Faculty of Engineering, Built Environment and Information Technology

School of Information Technology
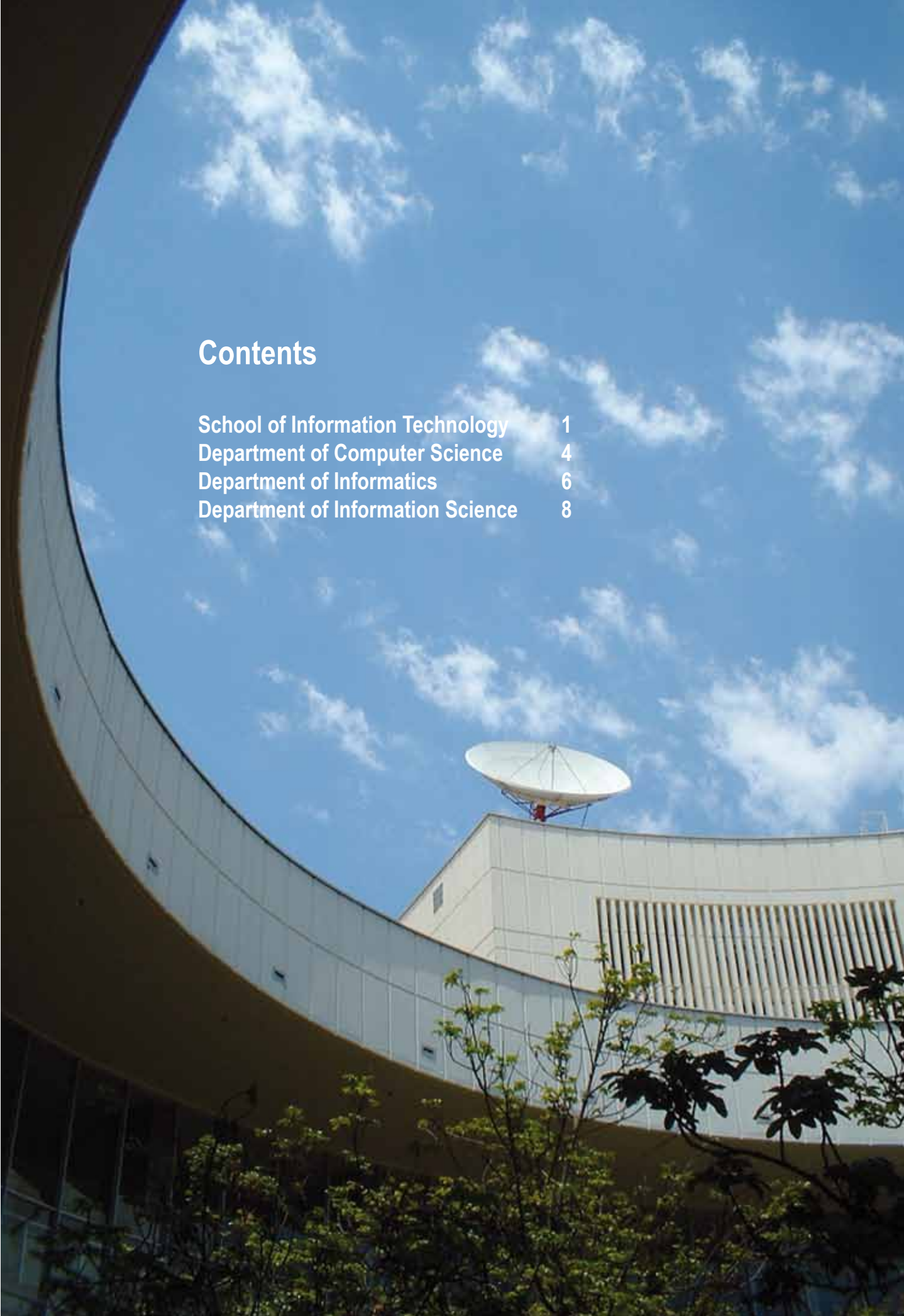
Postgraduate degrees and research

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Engineering, Built Environment and Information Technology

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School of Information Technology
Postgraduate degrees and research

