ACED
AUSTRALIAN COUNCIL OF ENGINEERING DEANS

ENGINEERS AUSTRALIA

AUSTRALIAN ENGINEERING HIGHER EDUCATION STATISTICS 2012-22

GRADUATE NUMBERS AND QUALITY INDICATORS

STUDENT DATA

DIVERSITY AND INCLUSION

ACADEMIC STAFF

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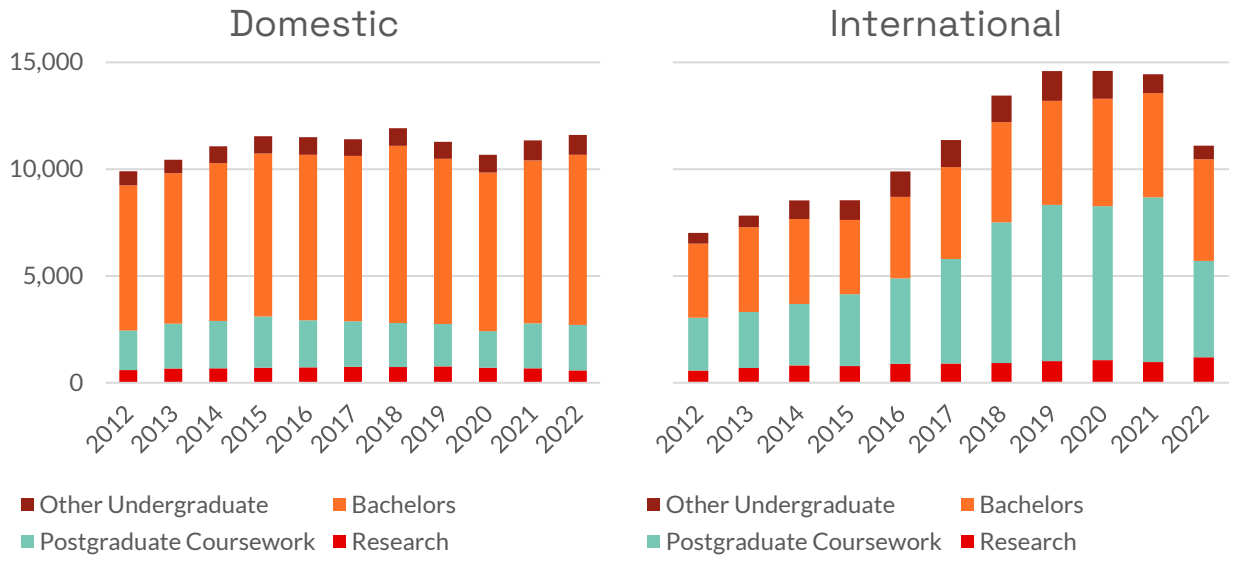
Higher Education Graduations in Engineering & Related Technologies, 2012 - 2022



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AUSTRALIAN ENGINEERING HIGHER EDUCATION STATISTICS 2012-22

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Author's Note: The author takes responsibility for any errors in transcribing and interpreting data from the sources used in this report. This report builds on the previous work of the late Emeritus Professor Robin W King FTSE, FRSN, Hon FIEAust. The author thanks ACED members and others for their comments on the draft of this report. ACED members and other readers are encouraged to contact the author to clarify any pertinent matters.

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The Australian Council of Engineering Deans

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ACED
AUSTRALIAN COUNCIL OF ENGINEERING DEANS

ENGINEERS AUSTRALIA

The Australian Council of Engineering Deans

The Australian Council of Engineering Deans Inc. (ACED) exists to promote and advance engineering education, research and scholarship on behalf of the Australian higher education system. The membership of ACED is a senior academic representative of each of the 35 Australian universities that provide professional engineering degrees accredited by Engineers Australia.

ACED's mission is to promote and advance engineering education, research and scholarship on behalf of the Australian higher education system.

ACED's member universities are each represented by a senior staff member from its Engineering Faculty or School. These provide 'formative' and advanced engineering qualifications, research, and consultancy services. The formative Masters, Bachelor (Honours), Bachelor degrees, Associate Degrees and Advanced Diplomas, that are accredited by Engineers Australia, qualify their graduates to enter practice as professional engineers, engineering technologists and engineering associates.

ACED supports its members, and the development of Australian engineering more generally, by making submissions to government inquiries, and undertaking projects aimed at improving the quality of engineering courses and research. Many of these activities are undertaken as collaborations of ACED members, and with other organisations, including Engineers Australia, the Australasian Association for Engineering Education (AAEE), and the Academy of Technological Sciences and Engineering (ATSE).

Position papers and other reports are on the ACED website: www.aced.edu.au

Engineers Australia

Engineers Australia (EA) is the peak national professional association for engineering in Australia. As Australia's signatory to the International Engineering Alliance (IEA), Engineers Australia uphold standards for engineering education through accreditation of university engineering courses. and set and maintain standards for professional practice. Engineers Australia encourages the development of engineering knowledge and convene engineers and other stakeholders in various forums to facilitate the exchange of ideas and information. Engineers Australia inform community leaders and decision makers about engineers and engineering matters. Engineers Australia also ensure the engineering perspective is heard on a range of national policy matters. And Engineers Australia recognise and promote engineering excellence and achievements of individuals and teams.

Engineering skills and expertise are unique and have no substitutes. The training, skills, and experience of engineers are highly valued and the skillset and mindset that feature problem-solving, critical thinking, quantitative analysis and systems thinking, are transferable to many other fields of work. People with engineering qualifications contribute broadly to the Australian economy in every industry and sector.

Contents

Summary numbers and facts for Australian higher education in engineering & related technologies

SYSTEM SIZE IN 2022

Total enrolment: 109,811 students, 12,160 less than in 2019 and 3,120 less than in 2021

Student load: 68,240 EFTSL (effective full-time student load), 10,538 fewer than in 2020

The **36 public universities** (35 ACED members) had **95%** of these enrolments and approximately **4,589 full-time equivalent academic staff** (excluding casual staff)

qualification levels	domestic		international	
	number	% women	number	% women
Bachelor (mostly 4-year Hons)	7,960	18.4	4,757	18.9
Postgraduate coursework	1,352	20.1	4,405	30.7
Research (PhD and Masters)	583	24.6	1,192	26.9
Associate Degree & Advanced Diploma	482	8.5	92	15.2
All award levels	11,671	18.4	11,105	21.6

colours indicate up/down compared with 2021 figure

Proportions of bachelors degree graduates by field of education in 2022

FoE Code	Name	Domestic	International
0300	Engineering	43.0%	36.5%
0301	Manufacturing	1.4%	1.6%
0303	Process and Resources	2.2%	2.2%
0305	Automotive	0.1%	0.2%
0307	Industrial	6.6%	9.6%
0309	Civil	10.9%	13.6%
0311	Geomatic	2.7%	0.3%
0313	Electrical & Electronic	9.2%	13.1%
0315	Aerospace	7.0%	6.8%
0317	Maritime	0.8%	1.8%
0399	Other Engineering	22.0%	16.8%

Approximately six months after graduation, employed graduates of undergraduate awards had:

measure surveyed in 2022-23	engineering	all fields
median salary	$75,000 (ranked 4/21)	$71,109
full-time employment rate	89.2% (ranked 6/21)	79.0%
graduate overall satisfaction	72.3% (ranked 19/21)	77.9%
employer overall satisfaction	88.8% (ranked 2/10)	83.7%

50 percent of engineering students will have completed their qualification 5.5 years post-commencement of study.

