Next Generation Artificial Intelligence Graduates Program and Next Generation Emerging Technologies Graduates Program Guidelines

Introduction

As part of the Australian Government's Digital Economy Strategy and Artificial Intelligence Action Plan, CSIRO, through its Data61 Business Unit, will deliver the Next Generation Artificial Intelligence Graduates Program and the Next Generation Emerging Technologies Graduates Program.

The Programs will fund nationally competitive scholarships to attract and train the next generation of artificial intelligence ('AI') and emerging technologies specialists and build technology capability and skills across a range of fields. The Programs will provide scholarships to domestic students (Australian Citizens and Permanent Residents) only.

Each program will provide up to $28.386 million in student stipends and allowances from 2022-2026 with a further $9.585 million expected to be committed by industry partners to each program. We're working in partnership with industry and universities to grow a pipeline of home-grown, job-ready graduates to unlock the immense economic opportunity offered by artificial intelligence and emerging technologies.

The intent of the Programs is for the students to come into a cohort-based, industry driven, multi-disciplinary environment, enabling peer-to-peer learning and 'baking-in' an entrepreneurial mindset. The programs are seeking to attract students with a diverse range of degrees and skills, including for example students from the social sciences or those with professional degrees as well as students with degrees in the mathematical and computational sciences. The themes of the cohorts will bind the students and collaborators together, making it larger than a single research project.

CSIRO estimates that Australian industry will need up to 161,000 new AI specialist and AI savvy workers by 2030 in machine learning, computer vision, natural language processing and other AI technologies. There is also a shortage of digital and emerging technology workers - a recent study by RMIT and Deloitte found Australia will need 156,000 digital technology workers by 2025 to aid in the recovery of the recession resulting from the COVID-19 pandemic. If Australia can address the skills gap, it will assist businesses in the technology, media and telecommunications industry by $10 billion by 2025, thereby boosting Australia's economy.

Program overview

The Next Generation Artificial Intelligence Graduates and Next Generation Emerging Technologies Graduates Programs expect to fund at least 480 nationally competitive scholarships to attract and train the next generation of technology specialists. The programs aim to upskill Australia's workforce in AI and other emerging digital technologies, such as robotics, cyber security, quantum computing, blockchain and data science through competitive national scholarships for domestic students.

Students will participate in industry-led research projects and placements to build job-ready skills. As such, the scholarships must be co-funded by an industry, government, or philanthropic organisation. Students will enrol as part of a cohort – which will allow graduates from varying backgrounds to work alongside and learn from each other in a truly-multidisciplinary environment. The program will develop entrepreneurial thinking of graduates at early stage in their career progression, where cross-pollination of ideas leads to breakthrough innovation.

Objectives

The objective of the Next Generation Graduates Programs is to build a cohort-based, industry driven, multi-disciplinary Graduate Training Program. A cohort of students is a group of students, an expected minimum of 10, who enrol at the same time and are working on related projects that tackle a real-world challenge. When enrolling through a cohort program the students are expected to collaborate with each other and to utilise peer to peer learning, expanding on their different backgrounds and experience to provide richer research environment. It is expected that universities and partner organisations will build a cohort by identifying a real-world challenge that has the potential for many student projects, where each student contributes to solving the real-world challenge (including from multidisciplinary perspectives) and where the sum of the student projects is greater than the parts.

Compulsory student coursework

Master of Philosophy and PhD candidates are required to undertake a compulsory nine-week coursework program - developed, led, and managed by Data61 - which will allow for students from a diverse range of backgrounds to learn from each other and develop the foundational skills required for an AI or digital technology program. The intent of the program is to embed the cohort experience and build strong relationships among the students. The courses may include subjects such as 'AI 101', 'Ethics in Technology', 'Entrepreneurship in Technology', 'Data-Centric Engineering' and 'Data and Decisions'.

The delivery of the coursework program will include keynotes from leaders in industry and academia and provide real world problems and examples for the students to explore. The content is under development and Data61 will be working with Universities to ensure alignment with existing programs.

Students enrolled in one year research programs (honours, coursework masters) will be required to undertake a selection of the coursework - primarily keynotes and seminars of interest with the anticipated commitment to be half a day per week for four weeks.

Priority areas

Proposals for student cohorts should focus around a real-world challenge aligned with an Australian Government priority.

The Australian Government has identified four priority areas for strategic focus to position Australia as a leading digital economy and society by 2030. These are:

- Digital SMEs – lifting digital capability and adoption across the economy to support new ways to work and do business. This will increase profitability and save businesses time.
- Modern Industry sectors – supporting globally competitive export sectors operating at the digital frontier, including manufacturing, mining, agriculture and construction.
- Dynamic and emerging tech sector – building emerging technology capability and accelerating the growth of tech start-ups in areas like fintech and regtech that can drive an uplift in the rest of the economy.

- Digital government and services – delivering simple, secure and trusted essential services for frictionless interactions.

