All newly enrolled MSc (Med) and PhD students in **Exercise Science** who have not completed the UCT Honours course in Exercise Science will be required to attend certain lectures with the Honours students and pass the associated assignments and/or class tests.
- Depending on prior learning, MMedSc and PhD in **Dietetics and Nutrition** students' may be expected to complete a non-credit bearing postgraduate course in nutrition science and biostatistics.
- Depending on prior learning, MSc (Med) and PhD in Physiology with a **Sleep Science** focus students' are expected to attend a lecture and tutorial series together with practical techniques sessions with Honours students. This is a non-credit bearing course, but students will be expected to participate actively and complete all related assessments to ensure adequate basic knowledge in Sleep Science.

### **2) In-depth knowledge in your specialised area**

Students are required to undertake an extensive literature review for the dissertation or thesis. Part of this should be done before planning the project/s, but

students are also required to keep up with new publications in their area of research throughout the time-course of their projects and write-up. The final literature survey must be up to date.

Students are required to submit a research proposal to the appropriate Human Research Ethics Committee and Postgraduate Research Committee of the Faculty of Health Sciences. You are encouraged to make contact with researchers from other UCT departments, local and international universities whose interests overlap with your own.

### **3) Research skill**

The proposal for research related projects must be presented to the Division of Physiological Sciences for comment/suggestions before data collection is started. The Postgraduate Research Committee of the Faculty of Health Sciences requires that the final proposal must also be uploaded onto PeopleSoft. If required, approval must also be obtained from the appropriate research ethics committee before data collection is started.

Where appropriate, senior Master's and PhD students will be required to co-supervise research projects of the Hons and MPhil students.

### **4) Proficiency in data collection and interpretation**

Early in the year, new students will have the opportunity to join the Honours techniques courses which will cover routinely used techniques in the biochemical, biomechanical and physiology laboratories. Students can discuss the content with their supervisor(s) to decide what is relevant. Students are encouraged to attend the Honours research module which will cover topics related to writing and presentation skills, and statistics. Students are also required to attend the weekly

Divisional of Physiological Sciences and the appropriate research center seminars.

## **F: Regulations**

All Master's and PhD students must register each year. Within the first year of registration for the Master's degree, a research proposal must be submitted to the Postgraduate Research Committee of the Faculty of Health Sciences. The PhD candidate must be approved by the UCT Senate on recommendation from the Faculty of Health Sciences. Approval is dependent on the suitability of the subject matter, the research proposal and the conditions under which the work will be carried out.

The main supervisor submits a progress report once a year to the Postgraduate Research Committee of the Faculty of Health Sciences. The candidate may not re-register unless the progress has been deemed satisfactory. The UCT Senate may suspend or cancel the registration of a candidate whose progress is unsatisfactory.

The minimum required time for a research Master's degree is one year. A PhD candidate must be registered for at least two full years. Retrospective registration is not allowed, except by special permission of the UCT Senate. The candidate must maintain unbroken registration between admission and graduation unless granted a leave of absence by the Doctoral Degrees Board.

Submission of the dissertation or thesis for examination imparts a free licence to the University to publish it in whole or in part in any format that the University deems fit.

Before the PhD thesis is submitted the candidate must notify the Doctoral Degrees Board Office in writing of the expected date of submission (Intention to Submit). This should be accompanied by a signed statement from the main supervisor that

he/she supports the submission of the thesis for examination. The University does not undertake that the degree will in fact be awarded at any specific date.

More information about the roles and regulations for Master's and PhD students can be found at: <https://www.uct.ac.za/students/postgraduates/administration/>

## **G: Funding opportunities**

Scholarships are available for research Master's and PhD students from a variety of institutions.

For details check:

<https://www.uct.ac.za/students/postgraduates/funding/degrees/overview/>

These awards are administered by UCT and are available for full-time students only. Criteria are first, outstanding academic results, and second, above average potential as a researcher and a commitment and dedication to science. Financial need is also considered. In some instances only the cost of tuition is supplied. Renewal of scholarships is dependent on the academic performance of the student.



## INTERNAL APPLICATION FORM for prospective Research Masters & PhD Students in the Division of Physiological Sciences

The selection of students for the research Masters and PhD programmes within the Department of Human Biology's Division of Physiological Sciences at UCT is made firstly by an internal committee which then recommends to the the Faculty of Health Sciences that the applicant is accepted into the course. To assist us, please fill out the following questionnaire in as much detail as possible and return via e-mail to:

**For Attention: Ms Ayesha Hendricks at [HUB-PhysiologicalSciences@uct.ac.za](mailto:HUB-PhysiologicalSciences@uct.ac.za)**

The internal selection committee will also need:

- 1) Your CV containing (i) degrees already attained and number of years required for completion of each, (ii) degree and university for which you are currently registered, (iii) number of years you have been registered for, and (iv) publications peer-reviewed journals
- 2) Certified copy of your marks transcripts
- 3) A letter of support from you proposed supervisor

<b>Surname</b>	
<b>First Name</b>	
<b>E-mail Address</b>	
<b>Cell Number</b>	

<b>UCT E-mail Address</b> (only if you have one)	
<b>UCT Student Number</b> (only if you have one)	

<b>Postal Address</b>	
<b>Postal Code</b>	
<b>Age</b>	

<b>APPLYING FOR</b>	<b>MMedSc in Dietetics</b>		<b>PhD in Dietetics</b>	
	<b>MSc (Med) in Exercise Science</b>		<b>PhD in Exercise Science</b>	
	<b>MMedSc in Nutrition</b>		<b>PhD in Nutrition</b>	
	<b>MSc (Med) in Neuroscience</b>		<b>PhD in Neuroscience</b>	
	<b>MSc (Med) in Physiology</b>		<b>PhD in Physiology</b>	
	<b>MSc(Med) in Physiology (specialising in Sleep Science)</b>		<b>PhD in Physiology (specialising in Sleep Science)</b>	
	<b>What general area of Dietetics, Exercise Science, Nutrition, Neuroscience, Physiology or Sleep Science are you particularly interested in and why?</b>			

<b>In what particular specialised area do you wish to concentrate your research?</b>	
<b>Main Supervisor</b>	
<b>Co-Supervisor(s)</b>	
<b>Short description of the proposed research project</b>	
<b>What research skills do you already possess?</b>	

<b>On what topics have you lectured to undergraduate students, graduate students, or the public?</b>			
<b>What are your ultimate career goals?</b>			
<b>How do you plan to finance your studies? Please provide some details.</b>			
<b>Scholarships/Bursaries</b>			
<b>Part time work</b>			
<b>Other</b>			
<b>Signature</b>		<b>Date</b>	