DEGREES OF SUCCESS

University of Western Sydney
Bringing knowledge to life

ENGINEERING, INFORMATION AND COMMUNICATIONS TECHNOLOGY

AREA OF STUDY GUIDE 2012

The University of Western Sydney (UWS) provides a welcoming environment for all students, and our campuses, spread across Greater Western Sydney, offer purpose-built facilities designed to give you room to think and learn.

With ground-breaking research, recognised nationally and internationally, our academics are challenging the boundaries of knowledge and laying the pathway to success through teaching and learning excellence.

At UWS you are encouraged to aspire to achieve great things in your career and community.

ENGINEERING, INFORMATION AND COMMUNICATIONS TECHNOLOGY COURSE GUIDE 2012

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Troy Haddon

Bachelor of Information Communications Technology

Troy Haddon believes it is important to know the commitment you are making to study before you start university. 'If you are unsure what you want to do or what you want to study then a gap year to get some work and life experience could prove helpful in deciding which direction you should take,' he says.

'I have worked in many different roles, such as a Pizza franchise, a newsagency, a bottle shop and Medibank Private. I started with Medibank in the Call Centre, which helped me get the job I have now in the UWS Contact Service Centre, and the remainder of the time I worked in Retail.

'While in Retail I gained the role of Headstart Trainer, which involved teaching new employees about policies, procedures, products, services, sales and government legislation over a four-week period before they are introduced into the Retail environment.

'This was the most enjoyable and fulfilling role I have been employed in since completing my HSC, and so I will probably never rule out teaching/training as a future career opportunity.'

Troy chose UWS primarily because of its location. 'My younger sisters live and attend high school in the area and I am very close to them.'

'I also like the internship opportunities available at UWS which enable students to get hands on industry experience.'

'I like that the units I am studying are going to be industry recognised when I'm finished. For example, the networking units we study are run through Cisco. This means when we complete these units we have the opportunity of obtaining a qualification from an organisation that is internationally recognised as a leader in its field. I also like the internship opportunities available at UWS, which enable students to get hands-on industry experience.'

Why Study Engineering and

» Break new ground: Despite all our modern conveniences, the greatest advances in technology are yet to be made. These advances are not limited by such mundane concepts as bandwidth, tensile strength and system theory; they are limited only by imagination.

» Prepare for a dynamic, exciting and challenging career: UWS Engineering and Information and Communications Technology (ICT) programs are at the forefront of Australian technology education, research and development. The programs offer a balance of theory and practical field studies, broad subject choices, flexible course structures, industry-based projects and placements, and local and international work experience opportunities.

» Make today's dreams tomorrow's technology: Graduates can pursue a range of exciting Engineering and ICT career paths, including software development and database design, computer forensics and systems security, system analysis, design and integration, computer network design and management, e-business and internet technologies, water, roads and buildings, robotics and mechatronics, and many more.

» Industry-leading facilities: UWS offers highly-advanced ICT laboratories and the Construction Technology Research Laboratory, which is one of Australia's best independent testing facilities for the construction and manufacturing industry.

ICT at UWS?

» Changing the face of infrastructure: UWS hosts the first Australian Civionics Research Centre, bringing together researchers from civil and electrical engineering, construction and industrial design to create 'smart' infrastructure. It is one example of the University's commitment to innovation.

» Graduate success: James Pirozzi, a graduate of the UWS Bachelor of Engineering (Civil), received outstanding results in his degree, and was awarded the Australian Water Association NSW Branch Best Undergraduate Thesis Award and was named Sydney's Engineering Student of the Year by Engineers Australia. He is now an engineer at Snowy Hydro in Cooma.

» Cutting-edge research: UWS has a distinctive, high-impact research culture committed to enhancing our region's cultural, economic, environmental and educational development. In the area of Engineering, Dr Zhong Tao is currently researching the behaviour of concrete-filled stainless steel columns. His research aims to provide a pathway for better use of stainless steel in Australia's buildings, bridges and offshore infrastructure, thereby providing significant socio-economic benefits to our nation.

» Learn from leaders in the field: Be inspired by our enthusiastic, experienced teaching staff. Lourise Fakhr, UWS Bachelor of Engineering (Civil) graduate, says, 'I chose UWS because of its exceptional Engineering school and from satisfying reports from current students and graduates. The teaching staff within Engineering aimed to maximise the potential of their students and applied 'real life' projects for us to tackle.'

Bachelor of Engineering (Advanced)

During the Bachelor of Engineering (Advanced) course you will have the opportunity to work closely with an academic mentor to develop high-order research skills.

The Bachelor of Engineering (Advanced) follows the structure of the Bachelor of Engineering, with extension activities and alternative assessments designed to stimulate and realise your full academic potential.

Key Programs/ Major Studies

The Key Programs of the Bachelor of Engineering (Advanced) are Civil, Construction, Computer, Electrical, Environmental, Mechanical, Robotics and Mechatronics, and Telecommunications.

For more information on each of these Key Programs and the subjects (units) you may study, please see the descriptions starting on page 8.

Course	UAC Code	Campus	Duration	ATAR
B Engineering (Advanced)	722500	Penrith	4F/8P	90.50

Practical Experience

You will complete 12 weeks of industrial experience, which is required after the end of the third year. The Engineering Summer Placement program, available through the UWS Cooperative Programs, offers high-achieving students the opportunity for paid placements.

Professional Recognition

The course has been designed to meet the requirements of Engineers Australia. Six Key Programs, namely, Civil, Computer, Electrical, Environmental, Robotics and Mechatronics, and Telecommunications, have received full accreditation from Engineers Australia at the level of Professional Engineer. Accreditation for the Construction Key Program was sought from Engineers Australia in 2010. Accreditation for the Mechanical Key Program was sought from Engineers Australia in 2011.
Engineers Australia only accords full accreditation to a course after the first student cohort has graduated.

