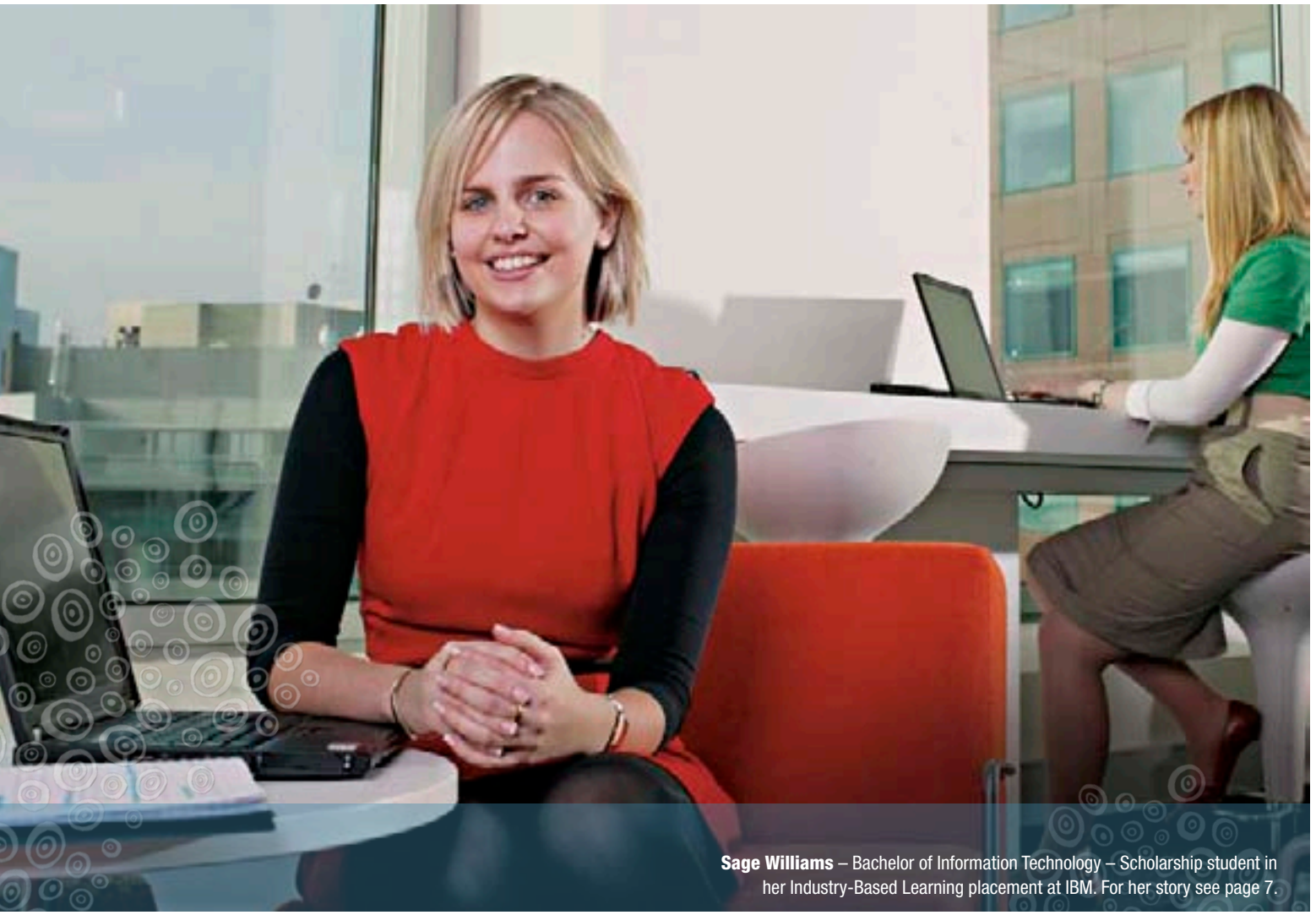
SWINBURNE

Information and Communication Technologies

Undergraduate degrees

SWINBURNE UNIVERSITY OF TECHNOLOGY

www.swinburne.edu.au



Sage Williams – Bachelor of Information Technology – Scholarship student in her Industry-Based Learning placement at IBM. For her story see page 7.

