INFORMATICS

UOW was one of the first universities to combine all the fields of study related to the Information and Communication Technology (ICT) industry into one faculty: Informatics. Experts encompassing the entire breadth of the computer science, information technology (IT), information systems (IS), engineering and mathematical methodologies in the ICT industry have created an extremely dynamic teaching, learning and research environment. Wollongong is now one of the largest sites for ICT research in the southern hemisphere.

Leading global companies such as Telstra and Accenture have chosen UOW to collaborate with the Faculty, undertaking significant research projects with Faculty staff. These creative partnerships mean you will interact with and learn from industry leaders throughout your degree.

Faculty staff bring their industry expertise to the classroom at all levels of study, and practical skills are reinforced through industry placements and major projects incorporated into degree programs.

As a UOW student you will have access to internationally renowned leaders covering the spectrum of specialist areas within the industry. Informatics degrees provide you with a global passport, and graduates have recently been employed in the USA, UK, Europe and Asia. First-class facilities include 24-hour student access to five large computer laboratories.

GRADUATE DESTINATIONS

→ Business Analyst
→ Computer Animator
→ Computer Engineer
→ Computer Technical Writer
→ Computing Specialist
→ Design Engineer
→ E-commerce Professional
→ Electronic Specialist
→ Electrical Engineer
→ Information Technology Consultant to Insurance, Manufacturing, Medical, Banking and Transportation Industries
→ Internet Applications/Networks Designer
→ Merchant Banker
→ Multimedia Designer
→ Network Development Architect
→ Network Planner
→ Programmer
→ Project Coordinator
→ Project Manager
→ Researcher
→ Software Engineer
→ Statistician
→ Stockbroker
→ Superannuation and Trust Funds Adviser
→ Systems Analyst
→ Systems Administrator
→ Systems Engineer
→ Teacher
→ Telecommunications Engineer
→ Webpage Developer

Full details of courses offered can be found at: www.uow.edu.au/handbook
### DEGREES AT A GLANCE

<table>
<thead>
<tr>
<th>DEGREE</th>
<th>APPROX. UAI</th>
<th>FULL TIME DURATION</th>
<th>ASSUMED KNOWLEDGE</th>
<th>RECOMMENDED STUDIES/ ADDITIONAL REQUIREMENTS</th>
<th>LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor of Computer Science</td>
<td>75</td>
<td>3 years</td>
<td>Any 2 units of English plus Mathematics</td>
<td></td>
<td>Wollongong</td>
</tr>
<tr>
<td>Bachelor of Computer Science (Dean’s Scholar)</td>
<td>93</td>
<td>3 years</td>
<td>Any 2 units of English plus Mathematics</td>
<td></td>
<td>Wollongong</td>
</tr>
<tr>
<td>Bachelor of Engineering (Computer) (Electrical)</td>
<td>78</td>
<td>4 years</td>
<td>Any 2 units of English plus Mathematics and 2 units of Science</td>
<td>English Advanced, HSC Mathematics Extension 1 and Physics</td>
<td>Wollongong</td>
</tr>
<tr>
<td>Bachelor of Engineering (Dean’s Scholar)</td>
<td>93</td>
<td>4 years</td>
<td>Any 2 units of English plus Mathematics and 2 units of Science</td>
<td>English Advanced, HSC Mathematics Extension 1 and Physics</td>
<td>Wollongong</td>
</tr>
<tr>
<td>Bachelor of Information Technology</td>
<td>75</td>
<td>3 years</td>
<td>Any two units of English plus Mathematics</td>
<td></td>
<td>Wollongong</td>
</tr>
<tr>
<td>Bachelor of Information Technology (Dean’s Scholar)</td>
<td>93</td>
<td>3 years</td>
<td>Any two units of English plus Mathematics</td>
<td></td>
<td>Wollongong</td>
</tr>
<tr>
<td>Bachelor of Internet Science &amp; Technology (Dean’s Scholar)</td>
<td>93</td>
<td>3 years</td>
<td>Any 2 units of English plus Mathematics</td>
<td></td>
<td>Wollongong</td>
</tr>
<tr>
<td>Bachelor of Mathematics</td>
<td>75</td>
<td>3 years</td>
<td>Any 2 units of English plus Mathematics</td>
<td>HSC Mathematics Extension 1</td>
<td>Wollongong</td>
</tr>
<tr>
<td>Bachelor of Mathematics (Advanced)</td>
<td>90</td>
<td>3 years</td>
<td>Any 2 units of English plus Mathematics</td>
<td>HSC Mathematics Extension 2</td>
<td>Wollongong</td>
</tr>
<tr>
<td>Bachelor of Mathematics &amp; Finance</td>
<td>82</td>
<td>4 years</td>
<td>Any 2 units of English plus Mathematics</td>
<td>HSC Mathematics Extension 1</td>
<td>Wollongong</td>
</tr>
<tr>
<td>Bachelor of Arts (Science, Technology &amp; Society)</td>
<td>75</td>
<td>3 years</td>
<td>Any 2 units of English</td>
<td>English Advanced</td>
<td>Wollongong</td>
</tr>
<tr>
<td>Bachelor of Mathematics Education</td>
<td>75</td>
<td>4 years</td>
<td>Any 2 units of English plus Mathematics</td>
<td>HSC Mathematics Extension 1</td>
<td>Loftus</td>
</tr>
</tbody>
</table>