Key: B = Bachelor of; F = Full-time; P = Part-time. Note: part-time refers to study load, not to timetabling of evening classes.

Core Subjects

To graduate with a Bachelor of Engineering (Advanced), you will be required to complete 26 subjects for a total of 320 credit points, as well as practical industrial experience and an Advanced Engineering Thesis.

- Mathematics for Engineers
- Physics and Materials
- Fundamentals of Mechanics
- Engineering Computing
- Electrical Fundamentals
- Engineering, Design and Construction Practice
- Engineering and Design Concepts.

For detailed information about the course structure and subjects, visit myfuture.uws.edu.au

Career Opportunities

As a UWS Engineering graduate, you can look forward to career opportunities in:

- water, roads and buildings
- robotics and mechatronics
- telecommunications, manufacturing and utilities
- commercial, medical and industrial product design
- product management, project management and consultancy
- industrial, commercial or residential development.

Bachelor of Engineering

The future presents significant challenges for managing the environment, infrastructure and technological developments. Effective solutions to these challenges will require innovative engineering, applied science and design strategies.

At the University of Western Sydney, we prepare students to take on those challenges and succeed. The UWS Engineering degree is all about the application of knowledge to achieve practical outcomes. It covers all major engineering domains, and you can experience many facets of engineering before deciding your area of specialisation at the end of your first year.

Course	UAC Code	Campus	Duration	ATAR
B Engineering (Civil, Computer, Construction, Electrical, Environmental, Mechanical, Robotics and Mechatronics, Telecommunications)	722506	Penrith	4F/8P	74.50

Practical Experience

You will complete 12 weeks of industrial experience, which is required after the end of the third year. The Engineering Summer Placement program, available through the UWS Cooperative Programs, offers high-achieving students the opportunity for paid placements.

Professional Recognition

The course has been designed to meet the requirements of Engineers Australia. Six Key Programs, namely, Civil, Computer, Electrical, Environmental, Robotics and Mechatronics, and Telecommunications, have received full accreditation from Engineers Australia at the level of Professional Engineer. Accreditation for the Construction Key Program was sought from Engineers Australia in 2010. Accreditation for the Mechanical Key Program was sought from Engineers Australia in 2011. Engineers Australia only accords full accreditation to a course after the first student cohort has graduated.

Key: B = Bachelor of; F = Full-time; P = Part-time. Note: part-time refers to study load, not to timetabling of evening classes.

Core Subjects and Electives

To graduate with a Bachelor of Engineering, you will be required to complete 32 subjects (units) for a total of 320 credit points, as well as practical industrial experience.

For more information on the Engineering Key Programs please see the descriptions starting on page 8.

The core common first year subjects may include Mathematics for Engineers, Physics and Materials, Fundamentals of Mechanics, Engineering Computing, Electrical Fundamentals, Engineering Design and Construction Practice, and Engineering and Design Concepts. You will have the opportunity to complete up to four electives, depending on the key program you select.

For detailed information about the course structure and subjects, visit myfuture.uws.edu.au

Further Studies

Students can study for an Honours award during their fourth year. Entry to the Honours stream is by superior performance in the first three years. Find out more at myfuture.uws.edu.au/honours

Indigenous Australian Studies

Enrolment in the Indigenous Australian Studies (IAS) major, sub-major or units is available to all UWS undergraduate students who have open electives. Find out more at studyias.com.au

Please see over for more information.

Engineering Key Programs/Major Studies

After a common first year in the Bachelor of Engineering, you can specialise in one of the following Key Programs:

Civil – Covering the fields of structural design, construction management and water engineering, together with environmental and geotechnical engineering.

Core and elective subjects for this Key Program may include: Mechanics of Materials, Surveying for Engineers, Hydrology, Foundation Engineering, Timber Structures and Environmental Engineering.

Career opportunities include: designing, constructing and managing roads, transportation, airports, water supply, sewerage systems, and large buildings.

Computer – Covering computers and communication systems, including information and process control and computer design.

Core and elective subjects for this Key Program may include: Circuit Theory, Computer Organisation, Systems Programming, Data Networks, Engineering Visualisation and Digital Control Systems.

Career opportunities include: hardware and software development, computer control and real time computer systems, communications and networking, networking technology development. For example, creating and designing the next-generation tool used in computers, or designing solutions to improve communication in limited-resource countries.

Construction – Providing skills necessary for performing at a professional level in construction management and structural design. It includes core subjects in all branches of construction and structural engineering.

Core and elective subjects for this Key Program may include: Engineering Geology and Concrete Materials, Estimating, Construction Planning, Steel Structures and Construction Technology.

Career opportunities include: working in the fields of construction, structural design, project management, quantity surveying and estimation. You may work in the private or public sector on projects covering roads, bridges, airports, and residential and commercial buildings.

Electrical – Working on electronic components, computers, power generation and distribution systems, and in communications and control.

Core and elective subjects for this Key Program may include: Electronics, Engineering Electromagnetics, Electrical Machines, Energy Systems, Instrument and Measurement, and Data Networks.

Career opportunities include: working in communications, electromagnetics, power and control, public utilities, telecommunications, manufacturing, and electrical systems areas. For example, designing or improving electrical systems to conserve energy and improve productivity.

Environmental – Providing an essential grounding in ecology, civil engineering and environmental management. Environmental engineers are concerned with ensuring a sustainable and better future for the community by developing and managing systems that integrate with, and protect, our environment.

Core and elective subjects for this Key Program may include: Fluid Mechanics, Resource Sustainability, Management of Aquatic Environments, Air Quality Assessment and Management, and Water and Waste Management.

Career opportunities include: designing solutions with a strong emphasis on environmental impact. You may work in private, industrial or mining companies, government departments and city and shire councils.

