Bachelor of Information Technology (IT23)

Year offered: 2011  
Admissions: Yes  
CRICOS code: 012656E  
Course duration (full-time): 3 years  
Course duration (part-time): 6 years  
Domestic Fees (indicative): 2011: CSP $3,886 (indicative) per semester  
International Fees (indicative): 2011: $11,375 (indicative) per semester  
Domestic Entry: February and July  
International Entry: February and July  
QTAC code: 418801  
Past rank cut-off: 74  
Past OP cut-off: 13  
OP Guarantee: Yes  
Assumed knowledge: English (4,SA), Maths A, B or C (4,SA)  
Preparatory studies: For information on acquiring assumed knowledge visit http://www.qut.edu.au/assumed-knowledge  
Total credit points: 288  
Course coordinator: Mr Mike Roggenkamp  
Campus: Gardens Point

Why Choose This Course

This degree is innovative in its approach to teaching. You will experience a hands-on approach to learning through projects where you develop information technology systems and work in a collaborative team setting. The degree structure is flexible, giving you the opportunity to customise your degree to suit the area/s you wish to focus on.

Modern information technology professionals need to know more than technology; they have to understand how to shape the industries of the future, through an effective blend of information technology and business knowledge. The Faculty’s close collaboration with industry ensures that the degree is structured to stay up to date with industry needs—now and into the future. This in turn enables you to acquire the right skills and knowledge needed to secure a job and progress your career.

As the Area Academy Training Centre, Australia and New Zealand for the CISCO Networking Academy Program, we also offer you a range of CISCO programs. As a QUT Bachelor of Information Technology student, completion of any CISCO programs at QUT can be credited to your QUT degree.

Through our flexible degree program, with opportunities for engagement with real world professionals and industry leaders, and work experience program options, you will have the opportunity to prepare yourself for the future and realise your full potential.

Pathways

You have the opportunity to choose a study pathway:

• **professional pathway**— you will learn how to think strategically, identify opportunities and solve problems that we don’t even know are problems yet. This pathway will enable you to acquire the business and IT skills to have a career as an IT professional within any industry.

• **research pathway**— if you are interested in shaping the future of the IT industry you can pursue a research career. You will have opportunities to work with researchers on projects and progress on to an honours degree. You will have access to world-leading researchers within the Faculty.

• **entrepreneurship pathway**— you now have the opportunity to gain the entrepreneurial skills to develop an idea into a commercial opportunity. You will be able to take advantage of the Faculty’s close relationship with local technology entrepreneurs to learn from their experiences.

In 2001, the Faculty introduced an accelerated Honours program to increase the number of Bachelor of Information Technology students continuing their studies to complete the Honours year. The program allowed selected high achieving students the opportunity to undertake one postgraduate unit in the final semester of the Bachelor of Information Technology which would be counted both for completion of the degree and towards Honours. The program also provided students with the opportunity to commence their Honours studies over the Summer Semester.

The Dean’s Scholars program was introduced in Semester 1, 2006. This program provides a scholarship for OP 1 and 2 students throughout their Bachelor and Honours degrees. Students in the program are required to maintain a high GPA to continue to qualify for the scholarship each semester. Students in the Dean’s Scholars program will be able to take advantage of the Accelerated Honours program. Students in the Dean's Scholars program will have an option to follow an accelerated pathway through the Bachelor of Information Technology, allowing them to complete the Bachelor of Information Technology course plus the Bachelor of Information (Honours) course in a total of three years.

To encourage students to enter the Dean’s Scholars program, domestic students have their undergraduate HECS paid by the Faculty and those proceeding to
Honour’s level will also receive full HECS support. International students who have completed a Year 12 education in Australia and meet the entry requirements for the program will have a third of their tuition fees paid by the Faculty for the undergraduate and Honours program.

An alternative to the Honours program is the Master of Information Technology (Research). Students who complete IT23 with a grade point average equal to, or greater than 5 (7 point scale) and who have decided against enrolling in an Honours program, could undertake this course. In addition, students may wish to enrol in the re-designed postgraduate coursework Masters which has ten specialisations allowing students to either extend their area of interest or specialise in other areas at the Masters level.

Design Your Own Degree
The Bachelor of Information Technology provides you with the practical skills and theoretical knowledge to become an effective professional.

The 24-unit degree comprises:

- eight core units – four introductory units in first semester to introduce you to the breadth of information technology and its relationship to modern society. Then there are four advanced units spread over the rest of your degree program to develop your professional skills in preparation for your career

- four breadth units (intermediate level units) – these units give you broad technical experience across a range of fields in information technology. They also give you an introduction to choose the specialisation you wish to focus on

- four specialisation units (advanced level units) – these units allow you to focus on your chosen area of study, or you may choose to continue to broaden your information technology skills. This option allows you to study across a selection of study areas rather than focusing on one specialisation

- eight optional units – these units allow you to customise your degree by studying in another professional discipline (for example, business, health, or science). Or you may choose to gain further depth in other areas of information technology.

SPECIALISATION AREAS

Business Process Management
Learn how to increase business efficiency. All businesses require IT to effectively and efficiently support their operations. This specialisation provides you with the skills required to improve business performance.

Data Warehousing
Database technology, the software that enables us to buy concert tickets online, download music or book a flight, is sophisticated and complex. You will gain knowledge and skills in the accurate recording, rapid retrieval and management of data that is essential to modern society. You will learn how to mine existing sets of data to extract hidden knowledge.

Digital Environments
Study how developments in IT shape society through applications like Facebook, MySpace, Second Life, smart phones, iPods and gaming devices.

Enterprise Systems
Enterprise systems from vendors like SAP, Mincom and Oracle form the fundamental structure of organisational processes in most large organisations. You will gain hands-on experience with successful enterprise systems to enable you to put into practice the theory that supports business activities.

Network Systems
Learn to tackle emerging network issues such as security, network monitoring and high availability design, and gain up-to-date technical skills for the administration and management of computer networks.

Software Engineering
Software is the invisible infrastructure of modern society. Almost all aspects of business and social endeavour are facilitated by software applications or devices controlled by software. You will learn how leading-edge techniques and technologies enable you to design and implement complex software systems for use in a wide range of domains.

Web Technologies
Web technologies are the principal mechanism for integrating the various applications that exist within an organisation. They also provide the main user interface for most applications used by internal and external clients, including modern web-based interfaces. You will develop practical skills to help organisations use web technologies effectively in deploying a range of applications and services.

