WANT TO CREATE A NEW APPLIED SCIENCE?

Take part in a first-of-a-kind curriculum of postgraduate courses at the Australian National University's 3A Institute.

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3Ai POSTGRADUATE COURSES

The collection of technologies we are currently calling artificial intelligence (AI) heralds the next industrial revolution: IoT turbo-charged by AI, advanced robotics, automated vehicles incorporating sensing data with other datasets, machine learning driving automated decision-making. Rapid convergence into systems – cyber-physical systems – is having unprecedented impact on humanity through deep economic, social and cultural shifts.

The world needs new ways to enable the safe, ethical and effective design, integration, management and regulation of cyber-physical systems. The 3Ai Institute (3Ai) at the Australian National University (ANU) is forging this path through the creation of a new applied science (as yet unnamed).

ANU has a commitment to intellectual leadership, transformational experiences and building capacity for the 21st Century. 3Ai is a flagship of this commitment.

Located within the ANU College of Engineering and Computer Science, 3Ai brings together an interdisciplinary team led by Distinguished Professor Genevieve Bell, one of the world's leading technologists and Senior Fellow at Intel.

Inspired by Silicon Valley-style rapid and iterative prototyping, the 3Ai team is developing a radical postgraduate curriculum to inform the creation of this new applied science.

We are seeking student participants to undertake, and be involved in prototyping, these immersive postgraduate courses. The 3Ai courses will be delivered in an accelerated timeframe and will serve as a pilot for a formal, named suite of degrees from 2020. We will cover the tuition fees for each student enrolled in the pilot cohort, to offset some of the cost of taking a year out to help build Australia's future.

The challenge that AI presents our society calls for training that will profoundly disrupt the educational status quo. It will be an intensive, research-driven, collaborative and participatory experiment in shaping the new applied science through an educational lens.

By trialling how we would teach the new applied science together with our participants we aim to challenge, inform and refine the intellectual framework and core tenets that form its skeleton.

We have shaped a coordinated curriculum of courses for 2019. We are looking for a cohort of dedicated, risk-taking participants to undertake, challenge and iterate on these courses with us, to enhance the curriculum for the next generation of students.

Participants of the 2019 year will be the first ever intake into the curriculum of courses for the new applied science and will help shape how it unfolds.

STUDENT PROFILE

We are recruiting a pilot cohort of around 10 student participants. Selected participants will undertake an intensive one-year period of study (February 2019 – February 2020) delivered in person on the ANU campus, take a proactive role in reflecting on the course topics and delivery, and help iterate these towards the named educational offering in 2020. We encourage diversity in background, education, experience, gender, orientation and aspiration.

In 2019 the 3Ai postgraduate courses will be available under the ANU Master of Studies. As a result, candidates **must** meet all admission requirements of the ANU Master of Studies **and** all admission requirements of 3Ai courses.

Admission requirements: Master of Studies

- A Bachelor degree or international equivalent with a minimum GPA of 5/7.
  Or At least 3 years work experience in a cognate discipline (all undergraduate disciplines) and a minimum GMAT (Graduate Management Admission Test) score of 550 or higher (minimum 5.0 in Analytical Writing).
  Or the GRE General test with a minimum score of 150 for Verbal Reasoning, 150 for Quantitative Reasoning and 4.0 in Analytical Writing.
- All applicants must meet the University's English Language Admission Requirements for Students.

Admission requirements: 3Ai courses

- Have Honours or a Graduate Diploma or Higher Degree (in any discipline).
- Have 3+ years of professional experience in an area of relevance to the new applied science.
- Be ready to start in February 2019 and able to commit full-time until February 2020, in person, on the ANU campus.

- Have an interest in participating as a co-investigator in the courses.
- Demonstrated aptitude for sharing expertise with, and learning from, peers, stakeholders and partners.