**NB:** UAI’s to be used as a guide only and are based on the previous year’s demand.

### DEAN’S SCHOLARS

The Dean’s Scholar programs are designed to encourage high-achieving students to continue their studies through the completion of Honours and research degrees. It is available in the following degrees:

- Bachelor of Computer Science
- Bachelor of Engineering (Computer, Electrical and Telecommunications majors)
- Bachelor of Information Systems
- Bachelor of Information Technology
- Bachelor of Internet Science and Technology
- Bachelor of Mathematics
- Bachelor of Mathematics & Finance
- Bachelor of Arts (Science, Technology & Society)

Dean’s Scholars will complete all requirements for their respective degrees and, where possible, may be permitted to take an accelerated program after their first session. Dean’s Scholars will receive special privileges, including:

- $500 book allowance per year (pro rata for part-time study)
- Extended library access
- Extended Internet quota
- Access to an academic mentor—a member of academic staff who advises you on matters concerned with your degree
- Assignment to a Faculty research centre depending on your degree and area of interest
- Opportunity for summer internship

The Programs are a distinction highly visible to future employers, giving you an edge in competitive employment. There will be a combined quota of 15–20 students admitted to the Program from across the Faculty each year, selected from candidates with a UAI above 93.

To apply for these Programs, make sure to include the relevant degree as one of your UAC preferences (see the UAC Guide for the appropriate code). There is no additional formal application process for these degrees in Informatics, although students who apply may be contacted by the University prior to admission.

Please note, the Dean’s Scholar Program is not offered in a double degree combination and is not a scholarship. Students intending to apply for a place in the Program are encouraged to apply for a UOW undergraduate scholarship separately (see page 32).

### BACHELOR OF ENGINEERING

Internationally there is a shortage of engineers, so a degree in Engineering offers not only good employment prospects but qualifications that are globally relevant. The Bachelor of Engineering degree produces professional engineers, who graduate with the proficiency to compete successfully anywhere in the world, and who possess the requisite knowledge, skills and attitudes to further develop in their chosen careers. The success of the UOW Engineering degree is evidenced by the number of graduates employed by large corporations in Australia, the United Kingdom, North America, Europe and Asia.

The degree programs are enriched by partnerships between UOW and industry. Traditionally, Engineering at UOW has had close ties with Integral Energy and these continue today. Research activities have diversified over the years with the establishment of major research institutes and centres in fields such as Power Quality and Reliability, Telecommunications and Information Technology.

#### COURSE STRUCTURE

First and second year students complete common compulsory subjects, covering electrical engineering, engineering programming, digital hardware, power engineering, mathematics, physics, and engineering fundamentals. A key feature of the degree is a design and management strand that develops the interpersonal skills required to work in the commercial and industrial world.

There are three majors available within the degree: Computer, Electrical or Telecommunications Engineering. The common program of study in the first two and a half years allows students to select their major in the third year. Common subjects are taken in all majors in third and fourth year, including advanced studies in communication, control, electronics, design, digital hardware and signal processing. Additional subjects are taken from topics relevant to the chosen major study.

#### PROFESSIONAL WORK EXPERIENCE

All students complete a research project in their final year, and are also required to undertake 12 weeks of professional work experience. Honours is awarded at the end of the course based on overall performance throughout the four years of study.

#### PROFESSIONAL RECOGNITION

UOW engineering majors are accredited by Engineers Australia and relevant world engineering bodies through the Washington Accord. This ensures recognition by equivalent professional engineering bodies in the USA, UK, Hong Kong, Malaysia, Singapore, Japan, New Zealand, Canada, South Africa and other countries.