Career Outcomes
Information technology is an integral part of all commercial, industrial, government, social and personal activities. In the long term, your career opportunities are unbounded. Some information technology graduates retain a technical focus in roles such as web developer, database manager, network administrator, electronic commerce developer, data communications specialist, software engineer, systems programmer, computer scientist, systems analyst or...
programmer. Others evolve into domain experts as chief technology officers, chief information officers, managers, executives, business analysts, entrepreneurs or researchers. Graduates have the opportunity to achieve the highest levels of their profession.

Professional Recognition
This course is accredited by the Australian Computer Society (ACS). ACS accreditation is internationally recognised by the Seoul Accord.

Your Course

Year 1
In your first semester you will explore how information technology has changed the world and what the possibilities are for the future. You will look at the details of information, computing and communication technologies to understand how they work. You will take part in hands-on projects developing small information technology systems.

Core units for Year 1:
• Impact of IT
• Emerging Technology
• Industry Insights
• Building IT Systems

In Semester 2 you will undertake three breadth units and one elective.

Year 2
In your second year you will take part in a collaborative team setting, working on small projects that integrate the skills you learnt during Year 1. You will also start studying more advanced units in your chosen field of specialisation.

Core unit for Year 2:
• Scalable Systems Development

Throughout Year 2 you will undertake one breadth unit, two specialisation units and four elective units.

Year 3
In third year you will be able to undertake workplace experience opportunities offered by the Faculty, while earning credit towards your degree. You will continue studying in your area of specialisation. In your final semester you will develop a major project, showcasing what you have learnt during your degree—providing you with a key part of your portfolio when seeking a job.

Core units for Year 3:
• Professional Practice in IT
• The Business of IT
• IT Capstone Project

Throughout Year 3 you will undertake two specialisation units and three elective units.

Deferment
Domestic students can defer their offer in this course for one year. In exceptional circumstances up to 12 months of additional deferment may be granted.

Find out more on deferment.

Cooperative Education Program
An optional half or full year period of paid work experience is available to eligible full-time students. Students participating in this program enrol in INS011 Co-Operative Education 1 in the first semester of the program and in INS012 Co-Operative Education 2 in the second semester of the program. The cooperative education program and its mentoring and assessment requirements make up the required contact and assessment components of both units. Eligibility criteria apply. International students are not eligible due to visa restrictions. International students wishing to undertake a similar program should consider applying to take part in a CEED project or for an ACS Foundation scholarship.

Part-time students who are working in a professional IT position may be able to use their current employment to meet the criteria for completing INB300 Professional Practice in IT, after completion of 168 credit points in the Bachelor of Information Technology. Further information about this option is available from the unit outline for INB300.

Find out more about the Cooperative Education Program.

Further Information
For further information about this course, please contact the following:

Course Co-ordinator
Mr Richard Thomas
Phone: +61 7 3138 2782
Email: enquiry.scitech@qut.edu.au

IT Breadth Option Unit List

IT Breadth Option Units
You must complete four (4) units from the following list. You should not commence these units until you have completed INB101, INB102, INB103 and INB104.

INB120 Corporate Systems
INB210 Databases
IT Specialisation Option Unit List

YOU must complete four (4) units from the following list. Please ensure you have completed a minimum of 36 credit points (3 units) of IT Breadth Option Units before commencing these units. The units are grouped in areas to assist you in focusing your studies.

1. BUSINESS PROCESS MANAGEMENT:
   - INB320 Business Process Modelling
   - INB321 Business Process Management
   - INB322 Information Systems Consulting
   - INB123 Project Management Practice

2. DATA WAREHOUSING:
   - INB340 Database Design
   - INB341 Software Development With Oracle
   - INB342 Enterprise Data Mining and Data Analysis
   - INB343 Advanced Data Mining and Data Warehousing

3. DIGITAL ENVIRONMENTS:
   - INB344 Search Engine Technology

4. ENTERPRISE SYSTEMS:
   - INB123 Project Management Practice
   - INB221 Technology Management
   - INB311 Enterprise Systems
   - INB312 Enterprise Systems Applications

5. NETWORK SYSTEMS:
   - INB350 Internet Protocols and Services
   - INB351 Unix Network Administration
   - INB352 Network Planning
   - INB353 Wireless and Mobile Networks

6. SOFTWARE ENGINEERING:
   - INB370 Software Development
   - INB371 Data Structures and Algorithms
   - INB372 Agile Software Development
   - INB374 Enterprise Software Architecture

7. WEB TECHNOLOGIES:
   - INB313 Electronic Commerce Site Development
   - INB373 Web Application Development
   - INB374 Enterprise Software Architecture
   - INB385 Multimedia Systems
   - INB386 Advanced Multimedia Systems

8. UNGROUPED:
   - INB204 Special Topic 1
   - INB205 Special Topic 2
   - INB304 Special Topic 3
   - INB305 Special Topic 4
   - INB306 Project 1
   - INB307 Project 2
   - INB308 Project 3
   - INB355 Cryptology and Protocols
   - INB365 Systems Programming
   - INB381 Modelling and Animation Techniques
   - INB382 Real Time Rendering Techniques
   - INB860 Computational Intelligence for Control and Embedded Systems

IT - Complementary Study Unit List

Complementary Study Units: A maximum of 96 credit points can be chosen from:

1. The list of Breadth and Specialisation units.
2. Students can also choose from the range of CISCO units including INS350, INS351, INS352, INS354, INS356 and INS357.
3. Undergraduate units from other IT related degrees (e.g. INB124, INB180, INB181, INB182, INB280 or INB383).
4. Undergraduate units available with other QUT faculties.
5. Enrolment in INB830 or INB870 will NOT be counted towards completion of IT23.

NOTE: A maximum of 48 credit points of Advanced Standing for professional certifications is permitted towards completion of IT23 (including INS35X CISCO Units).
CISCO Units

CISCO Units

Students can choose from the following CISCO units as part of the Complementary Study Units (CISCO units located under Information Technology University Wide Unit Options on e-Student.)