GRADUATE SATISFACTION

★★★★★

GENERIC SKILLS

Areas of study:

- Business Information Systems
- Computer Science
- Computing
- Information Technology – Scholarship
- Network Design and Security
- Software Development
- Telecommunication and Network Engineering

undergraduate

The Information and Communication Technologies (ICT) industry offers exciting and challenging career opportunities in Australia and overseas across a range of areas including health, transport, automotive, defence and security, media and entertainment, banking and finance, education, retail, industrial and government. Graduates entering this industry will become specialists in information and communication technologies and will work within teams to help businesses and organisations build and improve their systems and software.

Over the past five years there have been some dramatic changes in ICT. Computers have become much more powerful, and broadband telecommunications allow connectivity that is faster and more flexible. The most significant change has been the emergence of information as the most important component of a successful business. Information is now the lifeblood of the modern corporation, and there is a desperate need for information workers who can analyse, control, manipulate and share information in innovative ways.

The Faculty of ICT has developed a range of degree programs that are sensitive to the demands of the modern information economy. Swinburne's ICT programs are designed and developed in collaboration with senior industry advisors to ensure that graduates are equipped with the right technical, business and communication skills needed in industry. Swinburne ICT graduates are confident, business-savvy, work-ready professionals that are in demand by the ICT industry.

Visit: www.swinburne.edu.au/ict

Features

Industry relevance

Swinburne is the most industry-focused university in Victoria. Our ICT students develop attributes that are keenly sought by employers: communication skills, teamwork, business understanding and professionalism. Our curriculum is guided through interaction with senior representatives from the ICT industry.

Industry-Based Learning (IBL)

Why wait until you have finished university to get a great job? Giving students a foot in the workforce door with valued industry experience is a key part of Swinburne's Industry-Based Learning program. IBL gives you a chance to combine your degree with meaningful, paid work in your chosen field for 6 or 12 months.

Recently, ICT students have been placed with businesses such as Axa, Berri, Coles Myer, Fosters Group, Fujitsu, Herald and Weekly Times, IBM, National Australia Bank, Telstra and the Age.

Note: Industry-Based Learning is not available to international students.

For further information visit: **www.swinburne.edu.au/ict/ibl**

International experience

Students can choose to add an international flavour to their education, and gain the study benefits and life experience that come from travelling to another country. You have the option of going on exchange, undertaking a study tour, or filling an IBL placement overseas.

Visit: **www.swinburne.edu.au/edabroad**

Employment opportunities

Our aim is to offer every student the best possible start to their career. Because Swinburne is an early adopter of new technologies, our graduates have the edge when it comes to exciting new fields. Our programs lead to high employment rates in challenging fields that pay well.

Scholarships

All students enrolled in the Bachelor of Information Technology receive a scholarship funded by Swinburne's industry partners. Currently the scholarship is worth approximately $33,500 (tax free) over the three years of the degree. In addition, students get to spend two 20-week periods working with Swinburne's partner organisations, giving them direct experience in the IT industry. To apply, students must select the Bachelor of Information Technology degree in their VTAC application, and also submit an application form directly to Swinburne.

Swinburne also offers Vice-Chancellor's scholarships to students who display academic excellence in their Year 12 studies. Vice-Chancellor's scholarships exempt students from paying the student contribution fees, and are available in all of Swinburne's ICT degrees. To be considered, students must achieve an ENTER of 97 or above, and complete an expression of interest form by the close of change of preference.

Visit: **www.swinburne.edu.au/scholarships**

Information and Communication Technologies

Professional Learning

As part of its major Professional Learning initiative, Swinburne is increasing its range of project-based learning options, strengthening industry connections and integrating career-skills development even more firmly in undergraduate teaching. This new initiative will allow students to select units from outside their major discipline, undertake career management training and access a wider range of international opportunities and major final-year projects.

Visit: **www.swinburne.edu.au/professionallearning**

Professional recognition

Swinburne IT qualifications are accredited at Professional Level with the Australian Computer Society and our telecommunication engineering degrees are accredited by Engineers Australia. This means that the courses are externally vetted to ensure they meet the highest standards of the profession and industry.

