MASTER OF APPLIED NEUROMORPHIC ENGINEERING (8124)

Approved Abbreviation: MAppNeuroEng
Western Sydney University Program Code: 8124

CRICOS Code: 106434D

This program applies to students who commenced in 2022 or later.

Handbook Summary 2022-2023

Neuromorphic Engineering is an exciting inter-disciplinary field combining aspects from electrical engineering, computer science, neuroscience, signal processing and mathematics. The Master of Neuromorphic Engineering offers students an opportunity to partner with high-profile industry partners in an applied project or a research project, mentored by leading researchers from the International Centre for Neuromorphic Systems at the MARCS Institute. This program seeks to address the rapidly growing demand for alternative inter-disciplinary technologies, such as bio-inspired agile sensory systems, smart edge devices, and brain-inspired high performance computational platforms. The students will be introduced to state-of-the-art neuromorphic hardware, sensors and algorithms in a highly structured way that increases their acumen for approaching new situations with creativity and initiative.

All students will enrol in the 8124 Master of Applied Neuromorphic Engineering and have the option to transition to 8123 Master of Neuromorphic Engineering at the end of their first year. A student completing the two-year degree may apply to pursue a PhD. Two exit options (Graduate Certificate in Neuromorphic Engineering and Graduate Diploma in Neuromorphic Engineering) are also available. The part-time offering of the 8124 M Applied Neuromorphic Engineering program is available to local students.

The majority of the coursework subjects will be undertaken at Parramatta City - Hassall St campus, while the applied project and research project will be located at Penrith campus.

Handbook Summary 2024

Neuromorphic Engineering is an exciting inter-disciplinary field combining aspects from electrical engineering, computer science, neuroscience, signal processing and mathematics fields. The Master of Applied Neuromorphic Engineering offers students an opportunity to partner with high-profile industry partners in an applied project, mentored by leading researchers from the International Centre for Neuromorphic Systems at the MARCS Institute. This program seeks to address the rapidly growing demand for alternative inter-disciplinary technologies, such as bio-inspired agile sensory systems, smart edge devices, and brain-inspired high performance computational platforms. The students will be introduced to state-of-the-art neuromorphic hardware, sensors and algorithms in a highly structured way that increases their acumen for approaching new situations with creativity and initiative.

Students will have the option to transition to 8123 Master of Neuromorphic Engineering at the end of their first year if they meet the transition requirements. Two exit options (Graduate Certificate in Neuromorphic Engineering and Graduate Diploma in Neuromorphic Engineering) are also available. The part-time offering of the 8124 M Applied Neuromorphic Engineering program is available to local students.

The majority of coursework subjects will be undertaken at Werrington South - Kingswood campus, except for COMP 7024 Programming for Data science and INFO 7001 Advanced Machine Learning subjects.

Early Exits

Students may exit this program on completion of 40 credit points with a 8126 Graduate Certificate in Neuromorphic Engineering (exit only) (https://hbook.westernsydney.edu.au/programs/graduate-certificate-neuromorphic-engineering-exit-only/) or on completion of 80 credit points with a 8125 Graduate Diploma in Neuromorphic Engineering (exit only) (https://hbook.westernsydney.edu.au/programs/graduate-diploma-neuromorphic-engineering-exit-only/)

Study Mode

One and a half years full-time. Students may be required to travel between campuses to complete their subjects.

Program Advice

Bharath Ramesh (https://directory.westernsydney.edu.au/search/email/B.Ramesh@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 City Campus - Macquarie Street	Full Time	Internal	See above
Parramatta City Campus - Macquarie Street	Part Time	Internal	See above
Penrith campus	Full Time	Internal	See above
Penrith campus	Part Time	Internal	See above

Admission

Admission 2022-2023

Admission to the program requires:

- An undergraduate degree in electrical, electronics, biomedical engineering, computer science, physics or mathematics; and
- A one-page statement of purpose showcasing solid achievements behind you that show promise for your success in graduate study.
- Be selected by interview from the International Centre for Neuromorphic Systems (ICNS) within The MARCS Institute.

Applicants who meet the academic requirement will be invited to an interview to discuss previous experience and suitability for the program.

Admission 2024

Admission to the program requires:

- An undergraduate degree in electrical, electronics, biomedical engineering, computer science, physics or mathematics; and
- A one-page Statement of Purpose highlighting the reason for applying to this program along with relevant achievements that make the case for success in graduate study.