Engineering enrolled 4.76 percent of all domestic commencing students starting bachelor degrees, up from 4.58 percent in 2022. Engineering was the field of education with the second highest proportion (73.2 percent) of commencers with ATAR 80.00 and above.

The number of international commencing students is 33 percent below the 2019 figure.

Overview

This report and supporting data tables are authoritative resources and commentary on the size and performance of engineering education in the Australian higher education system. Inclusive of the 2022 academic (calendar) year. The previous edition, published in April 2022, reported data to 2020. This report includes the period when Australian borders were closed due to COVID-19 (20 March 2020 to 6 February 2022) up to the end of calendar year 2022. The 2023 data was released in September 2024.

The continuing impacts of COVID-19 on engineering education will be better understand as additional data becomes available. This report makes comparisons over the last decade (for long term trends), with 2019 (the last year without COVID-19 based interruption) and 2021 for short term trends.

The data cover the field of education 'FoE03 Engineering and Related Technologies'[1] The field of education includes programs in 'Engineering' as recognised by the engineering profession, and 'Related Technologies' in aviation, maritime, and spatial sciences, including surveying. These areas are commonly provided within engineering faculties and comprise a small proportion of the FoE 03 aggregates. All of FoE03 is inferred by the term 'Engineering' unless otherwise explained.

The data includes Australian Qualifications Framework (AQF) programs from Level 5 (diplomas) to Level 10 (doctorates).

The providers of engineering programs include the 35 public universities that are all members of the Australian Council of Engineering Deans (ACED). A small number of these offer programs overseas at their own campuses, or in partnership with others. Private higher education providers and the Vocational & Training (VET) sector contribute less than 5 percent of the higher education awards in Engineering completed in 2022.

Graduation data confirms the effects of COVID-19. Excluding higher degrees by research (HDR) completions the number of internationals student completions is below the 2019 level for all award levels. The most significant reduction has occurred at the Coursework Masters level, being nearly 40 percent below the 2019 level, a reduction of 2,780 students. The number of domestic graduations has increased over 2021 and 2022 to it's second highest level of all time.

Enrolment and graduation data are provided for the past ten years, with details on the participation of women[2] and Indigenous students. Overall, the Equivalent Full Time Student Load (EFTSL) for engineering students remains 15 percent below the student load undertaken in 2019.

At all award levels there were 6,712 less international student commencements in 2022 than in 2019. Domestic commencements increased in 2021 before dropping slightly in 2022. Domestic commencements of 20,719 represent an increase of 9.6 percent from 2019, remain less than the 21,456 domestic commencements peak in 2014.

For bachelor degrees (including Bachelor Honours degrees), information is provided on commencing Engineering students' admission profiles, and their success, retention, and graduation (completion) rates. Selected data for some other fields of education and 'All field' aggregates are provided for comparison.

Engineering continues to perform well on student, graduate and graduate employer satisfaction, and graduate employment rates and median salaries. These conclusions are drawn from the most recent national surveys run by the government's Quality Indicators for Learning & Teaching (QILT) program. The decline in student and graduate satisfaction evident in the 2020 results has been largely reversed over 2021 and 2022.

[1] The Australian Standard Classification of Education (ASCED) defines 11 Fields of Education, plus 'Mixed-Field' programs. See Appendix 1, Table 17 for the list of subfields in FoE 03 and FoE 02 Information Technology.
[2] The Department of Education data uses gender categories 'male', female, and 'indeterminate/intersex/ unspecified'. The body of this report adopts the term 'women' in the commentary on participation rates and diversity, on the basis that the Department of Education data classified as 'female' are aggregated from individuals' reporting on their gender identity.

Data on teaching loads, including research supervision[3], and academic staffing for Engineering are provided, in order to compute the average student-to-academic staff ratio.

A summary each ACED member's program profile, and its commencing student and graduation data is provided. A commentary on the engineering graduate profile of each of the established formal university groupings is also provided. The paper concludes with a brief discussion of the outlook for engineering education in meeting the demand for engineers over the coming decades.

The Appendix contains detailed data purchased by ACED from the Department of xxx. Higher Education Statistics data held by the Department are compiled from information supplied by education providers. While complying with the Department of Education's requirements, it is known that there is variation in how providers report some data (e.g. some providers do not provide the sub-field of graduations). Inconsistencies that impact on data accuracy and interpretation are noted in the text.

Aggregation of the data in this report is available from the public Australian Department of Education Higher Education Statistics collections, accessible at https://www.education.gov.au/higher-education-statistics/student-data.

[3] Other research performance data (such as competitive grants, publications, and engagement) are not included in this report.

Award levels and external accreditation by Engineers Australia

Higher education programs in Engineering and Related Technologies are delivered at Level 5 (Diploma) through Level 10 (Doctorate) of the Australian Qualifications Framework (AQF), the national policy for regulated qualifications in Australian education and training[4].

Australian higher education providers are regulated by the Tertiary Education Standards and Quality Agency (TEQSA) and must align their programs with the level specifications and descriptors of AQF. All the Australian universities that are members of ACED are 'self-accrediting' institutions.

Providers of engineering programs in Australia typically align their programs to the expectations and needs of the engineering profession through professional accreditation. Engineers Australia accredits[5] programs that deliver the educational qualification for entry to supervised practice in three occupational categories: professional engineer, engineering technologist and engineering associate (senior technicians), as listed in this table:

EA membership category	Award (minimum full-time equivalent academic years of study, post-secondary school)	AQF Level	International Accord
Professional Engineer	Master (coursework) (5 years) Bachelor Honours (4 years)	9 8	Washington
Engineering Technologist	Bachelor (3 years)	7	Sydney
Engineering Associate	Associate Degree (2 years) Advanced Diploma (2 years)	6	Dublin

Engineers Australia specifies accreditation standards as a set of 'graduate competencies' for each occupational category, known as the 'Entry-to-Practice Competency Standard[6]'. These competencies are in knowledge and skills, engineering application ability, and professional and personal attributes. They are benchmarked against the graduate attributes specified for the educational accords of the International Engineering Alliance (IEA)[7].

The Engineers Australia accreditation process evaluates programs for their delivery of the graduate competencies in the relevant branch of engineering against criteria covering the academic program design and implementation and the provider's operating environment and quality assurance processes. Accreditation covers programs for up to five years from the year of evaluation.

Graduates of Engineers Australia accredited programs are deemed to have met the Stage 1 Competency standard for the applicable occupational category, and the educational requirements for Engineers Australia graduate membership of that occupation. Their qualification is also recognised as equivalent (in terms of educational outcomes) to those of the other signatories of the corresponding IEA educational accord.

