Flinders University

Australian Government

ANSTO

Give your career
A Nuclear edge

Develop the specialist knowledge and skills to work across Australia's emerging and global nuclear sectors.

Nuclear Postgraduate Courses

Nuclear technology and Australia's future workforce

Nuclear science and technology supports a diverse range of industries and applications, including defence, energy, medicine, research, mining, advanced manufacturing and government. As Australia develops its sovereign nuclear capability and the AUKUS partnership delivers Australia's nuclear-powered submarine program, demand is growing for professionals with the technical knowledge and skills required to work safely and effectively within the nuclear sector.

Flinders University's Nuclear Postgraduate courses provide flexible pathways for professionals seeking to develop specialist nuclear knowledge or build on existing engineering, science, technical or management experience.

Delivered fully online through scheduled teaching periods, the courses are designed to support working professionals and students across Australia. Learning is predominantly asynchronous, providing flexibility within each teaching period, with optional scheduled support available where applicable.

Why study nuclear?

The nuclear sector requires expertise across far more than reactor engineering. Nuclear organisations depend on professionals working across nuclear safety, regulation and compliance, radiation protection, criticality safety, materials engineering, emergency preparedness and response, systems engineering, advanced manufacturing and the construction and sustainment of nuclear facilities and platforms.

Australia's acquisition of conventionally armed, nuclear-powered submarines through the AUKUS partnership is creating a particular need to develop a workforce capable of operating within the demanding engineering, safety, regulatory and assurance environment associated with nuclear technology.

These capabilities are also transferable across the wider civil and international nuclear sectors, providing graduates with knowledge relevant to careers in defence, government, engineering, research, mining, medicine and other industries involving nuclear and radiation technologies.

Nuclear Postgraduate Courses

Why study nuclear at Flinders?

Flinders' Nuclear Postgraduate suite has been developed to provide both foundational nuclear knowledge and specialist pathways aligned with emerging Australian workforce requirements.

Courses are developed and taught by subject matter experts with experience across the defence nuclear sector, bringing practical experience in nuclear engineering, nuclear safety, regulation, radiation protection and emergency response directly into the curriculum.

Flinders also draws on expertise across advanced manufacturing, engineering and science, while ANSTO has contributed specialist case studies to course content and partnership with University of Manchester provides opportunity to study with them as part of the program.

What's on offer?

Flinders offers a flexible suite of postgraduate nuclear courses, allowing students to develop specialist capability through Graduate Certificates or undertake broader study through the Graduate Diploma and Master of Nuclear Science and Technology.

Specialist study is available across nuclear safety and compliance, nuclear workforce and governance, radiological protection and advanced manufacturingfor nuclear systems, with individual topics covering areas including nuclear fundamentals, criticality safety, regulation, radiation shielding, radiation protection, radiation damage in materials, nuclear accident management and emergency response, and nuclear submarine construction and commissioning.

Special thanks to ANSTO, Australia's nuclear science and technology organisation, for contributing expertise to the course content. As the operator of OPAL, Australia's only multi-purpose reactor, ANSTO draws on more than 70 years of nuclear know-how, safety and engineering excellence.

Nuclear Postgraduate Courses

Graduate Certificate (4 subjects) 6 months full time

Compliance & Safety	Workforce & Governance	Radiological Protection	Advanced Manufacturing for Nuclear Systems

Nuclear Science & Technology

Graduate Diploma in Nuclear Science & Technology
(Grad Cert plus additional 4 subjects from Flinders or University of Manchester)
12 months full time

Master of Nuclear Science & Technology
(Grad Dip plus additional 4 subjects from Flinders or a research/industry dissertation with University of Manchester or Flinders) 18 months full time
Online or in person (UK) option available for University of Manchester dissertation

Postgraduate specialisations

Course dates and times can be found in the "Timetable" section at the end of this booklet.
Courses are available full or part-time

Graduate Certificate in Nuclear Safety & Compliance

- Nuclear Safety & Compliance
- Regulation: Codes & Standards
- Criticality Safety Management
- Nuclear Fundamentals

Graduate Certificate in Nuclear Workforce & Governance

- Nuclear Fundamentals
- Nuclear Safety & Compliance
- Regulation: Codes and Standards
- Leading a Future Workforce (*option 1*)
- Project Management (*option 2*)

Graduate Certificate in Nuclear Science & Technology

- Select any four topics of your choice

Graduate Certificate in Radiological Protection

- Radiation & Radiological Protection
- Radiation Shielding
- Radiation Damage in Materials
- Nuclear Accident Management and Emergency Response

Graduate Certificate in Advanced Manufacturing for Nuclear Systems

- Production Engineering
- Innovation & Industry 4.0
- Nuclear Submarine Construction & Commissioning
- Radiation Damage in Materials

Nuclear Postgraduate Courses

Criticality Safety Management
Understand nuclear criticality safety and the reactor physics and assessment methods used to manage fissile-material hazards across the nuclear industry.