Pathways

At Swinburne we offer students an advanced credit transfer system known as the Pathways Program. This allows you to move seamlessly between ICT courses offered by TAFE and university.

Visit: **www.swinburne.edu.au/pathways**

Double degrees

At Swinburne you have the opportunity to combine your degree with another area of study, giving you two qualifications.

Swinburne offers the following qualifications:

- Bachelor of Business Information Systems/Bachelor of Business
- Bachelor of Engineering (Robotics and Mechatronics)/ Bachelor of Science (Computer Science and Software Engineering)
- Bachelor of Engineering (Telecommunication and Network Engineering)/ Bachelor of Science (Computer Science and Software Engineering)
- Bachelor of Multimedia (Games and Interactivity)/ Bachelor of Science (Computer Science and Software Engineering)

For information on these courses check out the appropriate course brochure or visit **www.swinburne.edu.au/coursefinder**

Honours

Swinburne offers honours programs in information systems and computer science that will deepen your intellectual understanding, increase your career opportunities and may lead to a PhD and a career in research. On successful completion of a 3-year bachelor degree, you may apply to join the honours program, which will involve one full-time year of specialised academic study.

For more information on Honours programs visit **www.swinburne.edu.au/ict/research**

Facilities

As a Swinburne student you will have access to a number of PC labs, including Hawthorn's Late Lab which offers 24-hour, 7-day access. Wireless network access also means that you can turn on your laptop anytime, anywhere within a coverage area, and access the university network.

Business Information Systems

People who embark on Information Systems (IS) careers enjoy highly varied and exciting jobs. Graduates are well versed in business concepts and understand the role of information systems in driving and achieving business goals and objectives. Throughout your IS studies, you will learn how to understand and solve business problems, often through the application of packaged software systems. You will develop some technical skills, but are more likely to progress to a career in business analysis, process modelling, IS project management and implementing information systems and services.

Students who wish to pursue a career in information systems should consider the following degrees:

- Bachelor of Business Information Systems
- Bachelor of Business Information Systems/Bachelor of Business
- Bachelor of Computing – Information Systems specialisation
- Bachelor of Information Technology – Scholarship Program

Telecommunications, Networks and Security

Telecommunication and Network Engineering involves communicating information electronically over a variety of media. Telecommunication and Network Engineers design and develop sophisticated systems including cellular mobile communication networks, broadband multimedia computer networks, and radio and television broadcasting systems. Organisations who wish to secure information combined in their network are faced with many threats. Common security threats include software vulnerabilities, design flaws and implementation bugs including viruses, worms and spyware. Technically, politically, or financially motivated sophisticated network attacks usually target a particular company or system. It has become increasingly vital for organisations to protect information security, integrity and daily business operations. Swinburne, through its programs, has addressed the growing industry demand for security specialists who need to be competent and knowledgeable in network technologies, design and security. Students who wish to pursue a career in telecommunications, networks and security should consider the following degrees:

- Bachelor of Computing (Network Design and Security)
- Bachelor of Engineering (Telecommunication and Network Engineering)
- Bachelor of Engineering (Telecommunication and Network Engineering)/ Bachelor of Science (Computer Science and Software Engineering)

Software Development

Today's software professionals utilise their technical, communication, problem-solving and people skills in order to design, develop and manage software systems in organisations. Software professionals are involved in a wide range of activities, from programming through to working with global teams analysing client requirements, designing system architectures, managing projects, controlling quality and costs, and integrating systems into organisations. Students who wish to pursue a career in software development should consider the following degrees:

- Bachelor of Computing – Software Development specialisation
- Bachelor of Science (Professional Software Development)
- Bachelor of Science – Computer Science and Astrophysics and Supercomputing majors

