



**Tshwane University  
of Technology**

*We empower people*

Faculty of ICT

## **INFORMATION BROCHURE**

**Masters and Doctor of Computing**

**(MComp & DComp)**

**Applications for 2018 academic year**

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## 1. INTRODUCTION

Welcome to the Faculty of Information and Communication Technology (ICT). This brochure contains important information regarding the Master of Computing (MComp) and Doctor of Computing (DComp) offered by the Faculty of ICT at the Tshwane University of Technology (TUT). Both MComp and DComp are research degrees requiring supervision and independent research. The DComp requires a unique contribution to existing knowledge whereas the MComp requires evidence that the candidate has a detailed and thorough knowledge of the field and topic which the thesis covers and of research methodology and practice but the result need not make a new or unique contribution to knowledge. Both qualifications culminate in thesis and peer-reviewed publications.

## 2. ADMISSION REQUIREMENTS

Admission to the MComp requires a relevant BTech/ Postgraduate Diploma/ Honours. The DComp requires a relevant Master's degree **with an average of at least 60% verifiable proof will be required**. Applicants will be subjected to a selection process taking into account, amongst previous academic performance, work experience, research concept paper, interview as well as the departmental research focus areas.

**NB:** *ONLY Students intending to register in either the department of **Computer Science** OR **Computer Engineering** and have no research topics should contact the department to inquire on the research activity.*

### 2.1 Important Information for Admission

**All candidates with BTech** or who may not have completed a relevant qualification as prescribed by admission requirements in the Prospectus at **NQF level 8**, will be required to attend **mandatory prerequisite modules** before they could be allowed to register for research for MComp at **NQF level 9**.

There will be coursework for each module. The candidate will need to score at least 50% for each of these coursework. Candidates will have to pass the coursework as there will be no supplementary examinations. Students who miss a module test will have to repeat the whole course.

- a. Advanced Research Methodology (ARM518T) (**15 Credits**)
- b. Development Trends in Computing (DTC518T) (**15 Credits**)
- c. Advanced Research Project (ARP518P) (**30 Credits**)

## 3. GUIDELINES FOR THE CONCEPT PAPER

A candidate's concept paper (of about 1000 words not more than 10 pages, 1.5 spacing) is needed by the department to assess the feasibility of the planned research and the availability of a supervisor. It is not limited to but should at least cover the following:

- Short descriptive title
- Outline of topic area/research problem
- Key issues to be addressed/research questions to be asked/ research objectives
- The gap in existing academic knowledge that the research intends to fill with its unique academic contribution / and Conceptual / theoretical framework where applicable.
- Research method and data analysis (specify inter alia subjects, materials, procedure and techniques of data analysis). Variations may exist depending on the department.

The concept paper will include at least a short list of references (**see the detailed TEMPLATE** for the concept paper at the end of this document). The concept paper is supposed to accompany the application and will be attached on the candidate's selection card. This is a prerequisite and all applicants will be required to submit it before the selection process.

#### **4. CURRICULUM INFORMATION**

- Both the MComp and DComp will be conferred by virtue of thesis and peer-reviewed publications.
- The department may prescribe modules, seminars and workshops in research methodology.
- Regular documented personal contact with the designated supervisor is imperative to enable the student to make progress.

#### **5. INTERNATIONAL STUDENTS**

Candidates with international degrees need to submit an accreditation certificate from the South African Qualifications Authority (SAQA) with their application. SAQA can be contacted at <http://www.saqa.org.za>. For other requirements regarding international students, please visit: <http://www.tut.ac.za/>

#### **6. FEES AND FUNDING**

Please visit the Fees & Funding (Postgraduate students) website at <http://www.tut.ac.za/>.

#### **7. NATURE OF STUDY**

Once an applicant's application has been received and the concept paper reviewed, the departmental Research Committee (DRC) will arrange an interview with the prospective candidates to enable the student to defend his/her idea of research. **Please note that concept papers will be tested for plagiarism.** Upon successful interview, the applicant will be allowed to enrol, register and be assigned supervisor(s). Under the guidance of the supervisor, the student will now develop a more extensive 15 - 30 pages research proposal within six months to be presented to DRC.

**Successful defence of the proposal will enable the student to continue with registration otherwise no further registration will be allowed.**

Under the guidance of the supervisor the student completes the study, conforms to all scientific requirements including those of the Faculty's Ethics and Postgraduate Committees as stipulated by the postgraduate policy, and submits the thesis and concept articles for publication for MComp and proof of acceptance by accredited journals for DComp. The research component forms 100% of the requirements for the degree, and the degree is not completed before all requirements have been met.