Mechanical – Concerned with the design of mechanical systems for a wide range of applications including manufacturing, transportation and energy conversion. The course delivers fundamental engineering principles as well as an intensive hands-on laboratory program to provide skills necessary for the design of machines – ensuring their functionality, safety and reliability.

Core and elective subjects for this Key Program may include: Kinematics and Kinetics of Machines, Automated Manufacturing, Advanced Dynamics, Thermodynamics and Heat Transfer, Thermal and Fluid Engineering, and Mechanical Design.

Career opportunities include: working in all sectors of industry that involve the development and use of machineries, such as the mining industry, biomedical applications, building services, energy generation and conversion, manufacturing, transportation and

aerospace. You may focus on design and development, process control and management, or service and maintenance.

Robotics and Mechatronics – Concerned with automation and the design and construction of intelligent mechanical systems. The course includes an intensive hands-on laboratory program and provides skills necessary for the design of smart machines of all types, such as auto cruise control, pilot-less spacecraft, automated factories and medical telerobotics. You will have access to the UWS robotic assembly system, one of the most advanced of its type and unique as a mechatronic engineering educational facility.

Core and elective subjects for this Key Program may include: Circuit Theory, Power and Machines, Mobile Robotics, Mechatronic Design, Instrumentation and Measurement, and Material Technology.

Career opportunities include: designing, developing and controlling automated machinery, designing smart mechanical equipment and systems, and marketing and management in fields like manufacturing, packaging, materials handling, aerospace and mining. For example, designing manufacturing solutions, processes and equipment or developing robotic devices to solve important health issues in the areas of diagnosis of body malfunction and the improvement of body movements.

Telecommunications – Emphasising the hardware issues related to telecommunications, including digital systems, antenna design, communication hardware, data transfer and management, and signal processing.

Core and elective subjects for this Key Program may include: Digital Systems, Signals and Systems, Communication Systems, Wireless Communication, Multimedia Signal Processing and Communication Electronics.

Career opportunities include: working with the transmission of data, for example, developing ways for the speech and hearing impaired to be able to talk, working in communications offices, designing computer communications solutions, or working on intercontinental communications issues.

Lourise Fakhr

Graduate of the Bachelor of Engineering (Civil)

As a Graduate Engineer from UWS, Lourise Fakhr worked with Delfin Lend Lease (DLL).

'The project I worked on involved the redevelopment of a 104ha site at Nelson's Ridge,' she says. 'It was amazing to be part of such a huge project straight out of uni. I was involved in managing and organising the design, planning, engineering and construction aspects of the project. Without my Civil Engineering degree, I'm convinced I could not have gained such a position.

'I thoroughly enjoyed my four years of full-time study at UWS. I chose UWS because of its exceptional Engineering school and from satisfying reports from current students and graduates.

'During my time there I met fantastic people, I gained employment with UWS Capital Works and Facilities division, and participated in meetings and activities to promote women in the field of engineering.

'The staff at UWS were very supportive during my studies, and their constant availability and willingness to help and give that bit extra to their students was great.'

'I believe UWS has provided me with the foundations that will allow me to grow in my chosen profession.'

Bachelor of Engineering Science

The Bachelor of Engineering Science is a three-year professional course that will train you to become an Engineering Technologist. The specialist knowledge of Engineering Technologists is a key element in the practice of engineering. The Engineering Technologist's focused learning and practical skills are highly utilised in industry and make a significant contribution to Australian engineering success and prosperity.

Course	UAC Code	Campus	Duration	ATAR
B Engineering Science (Civil, Computer, Construction, Electrical, Environmental, Mechanical, Robotics and Mechatronics, Telecommunications)	722512	Penrith	3F/6P	nc
Practical Experience				
A session of practical experience is required as part of the degree.				
Professional Recognition				
The course has been designed to meet the requirements of Engineers Australia. Formal accreditation for the Bachelor of Engineering Science course at the level of Engineering Technologist will be sought from Engineers Australia in 2012. It is expected that the course will be accredited by Engineers Australia from 2013.				

Key: B = Bachelor of; F = Full-time; P = Part-time. Note: part-time refers to study load, not to timetabling of evening classes.

The Greater Western Sydney region has experienced strong growth and the engineering industry requires engineering technologists in a range of specialisations to support industry. The Bachelor of Engineering Science degree covers all major engineering domains, and you can experience many facets of engineering before deciding your area of specialisation at the end of your first year.

The Bachelor of Engineering Science is offered as an entry program. It is also offered as a three-year exit program for the Bachelor of Engineering.

Core Subjects and Electives

To graduate with a Bachelor of Engineering Science, you will be required to complete 25 subjects (units) for a total of 240 credit points, as well as practical industrial experience.

The Key Programs in the Bachelor of Engineering Science are Civil, Construction, Computer, Electrical, Environmental, Mechanical, Robotics and Mechatronics, and Telecommunications. For more information on these Key Programs please see the descriptions starting on page 8.

The core common first year subjects may include Mathematics for Engineers, Physics and Materials, Fundamentals of Mechanics, Engineering Computing, Electrical Fundamentals, Engineering Design and Construction Practice, and Engineering and Design Concepts. You will have the opportunity to complete up to two electives, depending on the key program you select.

For detailed information about the course structure and subjects, visit myfuture.uws.edu.au

Further Studies

The B Engineering Science course is identical to the first three years of the B Engineering course. Students may apply to transfer from B Engineering Science to B Engineering during their course of study. Students who graduate from B Engineering Science may apply for admission to B Engineering so as to complete a second degree in another year.

Career Opportunities

Engineering Technologists make an important contribution to the engineering profession. Bachelor of Engineering Science graduates can:

- use your strong knowledge base to carry out specific and complex engineering tasks
- analyse and modify new and existing engineering technologies and apply them in the testing and implementation of engineering projects
- focus on interactions within engineering systems
- identify and solve complex, specialised engineering problems by applying innovative practices and procedures.