Three matters that impact on the interpretation of data in this report require further explanation:

i. Since 1980, Engineers Australia has required the accredited professional engineer qualification to be of **at least four full-time study years'** duration (or part-time equivalent) following completion of a Year 12 secondary school certificate or equivalent. From 1980 to

[4] Australian Qualifications Framework Council, The Australian Qualifications Framework, Second Edition January 2013, https://www.aqf.edu.au/framework/australian-qualifications-framework
[5] Engineers Australia's program accreditation process and criteria and the lists of accredited programs can be accessed at https://www.engineersaustralia.org.au/About-Us/Accreditation
[6] Available at https://www.engineersaustralia.org.au/about-engineering/occupational-categories
[7] The IEA is a self-governed international organisation of bodies that each has their jurisdiction's responsibility for accreditation of engineering qualifications and standards of engineering practice. Currently, the Washington Accord has 23 full signatories and 7 provisional signatories. The Sydney and Dublin Accords have 9 full signatories respectively. See http://www.ieagreements.org/

2013, the majority of graduates at many universities were awarded their 4-year degree 'with Honours', based on merit. Since 2014, providers have been required (for compliance with the Australian higher education standards) to configure their four-year degrees as 'Bachelor Honours Degrees' as defined in AQF Level 8. **The BEng(Hons) is therefore the 'standard' degree for entry to professional engineering practice in Australia**. Any class of level of Honours is awarded on merit. Most of the data provided in this report aggregates 'bachelor degree' numbers that cover awards at AQF Levels 7 and 8. The Appendix Tables 15 and 16 list ACED members' programs at these two levels.

ii. Until the mid-2000's, coursework Master degrees (AQF Level 9) in engineering were offered primarily to already-qualified professional engineers to **advance** their engineering and technical knowledge. **These degrees were not accredited by Engineers Australia**. Since the 2000's, most of the Australian university providers and some private providers have developed two-year '**entry-to-practice Master degree**' programs that are aimed at domestic[8] and international bachelors graduates with suitable engineering science degrees and other prior qualifications. These programs are eligible for accreditation by Engineers Australia to the Professional Engineer standard. The aggregated data for Master (coursework) graduates presented here includes numbers for both advanced and entry-to-practice types of Master degree programs. The Appendix Tables 15 and 16 provide data on the numbers of programs and branches of engineering provided by each ACED member.

iii. Research degrees (doctorates and Master degrees at AQF Levels 10 and 9, respectively) are not considered by Engineers Australia for external accreditation. Some summary data presented here for Master degree enrolments and graduations includes these Master degrees.

iv. Some higher education institutions classify their engineering programs to 'generic' field of education codes within the Australian Statistical Classification of Education which introduces an inexactness when providing statistics by field of education.

These overlaps in award designations and data classifications thus make it impossible to use the national data collections to provide **exact** answers to questions like:

i. 'How many domestic students were awarded an accredited Professional Engineer qualification in a given year?'
ii. 'How many of these graduates were in Civil Engineering?' and
iii. 'How many domestic engineering professionals are taking an advanced Master degree?'

Appendix Table 15 lists the ACED providers of accredited higher education programs at AQF levels 7 and 6, the latter mostly being Associate Degrees. AQF level 7 Bachelor degrees may be eligible for Engineers Australia accreditation for the Engineering Technologist occupational category. Some Advanced Diplomas may be eligible for accreditation for the Engineering Associate occupational category. The student enrolment and graduation data for these levels includes data for programs that are not aimed primarily at occupational outcomes, but are intended primarily as pathways to enrolment in BEng(Hons) degrees.

Vocational education and training (VET) providers, including TAFE institutions, offer awards in Engineering primarily at AQF Levels 3 to 6. The lower of these levels are qualifications for engineering trades, the higher ones are for engineering technicians. Most programs offered by the VET sector follow a competency-based education and training model, rather than the curriculum model used in higher education. Competency-based Advanced Diplomas in Engineering may be eligible for consideration by the Engineers Australia accreditation process at the level of Engineering Associate. Information on these awards is not provided in this report.

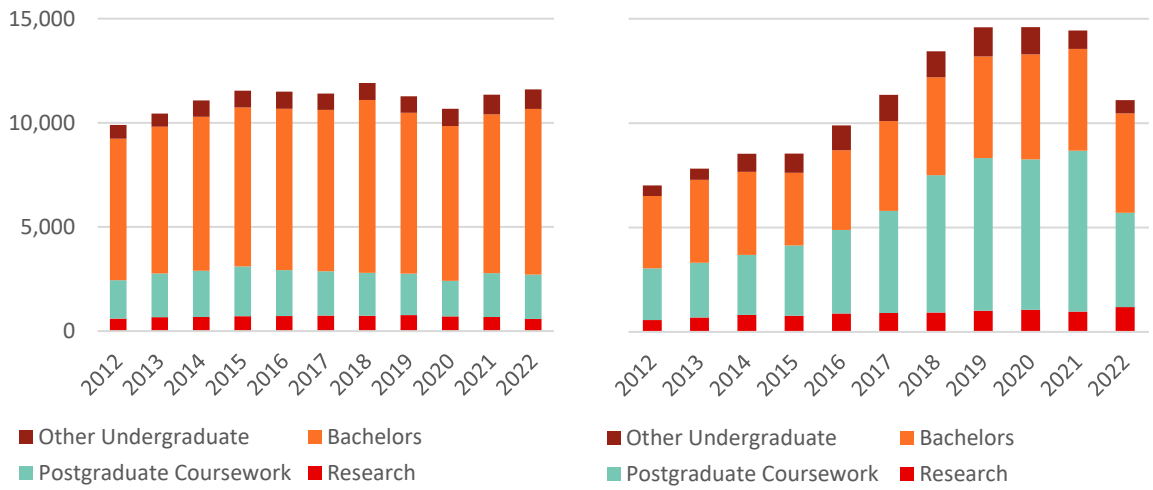
[8] Notably, the University of Melbourne and The University of Western Australia ceased offering 4-year Bachelor degrees to commencing students in the 2000s, and adopted a '3yr BSc +2yr MEng' engineering qualification model. Their 2-year MEng degrees are also available on the open market to suitably qualified domestic and international candidates. Charles Sturt University educates its professional engineers via a BTech + MEng program.

Award course completions (graduations) in engineering and related technologies

Graduations by award level

The total numbers of graduates by detailed award level over 2012-22 are provided in Appendix Table 1. Figure 1 summarises these numbers for four broad award levels: research (doctorate by research and research Master degree), postgraduate coursework, Bachelor, and other undergraduate awards (Associate Degrees, Advanced Diplomas and Diplomas).

FIGURE 1: AWARD COURSE COMPLETIONS IN ENGINEERING AND RELATED TECHNOLOGIES, DOMESTIC (LEFT) AND INTERNATIONAL STUDENTS (RIGHT)



In 2022 the total number of completions by international students fell below that of domestic students for the first time since 2017.

The international figures include those from programs offered by Australian providers at offshore campuses or in partnerships with local institutions. The offshore programs that are offered by ACED member universities and are accredited by Engineers Australia are listed in Appendix Table 16(b).

Graduations 2022: key points and trends

PhDs and Research Master degrees (domestic: 583; international: 1,192)

Graduations from research degrees have increased by around 50 percent over the decade, with 80 percent more international graduates offset by a small drop in domestic graduates of around 2 percent since 2012. Since 2019 the number of domestic students completing research degrees has fallen by around 24 percent, while international student completions are 18 percent higher. There has been a fall of around 22 percent in the number of domestic students completing Doctorates and 35 percent completing Research Masters degrees.

The proportion of women graduating from research degrees has increased to between 26 and 30 percent in 2022, for both domestic and international cohorts, with the exception of Domestic Masters Research completions, which has fallen to 18.3 percent.

In 2022 Engineering had 9.5 percent of the total domestic research degree graduations across all fields of education, and 27.4 percent of the international research degree graduations.

Postgraduate coursework (domestic 2,127; international: 4,516)

International student graduations from Master degrees dropped considerably in 2022 (4,405 compared having peaked at an all time high of 7,631 in 2021), following reductions in international student

Masters commencements recorded from 2020 onwards due to COVID-19. There has been a small shift in domestic postgraduate coursework completions away from Masters degrees to other coursework postgraduate degrees.

In 2022 the number of postgraduate coursework completions had fallen to 6,634, below the total recorded in 2017.