#### MAJORS

### COMPUTER ENGINEERING

**Bachelor of Engineering (Computer Engineering)**

The aim of this major is to produce professional computer engineers who have the skills needed to design and use computer systems in industrial processes. The primary emphasis of the major is on computer hardware design aspects. In addition, students receive a thorough grounding in software techniques, engineering design, synthesis and programming skills, telecommunications, control and systems theory, electronics, embedded systems design and mathematical analysis.
KRISHNA ALI  
Bachelor of Engineering (Mechatronic)  
Bachelor of Computer Science  
(Multimedia, Game Design)  

There is a lot of freedom at UOW, freedom of choice when it comes to what to study and when to study. I knew I wanted to study at UOW after I visited the campus and spoke to the Engineering staff.

I was excited to come to uni for the vast opportunities to learn more about electronics and computers—I’ve always been interested in computers and electronic gadgets. I decided to do a double degree to get the best of both worlds. The main benefit of this degree is that it allows me to learn a wide range of skills, and gives me choices in pursuing a career in either the IT or Engineering industries. Ultimately, though, I want to become a movie producer—I’ve had a passion for multimedia, electronics and 3D animation since I was about ten years old. UOW is teaching me lots of real things I can see myself applying in the future. My favourite class at the moment would be my 3D animation and programming classes, but I like them all!
**ELECTRICAL ENGINEERING**

Bachelor of Engineering (Electrical Engineering)

The aim of this major is to produce professional electrical engineers, who have the skills needed to design, construct and control electronic and electrical systems for areas such as power and automated systems and telecommunications. Topics covered include engineering design and synthesis skills, mathematical analysis, power systems, control and systems theory, electronics, machine dynamics, computer hardware and software and telecommunications. This major is broad-based, allowing students to select their field of specialisation in the final year of the degree.

**TELECOMMUNICATIONS**

Bachelor of Engineering (Telecommunications Engineering)

The aim of this major is to produce professional telecommunications engineers who have the skills needed to design modern communications systems. Students will receive a solid grounding in engineering design and programming, digital communications, communication theory, computer hardware and software, and the mathematical analysis of physical problems; combined with a thorough knowledge of advanced telecommunications engineering, computer networking and mobile networks.

**FURTHER STUDY**

→ Graduate Diploma in Internet Technology
→ Master of Internet Technology
→ Master of Engineering Studies (single and double major options)
→ Master of Engineering – Research
→ Doctor of Philosophy (PhD)

**CIVIL, ENVIRONMENTAL, MATERIALS, MECHANICAL, MECHATRONIC OR MINING ENGINEERING**

For information about Civil, Environmental, Materials, Mechanical, Mechatronic or Mining Engineering, please refer to the Faculty of Engineering section on page 62.

**BACHELOR OF COMPUTER SCIENCE**

Computer scientists design and write programs for computer applications. These applications include the use of computer systems to control machinery, analyse stock market trends, design games, design neural networks, visualisation of chemical reactions, computational geometry for robot navigation, automatic teller machines and patient monitoring in hospitals.

This degree includes a core of programming subjects as well as electives in databases, java language, artificial intelligence, computer security, computer graphics, operating systems, real-time software and software engineering. The high point of the degree is the third-year group project where students form teams to design, implement and document a software system.

**PROFESSIONAL RECOGNITION**

Accredited at professional level by the Australian Computer Society.

**MAJORS**

**ENTERPRISE SYSTEMS**

Bachelor of Computer Science (Enterprise Systems)

Modern economic enterprises depend on the use of computer systems for their operation and to gain a competitive advantage. Databases and enterprise computer applications are the key to the successful operation of most businesses. In this major, students focus on developing skills in database design, implementation and performance tuning. Systems security, server technology and enterprise computing are covered along with object-orientated design and implementation using the java language.

**DIGITAL SYSTEMS SECURITY**

Bachelor of Computer Science (Digital Systems Security)

Information security should be viewed as a critical aspect of every computer scientist’s education. With the rapid evolution of security technology, this major provides knowledge and tools desirable in industry. Students will gain important knowledge and skills in up-to-date security technologies including computer security, system security and network computer security.

**SOFTWARE ENGINEERING**

Bachelor of Computer Science (Software Engineering)

This major explores software systems and their role in solving problems in specific application domains. Core subjects include databases, development methods and tools, software process management and software engineering methods.

**MULTIMEDIA & GAME DEVELOPMENT**

Bachelor of Computer Science (Multimedia & Game Development)

This major has been developed in response to the needs of the growing Australian game development industry, where employees require both traditional computer science skills and skills in creative arts. In addition to computer science subjects, students take 3D Modelling & Animation, Multimedia Computing, Computer Graphics, Development and Game Engine Fundamentals.

**DOUBLE MAJORS**

Each of the four majors can be combined with each other or with a second major in Biological Sciences, Chemistry, Electronic Commerce, Electronics, English Language Studies, Geosciences, Management, Marketing or Mathematics.