The Engineering Technologist:

- focuses on interactions within the system
- modifies and adapts established engineering practices
- advances engineering technology.

Bachelor of Computer Science (Advanced)

Any computer science degree can teach you general programming and technical systems skills, but few give you a competitive edge for your career.

Course	UAC Code	Campus	Duration	ATAR
B Computer Science (Advanced)	724004	Penrith	3F	90.35

Professional Recognition

The Bachelor of Computer Science is currently accredited with the Australian Computer Society at Professional Level. This will enable you, following graduation, to join the Society at full professional level. As a member of the Australian Computer Society, you are also eligible to join the Association of Computing Machinery (ACM), which is one of the world's oldest and most prestigious professional bodies for the computing and information technology industry.

Key: B = Bachelor of; F = Full-time.

The UWS Computer Science (Advanced) program is an elite degree aimed at transforming today's brightest computing minds into tomorrow's computing leaders. Throughout the degree you will be mentored and guided by leading computing academics and you will develop superior knowledge and confidence so you can maximise your career opportunities.

The course is designed especially for people with a strong interest and aptitude for computer science who are seeking a career involving research and development at the cutting edge of technology. It is a challenging program that includes advanced coursework, extension activities and research training. A mentoring program links you with experienced academic staff and research groups within the University, allowing you to take part in the University's research activities.

Core Subjects and Electives

Major studies cover computer forensics, networked systems and systems programming. You will participate in industry and research-based extension activities. These activities have been designed with the goal of exposing students early in their degree and integrating them into a culture of academic enquiry, problem solving, knowledge generation and scholarship, and an awareness of the challenges and current issues confronting the industry.

You can also choose electives from areas such as artificial intelligence, computer graphics, computer organisation and architecture, database design, distributed systems, information security, operating systems, and network management and security.

For detailed information about the course structure and subjects, visit myfuture.uws.edu.au

Further Studies

An Honours year is available to high-achieving students. Information and details on how to apply for Honours will be provided to you as you progress through your Bachelors degree, or you can find out more at myfuture.uws.edu.au/honours

Career Opportunities

The UWS Computer Science degree is highly practical and developed in close consultation with the industry. Depending on the subjects completed, you may be able to program real-time, fault-tolerant, mission-critical software systems and simulated environments, including gaming and entertainment software. You will graduate career-ready and look forward to opportunities in:

- computer forensics
- computer security
- systems programming
- systems administration
- network support and management
- network and systems security support
- real-time programming
- systems engineering
- distributed software development
- communications and distributed systems support
- research and development in computer science.

Bachelor of Computer Science

Any computer science degree can teach you general programming and technical skills, but at UWS we offer specialist Computer Science degrees.

Course	UAC Code	Campus	Duration	ATAR
B Computer Science (Computer Forensics, Networked Systems, Systems Programming)	724000	Penrith	3F	76.85

Professional Recognition

The Bachelor of Computer Science is currently accredited with the Australian Computer Society at Professional Level. This will enable you, following graduation, to join the Society at full professional level. As a member of the Australian Computer Society, you are also eligible to join the Association of Computing Machinery (ACM), which is one of the world's oldest and most prestigious professional bodies for the computing and information technology industry.

Key: B = Bachelor of; F = Full-time.

Core Subjects and Electives

To graduate with a Bachelor of Computer Science, you will be required to complete 24 subjects (units). Within this degree, you can choose one of the following majors:

Computer Forensics – Prepares you for emerging cyber evidence detection career opportunities. Focusing on the gathering of evidence from computers and computer networks, this major develops the knowledge and skills necessary to ensure that evidence can be documented and presented in an intelligible manner. Identification and analysis of such evidence requires in-depth technical knowledge of the interactions between hardware, operating systems, programs and networks.

Core and elective subjects for this major may include: Statistics for Science, Computer Organisation, Information Security, Computer Forensics Workshop, Operating Systems and Systems Administration Programming.

Networked Systems – Recent advances in computer and telecommunications networked systems have increased the importance of network technologies in the discipline of computer science. This major gives you a thorough technical understanding of modern networked computer systems, how they work, and the principles that govern them. Based on this solid foundation, you have the opportunity to learn the practical skills needed to design, develop and integrate the networked computer systems needed by today's large organisations. It covers a wide range of topics, including computer communication network concepts and protocols, multimedia systems, internet standards and technologies, network security, wireless and mobile computing, and distributed systems.

Core and elective subjects for this major may include: Principles for Professional Communication, Computer Networking, Computer Networks and Internet, Network Security, Networked System Design, and Systems and Network Management.

Systems Programming – If you want to develop advanced programming skills, this is the major for you. It will give you strong systems programming and systems administration skills, focusing on programming at the level of the underlying operating system. It emphasises the development of highly-efficient and reliable code that can provide support services for higher-level application programs, as well as the development of programs suitable for systems administration and management. Practical work utilises C/C++ (the industry standard language for systems programming) as well as both the Unix and Windows environments.

Core and elective subjects for this major may include: Programming Fundamentals, Database Design and Development, Systems Programming, Internet Programming, and Distributed Systems and Programming.

Further Studies

An Honours year is available to high-achieving students. Information and details on how to apply for Honours will be provided to you as you progress through your Bachelors degree, or you can find out more at myfuture.uws.edu.au/honours

Career Opportunities

Career possibilities include work in:

- computer forensics
- computer security
- systems programming
- systems administration
- network support and management
- network and systems security support
- real-time programming
- systems engineering
- distributed software development
- communications and distributed systems support
- research and development in computer science.