The participation rate of women appears to have settled to approximately 21 percent, with international completions of coursework Master degrees at 30 percent in 2022 (with reduced numbers overall). Domestic coursework Master degree completions have increased to 1,352 in 2022, but remain below their peak of 1,608 in 2018.

The number of Graduate Certificates and Graduate Diplomas awarded to domestic students increased by 11 percent to 775, likely due to the expansion of Commonwealth support for these places as part of COVID-19 stimulatory measures. These awards are most likely to have been made to practising professionals.

Bachelor degrees (domestic: 7,960; international: 4,757)

In 2022 the domestic total completions grew by 4 percent compared to 2021, but remain below the 2018 peak of 8,295. International completions decreased a further 3 percent in 2022 to 4,757, the lowest level since 2018.

These totals include 634 domestic and 617 international graduates of 3-year degree programs (see Appendix Table 2). Many of these are from non-engineering degrees, such as civil aviation that had 153 and 54 domestic and international graduates respectively. Some of the engineering graduates at this level are likely to use their 3-year qualification as credit in articulating to a professional engineering degree.

Approximately 26 percent of the domestic bachelor degree graduates, and 3.4 percent of international students, respectively, graduated from programs of at least 4-years duration (Appendix Table 2). These are 'dual', 'double' or 'combined' degree programs from which graduates gain an additional bachelor degree award for study in another discipline (typically science or business), a co-op program in which students gain an additional award for industry-based study, or a BEng(Hons), MEng combination.

The participation rate of Australian women graduating with a bachelor degree increased to over 18 percent, while the proportion of international women graduates has decreased slightly by 1 percent, to below 19 percent.

Other undergraduate (domestic: 933; international: 638)

Associate Degrees and Advanced Diplomas were awarded to 574 students, a reduction of around 10 percent since their peak in 2020. There has been a decline in the number of international students completing these qualifications, with over 80% of this total being domestic graduates in 2022. Many of the engineering graduates at this level use this qualification to articulate into professional engineering degrees.

The number of international graduates of diplomas has fallen considerably, by around 55 percent since it's peak in 2019, with their share of completions falling from 79 percent to 55 percent in 2022.

Many of these graduates will articulate to enrolments in bachelor degrees as discussed in the Commencing Enrolments section below. There may be more students on enabling (foundation) pathways, but who are not assigned by their provider to the Engineering field of education.

Professional Engineer qualifications

From these data, and other information, it is estimated that approximately 8,295 domestic students and 8,469 international students graduated from an accredited BEng(Hons) or an entry-to-practice Master degree in 2022. Some Master degree graduates may already hold an undergraduate Professional

Engineer qualification and therefore are not necessarily newly available to enter engineering practice (for example if they were undertaking study in a new area of practice). These numbers are elaborated in the award course completions section.

Undergraduate completions by area of engineering

Appendix Table 2 provides details of undergraduate (AQF levels 8, 7 and 6) award completions for 2022, by duration and 4-digit ASCED code sub-classification of Engineering & Related Technologies (see Appendix Table 17). As the higher education system currently allows for students to freely choose their engineering discipline these data also provide insights into the relative attractiveness of the main areas of the field taken by domestic and international students. Figure 2 presents indicative trends[9]. However given the disruption caused by COVID-19 since 2020 it would be inaccurate to attribute shifts in completions by field of education solely to changing student preferences.

Note that figure 2 below represents only 35 and 47 percent of the domestic and international student undergraduate totals, with fields 0300 and 0399 (Engineering and Other Engineering) excluded.

FIGURE 2: UNDERGRADUATE COMPLETIONS BY AREA OF ENGINEERING

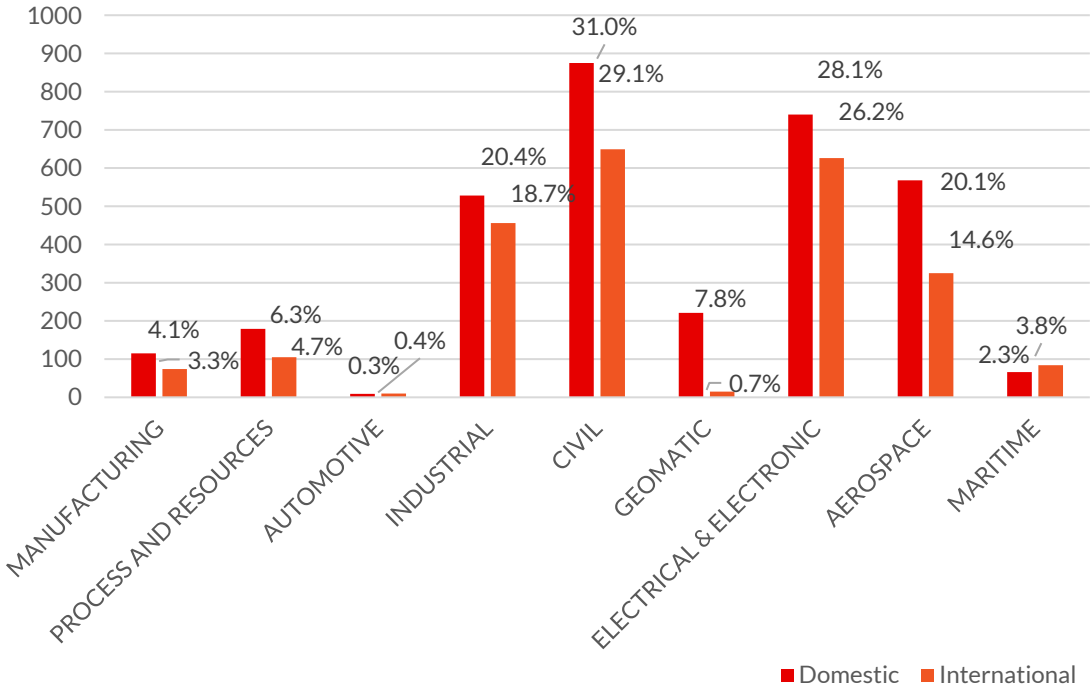
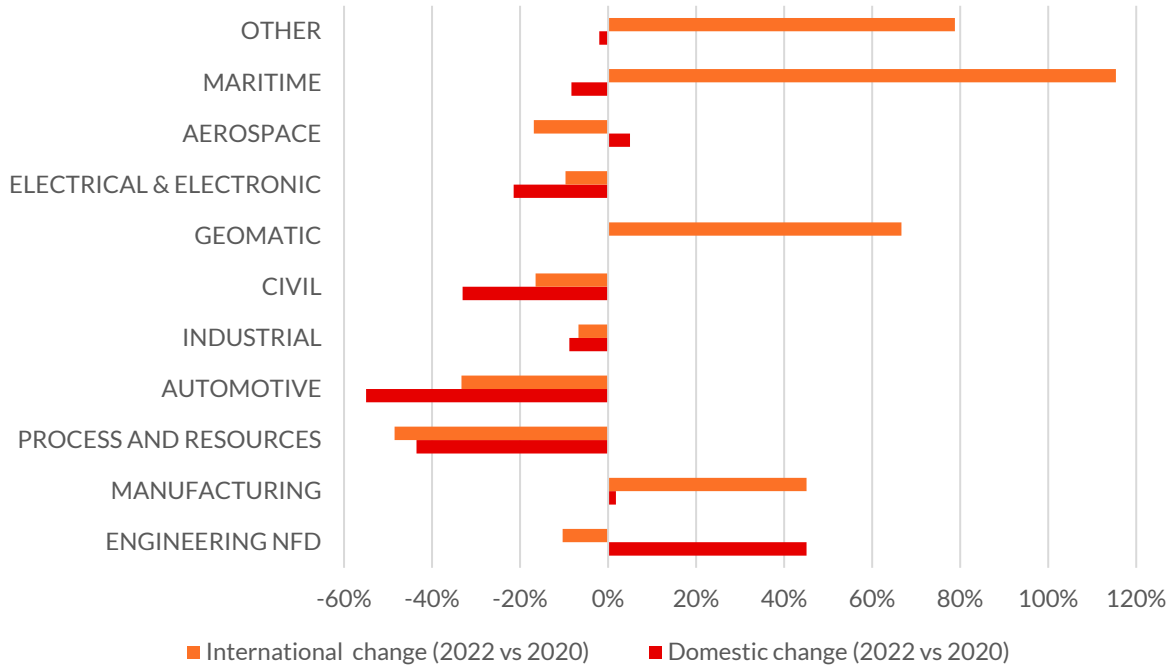


