



## ANNUAL REPORT 2020

### **About us**

The Australian Council of Engineering Deans (ACED) has formally been in operation for more than 20 years, with the stated mission *“To create economic and social impact by advancing engineering education, research and scholarship on behalf of Australian universities.”*

ACED does this in the national and international interest, which for education and research includes assuring the public that engineering graduates will conduct their work in the public interest with due regard for human safety and the sustainability of the environment.

ACED is an incorporated association whose members are the Australian public universities that provide undergraduate and postgraduate degree programs and research in engineering.

The Council elects a President for a two-year period. The President is supported by the Executive Committee, whose members are elected by the Council.

The Council meets in full twice a year (Autumn and Spring).

ACED has strong links with the Australasian Association of Engineering Education (AaeE) whose members are primarily engineering academics in Australian and New Zealand universities. ACED sponsors the annual AaeE award for Excellence in Teaching.

ACED invites a representative of the New Zealand Council of Engineering Deans to attend Council meetings. ACED supports and encourages members to become members of the Global Engineering Deans Council (GEDC)

ACED also has strong links with Engineers Australia (EA). Representatives of the EA Accreditation Centre attend all ACED meetings to inform and discuss with members developments in the national engineering program accreditation system as well as matters of importance arising within the International Engineering Association (IEA) that has oversight of the international engineering education Accords of which EA is a member.

### **ACED Governance**

#### **Executive Committee (at Dec 2020)**

|                   |   |
|-------------------|---|
| President:        | Professor Ian Burnett                                 |
| Deputy President: | Professor Friso de Boer (interim)                     |
| Past President:   | Professor John Wilson                                 |
| Members:          | Professor Valerie Linton (interim)                    |
|                   | Professor Vishnu Pareek (interim)                     |
|                   | Professor Elisa Martinez-Marroquin                    |
|                   | Ms Julia Lamborn (representing the ADTL Group)        |
|                   | Professor Andrew Bradley (representing the ADR Group) |

Professor Scott Smith (representing ADI Group)  
Assoc Professor Anne Gardner (representing the AaeE)  
Ms Bernadette Foley (representing Engineers Australia)  
Executive Officer: Em Professor Doug Hargreaves AM  
Consultant: Em Prof Robin King

### **ACED Objectives:**

- **Promotion:** To provide a forum for Australian leaders of engineering education to discuss matters of mutual concern and national importance, thereby contributing to matters such as raising general community awareness on the need for and value of high-quality engineering education, research training in the higher education sector.
- **Engagement:** To further the interests of engineering education and research in the higher education through engagement and outreach with relevant national and international bodies, particularly EA, AaeE and NZCED.
- **Policy:** To develop positions and make statements on relevant issues in response to government inquiries and concerns of professional and industry bodies, and to the media and the general community.
- **Projects:** To initiate and conduct reviews and projects consistent with its mission. This would include monitoring the state of engineering education and scholarship, benchmarking programs and resources and the quality of outcomes.
- **Leadership:** To support the development of leaders of engineering education and research within the faculties and schools.

### **ACED Meetings 2020**

**The Council met via Zoom (AGM in March and Ordinary meeting in September), with guest speaker Dr Bronwyn Evans (new CEO of Engineers Australia) in September.**

### **ACED Project “Engineering 2035”**

ACED initiated a major project during 2019 to investigate what knowledge skills and attributes will be required by graduate engineers in the 2035, and how the education system should be developed accordingly.

The Stage 1 report “**Engineering Futures 2035, a scoping study**” and a two-page Summary are available on the ACED website.

In response to the recommendations from the Stage 1 report, three task forces were set up.

Mr Rob Lawrence was commissioned to consider the promotion of engineering to various stakeholders. His report “**The promotion of future opportunities and possibilities for engineering graduates**” is available on the ACED website.

Em Prof Caroline Crosthwaite’s report “**Engineering Education Programs, Priorities & Pedagogies**” will be available early in 2021 and will be available on the ACED website.

Hon Assoc Prof Carl Reidsema's report "**A survey of Australian Engineering Academic attitudes and capabilities for educational change**" will be available early in 2021 and will be available on the ACED website.

Chair of the Steering Committee Em Prof Peter Lee will prepare a "**Call to Action**" document early in 2021, for endorsement by ACED members. The intention is also to engage a professional writer to merge the four reports mentioned above into a document that can be used to influence various government, industry, professional bodies and educational institutions to implement the outcomes of this study.