Computer Science

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MSc

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Research focus areas:

Computational intelligence

Computer and information security

Computer Science and geographic information science

Theoretical and applied Computer Science research:

- Finite automata systems, theoretical and applied research
- Software engineering principles and practices
- Software science and formal methods

Information Science

BIS Hons

MA

MIS

PhD

DPhil

Research focus areas:

Knowledge management

Information processes

Meta-context of information

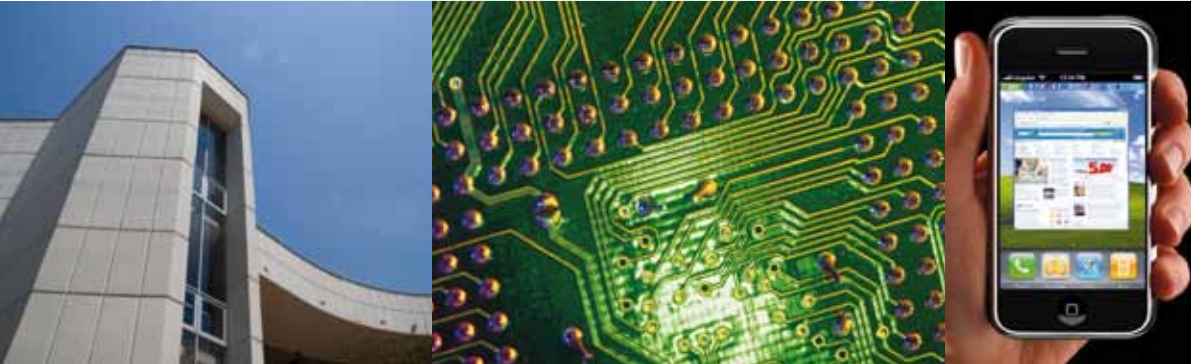Book and publishing studies

Informatics

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Research focus areas:

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IS and education

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School of Information Technology (SIT)

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PhD (IT)

sit.up.ac.za

School of Information Technology

About Us

The School of Information Technology at the University of Pretoria is a unique institution for tertiary education in the field of information technology.

Formed in April 1998, the School consists of the three academic Departments of Computer Science, Informatics and Information Science. Close links also exist with the Department of Electrical, Electronic and Computer Engineering. Three-year degree programmes and postgraduate degrees are offered in each of the three disciplines. In addition, an interdisciplinary study programme leads to the four-year BIT degree. The MIT degree opens exciting study prospects to IT-practitioners. Apart from being a capstone degree for the practitioner, it also leads to the PhD (IT).

The School is one of four in the Faculty of Engineering, Built Environment and Information Technology (EBIT), the other being the School of Engineering, the School for Built Environment and the Graduate School of Technology Management (GSTM).

Academic collaboration

Staff members at the School of Information Technology collaborate with both industry and academic partners from South Africa, the African continent and the rest of the world on a variety of research projects. Researchers participate in the international academic community through their involvement in program committees of international academic conferences, as editors or editorial board advisors for international journals and authors of books on relevant topics.

Continuing Education

SIT presents a variety of courses through CE at UP. Consult the CE at UP website for course information and enrolment details. Our courses are listed in the following categories:
- Information and Knowledge Management
- Project Management
- Geography & Geo-Informatics

Web: www.ceatup.co.za
Email: info.ce@up.ac.za
Tel: +27 12 420 5015/5051
Fax: +27 866 359 219

sit.up.ac.za

MIT

Purpose

The graduate of the Master's degree in IT will have the knowledge and skills to manage and lead information and information technology-related activities in an organisation in strategic, operational and project environments. This degree provides a broad IT perspective as well as good research and reporting skills.

The MIT degree is ideal for a middle management officer in preparation for senior management. Half of the degree is course work and the other half a mini-dissertation.

Selection

A limited number of applicants are selected for admission into the MIT degree every year. Selection is based on previous education, work experience and the strength of submitted portfolios. Applicants must meet the basic requirements for admission (see below), but this does not guarantee admission, only admissibility. For more information on the selection process, see www.up.ac.za/mit.