Figure 3 below shows the change for international and domestic undergraduate completions by field of study, comparing 2020 to 2022, inclusive of ASCED codes 0300 and 0399. Note the relatively small number of students completing programs encoded to Manufacturing (301), Process and Resources (303), 305 (Automotive Engineering), 311 (Geomatic Engineering) and 317 (Maritime Engineering) when examining the shifts between years.

[9] These data are not definitive because several universities report their graduations against two generic ASCED codes (0300 and 0399). The proportions and trends reported here assume that the universities that do report against the 4-digit codes are, collectively, representative of all. See Appendix Table 2. Table 15 and 16 list the branches of engineering offered by ACED members.

FIGURE 3: PERCENTAGE CHANGE IN COMPLETIONS BY FIELD OF STUDY



Both domestic and international undergraduate student completions reduced by 249 and 285 in 2022 compared to the 2020 totals.

For domestic students there were an additional 1,078 completions in FoE 0300, 27 in Aerospace (0315) and 2 in 301, with reductions to all other fields, including 432 fewer completions in Civil Engineering (0309), 202 in electrical and electronic engineering, and a 45 percent reduction in the number of students graduating from Process and Resource Engineering [10] (0303) programs.

For international students there were increases in completions in Manufacturing (0301) of 23, Geomatic Engineering (0311) of 6, Maritime (0317) of 45 and Other Engineering (0399) of 353. There were reductions in completions in all other fields, 201 fewer in Engineering (0300), 99 fewer in Process and Resource (0303), 128 fewer in Civil (0309), 67 fewer in Electrical and Electronics (0313).

Around 60 percent of domestic graduates and over 80 percent of international graduates in the aerospace category were from 3-year degrees, predominantly in civil aviation [11]), taken alongside qualification for a commercial pilot licence. One provider offers its civil aviation degree program offshore.

International comparison of graduates by discipline

In the previous edition of this publication statistics were provided for Australian graduates by narrow field of education for international comparison, which was supplied by ACED members. Updated data is not available for this edition.

The table below provides the number and proportion of engineering bachelors graduates in the United States in 2019 [12], totalling 154,212 graduates. We see that in contrast to Australia Mechanical Engineering graduates are the highest proportion of graduates and the United States has approximately one-third the proportion of Civil engineering graduates as does Australia.

[10] This combination includes Chemical Engineering and Mining Engineering.
[11] Separate HE Stats data for 2022 reported 76 women (22%) amongst the 334 domestic graduates from the undergraduate qualifications in aviation. There were 60 women amongst the 270 international graduates from these programs.
[12] Engineering and Engineering Technology by the numbers, American Society for Engineering Education, 2020, https://ira.asee.org/wp-content/uploads/2021/02/Engineering-by-the-Numbers-FINAL-2021.pdf

Discipline Name	Degrees Awarded	% of total	Discipline Name	Degrees Awarded	% of total
Mechanical	35,094	22.8%	Engineering (General)	2,252	1.5%
Computer Sci. (inside Eng.)	19,963	12.9%	Metallurgical and Matrls.	2,083	1.4%
Electrical	14,221	9.2%	Petroleum	1,563	1.0%
Civil	13,774	8.9%	Biological and Agricultural	1,406	0.9%
Chemical	11,148	7.2%	Envr. Eng	1,231	0.8%
Other	9,472	6.1%	Civil/Environmental	935	0.6%
Computer Sci. (outside Engr.)	9,394	6.1%	Engr. Science and Engr. Physics	831	0.5%
Computer	7,493	4.9%	Architectural	658	0.4%
Biomedical	7,328	4.8%	Nuclear	489	0.3%
Industrial/Manufacturing/ Systems	6,800	4.4%	Engineering Management	438	0.3%
Aerospace	4,533	2.9%	Mining	167	0.1%
Electrical/ Computer	2,939	1.9%	Total	154,212	100.0%

Total enrolments and student load

Total Enrolments

The enrolment data by detailed award level provided in Appendix Table 3, are summarised in Figure 4 for the broad award level categories. Total enrolments are the cumulative result of student commencements and successful progression and retention in their programs.

The large reduction in international commencing student enrolments from 2020 caused by the pandemic has clearly impacted on the total international enrolments, with the Australian borders closed for nearly two years, between 20 March 2020, reopening on 6 February 2022. Compared to the peak in 2019 there were 16,683 fewer international students enrolled in engineering programs in 2022.

FIGURE: 4 TOTAL ENROLMENTS IN ENGINEERING AND RELATED TECHNOLOGIES, DOMESTIC STUDENTS (LEFT) AND INTERNATIONAL STUDENTS (RIGHT), 2012 - 2022

The reduced numbers of international student enrolments in 2022 were most prominent in postgraduate coursework, nearly 45 percent lower, bachelors, down over 20 percent and other

undergraduate programs, down nearly 70 percent compared to 2019. There has been a nearly 5 percent increase in the number of international students enrolled in research programs in 2022 compared to 2021. Enrolments in bachelors degree programs by international students have fallen consistently each year since 2020, with the lowest number of international enrolments since 2014.

Domestic enrolments have increased for all award levels excluding research in 2022 compared to 2019, with a small reduction of 45 students compared to 2019. Bachelors enrolments remain consistent with the 2021 figures, with a slight reduction in the number of students enrolled in other undergraduate courses and postgraduate coursework, while enrolments in research programs increased nearly 5% in 2022 compared to 2021.

Student load

A full-time student (taking 8 courses per academic year or undertaking research training) accounts for one unit of "effective full-time student load" (EFTSL). The following table summarises the taught load in Engineering & Related Technologies field for domestic and total enrolments. The taught load for the international students is the difference between the total and domestic load, for each corresponding cell.

	Doctorates	Master	other p-grad	Bachelors	other u-grad	Enab	Non-award	Total
Domestic total 2018	2,514	2,888	457	33,545	1,390	3	45	40,839
Domestic total 2019	2,257	2,700	515	33,969	1,420	17	59	40,936
Domestic total 2020	2,322	2,694	608	35,028	1,686	15	52	42,401
Domestic total 2021	2,275	2,726	708	35,220	1,841	19	73	42,863
Domestic total 2022	2,304	2,475	672	34,158	1,874	13	71	41,567
% Change from 2019	2.1%	-8.3%	30.5%	0.6%	32.0%	-23.5%	20.3%	1.5%
% Change from 2021	1.3%	-9.2%	-5.1%	-3.0%	1.8%	-31.6%	-2.7%	-3.0%
All students 2018	6,786	17,813	563	52,055	2,512	3	358	80,089
All students 2019	6,721	18,351	664	52,597	2,639	17	420	81,406
All students 2020	6,866	16,296	753	51,980	2,656	15	213	78,778
All students 2021	6,657	12,789	839	50,496	2,555	19	113	73,471
All students 2022	7,284	11,021	804	47,833	2,610	13	249	69,819
% Change from 2019	8.4%	-39.9%	21.1%	-9.1%	-1.1%	-23.5%	-40.7%	-14.2%
% Change from 2021	9.4%	-13.8%	-4.2%	-5.3%	2.2%	-31.6%	120.4%	-5.0%

The load attributed to non-university providers in 2022 was 1,467 EFTSL[13], a little over 2 percent of the total load, roughly in line with previous years. In Engineering, this component of load is mostly for undergraduate or enabling programs.