- INS350  CCNA 1&2 Network Fundamentals and Routing
- INS351  CCNA 3&4 Lan Switching
- INS352  CCNP1: Building Scalable Internetworks
- INS354  CCNP3: Building Multi Layered Switched Networks
- INS356  Voice Over IP 1
- INS357  CISCO VOIP

IT23 Course structure - Part-time

Year 1, Semester 1
- INB101  Impact of IT
- INB102  Emerging Technology

Year 1, Semester 2
- INB103  Industry Insights
- INB104  Building IT Systems

Year 2, Semester 1
- Breadth Option
- Breadth Option

Year 2, Semester 2
- Breadth Option
- Breadth Option

Year 3, Semester 1
- INB201  Scalable Systems Development
  [Note: INB201 can only be taken after you have completed a minimum of 36 credit points of breadth units.]
- Specialisation Option

Year 3, Semester 2
- Specialisation Option
- Complementary Studies Unit (Elective)

Year 4, Semester 1
- Specialisation Option

Year 4, Semester 2
- Complementary Studies Unit (Elective)

Complemenatry Studies Unit (Elective)

Year 5, Semester 1
- Specialisation Option
- Complementary Studies Unit (Elective)

Year 5, Semester 2
- INB300  Professional Practice in IT
- Complementary Studies Unit (Elective)

Year 6, Semester 1
- INB301  The Business of IT
  [Note: INB300 and INB301 can only be taken after you have completed a minimum of 168 credit points of study.]
- Complementary Studies Unit (Elective)

Year 6, Semester 2
- INB302  IT Capstone Project
  [Note: INB301 must be completed before enrolling in INB302.]
- Complementary Studies Unit (Elective)

IT23 Course structure - Mid-Year entry

Year 1, Semester 1 (July)
- INB101  Impact of IT
- INB102  Emerging Technology
- INB103  Industry Insights
- INB104  Building IT Systems

Year 1, Semester 2 (February)
- Breadth Option
- Breadth Option
- Breadth Option
- Complementary Studies Unit (Elective)

Year 2, Semester 1 (July)
- Breadth Option
- Specialisation Option
- Complementary Studies Unit (Elective)
- Complementary Studies Unit (Elective)
**UNIT SYNOPSIS**

**INB101 IMPACT OF IT**
You will gain an appreciation of the massive and positive impact that IT has had on a wide range of fields including business, science, engineering, education and health. You will learn about the benefits of increased productivity due to IT. You will consider ethical issues and possible negative impacts of IT. You will raise your awareness of the social implications of IT systems for society at the global, local and personal levels. You will develop an informed position on issues, and justify your reasoning with considered supportive arguments.

**Antirequisites:** INN101  Credit points: 12  Contact hours: 3 per week  Campus: Gardens Point  Teaching period: 2011 SEM-1 and 2011 SEM-2

**INB102 EMERGING TECHNOLOGY**
The aim of this unit is to provide you with a conceptual framework so that you clearly identify Information Technologies and their purpose. This task will be fun as it covers a wide spectrum of ideas and allows us to examine some currently popular technologies. Information Technology has become so entwined with everyday life that identifying its scope is difficult, which also makes it difficult to identify opportunities where IT might further infiltrate into our daily lives for work and play. To achieve these aims, the unit introduces you to some of the theories and engineering practicalities that have already resulted in technological advances in the area of information technology. Concepts leading to existing technologies are introduced during lectures, which are followed by laboratory sessions where students will be encouraged to discuss social change, future information tools and explore the concepts required for constructing these technologies.

**Equivalents:** ITB005  Credit points: 12  Contact hours: 3 per week  Campus: Gardens Point  Teaching period: 2011 SEM-1 and 2011 SEM-2

**INB103 INDUSTRY INSIGHTS**
This unit aims to develop your awareness of the career possibilities in the ICT industry and to equip you with some of the essential skills required of an ICT professional. The unit helps you to derive a roadmap for your career; to enable you to identify the qualities, skills and interests you need to possess, to plan your career path. The unit will also introduce you the inter-disciplinary nature of ICT careers.

**Equivalents:** ITB002  Credit points: 12  Contact hours: 3 per week  Campus: Gardens Point  Teaching period: 2011 SEM-1 and 2011 SEM-2

**INB104 BUILDING IT SYSTEMS**
Today's modern integrated technology is built on IT systems which run in a range of contexts (e.g. mobile computing, robotics, and web-based systems) using a range of technological solutions such as programming and scripting, databases, web development and network programming. This unit is an integrated introduction to information technology designed to engage, inspire and inform and will demonstrate the important role that technical system design and development plays in achieving robust operation of a large variety of technological solutions. This unit will give you substantial hands-on, practical learning experiences and will motivate you through engagement in the creative, explorative and meaningful development of technological artefacts that operate in real world contexts.
INB120 CORPORATE SYSTEMS
Corporate Systems Management is a growing area where people can make a difference to the way organisations and societies operate. In key business domains, such as Government, Health, Finance, Utilities and Primary Industries, Corporate Systems Managers play a vital role in directing the socio-technical systems that affect everyone's lives. This unit will help students to gain an overview of these major roles and key business domains in order to set the scene for their future studies and help them to match their emerging professional interests with potential career directions.

Antirequisites: ITB360  Credit points: 12  Contact hours: 3 per week  Campus: Gardens Point  Teaching period: 2011 SEM-1

INB123 PROJECT MANAGEMENT PRACTICE
In your information technology career it is very likely that you will work on and lead project teams to achieve business outcomes. You will achieve more effective outcomes by employing a project management method. The aim of this course is to familiarise you with the PRINCE2® method so that you could successfully work within and lead project teams. At the conclusion of this unit you will may be eligible to sit the externally provided PRINCE2® Foundation and Practitioner accreditation examinations.

Antirequisites: INN500  Assumed knowledge: Completion of 48 credit points of an Undergraduate study is assumed knowledge.  Credit points: 12  Contact hours: 3 per week  Campus: Gardens Point  Teaching period: 2011 SEM-1 and 2011 SEM-2

INB201 SCALABLE SYSTEMS DEVELOPMENT
Information technology is a key enabling tool in a rapidly evolving global economy. IT systems underpin innovation across a range of application areas including business, economics, science, engineering, education and the arts. In order to educate graduates in this climate, Scalable Systems Development adopts an integrated approach to provide broad hands-on experiences designed to orient students to the range of possibilities within the IT discipline.

This team-based unit is an extension of project work introduced in Building IT Systems. Within a concrete, project-based context students will encounter the practical challenges of designing and implementing a substantial IT system. The unit aims to increase students' awareness of the potential of IT in enabling innovation through providing active, constructive and challenging problem-based learning experiences.

