

## Level 8

### **I801 - Research in Information Technology**

Level 8 | 15 Credits

Understand the framework for applied research in information technology through examining research methods and publications, with particular reference to research into the impact of information technology on society.

Course content includes research methods (qualitative, quantitative, and mixed); research literature; and impact of information technology on society (including digital divide, ethical issues, cultural and gender perspectives, environmental and social challenges).

**On successful completion of the course, learners will be able to:**

1. Critically evaluate the suitability of a range of research methods (qualitative, quantitative, and mixed) for application in a specific area of information technology.
2. Select, analyse, critique and synthesise research literature in a specific area of information technology.
3. Assess the (past, present and future) impacts of specific aspects of information technology.
4. Critically analyse ethical issues in the use of information technology.

**Offered by:** Postgrad Cert in IT, Postgrad Dip in IT, Master of IT

### **I802 - Research Proposal**

Level 8 | 15 Credits

Gain knowledge and skills in conducting literature reviews, preparing research proposals and addressing ethical issues.

Course content includes literature searches, criteria for critical review, acknowledging sources, data collection and analysis methods, institutional requirements for approval of research, structure of research proposals, and addressing ethical issues.

**On successful completion of the course, learners will be able to:**

1. Conduct a literature review in a selected ICT research area.
2. Evaluate the strengths and weaknesses of data collection and analysis methods commonly used in ICT research.
3. Identify and evaluate ethical issues in ICT research and develop strategies for minimising harm.

4. Develop a proposal for an ICT research project, including an application for ethical approval.

**Offered by:** Master of IT

## **D803 - Business Intelligence and Data Mining**

Level 8 | 15 credits

Understand the framework for identifying and aligning computer-based data analysis strategies with organisational goals in order to create and sustain competitive advantage.

Course content includes business intelligence, data mining tools and techniques, and analysis of very large data sets.

**On successful completion of the course, learners will be able to:**

1. Identify and apply appropriate data analysis strategies to meet specific organisational goals.
2. Critically assess the efficacy of a range of data mining approaches (classification, association and clustering) for knowledge discovery within large datasets.
3. Critically evaluate available methods of big data analysis and review possible uses of these techniques for business intelligence.

**Offered by:** Postgrad Cert in IT, Postgrad Dip in IT, Master of IT

## **D802 - Cloud Computing and ICT Infrastructure**

Level 8 | 15 credits

Learn how to critically analyse cloud computing and other advances in information and communications technology (ICT) infrastructure and recommend a workable solution (including cloud-related technology) for a given ICT environment.

Course content includes the benefits and challenges of cloud computing and advances in ICT infrastructure.

**On successful completion of the course, learners will be able to:**

1. Review advances in ICT infrastructure and related applications (including advanced data handling, cloud computing, distributed computing, intelligent agents, software-as-a-service, virtualisation, and web intelligence).
2. Analyse the requirements for a cloud infrastructure for a particular ICT environment and critically evaluate the component parts of the infrastructure.
3. Recommend a cloud solution for a particular ICT environment, including security countermeasures.

**Offered by:** Postgrad Cert in IT, Postgrad Dip in IT, Master of IT

## **D804 - Multimedia Application Development for Mobile Devices**

Level 8 | 15 credits

Understand the framework for the development of multimedia applications for mobile devices.

Course content includes mobile operating systems, java programming, human-computer interaction (HCI), graphics and animation, and business, technical and social implications.

**On successful completion of the course, learners will be able to:**

1. Critically assess the efficacy of multimedia applications on mobile devices and their business, technical and social implications.
2. Evaluate the different mobile operating systems for the suitability of multimedia applications.
3. Develop tools to analyse multimedia applications from an HCI perspective.
4. Design and build multimedia applications.

**Offered by:** Postgrad Cert in IT, Postgrad Dip in IT, Master of IT

## **T814 - Network Design and Management**

Level 8 | 15 credits

Gain an in-depth understanding of the concepts and procedures used in requirements analysis, design, installation, and management of computer and communication networks.

Course content includes network design considerations, network management protocols, network monitoring, network requirements analysis, flow analysis, network management, and performance architecture and analysis.

**On successful completion of the course, learners will be able to:**

1. Analyse network design considerations, network management protocols, network monitoring and monitoring tools.
2. Evaluate concepts and processes of network requirements analysis and flow analysis.
3. Critically assess network management systems and tools, performance architecture and analysis.

