MASTER OF APPLIED CYBERNETICS

2022 Application Pack

Australian National University
INTRODUCTION

Who is building, managing and decommissioning our AI-enabled future?

This question is at the heart of our mission, and our way in is cybernetics. We are drawing on the history of cybernetics and reimagining it for our 21st century challenges.

Located within the College of Engineering and Computer Science at the Australian National University, the School of Cybernetics is establishing programs that blend education, research and engagement to create a new generation of practitioners. Through our programs we are building a new branch of engineering to safely, sustainably and responsibly scale cyber-physical systems. We focus on systems as a unit of analysis and driver of action for industries working with complexity. And, we are generating new approaches to shape the future through and with technology.

The School of Cybernetics is now the home of the 3A Institute (‘3Ai’), and is building upon the foundational work and mission of 3Ai under the leadership of Distinguished Professor Genevieve Bell.

3Ai explores different ways into education and training – from training a new type of engineer to bringing skills development to the broadest cross-section of society. The Institute conducts novel research and brings together people from different places, backgrounds and disciplines to activate a systems approach to building the kind of world we want to live in.

In 2019, the 3A Institute ran the first pilot of a brand new postgraduate curriculum. It began as a collaborative experiment to help incubate the intellectual framework of the new branch of engineering. We are continuing this mission in 2022 with the fourth year of the experimental program.

The ANU Master of Applied Cybernetics is the first graduate program that grapples with the challenge of bringing intelligent cyber-physical systems safely to scale. We are seeking the next cohort of students who will continue to shape this new branch of engineering, through our innovative model of collaborative learning, teaching and researching. Our graduates possess 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.

### Master of Applied Cybernetics at a glance

<table>
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<tr>
<th><strong>Admission:</strong></th>
<th>competitive entry (see page 4), small cohort (approx. 12-20 students)</th>
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<tr>
<td><strong>Length:</strong></td>
<td>1 year for Master of Applied Cybernetics or 1.5 years for Master of Applied Cybernetics (Advanced). Full-time on ANU campus from Feb 2022 – Nov 2022.</td>
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<td><strong>Fees:</strong></td>
<td>As per ANU website (indicative fees) Domestic: $34,560 and International: $47,880 per annum</td>
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This application pack provides details on how to apply for one of the limited number of positions in this degree program in 2022.
Student Profile

ANU Master of Applied Cybernetics (commencing February 2022)

We are recruiting a small cohort of student participants for entry into the ANU Master of Applied Cybernetics. Selected participants will undertake the program over one year commencing in February 2022 through to February 2023. Courses are delivered full-time and in-person on ANU campus in Canberra, Australia. At the conclusion of this one-year period, participants will graduate with a Master of Applied Cybernetics.

For students who would like to complete a larger research and/or industry project in 2023, students may take the Master of Applied Cybernetics (Advanced). In this case, the period of study increases to 18 months full-time equivalent.

Admission requirements:

- Have Honours or a Graduate Diploma or Higher Degree (in any discipline) with a minimum GPA of 5/7;
- OR a minimum GMAT (Graduate Management Admission Test) score of 600 or higher (minimum 5.0 in Analytical Writing).
- OR the GRE General test with a minimum score of 150 for Verbal Reasoning, 155 for Quantitative Reasoning and 4.0 in Analytical Writing.

- Have 3+ years of professional experience in an area of relevance to the program.

- Be ready to start in February 2022 and commit full-time until November 2022, in person, on the ANU campus.

- Have an interest in participating as a co-investigator throughout the program.

- Demonstrated aptitude for sharing expertise with, and learning from, peers, stakeholders and partners.

- All applicants must meet the University’s English Language Admission Requirements for Students.

- We encourage diversity in background, education, experience, gender, orientation and aspiration.

- The following additional elements may be taken into consideration for ranking purposes for admission into the Master of Applied Cybernetics 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 / transdisciplinary collaboration
  - Individual and/or group-based professional / entrepreneurial / community service contributions. Experience in one or multiple of these fields (highly regarded): education, policy, technology, business, the arts, science, engineering, computing, social sciences, and entrepreneurship.
  - Ability to operate across disciplinary silos. Ability to think laterally and critically. Collaborative and mission-driven mindset.
Application Process

ANU Master of Applied Cybernetics (commencing February 2022)

The competitive selection process will include a formal application and interview process, to select a small cohort of students to undertake the ANU Master of Applied Cybernetics.