Prerequisites: (INB102 or ITB005) and (INB104 or ITB001)  Assumed knowledge: Completion of 36cp of Breadth units is assumed knowledge  Equivalents: ITB007  Credit points: 12  Contact hours: 3 per week  Campus: Gardens Point  Teaching period: 2011 SEM-1

INB205 SPECIAL TOPIC 2
This unit introduces computational techniques involving numerical simulations and visualization. These skills will be applied to solve problems in a range of application areas. The programming language MATLAB will be used, along with the simulation environment NetLogo.

Prerequisites: INB371  Assumed knowledge: Knowledge of programming in Java, C# or C++. Knowledge of basic data structures (stacks, queues, trees, linked lists, hash tables), complexity analysis  Credit points: 12  Contact hours: 3 per week  Campus: Gardens Point  Teaching period: 2011 SEM-1 and 2011 SEM-2

INB210 DATABASES
Databases and database systems are essential items that support many aspects of everyday life in modern society. All graduates from a course in Information Technology will be expected by employers to understand the concepts and terminology of databases. The aim of this unit is to introduce you to the structure and role of databases in modern organisations.

Prerequisites: INN210  Equivalents: ITB004  Credit points: 12  Contact hours: 3 per week  Campus: Gardens Point  Teaching period: 2011 SEM-2

INB220 BUSINESS ANALYSIS
This unit is aims to give you an introduction to the role, knowledge, and skills required of a business analyst. This unit focuses on both the trades—tools and methods used by
a business analyst, as well as the soft skills—creativity and communication, both of which are critical to successful business and requirements analysis. Through lectures, cases studies and role playing activities, you will develop basic knowledge and skills required for introductory business analysis (BA).

**Antirequisites**: INN220  
**Credit points**: 12  
**Contact hours**: 3 per week  
**Campus**: Gardens Point  
**Teaching period**: 2011 SEM-1

**INB221 TECHNOLOGY MANAGEMENT**  
This unit presents operational, tactical and strategic insights that support the activities central to the leadership and management of technology. These insights include project management, organisational leadership, outsourcing, planning, governance and millennium technologies. Such insights are used to inform decision-making - the core skill of any manager. Technology managers must understand the factors influencing any decision point. This unit equips students for the challenges of management and to contribute to the decision-making faced by managers and the staff who advise on these issues.

**Prerequisites**: INB103 or ITB002 or INB120 or ITB360  
**Antirequisites**: ITN241, ITN251 and ITN366  
**Equivalents**: ITB366, ITB241  
**Credit points**: 12  
**Contact hours**: 3 per week  
**Campus**: Gardens Point  
**Teaching period**: 2011 SEM-1

**INB250 FOUNDATIONS OF COMPUTER SCIENCE**  
Contemporary computer-based systems are built from a wide range of technologies working at different levels of abstraction, from microprocessor hardware, to operating system and application software, to entire communications networks. At each abstraction level different techniques are needed to understand emergent properties of the system. This unit introduces some of the foundational principles commonly used to reason about the behaviour of computer-dependent systems at different levels of abstraction. Most of the techniques are derived from the field of Discrete Mathematics and are the foundation of the discipline called Computer Science.

**Assumed knowledge**: Basic familiarity with set theory (Venn diagrams and set operators), elementary algebra (polynomial and summation expressions, exponents and logarithms, etc) and simple probability concepts (permutations and combinations).  
**Credit points**: 12  
**Contact hours**: 3 per week  
**Campus**: Gardens Point  
**Teaching period**: 2011 SEM-2

**INB255 SECURITY**  
This unit aims to give you an understanding of the major issues in information security. You will be able to identify critical information security concepts and determine the information security implications of interactions between entities. You will have knowledge of a range of techniques for protecting information, and understand the limitations of these techniques. You will be aware of international information security management standards.

**Prerequisites**: ITB161, ITB523, ITB623, ITN161 and INN255  
**Antirequisites**: ITB006  
**Credit points**: 12  
**Contact hours**: 3 per week  
**Campus**: Gardens Point  
**Teaching period**: 2011 SEM-1

**INB270 PROGRAMMING**  
This unit aims to give you a positive introduction to the skills required in solving computational problems and implementing solutions in a programming or scripting language. Although some theoretical aspects of computer programming are introduced briefly, the overall emphasis of the unit is programming practice. The unit emphasises generic programming concepts and related problem-solving strategies. The skills you learn in this unit will be applicable to a wide variety of commonly-used, industrially-significant programming and scripting languages.

**Prerequisites**: INB104 or ENB246  
**Antirequisites**: INN270  
**Equivalents**: ITB003  
**Credit points**: 12  
**Contact hours**: 3 per week  
**Campus**: Gardens Point  
**Teaching period**: 2011 SEM-1 and 2011 SEM-2

**INB271 THE WEB**  
The aims of the unit are to give you a thorough understanding of what the web is, how it works and what it has to offer. Additionally, the unit aims to give you a general understanding and basic skills in developing dynamic web applications, including an appreciation of the variety of implementation technologies available. Through an understanding of how web technologies have evolved to date, you will appreciate the necessity for lifelong learning and become an insightful predictor of future developments in this area. You will learn to critically analyse technological alternatives in order to adapt to and innovate with
technologies that presently do not exist. You will appreciate the business or organizational context within which web applications exist and be skilled in communicating within that environment. You will appreciate the social and ethical issues relating to web based systems including accessibility, globalization, privacy, and piracy.

**Prerequisites:** INB104  
**Antirequisites:** INB373 and INN373 and ITB007 and ITB227 and ITN007 and ITN227  
**Credit points:** 12  
**Contact hours:** 3 per week  
**Campus:** Gardens Point  
**Teaching period:** 2011 SEM-1

**INB272 INTERACTION DESIGN**

The aim of this unit is to provide you with an understanding of the theory, practices and challenges associated with the development of creative interactive design and human computer interaction.