**Offered by:** Postgrad Cert in IT, Postgrad Dip in IT, Master of IT

## **T811 - Network Security and Forensics**

Level 8 | 15 credits

Gain a broad knowledge of critical security threats to computer network systems and possible countermeasures, and learn best practice and techniques for investigating breaches of security.

Course content includes security threats (including denial of service, distributed denial of service, SQL injection, and social engineering attacks); security countermeasures to prevent or mitigate those threats (including firewalls, virtual private networks, and honeypots); and digital forensic investigation techniques (including acquisition, preservation, analysis, and presentation).

**On successful completion of the course, learners will be able to:**

1. Investigate the current state of network security and forensics.
2. Critically analyse security countermeasures and their effectiveness.
3. Critically assess forensic investigation techniques and tools for investigating breaches of security.

**Offered by:** Postgrad Cert in IT, Postgrad Dip in IT, Master of IT

## **D805 Conceptual Data Modelling**

Level 8 | 15 credits

Gain a framework for formalising the data requirements of organisations at a conceptual level, with particular emphasis on the modelling of constraints that control the behaviour of organisations.

Course content includes approaches to requirements engineering, conceptual and internal models, business rule taxonomies, object role modelling

**On successful completion of the course, learners will be able to:**

1. Critically evaluate techniques for formalising the data requirements of organisations before database development.
2. Generate conceptual models that represent the structure of organisations and the constraints under which they operate.
3. Generate an internal model from a conceptual model for a target database management system.
4. Synthesise the concepts and definitions of business rules with the constructs of conceptual modelling to express data requirements in a form comprehensible to business people.

**Offered by:** Postgrad Cert in IT, Postgrad Dip in IT, Master of IT

## **D806 - Quality Assurance and Testing**

Level 8 | 15 credits

Gain an in-depth understanding of methodologies and techniques used in software testing and quality assurance.

Course content includes methodologies and techniques used in software testing and quality assurance, software metrics, and software quality improvement.

**On successful completion of the course, learners will be able to:**

1. Critically evaluate methodologies and techniques used in software testing and quality assurance.
2. Analyse software testing techniques and select optimal solutions for different types of projects.
3. Apply suitable software testing techniques and quality assurance methodologies to a specific project.

**Offered by:** Postgrad Cert in IT , Postgrad Dip in IT , Master of IT

## **D807 - Advanced Artificial Intelligence and Machine Learning**

Level 8 | 15 credits

This course aims to provide students with a thorough understanding of machine learning and artificial intelligence, with a focus on practical applications and problem-solving in an industry context. Students will develop the ability to critically evaluate AI technologies and design solutions tailored to specific challenges.

At the end of this course, students will be able to:

1. Critically analyse the underlying principles and key concepts of machine learning and AI.
2. Research and critically evaluate advanced AI techniques and their applicability to real-world problems.
3. Assess the technical, business, and social implications of AI solutions in various industry sectors.
4. Design and implement appropriate AI-based solutions to unstructured, complex problems using relevant tools and techniques.

**Offered by:** Postgrad Cert in IT , Postgrad Dip in IT , Master of IT

## **T813 – The Ethics of Data and Artificial Intelligence**

Level 8 | 15 credits

Learn how to use careful research and analysis to identify and manage ethical issues related to the use and advancement of information and communication technology (ICT).

Course content includes introduction to cyber ethics; The Doing Ethics Technique (DET); ethical concepts and theories; professional ethics and moral responsibility; privacy, surveillance and cyberspace; critical thinking and rational argument; intellectual property; security and cyberspace; cybercrime; the Digital Divide; emerging and converging technologies; and regulating commerce and speech in cyberspace.

**On successful completion of the course, learners will be able to:**

1. Critically analyse ethical issues related to ICT.
2. Research established ICT Codes of Ethics and critically evaluate the guidance they provide in managing an identified ethical problem.
3. Analyse a current ICT ethical dilemma using critical thinking techniques and provide possible solutions within the context of the analysis.

**Offered by:** Postgrad Cert in IT, Postgrad Dip in IT, Master of IT

## **I804 - Internship**

Level 8 | 30 credits

Gain industry experience relevant to a chosen area of IT and learn how to critically reflect on concepts and perspectives studied.

Course content includes:

- Application of taught knowledge, research evidence and skills to a practical context.
- Assessment of work practices based on theoretical frameworks.
- Problem identification and recommendation of strategies.