Innovation & Industry 4.0
Equip students with innovative thinking, an understanding of Industry 4.0 readiness in organisations, innovation capabilities and industry 4.0 in the supply chain.

Leading a Future Workforce
Provides in-depth knowledge and skills on various traditional and contemporary theories of leadership. Learn how to utilise various theoretical frameworks to lead a highly digitised workforce.

Nuclear Fundamentals (with ANSTO Case Studies)
Develop a foundational understanding of atomic and nuclear structure, radioactivity, nuclear reactions and reactor fundamentals, and explore how nuclear technology applies across energy, medicine, industry and defence.

Nuclear Safety & Compliance (with ANSTO Case Studies)
Explore nuclear safety principles including defence-in-depth, hazard identification and risk assessment, and how safety culture and operational controls work together to prevent and mitigate nuclear accidents.

Nuclear Submarine Construction & Commissioning
Covers the end-to-end lifecycle of nuclear-powered submarine construction, from manufacture and reactor integration through to testing and commissioning.

Production Engineering
Exposes participants to key production engineering tools and methodologies that can be integrated into a range of Manufacturing, Production, Jobbing Shop and sustainment scenarios.

Project Management
Apply concepts of the management of engineering projects and organisations, with particular emphasis on analysing large industry, complex, and/or interdisciplinary projects.

Radiation Damage in Materials
Examine how ionising radiation interacts with nuclear materials, causing atomic-scale defects such as swelling, creep and embrittlement, and the implications for material selection and performance.

Radiation & Radiological Protection
Examine the principles and practice of radiological protection, including radiation types and biological effects, and how exposure is measured and controlled.

Radiation Shielding
Introduces the principles and methods used in the analysis and design of radiation shielding, including attenuation and transport, using analytical and computational calculation methods.

Nuclear Accident Management and Emergency Response
Examine the causes, progression and management of nuclear and radiological accidents, and the emergency arrangements used to protect workers, the public and the environment, across civil and defence scenarios.

Regulation Codes and Standards (with ANSTO Case Studies)
Examine the regulatory frameworks, codes and standards governing nuclear activities in Australia and internationally, and the roles of key regulatory bodies across civil, defence and industrial sectors.

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Nuclear Postgraduate Courses

Timetable

All topics are delivered fully online through scheduled teaching periods. Learning is predominantly asynchronous, providing flexibility within each teaching period, with optional scheduled support sessions available where applicable.

Course	Topic	Study Period
Graduate Certificate in Nuclear Safety & Compliance	Nuclear Fundamentals	25 January - 2 April 2027
	Nuclear Safety & Compliance	5 April - 11 June 2027
	Regulation Codes & Standards	27 July - 30 September 2026; *or* 14 June - 13 August 2027
	Criticality Safety Management	5 October - 11 December 2026; *or* 6 September - 12 November 2027
Graduate Certificate in Nuclear Workforce & Governance	Nuclear Fundamentals	25 January - 2 April 2027
	Nuclear Safety & Compliance	5 April - 11 June 2027
	Regulation Codes & Standards	27 July - 30 September 2026; *or* 14 June - 13 August 2027
	Project Management *(option)*	26 July – 29 October 2027
	Leading a Future Workforce *(option)*	5 October - 11 December 2026; *or* 1 March - 7 May 2027; *or* 4 October - 10 December 2027

Nuclear Postgraduate Courses

Timetable

All topics are delivered fully online through scheduled teaching periods. Learning is predominantly asynchronous, providing flexibility within each teaching period, with optional scheduled support sessions available where applicable.

Course	Topic	Study Period
Graduate Certificate in Radiological Protection	Radiation & Radiological Protection	5 April - 11 June 2027
	Radiation Shielding	25 January - 2 April 2027
	Nuclear Accident Management and Emergency Response	14 June - 13 August 2027
	Radiation Damage in Materials	16 August - 22 October 2027
Graduate Certificate in Advanced Manufacturing for Nuclear Systems	Production Engineering	26 July - 29 October 2027
	Innovation & Industry 4.0	1 March - 4 June 2027
	Nuclear Submarine Construction & Commissioning	14 June – 13 August 2027
	Radiation Damage in Materials	16 August – 22 October 2027

**Dates subject to change*

More information

For information about start dates, entry requirements and topic prerequisites, please visit
flinders.edu.au/nuclear

How to apply - askflinders@flinders.edu.au

Flinders Online - Nuclear

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