Business Information Systems

Course	Campus	Full-time duration#	VTAC Code	VCE Prerequisites	2008 Round 1 clearly-in ENTER
Bachelor of Business Information Systems	Hawthorn	Three years plus optional IBL year**	34641	Units 3 and 4 – English*	N/A
Bachelor of Business Information Systems/ Bachelor of Business	Hawthorn	Four years plus optional IBL year**	35461	Units 3 and 4 – English*	70.15
Bachelor of Computing – Information Systems Specialisation	Hawthorn	Three years plus optional IBL year**	34171	Units 1 and 2 – Mathematics (any) Units 3 and 4 – English*	70.65
Bachelor of Information Technology – Scholarship Program	Hawthorn	Three years plus IBL year	34311	Units 3 and 4 – a study score of at least 20 in English and Mathematics (any)	81.15
Vice-Chancellor's Scholarship Information Technology/Science	Refer to individual course entries	Refer to individual course entries	34621	Minimum ENTER of 97.00. Refer to individual course entries for specific prerequisites	97.00

Telecommunications, Networks and Security

Course	Campus	Full-time duration#	VTAC Code	VCE Prerequisites	2008 Round 1 clearly-in ENTER
Bachelor of Computing (Network Design and Security)	Hawthorn	Three years plus optional IBL year**	34211	Units 1 and 2 – Mathematics (any) Units 3 and 4 – English*	70.45
Bachelor of Engineering (Telecommunication and Network Engineering)	Hawthorn	Four years plus optional IBL year**	34201	Units 3 and 4 – English* and a study score of at least 20 in one of Mathematical Methods (either) or Specialist Mathematics	75.25
Bachelor of Engineering (Telecommunication and Network Engineering)/Bachelor of Science (Computer Science and Software Engineering)	Hawthorn	Five years plus optional IBL year**	34191	Units 3 and 4 – English* and a study score of at least 20 in one of Mathematical Methods (either) or Specialist Mathematics	75.60
Vice-Chancellor's Scholarship Engineering Information Technology/Science	Refer to individual course entries	Refer to individual course entries	34531 34621	Minimum ENTER of 97.00. Refer to individual course entries for specific prerequisites	97.00

Software Development

Course	Campus	Full-time duration#	VTAC Code	VCE Prerequisites	2008 Round 1 clearly-in ENTER
Bachelor of Computing – Software Development Specialisation	Hawthorn	Three years plus optional IBL year**	34171	Units 1 and 2 – Mathematics (any) Units 3 and 4 – English*	70.65
Bachelor of Science – Computer Science Major	Hawthorn	Three years plus optional IBL year**	34371	Units 3 and 4 – English* and a study score of at least 25 in Mathematical Methods (either) or Specialist Mathematics, and in one of Biology, Chemistry, Physics, Software Development or Specialist Mathematics	N/A
Bachelor of Science (Professional Software Development)	Hawthorn	Three years plus optional IBL year**	34001	Units 1 and 2 – Mathematics (any) Units 3 and 4 – English*	70.50
Vice-Chancellor's Scholarship Information Technology/Science	Refer to individual course entries	Refer to individual course entries	34621	Minimum ENTER of 97. Refer to individual course entries for specific prerequisites	97.00

** A study score of at least 20 in English (any)*

*** Subject to eligibility requirements and employer availability. Note: IBL is not available to international students*

 # Part-time study is also available (except for international students). The duration is generally double that of full-time study

Swinburne's ICT degrees

■ Bachelor of Business Information Systems
■ Bachelor of Business Information Systems/Bachelor of Business

Information Systems (IS) address how people, information, computers, networks and processes come together to create cohesive business solutions. This course will help you develop a good appreciation of the role of IT in driving business innovation and the ability to work in collaborative, diverse teams throughout business units and across organisations.

You will learn how to source and implement ICT solutions and manage business processes. You will gain excellent communication skills, analytical and problem-solving abilities, teamwork skills, sound technical knowledge and the ability to analyse and manage IS in organisations.

You also have the option of combining your studies with the Bachelor of Business, allowing you to gain specialised knowledge in a business field of your choice, such as accounting or marketing.

Key study areas

This course covers information systems core studies, an information systems specialist unit, as well as nominated business core studies, an industry project unit and electives. Emphasis within the course is placed on business analysis and problem solving, requirements analysis, project management, systems acquisition, process modelling, design and innovation, development and implementation of IS services, enterprise systems, understanding and managing IS-related organisational risk and the management of information systems in organisations.