Programs can also align with the Modern Manufacturing Strategy and National Manufacturing Priorities as follows:

1. Resources Technology & Critical Minerals Processing
2. Food & Beverage
3. Medical Products
4. Recycling & Clean Energy
5. Defence
6. Space

Grant amount and grant period

Maximum total Grant funding available per consortia's application (refer to eligibility criteria below), as calculated by the Budget template provided cannot exceed:

Program	Grant Contribution
Next Generation Artificial Intelligence Graduates	$1,200,000.00
Next Generation Emerging Technologies Graduates	$1,200,000.00

Table 1 Maximum Grant contribution per application

Eligible expenditure includes student stipends and allowances as per Table 2 below.

Grant funding in Table 1 excludes the required partner contribution as per Table 2.

Funding duration is from July 2022 to 30 June 2026.

Funding during the program will be subject to ongoing review based on student recruitment rates and progression.

Summary of Programs

Enrolment type	PhD	Master of Philosophy	Masters (RTP Qualified Program)[1]	Honours and Coursework Masters[2]
Research Duration	3.5 years	2 years	1 year	1 year
Partner placement	6 months	3 months	20 days	6 days

[1] Masters Programs at AQF9 where the second-year research component qualifies for an RTP
[2] 1 EFTSL research project similar to honours that is part of a coursework Masters degree

Stipend rate (p.a.)[3]	$40,500.00	$40,500.00	$30,000.00	$10,000.00
Training (p.a.)	$5,000.00[4]	$5,000.00	$5,000.00	$5,000.00
Travel (total)	$5,000.00	$5,000.00	N/A	N/A
Thesis allowance (total)	$840.00	$420.00	N/A	N/A
Partner contribution (total)	$60,000.00	$37,500.00	$13,300.00	$7,500.00
CSIRO contribution (total)	$106,046.70	$59,729.72	$21,700.00	$7,500.00

Table 2 Summary of Student enrolment types - stipends, allowances, and required partner contributions.

Eligibility criteria

Organisations

- Bids to this process are made through the form of an eligible consortium – to be eligible, a consortium's application must include:
    - A minimum of two Australian Degree-conferring organisations offering degrees at AQF Level 8-10 (i.e. two Australian universities)
    - At least one financially contributing partner (as per contributions outlined in Table 2 above) who must be external to the Universities
    - At least one partner organisation external to the Universities with dedicated resources to supervise student placements (can be the same as the financially contributing partner)
    - International partner organisations will be considered on case-by-case basis

Financial contributions

- Financial contribution amounts can be found in Table 2
- Financial contributions cannot be sourced from Commonwealth grant funding.
- Partner(s) must be willing to provide a non-binding in principle letter of support (including proposed financial contribution) for the program.
- Funding may be provided by Universities on behalf of Small Businesses and Start-up companies under the following circumstances.
    - Small Business means an Australian-owned and managed organisation which has fewer than twenty full-time employees who reside in Australia. The business must have a staff member who is based in Australia capable of providing the required student supervision.
    - Start-up means a company that is commercialising research and development (R&D) activities and has an average annual revenue over the previous two years of income that does not exceed $5 million per year. The start-up must have a majority of its employees (by number) and assets (by value) inside Australia. The business must have a staff member who is based in Australia capable of providing the required student supervision.
    - Data61/CSIRO may require more information as to the proposed funding and placement arrangements in order to make a determination on the application.

[3] 1.8% indexation has been applied to stipends for Master of Philosophy and PhD students to be covered by CSIRO contribution.
[4] PhD Training allowance is $5,000 per year for three years.

Diversity and Inclusion

- Applications are expected to include a diverse set of Chief Investigators, Investigators and partners and include a statement on the proposed approach to ensure diversity and inclusion within student cohorts.
- Funding may be available to provide additional travel support for students who are rural, remote or have caregiving responsibilities subject to review of individual circumstances.

Cohort sizes

- Applications must include the number of students in each cohort and their proposed levels, with an expected minimum of 10 students that may be from any level.

Application limits

- There is no limit on the number of applications that an individual university may participate in.
- An individual investigator (Chief Investigator or Investigator) may be named on no more than two applications for each of the Next Generation AI or Next Generation Emerging Technologies Programs.

Assessment Criteria

Applicants should rank highly against all four of the following assessment criteria:

a. Chief Investigator(s)[5] and Investigator(s)[6]/Capability and capacity to deliver the program **20%**

Describe the:

- Demonstrated quality of the proposed team including:
  - evidence of experience in and capacity to provide effective supervision, support and mentoring for graduate research candidates over the life of the Program.
  - evidence of experience in managing distributed and/or collaborative industrial and end-user focussed research;
- time and capacity of the team (including the Partner Organisation/s) to undertake and manage the proposed research

b. Feasibility and Commitment to the program **40%**

Describe the:

- appropriateness of the design of the Program to ensure the projects can be completed within the proposed budget and timeframe (including identified risks and mitigation strategies);

[5] Chief Investigators (maximum of 6 per program/consortium) will commit a minimum of 0.05FTE of their time and take responsibility for the overall research program and intend on providing supervision for one or more students within the program.

[6] Investigators (maximum of 20 including the CIs per program/consortium) will commit to providing support for the program and form part of student supervisory teams. Investigators include designated people from partner organisations.