The following additional elements may be taken into consideration for ranking purposes for admission into the 3Ai postgraduate courses but are not mandatory admission requirements:

- A track record of outputs illustrating intellectual leadership in your field, such as (but not limited to):
  - Awards, grants and projects secured
  - Publications, media, policy briefings, outreach activities, guidelines and training delivered
  - IP, products and product concepts created
- A demonstrated ability to communicate complex ideas across disciplines, media and sectors, to a range of audiences.
- A demonstrated ability to operate with a high degree of flexibility and openness to calculated risk-taking. Demonstrated determination and resilience. Aptitude for working in uncertain and fast-changing environments.
- Demonstrated aptitude for interdisciplinary/cross-disciplinary collaboration
- Individual and/or group-based professional / entrepreneurial / community service contributions. Experience in one or multiple of these fields (highly regarded): education, policy, technology, the arts, science, engineering, computing, social sciences.
- Ability to operate across disciplinary silos. Ability to think laterally and critically. Collaborative and mission-driven mindset.

APPLICATION PROCESS

We plan to use a competitive selection process, including a formal application and interview process, to select around 10 students who will undertake the 3Ai postgraduate courses and receive financial support.

The students selected for the 3Ai postgraduate courses will subsequently need to apply to the Master of Studies, in accordance with ANU procedures.

Application to the 3Ai postgraduate courses

We will select members of the pilot cohort through a three-step competitive process running between 3 September and 5 November 2018.

Applicants must be available to participate in phone and face-to-face (Canberra) meetings throughout the selection process. The 3A Institute will cover travel to Canberra and accommodation for applicants selected for the face-to-face interview stage.

All dates and times are Canberra time.

I. Applications open: 3 September – 11.59pm 7 October
Submit your application via email to
3Ainstitute@anu.edu.au.

Your application must include:
- Your up-to-date CV / resumé;
- A cover letter (max 2 A4 pages) addressing admission requirements of the Master of Studies **and** admission requirements of the 3Ai courses listed in the Student Profile section above;
- One Portfolio Piece that succinctly demonstrates your interest in the new applied science. Your Portfolio Piece must be your own work and can be in any format – e.g. a short piece of writing, an artwork, a video recording, a

piece of software, a poem, a blueprint, etc. – we encourage you to be creative! To avoid disappointment, we recommend you contact us early if your portfolio piece is a large file or requires unusual software to be opened.

We will contact applicants by **5pm on 19 October** and invite shortlisted applicants to the next stage.

II. Phone interviews: 22 October – 26 October
Congratulations on making the shortlist! The selection panel will arrange a 30-minute phone interview with you.

We will contact applicants by **5pm on 26 October** and invite further shortlisted applicants to the final stage.

III. Face to face interviews: 29 October – 2 November
The final round of interviews! Meet our selection panel for a 30-minute interview on the ANU campus.

We will extend offers to undertake the 3Ai postgraduate courses to the top-ranked candidates by **5 November**. Candidates will have until **9am on 12 November** to formally accept the offer.

Application to the Master of Studies

Selected candidates who have formally accepted their offer to undertake the 3Ai postgraduate courses will then apply for admission to the ANU Master of Studies by following the procedure outlined on the ANU Programs and Courses website.

3AI POSTGRADUATE COURSES OUTLINE

The 3Ai is committed to creating a new applied science to manage the machines, with a focus on cyber-physical systems. Our graduates will have cognitive, technical and creative skills to investigate, analyse and synthesise complex information, problems, concepts and theories and to apply established theories to different bodies of knowledge or practice.

In this context, the 3Ai courses have two main aims. First, to create pioneers of this new (as yet unnamed) applied science. Second, to prototype, test and iterate a two-year curriculum in just one year as a means of testing the principles of this new applied science.

Participants are expected to dedicate 40 hours per week to the courses, for its entire duration (subject to the usual university holiday breaks). Around 20 hours per week will be in face-to-face class sessions. The remaining 20 hours per week will be reading, listening, reflecting, viewing, discussing and writing, as well as individual and group projects.

COURSE STRUCTURE

The 3Ai postgraduate curriculum is an intensive 1-year experience divided into four courses, totalling 60 units of coursework, which interact and reinforce each other.

Fundamentals of a new applied science I

Semester 1 2019 | 12 units | 20 hours per week
This course will start to create pioneers who can critically examine new and emerging technological constellations and the questions they raise for human society. It challenges participants to (a) engage with technological detail and understand the building blocks of the technologies around us, (b) integrate multiple disciplinary perspectives in order

to move from a focus on solving problems, to a focus on framing critical questions about cyber-physical systems (CPSs).