For detailed information about the course structure and subjects, visit myfuture.uws.edu.au

Bachelor of Computing (Information Systems)

For a leading-edge career in the IS/IT industry, you need a leading-edge degree. And that's exactly what the University of Western Sydney's Bachelor of Computing gives you.

Course	UAC Code	Campus	Duration	ATAR
B Computing (Information Systems)	724008	Parramatta	3F	65.20

Professional Recognition

The Bachelor of Computing is accredited with the Australian Computer Society at Professional Level. This will enable you, following graduation, to join the Society at full professional level. As a member of the Australian Computer Society, you are also eligible to join the Association of Computing Machinery (ACM), which is one of the world's oldest and most prestigious professional bodies for the computing and information technology industry.

Key: B = Bachelor of; F = Full-time.

Computers are integral to modern culture and are a primary engine behind much of the world's economic and social change. The knowledge and skills required to be competitive in the computing industry are ever-increasing.

Today, practising professionals need to not only have knowledge and skills in computing, they also need to understand the context in which computer technology is applied in society, and be able to work collaboratively with people in all sorts of professions and industries.

The Bachelor of Computing degree integrates closely the applications of computing and information systems in a global business environment. You will work with organisations to design, develop, deploy and manage information systems through the application of computing technology. This course will help you carry out a real-life project where you will need to demonstrate you can design and develop an information system that solves a community-based problem.

Core Subjects and Electives

To graduate with a Bachelor of Computing, you are required to complete 24 subjects (units). You will complete a key program in Information Systems, which focuses on computing and information technology in the context of business. The core subjects you may study in the first year of this degree include Programming Fundamentals, Principles of Professional Communication, Systems Analysis and Design, Information Systems in Context, Computer Networking, Database Design and Development, and Object Oriented Analysis.
You will have six elective subjects and you may broaden your studies based on your interests and ambitions by choosing subjects, sub-majors or a major from other disciplines such as health, science, business, or design, as well as other specialised areas of computing and information technology. Major studies cover advanced programming, computer systems, information technology, health informatics, web systems development, computational decision making, entertainment computing, knowledge discovery and data mining, mathematics and statistics.

For detailed information about the course structure and subjects, visit myfuture.uws.edu.au

Career Opportunities

As a UWS Computing graduate, you can look forward to career opportunities such as:

- analyst programmer
- systems developer
- network developer
- systems architect and information systems manager
- web systems developer
- Chief Information Officer (CIO) of an organisation
- health Informatics manager.

Indigenous Australian Studies

Enrolment in the Indigenous Australian Studies (IAS) major, sub-major or units is available to all UWS undergraduate students who have open electives. Find out more at studyias.com.au

Dr Anton Bogdanovych

Postdoctoral Research Fellow

School of Computing and Mathematics

Dr Anton Bogdanovych strongly believes that the future of Internet is 3D and that virtual worlds like Second Life will soon replace traditional web browsing. 'In the future there will be no need to use keyboard and mouse. Interacting with menus, drawing, building objects, moving around will be done via full body motion and voice commands,' he says.

Dr Bogdanovych is a Postdoctoral Research Fellow in the University of Western Sydney's School of Computing and Mathematics and works in the areas of Artificial Intelligence, Video Games, Motion Capture, Human Computer Interaction and Virtual Worlds. As such, he leads the Uruk project, which aims to recreate the way of life of ancient Sumerians in the period around 3000 B.C. using Artificial Intelligence.

'My research shows the very nature of IT, which can be summarised as "Start here – go anywhere". It truly is a unique discipline that can only exist in a tight overlap with other fields. If you happen to develop a passion for other disciplines, like History and Cultural Studies in my case, your IT degree will give you the opportunity to make an active and innovative contribution to those areas; a contribution that other researchers in this discipline are unable to make. So keep your eyes open to such opportunities and use every chance to explore your passions. Only by finding a way to improve the quality of research in other disciplines will you unleash the true power of your IT degree.'

For future students interested in IT at UWS, Dr Bogdanovych suggests 'taking as much mathematics as you possibly can during your studies. Maths would give you all the necessary basics that would never expire. It will also be much more difficult to catch up on Maths if you happen to need it in the future, unlike many other subjects where you can quickly learn the missing bit of knowledge in a matter of days.'

Bachelor of Information and Communications Technology

The Bachelor of Information and Communications Technology (ICT) is a professional three-year course that will provide you with solid skills and a knowledge base in ICT. As well as the ability to apply practical solutions across the ICT arena, it will also allow you to develop skills in system analysis and design, application development, program design, networks, web design and the implementation of technology.

Course	UAC Code	Campus	Duration	ATAR
B Information and Communications Technology	724012	Campbelltown	3F	65.35
	724016	Parramatta	3F	65.15
	724020	Penrith	3F	66.15

Advanced Standing

TAFE graduates who have completed their qualifications may be granted exemptions/credits depending on their completed subjects and grades.

Professional Recognition

The Australian Computer Society (ACS) recognises graduates of this course at the professional level. This will enable you, following graduation, to join the Society at full professional level. As a member of the Australian Computer Society, you are also eligible to join the Association of Computing Machinery (ACM), which is one of the world's oldest and most prestigious professional bodies for the computing and information technology industry.

Key: B = Bachelor of; F = Full-time.

As a graduate of the Bachelor of ICT, you will be able to:

- investigate – draw on a solid technological and software core of ICT knowledge and practice to analyse and develop current applications
- integrate – amalgamate knowledge and skills to develop new applications and new application areas
- innovate – keep up-to-date with the rapid development in technology and practice across ICT, and find innovative solutions that move the field forward.

Core Subjects and Electives

To graduate with a Bachelor of Information and Communications Technology, you will be required to complete 24 subjects (units).

The core subjects you may study in your first year include Computer Networking, Object Oriented Analysis, Database Design and Development, Programming Fundamentals, Technologies for Web Applications, Systems Analysis and Design, and Statistical Decision Making.