### **ACED Representation on other bodies**

ACED participates in the reference group for the *Design and Technologies* school curriculum implementation, convened by the Australian Curriculum, Assessment and Reporting Authority (ACARA). Together with *Digital Technologies*, this curriculum strand forms the compulsory *Technologies* learning area for school years F–10. *Design and Technologies* introduces and develops engineering concepts and practice. ACARA commenced a review of all national curriculum learning areas during 2020. There will be an opportunity for external stakeholders, including ACED, to comment on revised curriculum specifications from April 2021.

ACED is represented on the Steering Committee for the *Australian Engineering Taskforce* project initiated by three ACED members, Professor Elizabeth Croft, Professor Mark Hoffman and Professor Elanor Huntington. The object of the Taskforce is to support initiatives to increase the interest of school students in STEM subjects and ultimately take up engineer. The Steering Committee met once in 2020.

ACED works closely with Engineers Australia and during 2020 was represented at a *Roundtable on Engineering Responses to Climate Change*. The summary report stresses that the engineering profession must be part of collaborative community leadership on addressing the issues. See

[https://www.engineersaustralia.org.au/sites/default/files/resource-files/2020-05/EA\\_ClimateChange\\_RoundTableReport\\_FINAL.pdf](https://www.engineersaustralia.org.au/sites/default/files/resource-files/2020-05/EA_ClimateChange_RoundTableReport_FINAL.pdf)

The President and Executive Officer ACED represent ACED on the *Tripartite Committee*, together with representatives of the Academy of Technology and Engineering (ATSE) and Engineers Australia (EA). No meetings were held in 2020.

### **Publications and presentations at national and international conferences**

At the AaeE2020 conference, Prof Peter Lee led an extended discussion on the Engineering 2035 project. This included the following three papers:

"Communicating the Changing Nature of Engineering Education"

Peter Lee, Robert Lawrence, Doug Hargreaves, Caroline Crosthwaite, Robin King and Ian Burnett

"Are we ready to transform engineering education?"

Carl Reidsema, Ian Cameron, Roger Hadgraft

“Engineering education programs and pedagogies for the future”

Caroline Crosthwaite, Bernadette Foley, Llewellyn Mann, Peter Lee, Robin King and Doug Hargreaves

## **ACED submissions to national reviews**

ACED responds to requests to make submissions to the Australian Government’s consultation processes on matters that relate to engineering education and research. These responses are normally then published on the ACED website.

During 2020, ACED submitted recommendations to the revision of the ***Australian and New Zealand Standard Research Classification (ANZSRC)***. The final revised ANZSRC includes most of the changes recommended by ACED and its members.

In response to the Australian Government’s ***National Industry Partnerships and Linkage Fund (NPILF)*** consultation paper, ACED stressed the strong engagement that ACED members already have with industry; urged the implementation of the program to engage with industry and the professions; and argued that current best practice should be recognised and built upon; metrics should be simple and respect the needs and norms of each industry; and that systematic support could be provided to SMEs.

## **ACED Financial Report (from Auditor’s report) - these need to be updated**

|                                       |            |
|---------------------------------------|------------|
| Opening Balance (1 Jan 2020)          | \$ 204,614 |
| Income (members’ dues + interest)     | \$ 72,881  |
| Total Expenditure                     | \$ 149,374 |
| Retained surplus (31 Dec 2020)        | \$ 128,121 |
| <br>                                  |            |
| Total Current Assets (all 4 accounts) | \$ 135,757 |
| Total Current Liabilities             | \$ 7,635   |
| Nett Assets                           | \$ 128,121 |