From 2019 to 2022 the total load dropped by 14.2%, given the small increase (1.5%) in domestic student load during this period the reduction is entirely attributable to decreased international student load, due to the restricted ability of international students to commence and/or continue studying during the period in which borders were closed due to COVID-19.

Bachelor degree student load is the largest component in 2022. Research training remains dominated by international load. The pandemic has stemmed the steady growth of international enrolments (and load) in entry-to-practice Master degrees to 2019.

Earlier year load totals, and the 2022 detailed data for 4-digit ASCED sub-codes (corresponding to the major branches of engineering) are provided in Appendix Table 4.

[13] Table 4.6, 2022 Section 4 – All Student Load, Department of Education, December 2023

On the assumption that 2022 load is attributed to teaching and supervising Engineering students [14], the 69,819 EFTSL is generated by the 109,811 enrolled students. As in previous years, each Engineering student represents approximately two-thirds (63.5 percent) of one EFTSL of teaching load. The difference between this number and parity is due to three factors: recent disruption to study due to COVID-19, part-time student enrolment and the contribution of teaching load from other academic areas into engineering programs. Most of the latter load is 'service teaching' of mathematics, science and computing into the first two years of undergraduate engineering programs.

In the Academic Staff section, the load data are combined with staff data to estimate the overall student-staff ratio for engineering teaching and research training undertaken by the ACED members' faculties and schools.

Commencing enrolments

Commencements by award level

Each graduation is preceded by a commencing enrolment. Figure 5 shows these numbers for the broad award categories over the past decade. More details are in Appendix Table 5. While most students commence their enrolment into the first study-year of the program, some will commence with advanced standing into a later study year.

The rapid growth of international student commencements underpinned the overall growth of engineering enrolments up to 2018. The significant decline of commencing international enrolments in 2020 and 2021 arose from the COVID-19 border closures, with the Australian border re-opening in February 2022 international students were able resume travel to commence their studies in Australia.

FIGURE 5: COMMENCING ENROLMENTS IN ENGINEERING & RELATED TECHNOLOGIES 2012-2022

Further observations on 2022 data and trends:

PhDs and research Master degrees (domestic: 570; international: 1,642)

Domestic PhD and research Master commencements declined significantly over 2021 and 2022, being 40 percent below their peak in 2015 and down 30 percent over the decade, with a nearly 20 percent decline between 2021 and 2022.

International research commencements grew in 2021 and 2022, to be 30 percent higher than in 2012 and 5 percent higher than in 2019, with the majority of this growth coming from PhD commencements.

[14] This is a reasonable assumption, since few engineering course units are taken by students enrolled in other fields of education.

Postgraduate coursework (domestic: 2,420; international: 5,805)

Domestic commencements have dropped 20% in 2022 compared to 2020, with a nearly 25% drop in students commencing a coursework Masters degree and around a 10% drop in other postgraduate commencements There were approximately 596 enrolments into the entry-to-practice professional engineering degrees at the University of Melbourne, The University of Western Australia and the University of Southern Queesnland. In 2022 there were 909 domestic commencing enrolments into Graduate Diplomas and Graduate Certificates, around 10 percent less than in 2020, with decreased enrolments into postgraduate awards aimed at practicing engineers, and graduates of other areas included in the FoE3 category.

While commencing enrolments of internatioanl students in coursework Masters degrees increased in 2022 by 40 percent to 5,643, they remain significantly below the 2019 total, by around 40 percent, or 3,660 fewer commencing enrolments. Almost all of these enrolments were into entry-to-practice Master degrees that are eligible for accreditation by Engineers Australia.

Bachelor degrees (domestic: 15,087; international:4,837)

In both 2021 and 2022 domestic commencing enrolments in bachelor degrees increased beyond their previous all-time peak of 15,085 in 2015, to 15,224 and 15,087 respectively, being 11 percent higher since 2012 and 5 percent higher than in 2019.

International student commencments in bachelor degrees reached a low point of 4,552 in 2021, the lowest number recorded after 2010, before recovering slightly (by around 6 percent) to 4,837 in 2022. The decrease in international commencing enrolments is a continuation of the downward trend since 2017. This trend has likely been accelerated due to disruption caused by COVID-19 and with the underlying increased local provision of bachelor degrees in countries from which Australia previously drew enrolments and that are now Washington Accord signatories, and the increasing preferences of international students with local non-accredited degrees to take the 2-year entry-to-practice coursework Master degree pathway to a professional engineering qualification.

Other undergraduate (domestic: 2,727; international: 1,338)

Commencing domestic enrolments in Associate Degrees and Advanced Diplomas increased to 1,488 in 2021, the highest figure since 2015, before decreasing to 1,212 in 2022 (with 33 of these being Advanced Diplomas, the remainder Associate Degree commencements). By contrast international commencements of these qualifications reached a low of 119 in 2021, before recovering to 174 in 2022, the lowest number since 2010 and remaining around 33 percent lower than in 2019.

Domestic commencing enrolments into 'Enabling and Other' programs in 2022 increased by 20 percent on the previous year and were 225 percent higehr than in 2019, having grown strongly in 2020 and 2021. The number of international enrolments in this category (1,164) in 2022 increased by 30 percent compared to 2021, but remain over 30 percent lower than in 2019. These programs are intended to provide pathways into higher level awards.

Student Load by Narrow Field of Education

The table below provides the EFTSL for all students and commencing enrolments in bachelors programs by narrow field of education and the proportion of all student load.

