BACHELOR OF COMPUTER SCIENCE (ADVANCED) (3634)

Approved Abbreviation: BCompSc(Adv)
Western Sydney University Program Code: 3634
AQF Level: 7

CRICOS Code: 061245G

This program applies to students who commenced in 2017 or later.

Handbook summary 2017-2023

This program is an advanced version of Bachelor of Computer Science. It provides students with a thorough and in-depth technical understanding of modern decentralised computer systems. This understanding includes how these computer systems are put together, how they work and what are the principles that govern them. Based on this solid foundation, students then have the opportunity to further learn the practical skills needed to design, develop and integrate the decentralised computer systems required by today's large organisations. This program is a three year program with distinct majors which allow students to specialise in different applications of computer science and computer systems. Some of the majors are: Cyber Security, Networked Systems, Cloud Computing, Systems Programming, Artificial Intelligence and others.

Students in the Bachelor of Computer Science (Advanced) will follow the same study program that is set out for the Bachelor of Computer Science. However, each student in this program will have an academic mentor and the student will also participate in additional compulsory activities including research projects. To maintain their enrolment in the Bachelor of Computer Science (Advanced) students must maintain an overall above 5 Grade Point Average, otherwise they will be transferred to the standard 3506 – Bachelor of Computer Science program. At enrolment students will be required to sign a declaration acknowledging the need to maintain a grade-point average (GPA) of 5.0 or more.

Handbook summary 2024

This program is designed for high performing students who are motivated to explore further in cutting-edge technology. In addition to computer science study which covers programming, data structure, algorithm, security, artificial intelligence, software design and development, the program provides student with independent learning and research training in advanced topics including algorithms, artificial intelligence, software engineering and security. Mentor will be assigned to each student. This program offers majors in Cyber Security, Artificial Intelligence, Systems Programming, Networked Systems, Technology Entrepreneurship, and a minor in Cloud Computing.
Graduates of an advanced computer science program will be well-equipped to tackle complex computational problems and contribute to the development of innovative technologies. Career paths include software engineering, cybersecurity, artificial intelligence, and research in computer science.
Students are required to maintain a grade-point average (GPA) of 5.0 or more at every semester.

Study Mode

Three years full-time.

Program Advice

Program Advice (CDMS@westernsydney.edu.au)

Prospective students should visit the following websites for general enquiries about this program.

Enquire about this program (https://enquiry.westernsydney.edu.au/courseenquiry/)| Local Admission (https://www.westernsydney.edu.au/future/) | International Admission (https://www.westernsydney.edu.au/international/home/apply/admissions/) |

Location

Campus	Attendance	Mode	Advice
Parramatta Campus - Victoria Road	Full Time	Internal	See above
Penrith Campus	Full Time	Internal	See above

Accreditation

The Bachelor of Computer Science currently is accredited by Australian Computer Society at the professional level.

Work Integrated Learning

Western Sydney University seeks to enhance student learning experiences by enabling students to engage in the culture, expectations and practices of their profession or discipline. This program includes a placement or other community-based unpaid practical experience.

There is a mandatory work component required for completion of this program. Please contact the Program Advisor listed above for information.

International students should also refer to the link below for more information and a link to the Commonwealth Register of Institutions and Courses for Overseas Students (CRICOS).

Work Integrated Learning (WIL) for international students (https://www.westernsydney.edu.au/currentstudents/current_students/services_and_facilities/international_student_support/working_in_australia/work_integrated_learning/)

Admission

Assumed Knowledge: HSC Mathematics and any two units of HSC English.

Applications from Australian and New Zealand citizens and holders of permanent resident visas may be made via the Universities Admissions Centre (UAC) or directly through the Western Portal. Use the links below to apply via UAC or Western Sydney University. Applications made directly to Western Sydney do not have an application fee.

http://www.uac.edu.au/
https://westernsydney.uac.edu.au/ws/

Applicants who have undertaken studies overseas may have to provide proof of proficiency in English. Local applicants who are applying through the Universities Admissions Centre (UAC) will find details of minimum English proficiency requirements and acceptable proof on the UAC website. Local applicants applying directly to the University should also use the information provided on the UAC website.