You will have eight elective subjects that you can select from other courses at the University of Western Sydney. You may elect to complete a major from Computing and ICT, which may include Networking, Advanced Programming, Computer Systems, Information Technology, Health Informatics, Web Systems Development, Computational Decision Making, Entertainment Computing, Knowledge Discovery and Data Mining, Mathematics and Statistics.

Indigenous Australian Studies

Enrolment in the Indigenous Australian Studies (IAS) major, sub-major or units is available to all UWS undergraduate students who have open electives. Find out more at studyias.com.au

Career Opportunities

As a UWS ICT graduate, you can look forward to career opportunities such as:

- network administrator or engineer
- systems architect
- systems integrator
- database administrator or programmer
- web analyst
- community/commercial web systems designer/developer
- software quality analyst
- business programmer
- software engineer analyst
- systems developer
- games developer
- information systems manager.

For detailed information about the course structure and subjects, visit myfuture.uws.edu.au

Bachelor of Industrial Design

Industrial design is a vital part of modern-day living. Every day of our lives we encounter products designed and manufactured with the intention of making our lives easier. It is industrial designers – incorporating a lateral and cross-disciplinary approach to problem solving – who create the most useful products.

The primary focus of the UWS Industrial Design program is ensuring its graduates are completely industry-ready, able to think strategically and provide innovative design solutions in a commercial context. The course promotes an awareness of the place of design in society and its effect on people, the environment and the economy, and provides students with the ability to work independently or collaboratively.

Course	UAC Code	Campus	Duration	ATAR
B Industrial Design	722530	Penrith	4F	65.05
Practical Experience				
You will be required to undertake 10 weeks of industry placement, which encourages professional development and often leads to projects for the final year of the program and, in some instances, employment upon graduation.				
Professional Recognition				
Graduates of this course are eligible for professional membership of the Design Institute of Australia – the professional body representing designers in Australia.				

Key: B = Bachelor of; F = Full-time.

Core Subjects and Electives

To graduate with a Bachelor of Industrial Design, you will be required to complete 24 subjects (units) as well as a Major Project. The final year of the degree is dedicated to the management of the major design project. The year-long design project culminates in WideVision, a unique exhibition and showcase of students' projects and skills.

Major studies cover innovation design management, interactive industrial graphics and international design management. The core subjects you may study in this degree include Engineering and Industrial Design Practice, Design Science, 3D Solids, Applied Ergonomics, Marketing Principles, The Design Proposal, Product Realisation, Sustainable Design: Materials Technology, and Design Management: Organisational Skills for Designers.

You can also select electives in areas such as design management, industrial graphics, sustainable design or other subjects from courses offered by the University of Western Sydney.

For detailed information about the course structure and subjects, visit myfuture.uws.edu.au

Further Studies

An Honours year is available to high-achieving students. Information and details on how to apply for Honours will be provided to you as you progress through your Bachelors degree, or you can find out more at myfuture.uws.edu.au/honours

If you are interested in becoming a secondary teacher, you can apply to study the UWS Master of Teaching (Secondary) on completion of the Bachelor of Industrial Design degree.

Career Opportunities

As a graduate of the UWS Industrial Design program, career opportunities may include in-house or consultant industrial designer in areas such as product management, environmental planning, systems design, exhibition design and marketing management. Work includes the development of new products and systems, as well as the updating and improvement of existing products and systems.

Indigenous Australian Studies

Enrolment in the Indigenous Australian Studies (IAS) major, sub-major or units is available to all UWS undergraduate students who have open electives. Find out more at studyias.com.au

Bachelor of Design and Technology

Delivering a sound knowledge of design from both a theoretical and a practical standpoint, the UWS Design and Technology degree can lead to multiple career outcomes including product design, packaging, rapid prototyping, 3D modelling, exhibition design and secondary school teaching with additional qualifications.

Course	UAC Code	Campus	Duration	ATAR
B Design and Technology	722520	Penrith	3F/6P	65.65
Practical Experience				
Throughout the course, you will have the opportunity to participate in practical work experience projects and network within the industry. During or at the end of your third year of study, the practical component of the course culminates in a 10-week session of industry experience, giving you priceless real-life experience in developing new products within a company or organisational environment.				
Professional Recognition				
Graduates are eligible for membership of the Design Institute of Australia (DIA).				

Key: B = Bachelor of; F = Full-time; P = Part-time. Note: part-time refers to study load, not to timetabling of evening classes.

The course endows you with a comprehensive knowledge of all design areas, but also offers the flexibility to specialise. It combines the University's own state-of-the-art technologies and processes with an extensive network of external industry-based resources.

Core Subjects and Electives

To graduate with a Bachelor of Design and Technology, you are required to complete 24 subjects (units) as well as practical industry experience. You are required to complete a sub-major and this can be in the areas of design management, industrial graphics or sustainable design.

The core subjects you may study in this degree include Engineering and Industrial Design Practice, Engineering and Design Concepts, Design Science, Applied Ergonomics, Sustainable Design: Materials Technology, Marketing Principles, Sustainable Design: Life Cycle Analysis, Industrial Graphics, Design Management: Organisational Skills for Designers, Designed Inquiry and Approved Industrial Experience.

For detailed information about the course structure and subjects, visit myfuture.uws.edu.au

Further Studies

If you are interested in becoming an industrial designer, you are able to apply to transfer to the Bachelor of Industrial Design and complete a fourth year of study.

Alternatively, if you are interested in becoming a secondary teacher, you can apply to study the UWS Master of Teaching (Secondary) on completion of the Bachelor of Design and Technology degree. Please refer to the UWS Teaching and Education Course Guide for further details.