**On successful completion of the course, learners will be able to:**

1. Critically assess work practices in a field of IT by integrating advanced concepts, theories and research relevant to a field of IT.
2. Identify a problem relevant to the chosen organisation and integrate theories and research evidence to recommend strategies for solving the problem.
3. Document and present recommended strategies as appropriate to a selected audience.

**Offered by:** Postgrad Cert in IT, Postgrad Dip in IT, Master of IT

## **I803 - Advanced Project Management for Information Technology**

Level 8 | 15 credits

Learn how to evaluate appropriate project management methodology and develop an appropriate project management process for complex IT projects.

Course content includes:

- Traditional and current project management philosophy, research, and practice.
- Current guidelines of the PMBoK (Project Management Body of Knowledge).
- Project management techniques, which may include critical path analysis, gantt chart, PERT, critical chain, and feasibility analysis.
- Project management tools.

**On successful completion of the course, learners will be able to:**

1. Research and evaluate current trends in IT project management methodologies and understand their implications for practice.
2. Create a project management plan for an IT project.
3. Implement a project management methodology for an IT project.

**Offered by:** Postgrad Cert in IT, Postgrad Dip in IT, Master of IT

## **T815 - Cryptography and Security Mechanisms**

Level 8 | 15 credits

Gain a broad knowledge of advanced cryptosystems, threats in such systems, and the design requirements of secure protocols and systems in business, and high-security environments.

Course content includes:

- Conventional cryptography
- Advanced cryptography
- Mechanisms to protect data integrity and authentication
- Protocols for identification and login
- Authenticated key exchange and management with third parties
- Systems, software, and web security

**On successful completion of the course, learners will be able to:**

1. Critically evaluate principles and application of cryptography in current business and high-security environments.
2. Research and apply security mechanisms to mitigate critical security threats and vulnerabilities in business and high-security environments.

3. Research, model and design/deploy real-world applications of cryptographic primitives and protocols in a variety of scenarios in business and high-security environments.

**Offered by:** Postgrad Cert in IT, Postgrad Dip in IT, Master of IT

## **T812 - Cybersecurity**

Level 8 | 15 credits

Gain in-depth knowledge of secure information within contemporary business, including data security, infrastructure security, application security, and the design requirements of secure data and applications.

Course content includes:

- Security environment
- Security technology and principles
- Infrastructure security and risk assessment
- Application security and awareness
- Systems, software, and web security
- Trusted computing and multilevel security

**On successful completion of the course, learners will be able to:**

1. Critically evaluate principles and applications of cybersecurity in contemporary business environments.
2. Research, evaluate, and apply mechanisms to mitigate critical cybersecurity threats and vulnerabilities in contemporary business, with a focus on data security, infrastructure security, application security, and design requirements.
3. Research, design, and deploy real-world applications of cybersecurity in contemporary business environments.

**Offered by:** Postgrad Cert in IT, Postgrad Dip in IT, Master of IT

## **Level 9**

### **I901 - Applied Research Project**

Level 9 | 45 credits

Undertake professional and applied research that contributes to professional practice in information and communications technology.

Course content includes:

- Selecting a suitable problem and method of solution.
- Evaluating results and making recommendations.
- Institutional standards for presenting project reports.

**On successful completion of the course, learners will be able to:**

1. Identify a suitable applied research problem in a selected ICT area.
2. Search the research and professional literature in order to identify and evaluate possible methods for solving the problem.
3. Select and justify an appropriate method for solving the problem.
4. Apply the identified method, evaluate results and make appropriate recommendations.
5. Prepare a project report that meets required presentation standards.

**Offered by: Master of IT**

## **I902 - Thesis**

Level 9 | 90 credits

Plan, execute and complete publishable applied research that contributes to the knowledge base in information and communications technology.

Course content includes literature review, data collection, and analysis, drawing conclusions and making recommendations, and institutional standards for presenting theses.

**On successful completion of the course, learners will be able to:**

1. Conduct a thorough literature review in a selected applied IT research area and identify a suitable research question(s).
2. Justify data collection and analysis methods chosen for answering research question(s).
3. Collect and critically analyse data and draw valid conclusions.
4. Demonstrate independent thought in interpreting and discussing research findings.
5. Apply professional editorial standards to a body of written work.

**Offered by: Master of IT**