**Prerequisites:** INB103 or INB181  
**Equivalents:** ITB254  
**Credit points:** 12  
**Contact hours:** 3 per week  
**Campus:** Gardens Point  
**Teaching period:** 2011 SEM-2

**INB300 PROFESSIONAL PRACTICE IN IT**

In this unit you will have the opportunity to experience real world work experiences and to reflect on how your studies have prepared you for the work environment. This will give you the opportunity to plan on how to best take advantage of your remaining studies to prepare for your planned career. To help you to understand your future career you will be working in a team and/or group environments, seeing firsthand the challenges and constraints that arise during professional practice in a real world industry environment. You will develop a richer appreciation of the graduate capabilities required of all information technology professionals, particularly skills such as communication, negotiation and problem-solving strategies.

**Prerequisites:** INB201  
**Antirequisites:** ITS020, INS010, INS011, INS012, INS020  
**Assumed knowledge:** To be taken in your final year of the BIT. You must have completed at least 132 CPs of IT units, including at least two specialisation units. Normally you should have completed at least 192 CPs in a single degree or 288 CPs in a double degree  
**Credit points:** 12  
**Contact hours:** 3 per week  
**Campus:** Gardens Point  
**Teaching period:** 2011 SEM-1, 2011 SEM-2 and 2011 SUM

**INB301 THE BUSINESS OF IT**

As an IT professional you are more and more evaluated in terms of the business value that you produce. This unit will prepare you for professional practice by making you "business savvy," i.e. giving you the business knowledge and skills that will help you with your future career and job. In particular the unit will address three themes: (1) career planning and job applications, (2) entrepreneurship & innovation, and (3) business and IT strategy. You will be introduced to career development tools that enable you to self-manage your career and life. You will learn how to critically think about the requirements of a job and reflect upon your own experiences and learn how to communicate them. You will also learn about the entrepreneurial process of identifying a business opportunity and how to take advantage of that opportunity. In addition, you will gain an understanding of core strategic concepts and models, discuss typical strategy tools and then apply them to the 'Business of IT'.

**Prerequisites:** INB301  
**Assumed knowledge:** Completion of 120 credit points within BIT is assumed  
**Credit points:** 12  
**Contact hours:** 3 per week  
**Campus:** Gardens Point  
**Teaching period:** 2011 SEM-1 and 2011 SUM

**INB302 IT CAPSTONE PROJECT**

Students are to work together in a team of 4-5 on a project that addresses one of the following three types of problems: real business problems, real market needs, real research problems. This unit extends students' development of the professional, technical and teamwork skills required by IT professionals in practice. Students will extend their knowledge and skills in the areas of IT project management through completing professional project documentation and managing the team project. Students will also gain a greater understanding and skill level in analysis and design, and their significance in delivering successful business or research outcome. The unit also focuses on furthering students' professional skills in report writing, oral communication, and visual communication.

**Prerequisites:** INB301  
**Assumed knowledge:** Students are expected to have a solid IT background knowledge (e.g., completion of at least 192 credit points)  
**Equivalents:** ITB010  
**Credit points:** 12  
**Contact hours:** 3 per week  
**Campus:** Gardens Point  
**Teaching period:** 2011 SEM-2 and 2011 SUM

**INB304 SPECIAL TOPIC 3**

Traditional Artificial Intelligence (AI) aims at satisfying the Turing test, that is, it aims at making computers indistinguishable from humans. Computer games AI aims at giving Non-Player Characters (NPC) behavioural artefacts that complement a game narrative. Computer game AI is a special area of study that deals with algorithmic approaches to entertainment affects in NPC. Students will develop in this unit an understanding of problems, solutions and algorithms that generally defines the current state of computer game AI. The aim of this unit is to provide students with an intermediate level course in computer game AI that involves a set of the most relevant algorithms and their applications in the interactive entertainment and game industries.
The unit presents and discusses the Enterprise Systems Lifecycle model, orienting students to the requirements of addressing total cost of ownership, change management requirements and process modelling requirements in order to achieve business benefits. Concepts of Enterprise Systems success and associated enablers and barriers are also introduced. This unit introduces the technical architecture of complex 3-tiered client server environments. It seeks to show how an integrated complex database environment meets common business needs, and yet fails to meet the total Information Systems requirements.

**INB312 ENTERPRISE SYSTEMS APPLICATIONS**

The aim of this unit is to introduce one of the more complex and comprehensive Enterprise Systems applications. This unit introduces the business perspective and application processes of modules (such as FI, CO, PP, MM and S&D) and investigates the support provided by these systems and the integration between modules by following some of the major processes in a business. The unit enables you to experience both the business analyst view and the user's view of the system across a number of business processes.
INB313 ELECTRONIC COMMERCE SITE DEVELOPMENT
This unit will enable you to specify, design, implement and maintain effective e-commerce applications. You will obtain a broad understanding of the potential of e-commerce and how it can be employed to benefit an organisation. You will get direct experience of creating an e-commerce storefront following a business to business (B to B) or business to consumer (B to C) model. You will also have an understanding of the computer systems that underpin e-commerce including payment systems and secure transactions.

Equivalents: ITB260 Credit points: 12 Contact hours: 3 per week Campus: Gardens Point Teaching period: 2011 SEM-2

INB320 BUSINESS PROCESS MODELLING
The aim of this unit is to introduce you to modern methodologies of business process modelling. A main objective is to increase your awareness of the conceptual foundation of modelling and for the capabilities of BPMN and available tools. You will learn how to use grammars and tools to build, maintain and communicate practically relevant process models.

Equivalents: ITB298 Credit points: 12 Contact hours: 3 per week Campus: Gardens Point Teaching period: 2011 SEM-2

INB321 BUSINESS PROCESS MANAGEMENT
The aim of this unit is to introduce you to modern methodologies of Business Process Management. A main objective is to increase your awareness of the close link between business requirements and IT capabilities, and the related fundamental role of business processes. This unit also seeks to develop logical thinking, an appreciation for conceptual models, and the capability to understand and deal with complex systems.

Antirequisites: INN321 Credit points: 12 Contact hours: 3 per work Campus: Gardens Point Teaching period: 2011 SEM-1

INB322 INFORMATION SYSTEMS CONSULTING
The aim of the unit is to develop your skills in the consulting engagement process. This unit will give you an appreciation of the management of consulting practices and an understanding of the consulting sector generally. This unit presents the tactical and strategic issues involved in management consulting, and in particular: client engagement. In the unit there is an emphasis on Information Systems (IS) related work. IS constitutes a substantial portion of consulting activity and cuts across all areas of business expertise. The unit examines the dynamics of IS consulting within the context of large consulting firms and familiarises students with the consulting engagement lifecycle.