- Be selected by interview from the International Centre for Neuromorphic Systems (ICNS) within The MARCS Institute.

Applicants who meet the academic requirement will be invited to an interview to discuss previous experience and suitability for the program.

Recommend Sequence

Qualification for this award requires the successful completion of 120 credit points as per the recommended structure below.

Full-time start-year intake

Course	Title	Credit Points
Year 1		
Autumn session		
ELEC 6004	Neuromorphic Electronics Design	10
MATH 7019	Mathematics of Signal Processing	10
NATS 6001	Introduction to Neuroscience	10
COMP 7024	Programming for Data Science	10
Students may exit with a Graduate Certificate in Neuromorphic Engineering at this point. [1]		
	Credit Points	**40**
Spring session		
ELEC 6003	Neuromorphic Accelerators	10
COMP 6001	Neuromorphic Algorithms and Computation	10
COMP 6002	Neuromorphic Sensing	10
INFO 7001	Advanced Machine Learning	10
Students may exit with a Graduate Diploma in Neuromorphic Engineering at this point. [2]		
	Credit Points	**40**
Year 2		
ELEC 6001	Applied Project in Neuromorphic Engineering	40
Note: From 2023, students who have met minimum 4.5 GPA requirements for 8123 Master of Neuromorphic Engineering will be able to transfer to this program and complete the subject ELEC 6002 Master Dissertation in Neuromorphic Engineering (80 credit points) instead of subject ELEC 6001 Applied Project in Neuromorphic Engineering (40 credit points).		
	Credit Points	**40**
	Total Credit Points	**120**

1. 8126 - Graduate Certificate in Neuromorphic Engineering (https://hbook.westernsydney.edu.au/programs/graduate-certificate-neuromorphic-engineering-exit-only/)
2. 8125 - Graduate Diploma in Neuromorphic Engineering (https://hbook.westernsydney.edu.au/programs/graduate-diploma-neuromorphic-engineering-exit-only/)

Part-time start-year intake

Course	Title	Credit Points
Year 1		
Autumn session		
COMP 7024	Programming for Data Science	10
NATS 6001	Introduction to Neuroscience	10
	Credit Points	**20**
Spring session		
INFO 7001	Advanced Machine Learning	10
COMP 6002	Neuromorphic Sensing	10
Students may exit with a Graduate Diploma in Neuromorphic Engineering at this point [1]		
	Credit Points	**20**
Year 2		
Autumn session		
ELEC 6004	Neuromorphic Electronics Design	10
MATH 7019	Mathematics of Signal Processing	10
	Credit Points	**20**
Spring session		
ELEC 6003	Neuromorphic Accelerators	10
COMP 6001	Neuromorphic Algorithms and Computation	10
Students may exit with a Graduate Diploma in Neuromorphic Engineering at this point [2]		
	Credit Points	**20**
Year 3		
Autumn session		
ELEC 6005	Applied Project in Neuromorphic Engineering (Part-time) [3]	20
	Credit Points	**20**
Spring session		
ELEC 6005	Applied Project in Neuromorphic Engineering (Part-time) [3]	20
	Credit Points	**20**
	Total Credit Points	**120**

1. 8126 - Graduate Certificate in Neuromorphic Engineering (https://hbook.westernsydney.edu.au/programs/graduate-certificate-neuromorphic-engineering-exit-only/)
2. 8125 - Graduate Diploma in Neuromorphic Engineering (https://hbook.westernsydney.edu.au/programs/graduate-diploma-neuromorphic-engineering-exit-only/)
3. 40 cp subject taken over 2 sessions (20cps each session)

Note: "*Students who have met **minimum 4.5 GPA requirements** for 8123 Master of Neuromorphic Engineering will be able to transfer to this program and complete ELEC 6002* Master Dissertation in Neuromorphic Engineering *(80 credit points) instead of Applied Project in Neuromorphic Engineering (40 credit points).*"

Please note: If student transition to 8123 Master of Neuromorphic Engineering at the end of second year, they will no longer be able to stay in the part-time offering. 8123 M Neuromorphic Engineering is full time only. The ELEC 6002 Master Dissertation in Neuromorphic Engineering subject (80 credit points) can only be completed full-time.