– proposed student recruitment strategy including demonstrated ability to attract high calibre domestic students at proposed levels;

– proposed level of collaboration to support the research program, including national and international networks and linkages;

– financial (cash and in-kind) commitment by each University and Partner Organisation(s) (including industry, government or other) to ensure completion of the Program; and

– availability of and access to the necessary facilities required to support the proposed research (physical, technical, access to infrastructure, etc);

If a project involves research pertaining to Aboriginal and/or Torres Strait Islander communities describe:

– the strategies for enabling collaboration with Aboriginal and/or Torres Strait Islander communities (for example, dialogue/collaboration with an Indigenous cultural mentor);

– any existing or developing, supportive and high-quality relationships with Aboriginal and/or Torres Strait Islander communities; and

– any personal affiliations with local Aboriginal and/or Torres Strait Islander communities that can facilitate the proposed research.

c. Delivery of a cohort-based, multi-disciplinary, industry-focused program 20%

Demonstrate:

- innovation in the cohort model with student cohort focused around real-world challenges with students collaborating and complementing each other, not just a loose collection of projects
- Experience in developing, running or being part of a cohort-based, multi-disciplinary or industry focused program
- conceptual/theoretical framework is genuinely integrated, cross-disciplinary, innovative and original;

d. Outcomes and Benefit of the proposed program 20%

Describe:

– the extent to which the research clearly addresses one or more of the priorities outlined in the Themes and Priority areas (internal link to above);

– the economic, commercial, environmental, social and/or cultural benefits for relevant Australian research end-users (including relevant industry and manufacturing sectors);

– the potential contribution of the proposed research to addressing the needs of the Partner Organisation(s) as well as associated industries and communities

– aims, concepts, methods and outcomes will drive growth, productivity and competitiveness within relevant sectors;

Assessment Process

Assessment of proposals will be conducted by a panel consisting of staff from CSIRO and the Department of Industry, Science, Energy and Resources, with decisions made according to the criteria above. No funding will be granted unless a Data61/CSIRO Agreement has been entered into between the successful Applicants

and Data61/CSIRO within a specified timeframe, further information regarding agreements and payment schedules will be provided in early 2022.

Post award reporting

- Successful programs will be required to report to the Next Generation Graduates team within Data61.
- Milestones will be provided in a stage-gate fashion and Next Generation Graduates funding will be associated with each Milestone.
- Milestone reports will be quarterly.

Content of each Report:

- Universities must provide confirmation that the project is still supported and on track to deliver.
- Brief report showing student enrolments, placements and other milestones.
- Outline of 'other activities' (e.g. BD, IP) that are tracking in parallel (to provide confidence the translation side of activities is progressing also).
- Financial declaration – confirmation that intended funds have been expended and co-investment is as per the Funding Agreement.
- Other information as required by the Australian Government.

Application Details

There will be a minimum of two application rounds with the first closing COB 28 February 2022 for proposals intending to recruit students for intakes in July 2022 and January 2023.

Successful applicants will be notified by the end of March 2022.

Opportunity for an extension of funding may be considered for future intakes of students to successful programs that fulfil student recruitment requirements in July 2022 and January 2023 (subject to available funding and partner contribution).

Further opportunities to apply for funding through the Next Generation Graduates Programs will be available at a later date.

All application will be subject to review under appropriate legislative compliance requirements.

How to Apply

All applications must be submitted electronically through the application submission portal.

- **Program Summary**
- **Program Description responding to Assessment Criteria**
- **Diversity and Inclusion statement (1000 words)**
- **Budget**
- **Chief Investigator CVs**
- **Letters of Support from universities and partner organisations**

Application size

Program Summary

- Proposed program title
- Participant summary
- 200-word program summary
- Objectives (one sentence per objective)
- Benefit and impact statement

Program Description

- Template provided
- Maximum of four pages
- Margins 1cm, size 11 font Times New Roman, single line spacing
- Subheadings:
  - Introduction, Background and Aims
  - Impact and Benefit
  - Delivery of a cohort-based, multi-disciplinary, industry-focused program
  - CI(s) and Investigator(s)/Capability
  - Feasibility and Commitment

Budget

- Calculator provided
- Proposed[7] student numbers at each level (template calculates CSIRO and minimum expected partner contribution)
- Additional budget is recommended but not required. It can include in-kind contribution that is not Chief Investigator or Investigator time such as project/program management, post-doctoral researcher supervision and support, additional cash contribution from partners etc.
  - Consideration will be given to the feasibility of the projects and additional resources that would be expected to ensure delivery of the projects.

Mandatory Attachments

- Chief Investigator (maximum of 6 per program/consortium) CVs - maximum two pages each
- Letter of support from universities signed by relevant delegate
- Non-binding letter of in principle financial contribution from partner(s)
- Non-binding letter of in principle support for student placements from partner(s)

Further information

Next Generation Graduates Programs Team

[7] For successful applicants the program will allow for flexibility in the eventual numbers of students at each level, understanding that recruitment of students may not align to the levels proposed.

Jess Cornock, Program Manager
data61-nextgengrad@csiro.au

Visit CSIRO.au for more information including the frequently asked questions