Career opportunities

Graduates are likely to pursue careers in business and systems analysis, business process analysis, business requirements analysis, project management, enterprise systems consultancy, IS/IT consultancy, business relationship management, business development management, and when you have gained experience, as an IT Director and CIO.

"Victoria produces the largest number of IT graduates of all states in Australia. ICT contributes to many strategic, high performing industries, such as transport, automotive, agriculture, biotechnology and financial services. These sectors are increasingly seeking innovative ICT solutions to enhance and improve their core business functions and to pursue new business opportunities."

Victorian Government
ICT Industry Plan 2005–2010

■ Bachelor of Computing

The Bachelor of Computing suits students who are seeking a general ICT program with flexible outcomes. It offers a range of options for students who have not yet decided which area of ICT to specialise in. You can choose to study a broad range of ICT units, as well as a specialisation of your choice. Electives may also be taken from other disciplines including biotechnology, business, multimedia and social sciences.

You will be provided with the skills necessary to develop software in VB.NET and Java as well as the option of selecting electives for programming in C++ and C#, advanced Java and .NET. Students will also gain experience with requirements analysis, systems analysis and design, database, data communications, information systems and the legal and ethical issues confronting the information and communication technology professional.

Key study areas

Students undertake a general course of study in computing and are able to combine studies in software development, network design and security, information systems and multimedia games development.

Career opportunities

Graduates may seek employment in computer programming, games design, internet systems development, multimedia software development, systems analysis and design, database administration and computer network support.

James Searle
Bachelor of Business Information Systems/Bachelor of Business

"I chose Swinburne primarily because of IBL (Industry Based Learning) and the close ties it has with industry. I think Swinburne provides great opportunities to gain experience and make graduates more employable.

"My favourite aspect of the course has been the interactive learning; being able to brainstorm ideas and work in teams. I am going to be studying abroad this year and will work as a tutor when I return.

"I see my qualification giving me opportunities in both business and ICT. I would like to work in a technical area such as database or programming with a goal to move into management."

Bachelor of Computing (Network Design and Security)

The Bachelor of Computing (Network Design and Security) has been designed to meet growing industry demand for security specialists who are competent in, and knowledgeable about, computer security and network technologies. The course covers the fundamentals of computing including programming, databases, internet technologies, systems analysis and design, software engineering, and advanced topics in networks and security.

Upon completion you will be confident in evaluating and managing business information systems and security projects, have an understanding of the complexities and methodologies associated with software development and have a comprehensive knowledge of internet security. You will also be well prepared for professional certification in Cisco Certified Network Association (CCNA) and Microsoft Certified Systems Administrator (MCSA).

Lawrence Stewart – Graduate

Bachelor of Engineering (Telecommunication and Network Engineering)/ Bachelor of Science (Computer Science and Software Engineering)

"During my undergraduate course I particularly enjoyed the Industry-Based Learning (IBL) experience and major projects. This included an engineering research and development project and a software engineering project with a team of six other students.

"I graduated in 2006 with first class honours and applied for a scholarship to undertake a PhD in telecommunications engineering at Swinburne's Centre for Advanced Internet Architectures. I was also fortunate to also receive a Chancellor's Research Scholarship (CRS) and began my PhD candidature in November 2007.

"My research is focused on IP networking and more specifically, on the interactions between, and scalability of the protocols responsible for transporting data across the internet. I am looking forward to the exciting research ahead of me and to a career focused on cutting-edge research and engineering."

Key study areas

The course consists of core programming and computing units, and also offers network design and security studies, ICT electives and non-ICT electives. Students will develop networking skills and will learn how to set up, administer, maintain and secure network servers and be exposed to a detailed review of network security threats, security policy issues, encryption, firewalls, VPN, IDS technologies, wireless technologies and programming.

Career opportunities

Skills in network security are in high demand and can lead to a range of career outcomes including information security analyst, network security practitioner, information security professional, IT systems administrator, security director, chief information security officer, network security analyst and security system analyst.

Bachelor of Engineering (Telecommunication and Network Engineering)

Bachelor of Engineering (Telecommunication and Network Engineering)/Bachelor of Science (Computer Science and Software Engineering)

A telecommunication and network engineer designs, implements and facilitates the communication infrastructure of today's business, ensuring information flow is not interrupted or slowed. The growth in internet and multimedia services is fuelling employment growth for telecommunications professionals.