International students currently completing an Australian Year 12 in or outside Australia, an International Baccalaureate in Australia or a New Zealand National Certificate of Educational Achievement (NCEA) level 3 must apply via UAC International.

http://www.uac.edu.au/

All other International applicants must apply directly to the University via the International Office.

International students applying to the University through the International Office can find details of minimum English proficiency requirements and acceptable proof on their website.

International Office (http://www.westernsydney.edu.au/international/)

Overseas qualifications must be deemed by the Australian Education International - National Office of Overseas Skills Recognition (AEI-NOOSR) to be equivalent to Australian qualifications in order to be considered by UAC and Western Sydney University.

Program Structure Current

The sequence below applies to students who commenced in 2024. If you commenced prior to 2024 please refer to the Structure 2017-23 tab for details.

Qualification for this award requires the successful completion of 240 credit points which include the subjects listed in the recommended sequence below.

Recommended Sequence

Full-time start-year intake

Course	Title	Credit Points
Year 1		
Autumn session		
MATH 1028	Statistical Decision Making	10
COMP 1005	Programming Fundamentals	10
INFO 1003	Professional Practice, Communication and Ethics	10
MATH 1006	Discrete Mathematics	10
	Credit Points	**40**
Spring session		
COMP 2008	Computer Organisation	10
COMP 2014	Object Oriented Programming	10
INFS 2002	Database Design and Development (Advanced)	10
COMP 2005	Computer Networking (Advanced)	10
	Credit Points	**40**
Year 2		
Autumn session		
COMP 2019	Systems Programming 1	10
COMP 2030	Data Structures and Algorithms (Advanced)	10
Select two electives or major or minor subjects		20
	Credit Points	**40**
Spring session		
INFS 3020	Artificial Intelligence (Advanced)	10
INFO 3021	Information Security (Advanced)	10
COMP 3009	Distributed Systems and Programming	10
Select one elective or major or minor subject		10
	Credit Points	**40**
Year 3		
Autumn session		
INFO 3019	Project Management	10
Select three electives or major or minor subjects		30
	Credit Points	**40**
Spring session		
COMP 3018	Professional Experience	10
INFS 3021	Formal Software Engineering (Advanced)	10
Select two electives or major or minor subjects		20
	Credit Points	**40**
	Total Credit Points	**240**

Suggested Elective Subjects

Subject	Title	Credit Points
COMP 3003	Cloud Computing Architecture	10
COMP 3006	Computer Graphics	10
COMP 3007	Computer Networks and Internets	10
INFO 3002	Ethical Hacking Principles and Practice	10
INFO 3015	Internet of Things and Smart Environments	10
COMP 3012	Introduction to Cloud Computing	10
COMP 2025	Introduction to Data Science	10
COMP 3013	Mobile Applications Development	10
INFO 3007	Network Security	10
COMP 3014	Networked Systems Design	10
COMP 3015	Operating Systems Programming	10
COMP 3032	Machine Learning	10
COMP 3033	Quantum Computing and Communication	10
COMP 3027	Robotic Programming	10
COMP 3020	Social Web Analytics	10
COMP 2026	Visual Analytics	10
COMP 3025	Wireless and Mobile Networks	10

Majors

The majors listed below have been designed specifically for this program and are recommended for Bachelor of Computer Science students.

Artificial Intelligence, Major (0031) (https://hbook.westernsydney.edu.au/archives/2024-2025/majors-minors/artificial-intelligence-major/)

Cyber Security, Major (0066) (https://hbook.westernsydney.edu.au/archives/2024-2025/majors-minors/cyber-security-major/)

Networked Systems, Major (0065) (https://hbook.westernsydney.edu.au/archives/2024-2025/majors-minors/networked-systems-major/)

Systems Programming, Major (0064) (https://hbook.westernsydney.edu.au/archives/2024-2025/majors-minors/systems-programming-major/)

Technology Entrepreneurship, Major (0261) (https://hbook.westernsydney.edu.au/archives/2024-2025/majors-minors/technology-entrepreneurship-major/)

Minor

Cloud Computing, Minor (0128) (https://hbook.westernsydney.edu.au/archives/2024-2025/majors-minors/cloud-computing-minor/)

Note: students may use some of their elective space to complete a Major or the Minor

Major and Minor elective spaces

Elective subjects may be used toward obtaining an additional approved major (80 credit points) or minor (40 credit points). Western Sydney University offers majors and minors in a range of areas including Sustainability and Indigenous Studies.