Career Opportunities

As a graduate of the UWS Design and Technology program, you will enjoy a range of career options. Graduates typically work in creating and producing designs for consumer, medical and industrial products, and in making models and prototypes of these designs for mass or specialist production.

Indigenous Australian Studies

Enrolment in the Indigenous Australian Studies (IAS) major, sub-major or units is available to all UWS undergraduate students who have open electives. Find out more at studyias.com.au

Monica Mazioun

Bachelor of Industrial Design

Monica Mazioun is thankful for her time studying at UWS.

'If I hadn't gone to UWS I wouldn't be where I am today,' she says. 'When I began work, people were surprised with the wealth of knowledge and technological experience I had. That gained me the respect of my work colleagues very quickly.

'The staff at UWS were awesome; from administration to lecturers, everyone was there for the interests of the students. The facilities were state-of-the-art, both on site for ease and off site made accessible through industry partnership.

'The course was rigid enough to give me my training but flexible enough to accommodate my interests. The workshop facilities convinced me it was a great decision to study at UWS, and the lecturers and tutors went out of their way to assist me in developing my skills and interests.'

Since leaving UWS, Monica has worked for small design consultancies, medium-sized furniture designer makers, teaching at TAFE and more recently for Electrolux.

'Working out of my Sydney office I get to communicate with people in China, Thailand, Singapore, Sweden, Germany and Italy, just to name a few, and there are many opportunities to travel.'

'UWS really equipped me for the real world.'

'My advice to future students is to work hard. The industry is super competitive. Thankfully, UWS really equipped me for the real world and then put me in touch with prospective employers. It will do the same for you.'

Bachelor of Construction Management

Be a driving force behind the creation of the highest quality constructed facilities with the UWS Construction Management degree. Equipping students with specialised skills in construction management, this degree is widely recognised for delivering the full suite of theoretical, practical and hands-on experience in the area of construction management.

Course	UAC Code	Campus	Duration	ATAR
B Construction Management	722515	Penrith	4F/8P	71.40

Practical Experience

You will be required to undertake a total of 1,200 hours of approved practical experience during the course. There are a number of opportunities during the course for obtaining a cadetship in the building industry in areas including building surveying, construction economics and construction management.

Advanced Standing

Applicants who have completed TAFE Diplomas in Building, Quantity Surveying, Architectural Technology or Engineering may be eligible for academic credit. Other relevant TAFE qualifications will be considered on merit. Students who are employed in the industry on a part-time basis may negotiate reduced study load per annum.

Key: B = Bachelor of; F = Full-time; P = Part-time. Note: part-time refers to study load, not to timetabling of evening classes.

In addition to high-calibre academic guidance, you will study in a purpose-built laboratory complex where you will conduct experiments across the range of building sciences, including acoustics, heat flow through a building, corrosion of materials, concrete testing, and much more.

Core Subjects and Electives

To graduate with a Bachelor of Construction Management, you are required to complete 32 subjects (units) as well as practical industry experience.

Major studies cover construction technology, management, law and economics. The core subjects you may study in the first year of the Bachelor of Construction Management are Building 1 and 2, Graphic Communication and Design, Engineering, Design and Construction, Design Science, Introduction to Business Law, Accounting Information for Managers and Management Foundations.

There are four elective subjects and you may consider subjects from other courses offered by the University of Western Sydney. You may like to complete subjects that relate to construction economics, for example Construction Information Systems, Quality and Value Management, Estimating or Quantity Surveying.

For detailed information about the course structure and subjects, visit myfuture.uws.edu.au

Further Studies

This course has an embedded Honours stream available to high-achieving students. Information about the embedded Honours option will be provided to you as you progress through your Bachelors degree.

Career Opportunities

As a UWS Construction Management graduate, you can look forward to such career opportunities as:

- site manager
- building surveyor
- estimator
- facilities manager
- building economist or consultant
- design and construction manager
- project manager.

Bachelor of Housing

The UWS Bachelor of Housing degree is ideal for anyone interested in a practical, professional qualification within the building industry. This degree gives you specialised skills for working in the housing industry with a strong emphasis on the design, construction, maintenance and economics of dwellings for human habitation.

A highly-practical course, the Bachelor of Housing degree gives you the opportunity to use the purpose-built laboratory complex to conduct experiments across the range of building sciences, including acoustics, heat flow through a building, corrosion of materials, concrete testing, and much more.

Course	UAC Code	Campus	Duration	ATAR
B Housing	722525	Penrith	3F	67.10

Practical Experience

Housing lecturers and tutors will actively encourage you to independently gain work experience during your studies in order to enhance practical skills and future employment prospects.

Advanced Standing

Applicants who have completed TAFE Diplomas in Building, Quantity Surveying, Architectural Technology or Engineering may be eligible for academic credit. Other relevant TAFE qualifications will be considered on merit. Students who are employed in the industry on a part-time basis may negotiate reduced study load per annum.

Key: B = Bachelor of; F = Full-time; P = Part-time. Note: part-time refers to study load, not to timetabling of evening classes.

Core Subjects and Electives

To graduate with a Bachelor of Housing, you are required to complete 24 subjects (units). Major studies cover housing construction, housing design, property development and investment, project management and urban planning.

The core subjects you may study in this degree include Graphic Communications and Design, Introduction to Business Law, Engineering, Design and Construction Practice, Design Science, Construction Technology (Civil and Substructure), Construction in Practice, Quantity Surveying, Material Science in Construction, Estimating, Development Control, Project Management and Building Regulation Studies.

You will have three elective subjects and you may consider subjects from other courses offered by the University of Western Sydney. You may choose subjects that relate to Building, which includes Construction Information Systems, Construction Technology 3 (Concrete Construction), Quality and Value Management, Quantity Surveying, and Construction Technology 4 (Steel Construction).