Antirequisites: ITB264, ITN264 Assumed knowledge: Completion of 96 credit points of an Undergraduate study is assumed knowledge Credit points: 12 Contact hours: 3 per week Campus: Gardens Point Teaching period: 2011 SEM-1

INB335 INFORMATION RESOURCES
This unit will help you to understand the structure of the information environment, to reflect upon the information resources you discover, and to develop the ability to find appropriate information for future problem solving. You will develop your skills in identifying, accessing, evaluating and retrieving information resources to meet specific information needs. The unit will also help you develop skills in teamwork and oral and written communication.

Equivalents: ITB322 Credit points: 12 Contact hours: 3 per week Campus: Gardens Point Teaching period: 2011 SEM-2

INB340 DATABASE DESIGN
The aim of this unit is to help you develop your knowledge, understand a formal specification tool (ORM) for modelling information systems unambiguously and to apply this formal technique to conceptualise information systems found in many real world application domains.

Prerequisites: INB210 or ITB004 Antirequisites: ITB229 Credit points: 12 Contact hours: 3 per week Campus: Gardens Point Teaching period: 2011 SEM-1

INB341 SOFTWARE DEVELOPMENT WITH ORACLE
This unit aims to develop a sound understanding of database creation, installation, administration, management, security, back up/recovery and application development. The unit aims to develop practical skills in each of these elements, using appropriate Oracle software.

It is expected that students undertaking this unit will have prior knowledge of relational database terminology and concepts, be thoroughly able to develop SQL for querying, updating and creating tables, and have a sound knowledge of database design.

Prerequisites: INB210 or ITB004 or INB122 Equivalents: ITB223 Credit points: 12 Contact hours:
INB342 ENTERPRISE DATA MINING AND DATA ANALYSIS
This unit will provide a comprehensive theoretical coverage of various topics in data and web mining. In addition there will be a significant practical component using hands on tools to solve real-world problems. Specifically, we will consider techniques from machine learning, data mining, text mining, and information retrieval to extract useful knowledge from data which are used for business intelligence, document databases, site management, personalization, and user profiling. This unit will first cover a detailed overview of the mining process and techniques, and then concentrate on applications of these techniques to web, e-commerce, document databases and data from advanced applications.

Prerequisites: INB122 or INB210 or INB340 or AYB114
Antirequisites: INN342
Credit points: 12  Contact hours: 3 per week  Campus: Gardens Point  Teaching period: 2011 SEM-2

INB343 ADVANCED DATA MINING AND DATA WAREHOUSING
Data warehousing and mining have been well recognized as the dominating techniques for using databases in the future. This unit discusses the concepts, structures and algorithms of data warehousing and mining, e.g., data architecture and quality, data warehouse and data mart, data cubes, OLAP, patterns, association rules and decision tables. Through this study, students will be able to demonstrate knowledge and skills of designing, developing and implementing data warehousing components in SQL environments. It also enables students to design systems and tools that provide services to data management and analysis, such as data warehouses, data mining tools, business intelligence based systems, smart information use systems, and data processing systems.

Prerequisites: INB210  Antirequisites: INN343
Credit points: 12  Contact hours: 3 per week  Campus: Gardens Point  Teaching period: 2011 SEM-1

INB344 SEARCH ENGINE TECHNOLOGY
Prerequisites: INB371  Assumed knowledge: Intermediate programming experience with intermediate-level knowledge of data structures and algorithms
Credit points: 12  Teaching period: 2011 SEM-1

INB345 MOBILE DEVICES
This unit provides the opportunity for exploring new and emerging mobile devices and wireless technology including iPhone, Netbook, 3G, WiMax, and RFID. Students will critically review and understand how they can be used for current contexts such as government, business, education and social community, as well as emerging 'wilderness' environments with no power and wired communication. Students will appreciate the impacts of these devices and be inspired for the current and future opportunities in ICT usage trends.

Credit points: 12  Contact hours: 3 per week  Campus: Gardens Point  Teaching period: 2011 SEM-2

INB346 ENTERPRISE 2.0
Web technologies and applications are reshaping contemporary organisations. By 2009 it has been predicted that more than 80% of organisations will have blogs and more than 50% of organisations will have wikis as part of their business solutions and strategies. Furthermore, with the advent of Cloud Computing, many companies are outsourcing key business functions to external web applications. The successful contemporary organisation requires expertise in not just business and management practice but in the critical design, use and consequences of new and emerging technologies. This unit will explore the ways in which IT has impacted on how organisations design and deliver activities and services internally and externally. The aim of this unit is to provide you with an understanding of how web 2.0 is changing the way contemporary organisations function.

Credit points: 12  Contact hours: 3 per week  Campus: Gardens Point  Teaching period: 2011 SEM-2

INB347 WEB 2.0 APPLICATIONS
Web 2.0 applications enable the user to be control. The unit will provide the opportunity for students to explore web 2.0 applications including blogs, wikis, social networking, social tagging, podcasts, gaming, storytelling and virtual worlds such as second life. Students will critically consider the many and varied web applications and how they can be used in different contexts such as government, small and medium size businesses, non-profit organisations, educational institutions and community groups.

Credit points: 12  Contact hours: 3 per week  Campus: Gardens Point  Teaching period: 2011 SEM-1

INB350 INTERNET PROTOCOLS AND SERVICES
An understanding of the theoretical and practical concepts of network protocols and services is highly useful and relevant to network engineers and others working in the Information Processing industries. This unit introduces you to Internet protocols and the design, implementation and operation of network based applications. Theory and practical skills taught in this unit will be useful if you intend undertaking further networking units.
Prerequisites: INB251 or ITB006 or ITB510
Antirequisites: ITB624, ITB629, ITB720, ITN525, ITN667, ITN720
Credit points: 12  Contact hours: 3 per week
Campus: Gardens Point  Teaching period: 2011 SEM-1

INB351 UNIX NETWORK ADMINISTRATION
The aim of this unit is to provide students with a working knowledge of the technical aspects and theory of network administration and management. The unit uses the Unix environment as the learning platform for attaining technical skills and for the development of problem solving skills necessary to be a successful networking professional.

Prerequisites: INB350  Equivalents: ITB721, ITB625, ITB535, ITB525  Credit points: 12  Contact hours: 3 per week
Campus: Gardens Point  Teaching period: 2011 SEM-2

INB352 NETWORK PLANNING
The unit draws together subject matter from a number of different networking-related areas. The aim of the unit is to assemble the previously acquired knowledge and techniques and apply it in a cohesive fashion to the task of network planning.