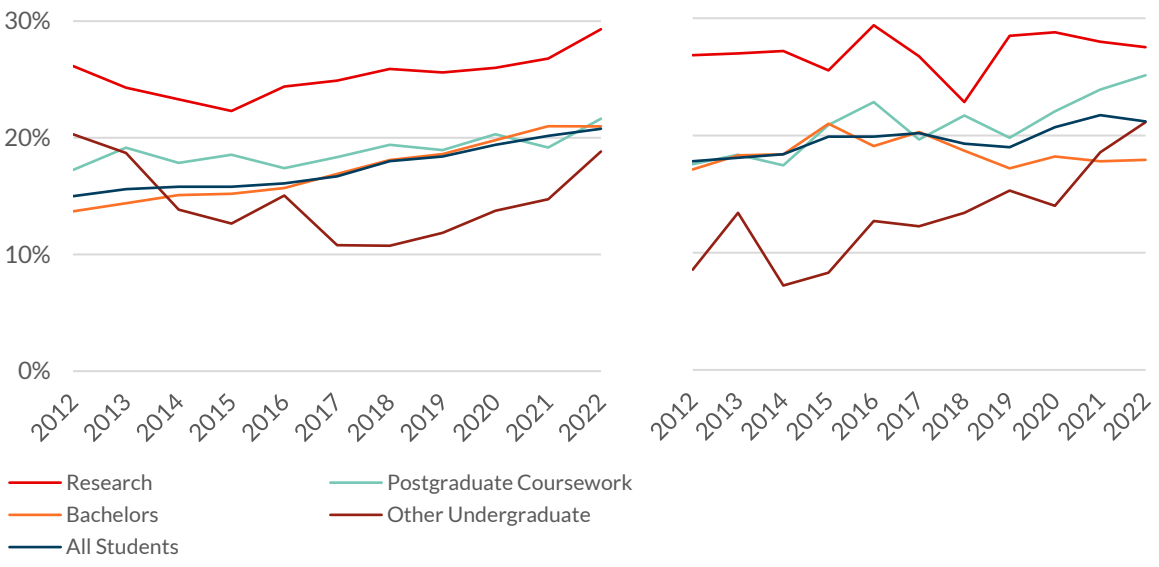
	All students		Commencing	
Field of Education	**EFTSL (Bachelors)**	**% of total**	**EFTSL (Bachelors)**	**% of total**
Manufacturing Engineering and Technology	1,302	2.7%	330	2.9%
Process and Resources Engineering	3,079	6.4%	562	5.0%
Automotive Engineering and Technology	88	0.2%	7	0.1%
Mechanical and Industrial Engineering and Technology	7,819	16.3%	1,399	12.4%
Civil Engineering	9,491	19.8%	1,588	14.1%
Geomatic Engineering	1,196	2.5%	309	2.7%
Electrical and Electronic Engineering and Technology	10,089	21.1%	2,363	20.9%
Aerospace Engineering and Technology	1,904	4.0%	442	3.9%
Maritime Engineering and Technology	207	0.4%	85	0.8%
Other Engineering and Related Technologies	12,658	26.5%	4,217	37.3%
Total	47,833		11,302	

Participation of women commencing engineering awards

Overall, 2022 saw the proportion of women in the domestic commencing cohort increase to 20.8 percent, the highest figure recorded, while the international commencing cohort decreased slightly to 21.2 percent, down from 21.7 percent in 2021 (the highest figure recorded for the international commencing cohort).

The recent participation trends for the broad award categories and all students are shown in Figure 6 below, for domestic and international commencing students.

FIGURE 6: PROPORTION OF WOMEN BY AWARD CATEGORY FOR DOMESTIC STUDENTS (LEFT) AND INTERNATIONAL STUDENTS (RIGHT)



The participation of women in domestic bachelor degrees had trended steadily up, by nearly 1% per year to 2021, with no increase between 2021 and 2022, with the proportion sitting at 21 percent for both years. The proportion commencing study in research degrees has increased by 12 percent since 2020, to 29.3 percent in 2022. There has been a 36 percent increase in the proportion of women commencing other undergraduate study, and overall the proportion of women commencing engineering study has increased by 7 percent since 2020.

The proportion of women in international student commencements peaked in 2021 at 21.7 percent and decreased in 2022 to 21.2 percent. The proportion of female international student commencements in postgraduate coursework and 'other undergraduate' qualifications increased by 13 and 50 percent respectively, however given their relatively small proportion of the commencing cohort these are not reflected in the overall proportion of female international student commencements.

The participation rates of women in postgraduate coursework and research awards are higher than those in undergraduate awards for both international and domestic students. Having a large cohort of women with research degrees may provide good role models for undergraduate engineering students and many will likely be employed as university tutors during their study.

The participation rates of women commencing undergraduate study across the branches of engineering cannot be deduced reliably from any commencing enrolment data, partly because many institutions do not require bachelor degree students to confirm their choice until second year.

The relative attractiveness of each major branch to women may however be deduced from graduation data, provided earlier. As reported there, women are less likely to participate in Geomatic Engineering (7.6 percent), electrical and electronics (8.6 percent), Industrial (Mechanical) (11.5 percent) and Industrial Engineering (15.4 percent) and more likely to participate in Other Engineering (18.6 percent) and Engineering NFD (21.5 percent) and Process & Resources (33 percent).

These national participation rates conceal considerable variations between provider institutions, reflecting their program mix (in terms of branches of engineering offered), location, history, and size.

Appendix Table 14 records the proportions of women in the commencing domestic and international cohorts for ACED members. For institutions with at least 200 commencing students in either citizenship category, the participation rates of women range from 14.2 to 30.9 percent (domestic) and 15.1 to 34.2 percent (international).

The higher rates are found in universities that offer programs in chemical and environmental engineering, and that admit high proportions of school leavers. From ACED member's reports, Environmental Engineering (which links to both chemical and civil engineering) and Biomedical Engineering are likely to attract approximately 30% and 50% women.

Domestic commencements in engineering compared with other fields of education

Figure 7 (from data in Appendix Table 6) shows the numbers of domestic students commencing higher education awards in several fields, for all award levels.

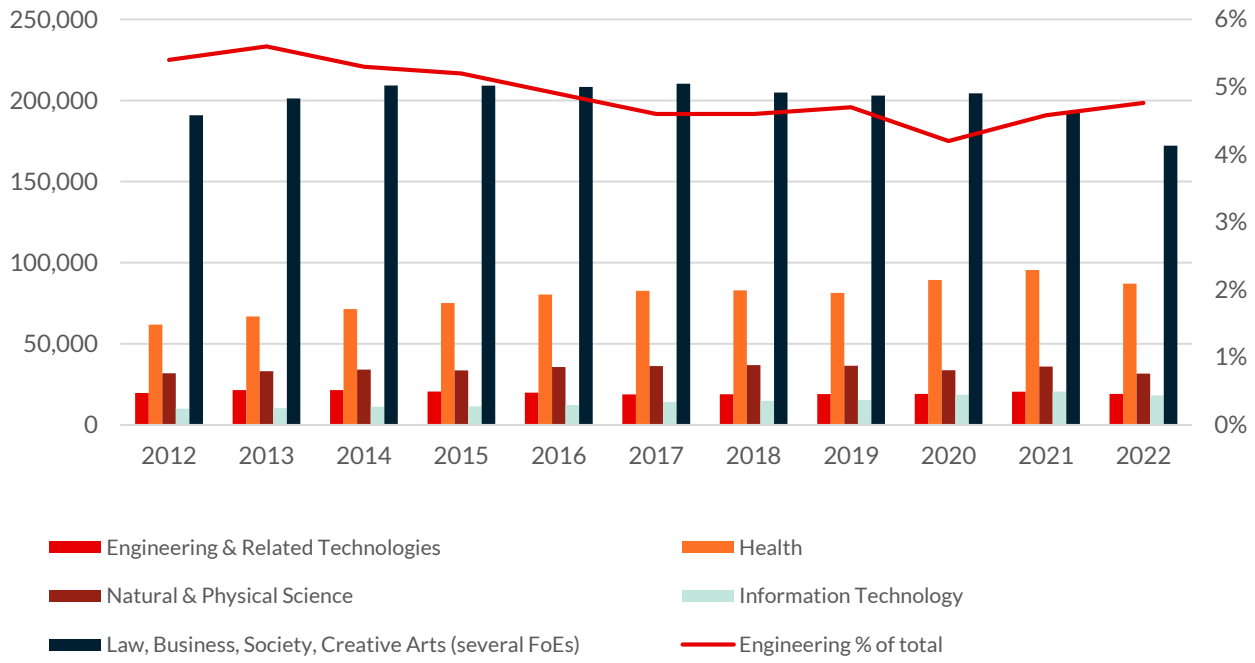
The total of all fields commencements (400,332) in 2022 was 11% lower than in 2020. Engineering's share of enrolments increased from the lowest on record in 2020, at 4.2 percent to 4.76 percent in 2022, with an increase recorded in 2021 as well (to 4.58 percent).