For detailed information about the course structure and subjects, visit myfuture.uws.edu.au

Career Opportunities

The current shortage of building industry professionals means that graduates of the Housing program can choose from a wide variety of careers including:

- property developer
- housing project manager
- site supervisor
- building surveyor
- estimator
- facilities manager
- building consultant
- design and construction manager.

Double Degrees

If you are considering the Bachelor of Information and Communications Technology, you can tailor your studies by combining degrees.

Your 2012 options will include combining your Bachelor of Information and Communications Technology degree with the:

- Bachelor of Arts
- Bachelor of Business and Commerce
- Bachelor of Business and Commerce (Accounting)

For detailed information about the course structure and subjects, visit myfuture.uws.edu.au

Course	UAC Code	Campus	Duration	ATAR
B Information and Communications Technology/B Arts	724100	Parramatta	4F	70.45
B Information and Communications Technology/B Business and Commerce	724110	Campbelltown	4F	70.45
	724115	Parramatta	4F	70.50
B Information and Communications Technology/B Business and Commerce (Accounting)	724120	Campbelltown	4F	70.50
	724130	Parramatta	4F	70.55

Key: B = Bachelor of; F = Full-time.

For more information please call the UWS Course Information Centre on 1300 897 669 or email study@uws.edu.au

Providing Support Through Scholarships

The University of Western Sydney is not only about obtaining an education. We challenge ourselves to engage students who will get involved and make a difference to the University and wider communities.

UWS has a unique set of scholarships on offer with many differing criteria. They reflect our strong commitment to academic excellence and opportunity for Greater Western Sydney students. Our scholarships support students who have diverse interests and skills, and who can and do make an active contribution.

UWS works closely with business, industry, and the community to ensure we offer scholarships that meet the needs of our students. Our scholarships provide our students with support and give them the opportunity to establish professional relationships while they study.

Take the time to examine our scholarships and make the most of your opportunities for success. For details on UWS Scholarships, including the eligibility requirements and how to apply, refer to www.uws.edu.au/scholarships or call 1300 897 669.

Erin Burke

Bachelor of Engineering (Advanced)

Erin says she was drawn to engineering because academically, science and mathematics have always been strengths.

While at UWS she's looking forward to majoring in Mechatronics, which she says 'combines all the things I love – like working with machines and computers.' Eventually she hopes to use her degree to get into the field of Biomedicine and 'working with prosthetic limbs.'

Erin went to school at Caroline Chisholm College, where she was involved in many extracurricular activities, including Science Challenges, which she says are some of her favourite memories.

As a recipient of an Academic Excellence Scholarship from UWS, Erin says the volunteer opportunities that the Aspire Future Leaders program offers are something she's really looking forward to.

'I get a real satisfaction out of helping others.' So far in the Aspire program, her involvement with other like-minded students has been a highlight.

Aspiring Leaders

Aspire Future Leaders at the University of Western Sydney™ is a unique professional development and personal enrichment program that has been specifically designed to cultivate and enhance the leadership qualities of students.

By being a part of Aspire, you will have the opportunity to be involved in:

- the annual three-day Aspire Welcome Retreat
- professional and personal development workshops
- valuable networking opportunities with the professional community
- VIP Invitations to UWS Open Days and other annual events
- volunteering opportunities through community engagement
- internships and work experience opportunities.

Aspire is an opportunity for young, talented people with leadership abilities and ambitions, to become part of an elite group of high-achieving undergraduate students. For details on the Aspire program and eligibility requirements, please refer to serious.uws.edu.au or call 1300 897 669.

Applicant Checklist

Find out about our courses 1

- ❑ Read the information within this Guide
- ❑ Talk with Careers Advisors, your parents and teachers/mentors
- ❑ Refer to the Future Students site, visit myfuture.uws.edu.au

Talk to us 2

- ❑ Attend UWS events – find out more at myfuture.uws.edu.au/events
- ❑ Call the UWS Course Information Centre on 1300 897 669 or email study@uws.edu.au
- ❑ Get the inside information on Alternative Entry Pathways to UWS, Triple Advantage and bonus points, Scholarships and Aspire

Apply to UWS 3

- ❑ Apply through UAC, visit www.uac.edu.au
- ❑ Place your UWS Preferences
- ❑ Check your eligibility and submit a scholarship application, visit www.uws.edu.au/scholarships

For International Students

If you are an international student completing one of the following qualifications in 2011, you must apply through UAC International:

- » an Australian Year 12 in or outside Australia
- » an International Baccalaureate
- » a New Zealand National Certificate of Educational Achievement (NCEA) Level 3

All other international students must apply direct to the University of Western Sydney. UWS International application forms, 2012 International tuition fees and further information about studying in Australia can be found at www.uws.edu.au/international

If you have any questions about applying as an international student call 02 9852 5499 or email internationalstudy@uws.edu.au

For international students, you can lodge your international student application online at www.uac.edu.au/international

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www.uws.edu.au

Course Information Centre
1300 897 669
study@uws.edu.au

See you at

- UWS Day Campbelltown, 7 June 2011
- Parent Information Evening, 7 & 14 July 2011
- UWS Open Day, 28 August 2011
- UWS Campus Tours, October 2011
- UWS Day Penrith, 9 November 2011
- Course Decision Day, 3 January 2012

More information: myfuture.uws.edu.au/events

Interact with us to experience UWS Life

- Visit the Future Students Site: myfuture.uws.edu.au
- Visit the Events Mini-Site: myfuture.uws.edu.au/events
- Find us on Facebook: www.uws.edu.au/facebook
- Connect with us on Twitter: www.twitter.com/UWSNews
- Take a Virtual Tour: virtualevents.uws.edu.au
- Watch our YouTube videos: www.uws.edu.au/youtube
- Call the Course Information Centre: 1300 897 669
- Email the Course Information Centre: study@uws.edu.au