Basic Requirements for Admission

The following are basic requirements for admission to the MIT degree:

- An appropriate honours or bachelor's degree with an average of 65%; **AND**
- A pass mark in Mathematics at grade 12 (matriculation) level or another qualification in Mathematics, Statistics or Mathematical Statistics which the Selection Committee considers to be sufficient; **AND**
- Appropriate practical experience at middle management level in the IT environment.

Courses (other than the mini-dissertation)

Organisational Behaviour and Management	Digital Economy
Computer Science in Perspective	ICT Project Management
Information in Perspective	Corporate IT Systems
ICT Infrastructure Management	IT Research
Information and Knowledge Management	Strategic ICT Management
Life Cycle and Maturity Models for IT	IT Financial Management

PhD (IT)

The PhD in IT can be obtained in any of the three departments within the School of IT. At the same time, each of the departments has unique doctoral programmes with specialization in the particular discipline. The PhD (IT) programme has more interdisciplinary focus, albeit from a particular disciplinary viewpoint.

BSc Hons

The Honours is a prestigious degree intended for those who wish to obtain a professional qualification of international standing and take their place in the IT industry or Computer Science academia. Entrance to the degree is restricted to those who achieve well in their BSc. The degree covers a range of topics that are presented by experts in the department.

These modules offer a more intensive study in a diverse range of computer science related topics, such as component based software engineering, theoretical aspects of computer science, computational intelligence, computer graphics, computer and information security, advanced networks, software engineering, distributed systems, spatial databases and generic programming.

Lectures of computer science modules are scheduled late in the afternoon from Mondays to Fridays to accommodate part-time students who work during the day.

MSc and PhD

The Department of Computer Science offers research-based MSc and PhD degrees. In both cases, a student works under the guidance of a supervisor and is expected to identify and pursue a research project. Regular discussions and interaction with the supervisor are important. While this can sometimes take place electronically, it is also important to hold regular across-the-table discussions. Thus, staff will not normally enter into a supervisory relationship with a student who is not physically resident within reasonable proximity of the university.

The minimum registration period for an MSc is one year, and for a PhD it is two years.

The outcome of an MSc is a dissertation that demonstrates to an examination panel that the student has the ability to plan, initiate, carry out and report on a scientific investigation. A draft article to be submitted to a reputable journal should also be prepared towards the end of the research period. The outcome of a PhD is a thesis that demonstrates to an examination panel that the student has the ability to independently plan, initiate, carry out and report on a scientific investigation. The research work done should be a significant and original contribution to the body of knowledge in the area of specialization. At least one article should have been published in a reputable journal and another submitted to a reputable journal before the end of the research period.

www.cs.up.ac.za

Department of Computer Science
Research focus areas

- Computational Intelligence
- Computer and Information Security
- Computer Science and Geographic Information Science
- Theoretical and Applied Computer Science Research
  - Finite Automata Systems, Theoretical and Applied Research
  - Software Engineering Principles and Practices
  - Software Science and Formal Methods

Research Groups

CIRG - Computational Intelligence Research Group
cirg.cs.up.ac.za

Artificial Neural Networks
Swarm Intelligence
Evolutionary Computation
Artificial Immune Systems
Data and Text Mining
Multi Agent Systems
Data and text mining
Image analysis
Game playing systems

ICSA - Computer and Information Security with specific reference to Distributed Systems Security and Privacy
icsa.cs.up.ac.za

Digital forensics
Distributed trust and security issues in pervasive computing
Privacy
Vulnerability scanning
Intrusion detection
Database and workflow security

Polelo - Computer Science and Geographic Information Science
polelo.cs.up.ac.za

Geographic information
Distributed systems
Spatial data infrastructures

FASTAR - Finite Automata Systems Theoretical and Applied Research
fastar.cs.up.ac.za

Finite state systems
Finite automata
Regular expressions
Pattern matchers
Parsers
Transducers
Algorithms and data structures
Formal Concept Lattices

Espresso - Software Engineering Principles and Practices
espresso.cs.up.ac.za

Methods and processes, such as agile methods, open source development, etc.
Tools and environments, such as software configuration management (SCM), refactoring, human aspects, etc.