**FURTHER STUDY**

→ Bachelor of Computer Science (Honours)
→ Master of Computer Science
→ Master of Computer Science Advanced
→ Master of Computer Science – Research
→ Doctor of Philosophy (PhD)

**BACHELOR OF COMPUTER SCIENCE HONOURS**

Candidates who achieve a credit average or better in the Bachelor of Computer Science, or a major in computer science in another degree, are eligible to enrol in an additional year of study towards a Bachelor of Computer Science (Honours). The Honours program provides students with a challenging opportunity to pursue an individual research project and advanced studies in computer science.

**BACHELOR OF INTERNET SCIENCE AND TECHNOLOGY**

The Internet and the web have revolutionised every facet of business, communications, health, entertainment and many other aspects of our lives. Health, learning, business, publishing, government—and even dating—are now all found online as a matter of course. As a result, there is a constant demand, both in Australia and internationally, for Web masters, digital content managers, website designers, digital and multimedia designers, web application developers, user interface designers and a host of other Internet-based jobs.

This degree provides the basic skills for all of these careers. Subjects cover fundamental Internet technologies, networking and telecommunication, the management of Web technologies, Internet security, the design and development of complex Web applications, and the strategic use of the Internet in business. The subjects are very much hands-on, and students will be involved in developing a number of small systems throughout the degree. They will also undertake a major project as part of their studies.

This degree offers majors in Internet Applications and web design and web programming, which allow students to specialise in an area of particular interest. In addition to their compulsory subjects, students choose electives that allow them either to specialise further or to broaden their skills.

**PROFESSIONAL RECOGNITION**

Accredited at professional level by the Australian Computer Society.
BACHELOR OF INFORMATION SYSTEMS
This Information Systems course is designed to prepare you for a career as a systems analyst or as an information systems specialist in business. Analysts are involved in the analysis, design, implementation, maintenance and improvement of computer-based systems critical to the successful operation of modern businesses. They require a sound understanding of the business requirements for the systems they design, and must deal with users at all levels within an organisation. The program emphasises practical skills and involves working with a wide range of hardware and software tools, using state-of-the-art computing facilities. Real life projects will ensure your skills meet industry requirements.

PROFESSIONAL RECOGNITION
Accreditation at a professional level is being sought from the Australian Computer Society.

FURTHER STUDY
→ Master of Information Systems Research
→ Master of Information Systems
→ Master of Information Systems Advanced

BACHELOR OF INFORMATION TECHNOLOGY
The Bachelor of Information Technology has a common core structure that offers graduates key skills required for any IT profession such as organisational areas in IT, database management, programming, information systems analysis and design, communications and networks, security, networks, eBusiness, project management, web-based technology, and professional practice in IT. Students can study a single or double major chosen from three majors outlined below.

PROFESSIONAL RECOGNITION
Accredited at professional level by the Australian Computer Society.

MAJORS
→ BUSINESS
Conducting business online is an increasingly essential feature of any organisation’s operations, and to survive in this environment means integrating adaptive business solutions that exploit evolving technologies. This major provides students with an understanding of the organisational environment and a working knowledge of the technologies used successfully in the e-business environment.

NETWORK DESIGN AND MANAGEMENT
Every major company in the world now relies on its networks to survive. A major in network design and management develops the skills necessary to build or manage networks that support businesses and governments in a competitive global market.

SOCIAL POLICY
Businesses and governments around the world are struggling to develop policies on emergent issues in ICT including privacy, hacking and computer crime. A major in social policy develops an understanding of these and other social issues associated with the growth of ICT and the Web.

FURTHER STUDY
→ Master of Information Systems
→ Master of Information Systems Advanced
→ Master of Information and Communication Technology
→ Master of Information and Communication Technology Advanced

BACHELOR OF INFORMATION SYSTEMS HONOURS
CANDIDATES who achieve a credit average or better in: the Bachelor of Information Systems (BIS), the Bachelor of Information Technology (BIT), or a major of IS or IT in another degree, are eligible to enrol in an additional year of study towards a Bachelor of Information Systems (Honours) or Bachelor of Information Technology (Honours).

BACHELOR OF INFORMATION TECHNOLOGY HONOURS
Candidates who achieve a credit average or better in: the Bachelor of Information Systems (BIS), the Bachelor of Information Technology (BIT), or a major of IS or IT in another degree, are eligible to enrol in an additional year of study towards a Bachelor of Information Systems (Honours) or Bachelor of Information Technology (Honours).