This degree aims to produce graduates who have a professional understanding of the basic science and engineering principles underlying telecommunication and network engineering, and an ability to apply that knowledge. Students will also acquire a thorough understanding of appropriate engineering methods and techniques, and have competence in their application.

The program is closely aligned with industry, preparing students for certification in Cisco Certified Network Association (CCNA) and Microsoft Certified Systems Administrator (MCSA).

You also have the option of combining your degree with computer science through the Bachelor of Engineering (Telecommunication and Network Engineering)/Bachelor of Science (Computer Science and Software Engineering). This double degree is excellent preparation for a career in telecommunications software development. Of all Swinburne programs, it offers the most comprehensive combination of studies in computer hardware, telecommunications and software development.

Key study areas

Students will undertake units from engineering (telecommunications), software engineering studies, internetworking studies, specialist technical studies, management and business studies. Students will also have the opportunity to specialise in wireless secure communications, advanced-level networking with strong emphasis in security, digital and analogue electronics, programming and mathematics.

Career opportunities

Graduates will find careers in the converging telecommunications, multimedia, and IT industries. Career outcomes include applications engineer, designing, installing and commissioning telecommunications equipment, telecommunications system designer, wireless network engineer, network security specialist, network switching protocol designer, product management, marketing and senior sales management.

Information and Communication Technologies

Bachelor of Information Technology – Scholarship Program

Swinburne's prestigious Bachelor of Information Technology degree offers students state-of-the-art skills in business and systems analysis, systems implementation and business process management, together with the skills necessary to apply information systems and technology in the modern business world.

The program has been designed in partnership with many of Australia's top companies, to ensure that its graduates have the right knowledge, skills and business focus to move quickly into leadership roles. Students in the program receive a tax-free scholarship, funded by sponsoring organisations, of approximately $33,500 over three years. They will also spend 40 weeks (2 x 20 week periods) working with Swinburne's industry partners, giving them direct experience in the IT industry.

To apply, students must select the Bachelor of Information Technology degree in their VTAC application, and also submit an application form directly to Swinburne. Selection is based on interview as well as ENTER.

Application forms can be found at **www.swinburne.edu.au/bit**

Key study areas

Students will study units in information technology, programming, business and project core studies, information systems specialist electives and other electives. Students will gain skills in business analysis, requirements analysis, systems analysis, systems design, programming, database design and development, systems acquisition and implementation and interpersonal communication skills, team skills and management.

Career opportunities

This degree has one of the highest employment rates of all IT courses in Australia, with many graduates now in major leadership roles. Career opportunities include employment as a software developer, systems analyst, project manager, business analyst, web developer and IT/IS consultant.

Bachelor of Science – Computer Science Major

The Swinburne Bachelor of Science allows students to study a combination of majors, co-majors and minors from a range of science disciplines. The combination of the Computer Science major with the Astrophysics and Supercomputing co-major will develop your skills in problem-solving, analytic thinking, and applications of information technology that are transferable to a range of careers, particularly those involving supercomputing.

This unique combination of majors uses astrophysics as the context in which to explore the use of supercomputers including image processing and analysis, numerical simulations, and information and data management. The program takes a practical approach with an emphasis on problem solving in the context of real-life problems.The astrophysics co-major will also cover the universe and how it works, including a wide range of topics from planets to galaxies to the large-scale structure of the universe.

Key study areas

Topics covered include computer systems, software development, data structures, scientific computing and supercomputing as well as the solar system, stars and stellar evolution, galaxies and cosmology, astronomy data processing techniques and simulation methods.

Career opportunities

Students undertaking the Computer Science and Astrophysics and Supercomputing majors within the Bachelor of Science will be well prepared for a career in areas such as programming, scientific computing, industrial research, software engineering, internet systems development, high-end financial modelling, aerospace, remote sensing and database development and design.

Sage Williams
Bachelor of Information Technology – Scholarship

"I have an interest in IT as well as business so the Bachelor of Information Technology seemed like the ideal course for me. The $33,500 scholarship is an extra bonus!