SSFM - Software Science and Formal Methods
ssfm.cs.up.ac.za

Formal Specifications of Systems
Model Driven Engineering
Theoretical and Methodological Foundations of Software Engineering
Tools for Computer-Aided/Automated Software Engineering

www.cs.up.ac.za

Department of Informatics
Postgraduate degrees

BCom Hons

Our undergraduate programme leading to the degree BCom (Informatics) extends over three years. The honours course should be seen as a finishing fourth year of the undergraduate programme, containing material that is aimed at enhancing the technical background of students and broadening their horizons in respect of the information technology and information systems field.

Modules

Research Methodology	Electronic business applications
Research paper	Human-computer interaction
Advanced database systems (data warehousing)	Knowledge acquisition and sharing (data mining)
Managing projects and end users	Enterprise Architecture
Information systems development	IT Law

MCom (Informatics) and MPhil (Informatics) Course work

Although it is not an absolute prerequisite, this taught master's is mainly aimed at students who have had a number of years exposure to the information technology industry.

The Department offers both an MCom and an MPhil in Informatics. The prerequisite for the MCom is a BCom (Honours) in Informatics or Information Systems (IS), or the equivalent. The prerequisite for the MPhil is a four-year degree in IT and a number of years' experience in the IT industry working as a software developer or systems/business analyst. MCom/MPhil mini-dissertations for partial fulfilment of the requirements of the master's degree in Informatics and courses in Research Methodology, Thinking about IS thinking and IS theories must be completed.

MCom

The master's degree by full dissertation is available to students with exceptional academic or career qualifications. Topics for the thesis may be chosen from the research focus areas of the department.

PhD

The Department offers a PhD in Information Technology under the auspices of the School of Information Technology in the Faculty of Engineering, Built Environment and Information Technology, as well as a PhD in Informatics under the auspices of the Faculty of Economic and Management Sciences. Students in possession of a master's degree or equivalent may consider this option in Informatics.

The study consists of a research thesis to be completed under the supervision of a promoter. Topics for the thesis may be chosen from any of the research focus areas of the Department.

informatics.up.ac.za

Department of Informatics
Research focus areas

IS and Organizations (IFIP TC 8 WG 8.1, 8.2, 8.3)

Dimensions	Particular interest
IS theory	Application of social theories to, and the use of innovative tools and techniques in information system design, development and implementation processes.
Socio-economic implications	Application of a socio-technical framework for understanding information system adoption and also failure in diverse settings. Particular emphasis is on the context and hence we have a particular interest in issues relating to developing countries.
Research approaches	Multi-methodological (Pluralist) but with a bias towards interpretative research.
Human behaviour	The impact and role of soft issues in the IT-environment.
Culture	The role and impact of culture on organizational issues and vice versa.
Systems development	Development of a framework for improving the inclusion of stakeholders in of the design, development and implementation of information systems.

IS and Education (IFIP TC 3 WG 3.2, 3.3, 3.4)

Dimensions	Particular interest
Application of theory	Application of teaching and learning theories and techniques as well as theories from other disciplines to information system teaching. This includes training of IT-professionals and vocational education in ICT.
Socio-economic implications	Application of a socio-technical framework for understanding information system teaching and also failure in diverse settings. Particular emphasis is on the context and hence we have a particular interest in issues relating to developing countries.
Application of ICT	The innovative use of ICT-tools (e.g. e-learning, m-learning) in teaching including IS-teaching. This includes training of IT-professionals and vocational education in ICT.
Human behaviour	The impact and role of cooperative learning and group work in the IS- teaching environment
Culture	The role and impact of culture on IS-teaching and vice versa.
Curriculum	Development of curriculum, taking into account several factors including industry requirements, the ICT-skills shortage, etc.