Fundamentals of a new applied science II

Semester 2 2019 | 12 units | 20 hours per week
This course uses a case-study approach focusing on emerging CPSs. It is designed to (a) provide participants with an appreciation of the complexity and dynamics of the settings in which CPSs are planned, designed, built, operated and maintained, and (b) give participants a practical grounding in new and existing approaches they could use to analyse and intervene throughout the CPS lifecycle. Building on the critical framework established in Fundamentals I, this course challenges participants to explore the key questions of autonomy, agency and assurance, plus how we decide metrics for success and what the interface looks like, when planning, designing, building, operating and maintaining cyber physical systems.

New applied science: Lab

Semesters 1 & 2 2019 | 24 units | 20 hours per week
This course will give participants a hands-on understanding of new and emerging technological constellations and their separate components. Participants will complete a range of lab-based projects to develop an understanding of systems as designed objects which embody values. They will also gain confidence in designing, building and understanding such systems, putting the skills learned in Fundamentals I and II into practice. Through learning-by-doing, participants will complement their existing skillsets and gain the mastery required to build and guide teams developing and understanding new and emerging technologies.

New applied science: Capstone project

Summer session 2020 | 12 units | 40 hours per week

This intensive capstone experience will provide participants with an opportunity to demonstrate and apply the knowledge and skills they have gained throughout the 3Ai curriculum, to contribute to professional practice as discipline experts. In consultation with the convenor prior to the beginning of this course, each participant will identify a substantial individual research project that addresses a complex problem of their choice. The research project may be undertaken in a range of professional settings.

ADMINISTRATIVE PROCEDURE

The 3Ai postgraduate courses will be available under the Master of Studies administered by the ANU College of Arts and Social Sciences. The Master of Studies is a flexible option for graduate studies at ANU for students whose needs are not met by following a program of study in a single academic discipline. It usually requires completion of 96 units of coursework from across the graduate course offerings available over 2 years.

The pilot cohort will only be required to complete the 60 units of coursework outlined above, with 36 units offset as credit for the prerequisite completion of a Graduate Diploma or Honours, as outlined in the student profile section above. Students will graduate with an ANU Master of Studies upon successful completion of the 3Ai postgraduate courses.

On **5 November**, we will extend offers to join the pilot cohort to the top-ranked candidates. Upon approval of the offer, these candidates will apply for admission into the Master of Studies by following the procedure outlined on the ANU Programs and Courses website. Upon successful enrolment, students will be invited to apply for 36 units of credit, and receive permission codes to enrol in the first three 3Ai postgraduate courses in 2019.

BENEFITS

We don't expect the 3Ai postgraduate courses to be for everyone. Those able to come on the journey can expect a range of benefits…

Help co-design a new applied science in Australia
On successful completion, you will be certified as being one of the first pioneering 10 people to ever take these courses.

Open new employment opportunities
Explore further study or teaching positions at ANU, or internships and employment with our many Australian and international partners.

Build a strong community
Work closely with 3A Institute faculty and your peers to develop long-lasting relationships, which we will support well beyond the end of the program.

Boost your professional networks
Collaborate with visiting experts from a wide range of disciplines and sectors in Australia and around the world.

Play a role in reimagining tertiary education
The 3A Institute is part of a bold project to reimagine the constellation of engineering and computing disciplines, being led by the ANU College of Engineering and Computer Science.

Earn a fee-free Masters experience
We will cover tuition fees to the 3Ai postgraduate courses for all students in the pilot cohort, and provide scholarships to offset some of the cost of taking a year out to help build Australia's future.

MORE INFORMATION

You can find more information in the Frequently Asked Questions document available on the 3A Institute website.

If you still have questions, please contact us at 3Ainstitute@anu.edu.au.

GOOD LUCK!

To keep in touch with the 3A Institute:
- Join our mailing list via this link
- Follow us on Twitter: @3ainstitute
- Visit our website: 3ainstitute.org

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