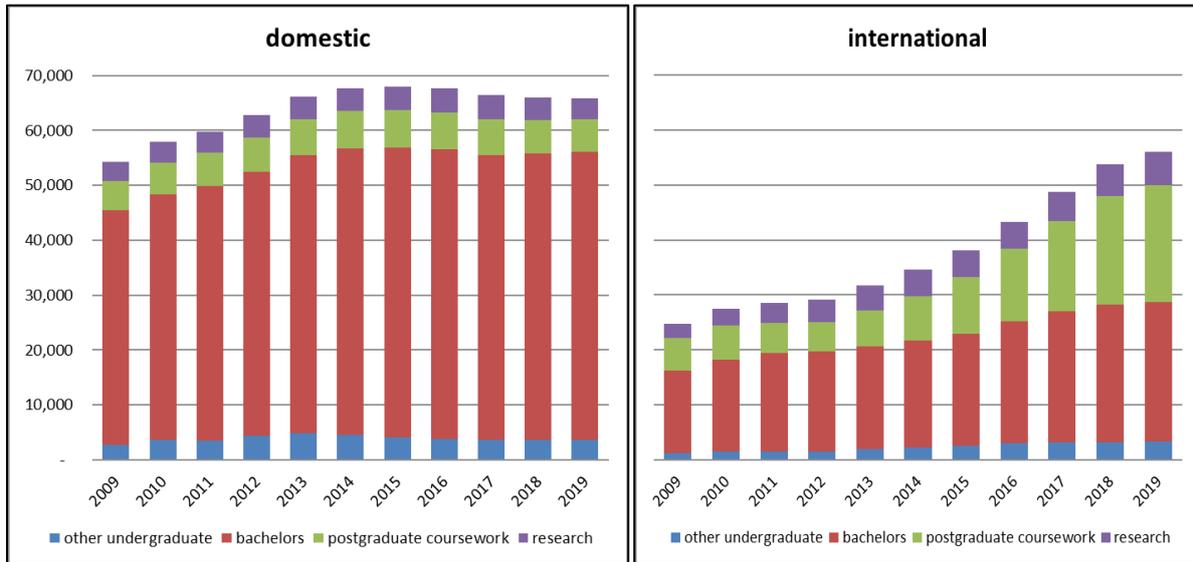
## **ACED Statistics**

ACED compiles an annual report on higher education student enrolments and graduations in engineering and related matters, from the most recent data published and collected by the Australian Higher Education Statistics Unit.

During 2020, Annual Reports based on both 2018 and 2019 data were compiled and uploaded to the ACED website. The December 2020 edition provides data up to 2019.

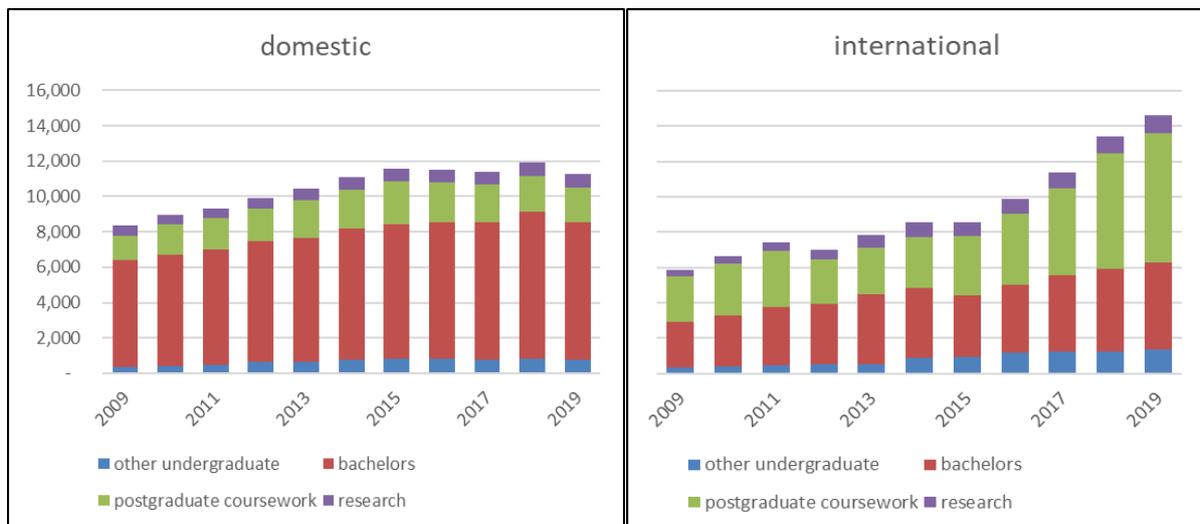
In 2019, there were nearly 122,000 students enrolled in higher education qualifications in engineering and related technologies, 97% of them at ACED member institutions.

Over the decade, total domestic enrolments have plateaued, although the participation of women has steadily increased, to 17.6% in 2020. International enrolments have grown significantly. The decadal enrolment trends are shown in the following charts:



**Total Enrolments in Engineering & Related Technologies 2009-19**

Graduations in engineering exceeded 25,000 in 2019. International graduates constituted 56.4% of the total graduating cohort, due principally to the strong growth in Masters degrees aimed to provide overseas bachelor degree graduates with a professional engineering qualification, recognised by Engineers Australia accreditation. Women constituted 17.0% of the domestic graduates and 20.5% of the international graduates.



**Graduations in Engineering and Related Technologies**

Commencing enrolments in 2019 increased slightly on the 2017 figures for both domestic and international student cohorts. The proportion of women in the domestic bachelor degree commencing cohort increased to 18.6%, the highest figure to date.

**Contact us**

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