Prerequisites: INB350  Antirequisites: ITB551, ITB628, ITB722, INN352, ITN551, ITN722, ENN523  Credit points: 12  Contact hours: 3 per week
Campus: Gardens Point  Teaching period: 2011 SEM-2

INB353 WIRELESS AND MOBILE NETWORKS
This unit provides you with the skills to be able to design and understand the issues involved with different types of wireless communications systems. It develops your knowledge of Wide Area Networks (WANs), Local Area Networks (LANs) and Personal Area Networks (PANs) as well as skills in programming for mobile handsets. You will also develop knowledge of the different types of wireless communications technologies available and when each is most applicable in a particular situation.

Prerequisites: INB251 or ITB006  Antirequisites: ITN723  Assumed knowledge: Networks or equivalent networking knowledge is assumed knowledge  Equivalents: ITB723  Credit points: 12  Contact hours: 3 per week
Campus: Gardens Point  Teaching period: 2011 SEM-1

INB355 CRYPTOLOGY AND PROTOCOLS
Cryptographic techniques are widely used to implement computer and network security. As an IT security professional you may be required either to evaluate or implement information systems using cryptographic algorithms and protocols. This elective unit covers the main cryptographic technical concepts including encryption, digital signatures and cryptographic protocols.

Prerequisites: INB270 or ITB003  Antirequisites: ITB646, ITB548, ITB566  Assumed knowledge: Maths B or equivalent is assumed knowledge.  Equivalents: ITB732  Credit points: 12  Contact hours: 3 per week
Campus: Gardens Point  Teaching period: 2011 SEM-1

INB365 SYSTEMS PROGRAMMING
Systems programming is an essential part of any computer-science education. This unit uses operating system concepts to teach the foundations of systems programming and advanced concepts for producing softwares that provide services to computer hardware. Through this study, you will be able to demonstrate knowledge of the principles and techniques of process management, memory and file management, protection & security, and distributed systems.

Prerequisites: INB270 or ITB003 or INB371  Antirequisites: ITB745, ITB706, INN365  Assumed knowledge: Fundamentals of computer architecture; high level programming languages (such as C, C++, Java Python) is assumed knowledge.  Credit points: 12  Contact hours: 3 per week
Campus: Gardens Point  Teaching period: 2011 SEM-2

INB370 SOFTWARE DEVELOPMENT
Understanding software development is an integral part of the IT industry for software engineers. Software development relies on object technologies, programming techniques and numerous code libraries provided by language developers and third party vendors. Integrated Development Environments, unit testing frameworks, automated and continuous build tools and versioning systems are all becoming part of the tool set modern software developers must be familiar with. This unit is designed to introduce these technologies and techniques to show how software can be rapidly developed.

Prerequisites: INB270 or ITB003  Credit points: 12  Contact hours: 3 per week
Campus: Gardens Point  Teaching period: 2011 SEM-1

INB371 DATA STRUCTURES AND ALGORITHMS
The purpose of this unit is to ensure that you have a sound knowledge of modern programming techniques and their use in providing medium-scale software solutions. This unit will teach you to decompose a problem and produce a modular solution to a programming task. The principles to analyse algorithms for efficiency will also be introduced. In addition, you will acquire the necessary skills for you to use the tools available in common development environments, such as Microsoft Visual Studio.

Prerequisites: INB270 or ITB003  Antirequisites:
ITB711, ITB702, INN371  Credit points: 12  Contact hours: 3 per week  Campus: Gardens Point  Teaching period: 2011 SEM-1

INB372 AGILE SOFTWARE DEVELOPMENT
This unit introduces you to the software development process. You will look at each of the major activities involved in developing a software system. You will also learn how to manage and control the software development process for a large project when a number of team members are involved in the development. This unit develops the professional practice of working on large software systems.

Prerequisites: INB370  Antirequisites: INN372, ITB612, ITB712  Assumed knowledge: Good programming, debugging, testing and software development skills.
Credit points: 12  Contact hours: 3 per week  Campus: Gardens Point  Teaching period: 2011 SEM-2

INB373 WEB APPLICATION DEVELOPMENT
This unit will provide you with an understanding of the issues, structure and technologies used for developing web-based systems. The unit will provide you with the theoretical and practical skills needed to develop enterprise critical applications designed with an n-tier architecture using state of the art technologies. A comparative technology approach is taken, including an analysis of how web technologies have evolved to date, in order to identify common themes and to better enable you to comprehend and critically evaluate future web technology offerings.

Prerequisites: INB271 or ITB007  Antirequisites: INN271, INN373  Equivalents: ITB716 and ITN716
Credit points: 12  Contact hours: 3 per week  Campus: Gardens Point  Teaching period: 2011 SEM-1

INB374 ENTERPRISE SOFTWARE ARCHITECTURE
This unit aims to introduce you to the field of enterprise architecture. It attempts to give you a grounding in the basic knowledge and skills required by an enterprise architect. This includes a solid understanding of the IT challenges currently facing medium to large size organizations, the theory and technologies currently used to address them and an appreciation of the business imperative for which they are utilized.

Prerequisites: INB270 or ITB003  Equivalents: ITB717
Credit points: 12  Contact hours: 3 per week  Campus: Gardens Point  Teaching period: 2011 SEM-2

INB381 MODELLING AND ANIMATION TECHNIQUES
The development of computer graphics tools is a significant application within the IT, Games and related industries, relying heavily on software engineering methodologies.

These tools, such as CAD systems, 3D modelling systems and games engines, are used in such industries as advertising, engineering, manufacturing, simulation for education and training, computer games, film special effects, etc. Modelling techniques are intrinsic to a 3D graphics system, especially one used for real time animation. With increased CPU and GPU power, the ability to animate in real time is allowing more sophisticated interaction and the merger of games/simulation and film. The unit will provide you with the knowledge and skills to use an industry standard graphics API to implement graphics applications and to develop a basic real time animation system using an industry standard language.

Prerequisites: INB371 and MAB281  Equivalents: ITB746  Credit points: 12  Contact hours: 3 per week  Campus: Gardens Point  Teaching period: 2011 SEM-2

INB382 REAL TIME RENDERING TECHNIQUES
This unit will provide you with knowledge and skills in basic to advanced techniques in real-time rendering using shading languages. You will be able to implement a high-quality real-time rendering system in an industry standard API.