## 8. DURATION OF STUDY

Studies must be completed within the required period of time as stipulated in the department's prospectus. However, completion depends on the student's effort. The student will be provided with a copy of the TUT postgraduate policy and students' rules and regulations. The department will strictly observe the postgraduate policy and during workshops students will be reminded of the policy items that relate to the registration and period of study.

## 9. APPLICATIONS

Prospective students are encouraged to apply as soon as possible after applications open in March of the year preceding the study. Closing dates for applications for 2018 are:

- 30 June 2017 for international students.
- 30 September 2017 for South African citizens.

Applications can be made electronically at:

[https://ipenabler.tut.ac.za/pls/prodi03/w99pkg.mi\\_login](https://ipenabler.tut.ac.za/pls/prodi03/w99pkg.mi_login) or a paper copy sent to the admission office Building 21 Pretoria campus. Please ensure that your application is complete and has been received by the admission office. **NO** applications may be made directly to the department. Please visit the **enrolment** at <http://www.tut.ac.za/enrol/> for more details).

## 10. CONCEPT PAPER DEVELOPMENT AND TEMPLATE

### ***10.1 Introduction***

A concept paper is meant to give the department an informed idea of the applicant's areas of research interest in order to avail the assistance needed to develop a full research proposal and allocate supervisor(s). Applicants should therefore be as specific as possible. They should be concise documents containing accurate, relevant information and persuasive arguments to enable decision making. The guidelines that follow are intended to guide applicants on how to develop a concept paper which is a mandatory part of the application process.

### ***10.2 Process of developing a concept paper***

**Selection of research field:** Each university has got specialized fields of research or niche areas, and students will be expected to undertake research within those fields for ease of supervision. Where possible, the department will

provide a list of the research fields within which students should align their proposed research.

- a. Generate an area of interest:** This is an area where you have a curiosity or have identified a problem that you would like to address and this could be influenced by a number of factors including: Your knowledge of the state of the scientific discipline relating to your area of specialization, knowledge of particular social problems, your own personal values and research expertise in a particular field as well as your educational background.
- b. Develop specific questions to guide the study:** What will be the research unit? What is the unit of analysis (will the study be on individuals, groups, structure, systems etc.)? What key variables are to be explored in the intended study? What are the anticipated relationships among the variables identified? What implementation process are you to follow?
- c. Formulate a possible research topic or title based on the answers above:** Being clear on the research variables and their anticipated relationships will help you to formulate a tentative topic for investigation which will be discussed and approved by your supervisor. The title should be clear and concise and may not exceed 13 words.
- d. Identify the data needed and or the probable methodology.** At a doctoral level there is a great likelihood that you will need multiple types of data and also use various methodologies. The methodologies will vary depending on the department.

### ***10.3 Research Topics in the department of Informatics***

Below are some of the research areas for students seeking admission in the department of **informatics**. We encourage applicants to choose from these niche areas when preparing their concept papers.

- Data science including Big Data
- Internet of Things (IOT)
- Knowledge Management and its Applications
- Application Development and Agile methodologies
- Socio-technical approach and behavioral science
- Mobile computing, applications, devices and learning
- Virtual & augmented reality
- Smart technologies including smart cities, vehicles and Web of Things
- Massive online open source (MOOCs)
- Business Intelligence, Predictive analysis and Data mining
- Cloud computing

## 11. CONCEPT PAPER TEMPLATE

For uniformity in assessment of the concept papers, all applicants should follow this structure:-

- **Cover page:** Include the descriptive title of your planned research, your surname and initials as they appear on your academic documents, the area of specialization of the Masters or Doctorate as advertised, previous qualifications and the date
- **Introduction:** Explain the area of your proposed interest and why such an area is of significance to the study. Justify why research about this area is of utmost importance (not more than 3 paragraphs).
- **Problem statement:** Briefly state the problem underlying the investigation for the proposed study. Give evidence of the magnitude of the problem either by giving the statistics or citations (2 paragraphs).
- **Research questions, objectives and hypotheses:** Formulate the key questions which your study intends to explore. The questions should be aligned with the formulated objectives and hypotheses if any. (Good research should not have more than 6 research questions/ objectives.)
- **Literature:** Briefly review recent literature about the proposed area of research. Use accredited sources (i.e. journals, published books and to a small extent conference papers). Clearly show the gaps in the current knowledge to be filled by you research. (2-3 pages would be adequate)
- **Methodology:** Briefly describe the methodology you intend to follow in conducting the proposed research. You need to show the usefulness of this methodology to the research orientation **either** in terms of research paradigm and approach and the methods of data analysis **or** to the implementation. This will depend on the field of specialization
- **References:** Include a list of references (all works cited in the text) and ensure you follow the Harvard style of referencing. Harvard guidelines are available on the World Wide Web.