"I chose to do the BIT at Swinburne because it is a leading university and gives students the option of Industry-Based Learning. Swinburne also has small grounds and the location is very convenient. The highlight of my course has been the range of interesting IT and business subjects that I have studied, which has broadened my skills and knowledge. In addition, I have enjoyed making new friends and meeting some of the BIT industry partners.

"In the future, my plan is to climb the corporate ladder in the field of IT and business."

Bachelor of Science (Professional Software Development)

Software specialists are involved in all aspects of the development or improvement of software systems including liaising with clients, researching or brainstorming solutions, managing the software design and development phase, and overseeing an implementation process that incorporates testing and final rollout. Most software developers love the challenges of working with a range of people to solve problems and are team players who gain satisfaction from building something tangible.

Swinburne's Bachelor of Science (Professional Software Development) will give you the necessary skills to meet the demands of this industry. You will cover advanced software development with an emphasis on problem solving, practical software engineering, quality assurance, project management and the use of industry-standard development techniques and tools. Graduates will develop deep technical skills with an understanding of software architecture and its role in an organisation.

Key study areas

Students undertaking the course will be exposed to problem solving, software development, database, internet technologies, software engineering and development practices, project management, data communications and security, software architectures and design, software deployment and evolution, usability and a major project. Specialisation options include enterprise systems development, database systems, intelligent systems, web development, networks, multimedia and games development and information systems and analysis.

Career opportunities

Employers are now looking for well-rounded graduates with technical skills as well as communication and presentation teamwork skills. Career opportunities in software development include web development, software design, user interface engineering, software testing, solution architecture, games/multimedia development and project management. There are many lucrative opportunities for software development professionals to travel and work overseas.

Bianca Rinaldi
Bachelor of Science
(Professional Software Development)

"Swinburne is recognised as a leader in Australian universities, especially for ICT courses. It has a smaller campus with good class sizes compared to other universities. The Industry-Based Learning (IBL) and overseas placement were also an advantage, as was Swinburne's close industry relationships with leading IT companies.

"I decided to undertake Professional Software Development at Swinburne as it is recognised by the Australian Computer Society and there are many job opportunities available in software development."

General information

Application procedure

Applications for semester one places must be made through VTAC.
Visit: **www.vtac.edu.au**

Mid-year applications are made directly to Swinburne.
Visit: **www.swinburne.edu.au/midyear**

Application forms for the Bachelor of Information Technology scholarship program can found at **www.swinburne.edu.au/bit**

Fees

Commonwealth Supported Places (CSP) – All students enrolled in higher education courses are required to contribute to the cost of their education. Student contributions will vary according to the units of study you undertake. If you are eligible for HECS-HELP, you may also be eligible to make a full up-front payment and receive a discount or defer payment and repay through the taxation system.

Note: CSP is only available to Australian and New Zealand citizens or holders of Australian permanent resident visas.

Visit: **www.swinburne.edu.au/fees**

Summer/Winter Term

Swinburne provides flexible study options designed to put you in control. Speed up or spread out your studies by taking subjects in Winter or Summer Term.

Postgraduate courses

To find out more about Swinburne postgraduate programs by coursework or research, telephone 1300 ASK SWIN or visit:
www.swinburne.edu.au/postgrad

International students

The information in this brochure is only applicable to domestic students. International students who wish to study at Swinburne should contact Swinburne International, which is responsible for the admission, orientation and support of all international students.

Telephone: 1800 897 973 (within Australia)
Telephone: +61 3 8676 7002 (worldwide)
Email: international@swinburne.edu.au
Web: **www.international.swinburne.edu.au**

Student Services

Swinburne provides a range of services to its students including career advice, child care, counselling, employment, equity, finance and housing.

Visit: **www.swinburne.edu.au/stuserv**

ANY QUESTIONS?

www.swinburne.edu.au
1300 ASK SWIN (1300 275 794)
study@swin.edu.au

2008 Swinburne Centenary

CRICOS provider number 00111D

This brochure has been printed on recycled paper manufactured under the ISO 14001 environmental management systems standard.

Designed and produced by Swinburne Press Design Studio
SP0391-10-0708