Prerequisites: INB371, INB381 and MAB281  Antirequisites: ITB648 and ITB649  Equivalents: ITB747
Credit points: 12  Contact hours: 3 per week  Campus: Gardens Point  Teaching period: 2011 SEM-1

INB385 MULTIMEDIA SYSTEMS
This unit will explore the concepts underpinning multimedia systems and the role played by these technologies in the overall knowledge of a computer professional. You will learn to: design and develop different kinds of interactive multimedia applications; understand the bank of knowledge in cultural developments surrounding the emergence of multimedia technologies; analyse design and processes that contribute to the production of a creative work, using contemporary hardware and software technologies; develop the creative potential of temporal media forms and their placement and use within new media works; understand principles and conventions associated with the interpretation and production of meaning through interactive visual representation.

Prerequisites: INB103 or ITB002  Antirequisites: ITB257
Credit points: 12  Contact hours: 3 per week  Campus: Gardens Point  Teaching period: 2011 SEM-1

INB386 ADVANCED MULTIMEDIA SYSTEMS
This advanced level unit will give you high level design and development skills in some of the current and emerging areas of the new media. Web delivered applications, stand-
alone systems and installations will be included. It will endeavour to give you an in-depth understanding of interactive Multimedia Systems. You will be given the theoretical basis and practical skills to motivate you in the design and creation of a state-of-the-art system in this discipline. In the process it will encourage a professional team approach appropriate to the industry environment.

**Prerequisites:** INB385 (Special considerations may apply)  
**Equivalents:** ITB259, ITN259  
**Credit points:** 12  
**Contact hours:** 3 per week  
**Campus:** Gardens Point  
**Teaching period:** 2011 SEM-2

**INB860 COMPUTATIONAL INTELLIGENCE FOR CONTROL AND EMBEDDED SYSTEMS**

This is a specialisation unit in the area of Infomechatronics that introduces five methods from the field of computational intelligence and relates them to applications on real time control and embedded systems. The methods are: Knowledge Base Systems, Fuzzy Control, Neural Networks, Reinforcement Learning and Evolutionary Computation. The unit is also intended to teach the specific design and programming skills that will enable you to solve problems using computational intelligence methods in real-time embedded systems. It is assumed that you already have knowledge of programming.

**Assumed knowledge:** Knowledge of a programming language like Python, Java or C is assumed.  
**Equivalents:** ITB847  
**Credit points:** 12  
**Contact hours:** 3 per week  
**Campus:** Gardens Point  
**Teaching period:** 2011 SEM-1

**INS350 CCNA 1&2 NETWORK FUNDAMENTALS AND ROUTING**

This unit provides in-demand Internet technology skills for designing, building and maintaining networks. Combining instructor-led, online education with hands-on laboratory exercises, the curriculum enables students to apply what they learn in class while working on actual networks. From building basic networking skills to advanced VLAN troubleshooting, the Networking Academy curriculum prepares students for industry certification that lead to lifelong opportunities. Particular emphasis is given to using decision-making and problem-solving techniques in the application of science, mathematics, communication and social studies concepts to solve networking problems.

**Antirequisites:** INS450  
**Equivalents:** ITS701, ITS601, ITB011, ITN011  
**Credit points:** 12  
**Contact hours:** 3 per week  
**Campus:** Gardens Point  
**Teaching period:** 2011 SEM-1 and 2011 SEM-2

**INS351 CCNA 3&4 LAN SWITCHING**

This unit is the second step to a Cisco career certification path. The aim of this unit is to prepare students for the topics covered in Interconnecting Cisco Networking Devices Part 2 (ICND2) v1.0 (640-816) and Cisco Certified Network Associate Exam (CCNA 640-802). The ICND exam is one of the two qualifying exams available to candidates pursuing a two-exam option for the Cisco Certified Network Associate (CCNA) certification and CCNA 640-802, single-exam option for the Cisco Certified Network Associate CCNA certification.

**Prerequisites:** INS350  
**Antirequisites:** INS451  
**Credit points:** 12  
**Contact hours:** 3 per week  
**Campus:** Gardens Point  
**Teaching period:** 2011 SEM-1 and 2011 SEM-2

**INS352 CCNP1: BUILDING SCALABLE INTERNetworks**

This unit is the second step to a Cisco career certification path. It provides more knowledge and practical skills on Wide Area Network through various routing protocols and layer 2 related technologies. This unit provides you with advanced level of study on WAN technologies.

**Prerequisites:** INS351  
**Antirequisites:** INS456, INS452  
**Assumed knowledge:** INS350, CCNA 1/2/3/4 are recommended prior study  
**Equivalents:** ITS703  
**Credit points:** 12  
**Campus:** Gardens Point

**INS354 CCNP3: BUILDING MULTI LAYERED SWITCHED NETWORKS**

This unit is the second step to a Cisco career certification path. It provides more knowledge and practical skills on securing enterprise networks with various security technologies. The aim of this unit is to provide professional knowledge and skills focusing on securing LANs and WANs environment.

**Prerequisites:** INS350 and INS351  
**Assumed knowledge:** INS350 and INS351 are recommended prior study  
**Equivalents:** ITS705  
**Credit points:** 12  
**Campus:** Gardens Point

**INS356 VOICE OVER IP 1**

**Prerequisites:** INS350  
**Antirequisites:** INS456  
**Credit points:** 12

**INS357 CISCO VOIP**

This unit provides internet technology skills for converged voice and data networks as well as the challenges faced by its various technologies. This unit presents generic solutions and implementation considerations to address those challenges. Students will learn about PSTN, Voice over IP network architecture, Voice over IP system components, features, and Quality of Service (QoS) technologies. In
particular this unit focuses on developing understanding on the latest VoIP technologies and skills to build VoIP network for campus networking environment. The aim of this unit is to prepare students for the topics covered in CISCO CCNA Voice Exam (640-460 IIUC Implementing Cisco IOS Unified Communications OR 642-436 CVOICE 6.0 Cisco Voice Over IP). This unit aims to build important knowledge and skills necessary to build the VoIP integrated campus network.

**Prerequisites:** INS350  
**Credit points:** 12  
**Campus:** Gardens Point  
**Teaching period:** 2011 SEM-2