ICT for Sustainability

Dimensions	Particular interest
IS Theory	Critical debate and application of Social and IS theories to culturally tailor ICT to bring about sustainable socio-economic development to impoverished communities.
Socio-economic implications	Ongoing development and scrutiny of various frameworks for facilitating the introduction of ICT to different developing communities for sustainable socio-economic development.
IS Philosophy	An Afrocentric philosophy and approach to integrate ICT into developing communities for sustainable development, with a prominent focus on Afrocentric contexts.
Research Approach	Multiple methods with a bias towards interpretive and critical approaches.
Curriculum and Training	Development of approaches for teaching ICT for sustainable development and ongoing empowerment from a socially aware and a culturally sensitive perspective.
ICT for Sustainable Development	Introduction of ICT as a tool for and facilitator of development comes with a challenge: the dominance of some forms of thought, culture and business. This tampers with the potential of ICT to serve the interest of the local people through preserving their culture, language and socio-economic interests. There is a need to study new frameworks to implement ICT for sustainable developing in Afrocentric context.

informatics.up.ac.za

Department of Information Science
Postgraduate degrees

Empower yourself
by enrolling for one of the exciting postgraduate programmes and join the information world.

Aim

The field of Information Science, which includes the fields of Information and Knowledge Mangagement, Library Science, Multimedia and Publishing, plays a vital role in the development of a country. Without knowledge and information the promotion of science, research, culture and training would be impossible. The post-graduate courses offered by the department are not only aimed at stimulating your personal subject interest and speciality, but also to help you to make a contribution to the development of South Africa.

B IS (Hons) in Information Science, Multimedia and Publishing

BIS (Hons) Information Science

Fundamental modules

Research Methodology & Research Report

Core modules

Information & Knowledge Management
Organisation, retrieval and seeking of information

Four elective modules

BIS (Hons) Multimedia

Fundamental modules

Research Methodology

Core modules

Hypermedia and mark-up languages
Applied Multimedia

Four elective modules

BIS (Hons) Publishing

Fundamental modules

Research Methodology

Core modules

Publishing management:
Management and finances
Publishing management:
Organisation and processes
The publishing environment:
Developments and trends in the
South African book industry
The publishing environment: Global
developments and trends in book
publishing
Editorial practice: Advanced copy-editing
and editorial project management

Two elective modules

M IS in Information Science, Library Science, Multimedia, Publishing
MA in Development Communication
Doctoral programmes in Information Science, Multimedia, Knowledge Management, Library Science, Publishing and Development Communication

MIS

The following MIS (Research) degrees are offered with specialization in:

- Library Science
- Information Science
- Multimedia
- Publishing

MA

The following MA (Research) degree is conferred by the Faculty of Humanities and is offered with specialization in:

- Development Communication

DPhil or PhD

The following doctoral programmes are offered in:

- Multimedia
- Information Science
- Knowledge Management
- Publishing
- Library Science
- Development Communication

is.up.ac.za

Department of Information Science
Research focus areas

Knowledge Management

1) Policy and Strategy

2) Tools and Techniques

3) Organisational Culture and Leadership

4) Knowledge Infrastructures

5) Knowledge Systems

6) Competitive and Business and Intelligence

7) Teaching, Theory and Practice

Information Processes

1) Information Organisation & Representation

2) Information Dissemination & Use

3) Information Seeking and Searching

4) Information Retrieval

5) Information Architecture

6) Digitisation and Preservation

7) Teaching, Theory and Practice

Meta-Context of Information

1) Philosophy and Ethics

2) Legal Issues

3) Theory and Methodology

4) Socio-Cultural Issues

5) Economics and Political Issues

6) Information Communication

7) Teaching, Theory and Practice

Book and Publishing Studies

1) Authorship, writing and origination practice

2) Print media production processes

3) Print media history

4) National policies in the print media sector, employment and skills development

5) Book selling, trade and marketing [Dissemination & distribution]

6) Book consumption, readership and reading practice

7) Teaching, Theory and Practice

Contact information

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PhD (IT)

Refer to the doctoral coordinators in the respective departments

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Faculty of Engineering, Built Environment and Information Technology (EBIT)

www.up.ac.za/ebit/

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Client Services Centre

Select 'Client Service Centre' from the 'Support Services' drop down on www.up.ac.za

Online applications

Click on 'Prospective Students' and 'Apply for Admission' in 'Quick links' on the right on www.up.ac.za

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