BACHELOR OF MATHEMATICS AND FINANCE
The Bachelor of Mathematics and Finance is an advanced degree that provides graduates with a firm foundation in both mathematics and finance. The degree covers the basics of corporate finance, financial Institutions and investments, and allows students to specialise through the choice of four optional majors.

Graduates have the skill to apply sophisticated mathematical/statistical techniques to real world problems and are also encouraged to develop computing and communication skills, which are an asset in the employment market. This degree provides the essential background for analysing corporate performance, the state of the stock market, or strategic planning, and includes the option for high-achieving students to complete an Honors research project in the final year, or to take further specialist coursework subjects.

MAJORS
→ QUANTITATIVE CORPORATE FINANCE AND INVESTMENTS
This major is designed for students interested in careers as quantitative analysts in the finance sector.

The major has a strong focus on numerical finance and computing, which are vital for options and derivative trading.

→ RISK MANAGEMENT AND INSURANCE
This major is designed for students interested in a career involving Actuarial Studies. It allows articulation into the Master of Actuarial Studies at ANU, the Master of Actuarial Practice at Macquarie University and the Master of Actuarial Studies at UNSW.

→ FINANCIAL SERVICES
This major is intended for students who are interested in a career in financial planning. It is accredited by the Australian Securities and Investment Commission (ASIC).

BACHELOR OF MATHEMATICS
This degree is designed to give graduates a solid foundation in the skills needed to work as a professional mathematician or statistician. It is flexible enough to allow students to specialise in an area that is of particular interest, or to gain an introduction to a wide variety of topics.

While the major components of the degree are in Mathematics or Applied Statistics, second majors can be chosen from other areas including Computer Science, Biomedical Science, Economics, Account and Management, Marketing or Finance.

MAJORS
→ MATHEMATICS
Through subjects covering complex variables, group theory, topology and chaos, financial calculus and logistics, the mathematics major provides graduates with strong portable skills, including the ability to reason deductively and to think analytically and critically, that will give them a competitive edge in virtually any career. Mathematicians have an opportunity to make a lasting contribution to society by helping to solve problems from many diverse fields.

→ APPLIED STATISTICS
An Applied Statistics major provides graduates with an excellent foundation for work as a professional statistician in government, industry and commerce, and for further studies in quantitative disciplines. Topics covered include multiple regression and time series data, sample surveys and experimental design, estimation and hypothesis testing, and probability and random variables.

UOW is recognised by the Australian Bureau of Statistics as one of the universities in Australia from which graduate statisticians are recruited.

FURTHER STUDY
→ Graduate Diploma in Education
→ Graduate Diploma in Statistics
→ Bachelor of Mathematics (Honours)
→ Master of Mathematics
→ Master of Statistics
→ Master of Science – Research
→ Doctor of Philosophy (PhD)
This challenging Bachelor degree is available to students who have superior mathematical knowledge on entry (i.e. HSC Mathematics Extension 2 is assumed knowledge). It reduces the number of compulsory first-year subjects, enabling students to take enrichment projects which provide opportunities to build links with industry and to understand the interaction between mathematics and society. Students will also have close interaction with active academic researchers.

The degree offers a practice-oriented program to high-achieving students, providing adaptability and application, which is valued highly in industry and research organisations. The flexibility of this degree allows students to enhance their versatility by taking subjects from other disciplines.

**HONOURS PROGRAMS**

The Bachelor of Mathematics Advanced and Bachelor of Mathematics (Honours) programs are a fourth year of study available to students who have achieved at least a Credit average in the BMath or a Distinction average in the BMath(Adv) respectively. Both these Honours programs are challenging and include a research project.

Students who wish to enter the Honours program should obtain the approval of the Honours Coordinator at the end of their third year.

**BACHELOR OF MATHEMATICS EDUCATION**

This degree is an innovative approach to teacher training with both mathematical knowledge and teaching/educational training in an integrated fashion.

The degree focuses on developing secondary school teachers as critical reflective practitioners with a sound basis of practical teaching skills. In addition, this degree also develops mathematical concepts in a broad range of areas to provide a full Mathematics major in a specialisation of their choice that can be utilised in other community settings.

For more information, see the Faculty of Education entry on page 58.
THOMAS KING
Bachelor of Mathematics and Finance

I chose UOW because my Dad came here, and he and other graduates had said it was great. UOW was also one of only two NSW unis that offered the degree I wanted to study.

Having lived in Wollongong for so long, I already knew how good the area and people are. My favourite place in the area is probably Thirroul beach, it’s a great place to hang out with my friends. But it’s not just the place and the people—the lecturers and tutors at UOW are great, and are easy to talk to.

I want to get involved in investment banking or similar areas after I graduate. UOW is helping me do this by offering a degree tailored to this profession.