Global Sustainability Minor (https://hbook.westernsydney.edu.au/majors-minors/global-sustainability-minor/)

Indigenous Australian Studies Major (https://hbook.westernsydney.edu.au/majors-minors/indigenous-australian-studies-major/)
Indigenous Australian Studies Minor (https://hbook.westernsydney.edu.au/majors-minors/indigenous-australian-studies-minor/)

Western Sydney University also offers the following innovative transdisciplinary Challenge Minors (https://www.westernsydney.edu.au/educational_partnerships_and_quality/home/challenge_minors/) which we encourage those students who have elective space to consider.

Equitable Technologies (https://hbook.westernsydney.edu.au/majors-minors/equitable-technologies-minor/)
Urban Evolution (https://hbook.westernsydney.edu.au/majors-minors/urban-evolution-minor/)
Migration and Global Change (https://hbook.westernsydney.edu.au/majors-minors/migration-global-change-minor/)
Personal Innovation (https://hbook.westernsydney.edu.au/majors-minors/personal-innovation-minor/)
Innovating, Creating and Problem Solving (https://hbook.westernsydney.edu.au/majors-minors/innovating-creating-problem-solving-minor/)
Eco-Socially Conscious Design and Manufacturing (https://hbook.westernsydney.edu.au/majors-minors/eco-socially-conscious-design-manufacturing-minor/)
Water for Life (https://hbook.westernsydney.edu.au/majors-minors/water-life-minor/)
Climate Justice (https://hbook.westernsydney.edu.au/majors-minors/climate-justice-minor/)
Creative and Visual Communication (https://hbook.westernsydney.edu.au/majors-minors/creative-visual-communication-minor/)
Global Workplaces (https://hbook.westernsydney.edu.au/majors-minors/global-workplaces-minor/)
Innovating For Humans (https://hbook.westernsydney.edu.au/majors-minors/innovating-humans-minor/)
Creative Living for Cultural Wellbeing (https://hbook.westernsydney.edu.au/majors-minors/creative-living-cultural-wellbeing-minor-/)
Ideate. Strategise. Innovate. (https://hbook.westernsydney.edu.au/majors-minors/ideate-strategise-innovate-minor/)
Humanising Data (https://hbook.westernsydney.edu.au/majors-minors/humanising-data-minor/)

For more information, visit the Challenge Minor (https://www.westernsydney.edu.au/educational_partnerships_and_quality/home/challenge_minors/) website.

Search for majors and minors (https://hbook.westernsydney.edu.au/majors-minors/)

Students can apply for an elective major or minor via Western Now.

WesternNow (https://www.westernsydney.edu.au/westernnow/)

Program Structure 2017 - 2023

If you commenced in 2024 or later please refer to the Structure 2024 tab for details.

In addition to the subjects outlined in the program structure for Bachelor of Computer Science (https://hbook.westernsydney.edu.au/archives/2024-2025/programs/bachelor-computer-science/), students in the advanced program must also complete the following three subjects.

Students must enrol in both 1H and 2H sessions.

Recommended Sequence

Course	Title	Credit Points
Year 1		
1H session		
COMP 1002	Advanced Computer Science Activities 1	0
	Credit Points	**0**
2H session		
COMP 1002	Advanced Computer Science Activities 1	0
	Credit Points	**0**
Year 2		
1H session		
COMP 2001	Advanced Computer Science Activities 2	0
	Credit Points	**0**
2H session		
COMP 2001	Advanced Computer Science Activities 2	0
	Credit Points	**0**
Year 3		
1H session		
COMP 3001	Advanced Computer Science Activities 3	0
	Credit Points	**0**
2H session		
COMP 3001	Advanced Computer Science Activities 3	0
	Credit Points	**0**
	Total Credit Points	**0**

Minor Elective Spaces

Students may select their electives to be used toward obtaining an additional approved minor in Applied Leadership or Critical Thinking.

Applied Leadership, Minor

Critical Thinking, Minor (https://hbook.westernsydney.edu.au/archives/2024-2025/majors-minors/critical-thinking-minor/)