We will select members of the 2022 cohort through a two-step competitive process running from July to October 2021.

Applicants must be available to participate in an in-person interview (face-to-face where possible, otherwise by video) throughout the selection process.

All dates and times are in Canberra time (AEST).

1. Applications open: 15 July 2021
Applications close: 11.59pm 31 August 2021

Submit your application in accordance with the School of Cybernetics’ application process, found on our website.

Your application must include:
• Your up-to-date CV / resumé;
• A cover letter (max 2 A4 pages) addressing admission requirements of the Master of Applied Cybernetics listed in the Student Profile section above;
• One Portfolio Piece that succinctly demonstrates your interest in the program. 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. You can email us at 3ainstitute@anu.edu.au.
• If your file is larger than 5GB, please contact us at 3ainstitute@anu.edu.au. We will assist you to find an alternative submission process

We will contact applicants by mid-September 2021 and invite shortlisted applicants to the next stage.

2. Face to face interviews:
September-October 2021

Meet our selection panel for a 20-minute interview on the ANU campus or via video link.

We will extend offers to undertake the ANU Master of Applied Cybernetics to the top-ranked candidates by 1st week of November 2021. Candidates will have 1 week to formally accept the offer.

Successful candidates who have accepted their offer will be invited to complete their application formalities by applying for the Master of Applied Cybernetics through the Universities Admission Centre (domestic students), or directly to the university (international students) in line with the ANU’s application process.

Scholarships for successful candidates may be available and can be applied for upon acceptance of offer.

<table>
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<th>Summary of key dates</th>
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<td>Applications open</td>
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<tr>
<td>Applications close</td>
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<tr>
<td>Applicants contacted</td>
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<tr>
<td>Interviews</td>
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<tr>
<td>Offers made</td>
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<tr>
<td>Acceptance of offer by:</td>
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Artwork Igor Savin
Program Outline

ANU Master of Applied Cybernetics (commencing February 2022)

The Master of Applied Cybernetics has an overarching aim: to create pioneers of this new branch of engineering. Now in its 4th iteration, your participation in this program means not just grappling with but also testing the principles we have developed so far. Participants are expected to dedicate approximately 40 hours per week to the program, for the one-year duration of the on-campus delivery component (subject to the usual university holiday breaks). Around 20 hours per week will be contact hours. The remaining hours per week will be reading, listening, reflecting, viewing, discussing and writing, as well as individual and group projects.

Program structure

The 1-year intensive component of the Master of Applied Cybernetics (running from February 2022 – November 2022) is divided into 4 courses which interact and reinforce each other.

‘Questions’
Semester 1 2022 | 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).

‘Practice’
Semester 2 2022 | 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 ‘Questions’, 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.

‘Build’
Semesters 1 & 2 2021 | 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. 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.

‘Professional Experience’
Summer Session 2022-23 | 0 units | 160 hours total as negotiated with placement organisation

This course will enable students to develop competencies expected of professionals working in business, government, academia or the broader community. There may be internship opportunities available, for which students can apply. A holistic selection process will be used to select the best applicant for each opportunity.

Master of Applied Cybernetics (Advanced)

Courses as above plus the following course.

New Branch of Engineering: Capstone Project 2023 Semester 1 or negotiable | 24 units | 40 hours per week

Capstone research and/or industry projects will be established following negotiations between the student, ANU and the potential host organisations or project sponsors, before being offered to students along with other opportunities.
COVID-19 announcement

The model of delivery in 2022 for the ANU Master of Applied Cybernetics is subject to an evolving response to COVID-19. Depending on restrictions in place for the safety of our community, the intensive, in-person delivery model of this program may change. At this time, eligibility to undertake this degree does require your ability to attend the course in-person at the Australian National University, Canberra.

For an update on the University’s response to COVID-19 and travel advice that may affect your ability to undertake the course, please refer to these links: ANU COVID-19 advice. For entry restrictions into Australia, Department of Home Affairs website

Other General Resources: You can call the Coronavirus Health Information Line on 1800 020 080 if you are seeking information on COVID-19. The line operates 24 hours a day, seven days a week. For the most up-to-date information about the virus and health advice, please visit the Australian Government Department of Health website and the ACT Health website.

For more information and the University’s response to COVID-19, please visit the dedicated ANU website

GOOD LUCK!

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

Keep in touch

✉️ Join our mailing list at this link: http://bit.ly/3Aisubscribe

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Visit our website: 3ainstitute.org