All fields of education recorded a decline in enrolments in 2022, with the decrease in engineering commencements (nearly 7 percent lower than 2021, a reduction of 1,392 commencements) being lower than all other fields of education, ranging from 10.7 percent to 12 percent.

Numerically the largest declines were in the combined fields of Law, Business and Creative Arts (down 20,705 students), Health (down 8,370 students) and Natural and Physical Sciences (down 4,328 students). 17.3 percent of all commencing students were in core STEM fields in 2022.

The share of domestic bachelor degree commencements in Engineering amongst all fields of education increased to 5.99 percent in 2022, up from the lowest value on record in 2020, 4.2 percent (see Appendix Table 7). The share of commencing bachelor degree enrolments in Education and Architecture and Building increased, while all other fields decreased.

FIGURE 7: DOMESTIC COMMENCING ENROLMENTS (ALL AWARD LEVELS) IN SELECTED FIELDS OF EDUCATION, 2012 - 2022



Domestic student entry paths into bachelor degrees and ATAR bands

Detailed data on domestic commencing Engineering students' 'basis of admission' are provided in Appendix Table 8(a). The last four years' data are provided below, with the 2022 distributions shown for 'All students' and for women:

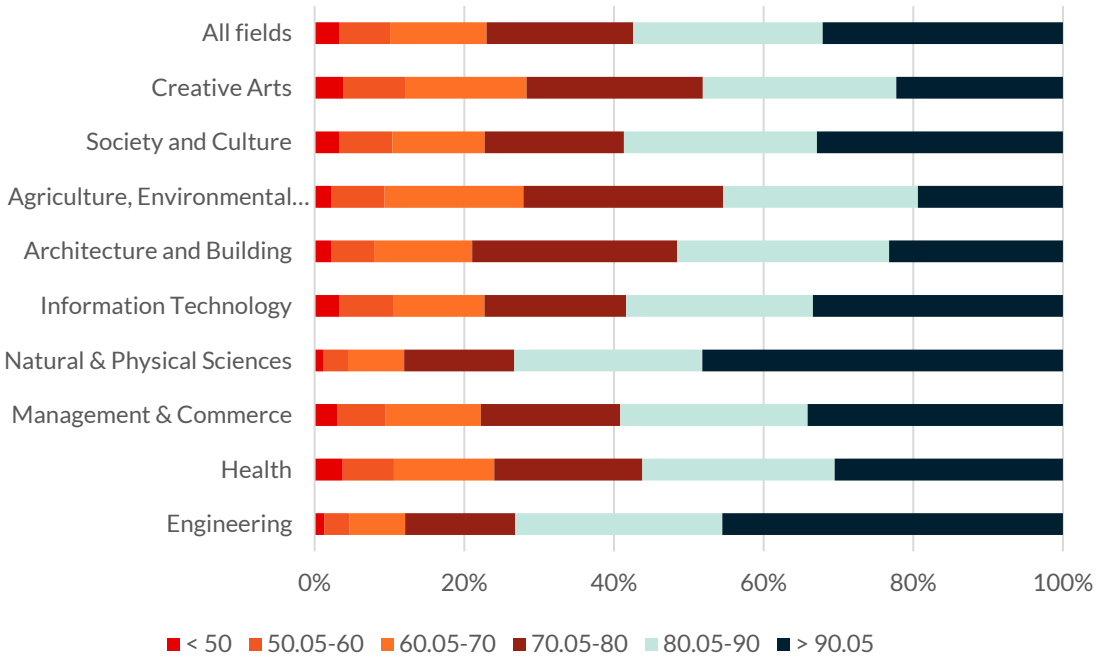
	2019	2020	2021	2022 (All students)	2022 (women)
completed secondary school	63.1%	61.7%	62.9%	67.0%	69.5%
VET/TAFE	6.3%	5.5%	4.9%	3.6%	2.8%
higher education	20.5%	22.1%	23.5%	22.1%	22.8%
other	10.0%	10.7%	8.0%	6.2%	3.5%

The longer term trends are the decrease in the proportion of domestic students entering via VET and other pathways, with a 7 percent increase in the number entering via higher education and 6 percent via direct entry from secondary education.

The final column in the Table above shows that relatively more women enter on the basis of completing secondary school, and nearly 25 percent fewer have a VET qualification. Given the low participation of women in VET engineering qualifications, it is possible that a quite high proportion of those who complete VET choose to progress to higher education.

The published data on undergraduate admissions and offers shows the distribution of offers by ATAR band for the applicant student cohorts for all fields of education. The 2022 shares are presented for Engineering and selected other fields in Appendix Table 8(b) and in Figure 8.

FIGURE 8: PROPORTIONS OF OFFERS IN DECADAL ATAR BANDS MADE TO SCHOOL LEAVERS IN ALL FIELDS, 2022



In 2022 Engineering had the second strongest ATAR profile of all fields [15] (including those not shown), on the basis that it is the field with the second highest proportion (73.19 percent) after Natural and Physical Sciences (73.32 percent), of offers to candidates with ATAR greater than 80.05.

Engineering also has the second lowest proportion (4.66 percent) of entrants with ATAR less than 60.05, behind Natural and Physical Sciences again (4.45 percent).

Countries of origin of commencing onshore international students

In 2020, the Tertiary Education Quality and Standards Agency (TEQSA) and the Australian Skills Quality Authority (ASQA) announced regulatory flexibility for the mode of delivery to overseas students of Australian qualifications, in recognition of the significant impact of the COVID-19 pandemic, including domestic lockdowns and international border closures. The flexibility allowed impacted overseas students to continue their studies fully online.

With international borders re-opening and overseas students once again able to travel to Australia for study, TEQSA and ASQA announced in October 2022 that providers are expected to return to full compliance with the National Code of Practice for Providers of Education and Training to Overseas Students 2018 (National Code) by 30 June 2023, where it is safe and practical to do so.

From 30 June 2023, registered providers must not deliver more than one-third of the units in a course for overseas students by online or distance learning and must ensure that overseas students study at least one unit that is not by distance or online learning in each study period, with the exception of the last unit of their course [16]. This requirement applies only to those who wish to study in Australia on a student visa. It is anticipated that this requirement will influence 2023 higher education data when

[15] The sub-fields of Medical Studies, Dental Studies and Veterinary Studies within Health have stronger ATAR profiles, but much smaller enrolments than Engineering.
[16] ESOS Act and the return to compliance – frequently asked questions (FAQs), Tertiary Education Quality and Standards Agency, 7 July 2023, https://www.teqsa.gov.au/how-we-regulate/acts-and-standards/esos-act/esos-act-and-return-compliance-frequently-asked-questions-faqs

available. There is no requirement for international students studying an Australian qualification who are not seeking a study visa in Australia to undertake any portion of study on-shore, beyond individual institutions requirements.

The top sixteen countries that provided commencing on-shore international students in both 2021 and 2022 are detailed in Appendix Table 9.

The 2022 figures reflect ongoing reduced commencements and the proportion who commenced study on-shore, dropping from 76 percent of all international commencing students in 2019 to 45.6 percent of international students commencing study on-shore in 2022.

Interestingly the proportion of international students commencing a bachelors program in engineering on-shore has increased from 66 percent in 2019, to 83 percent in 2022, whereas the inverse has occurred for postgraduate commencements, shifting from 81 percent commencing on-shore in 2019 to just 18 percent in 2022.

In both 2021 and 2022 India became the top source country for commencing international student enrolments, with China (excluding SAR's and Taiwan) taking second place – with India having just 19 percent of the commencing enrolments on-shore that it did in 2019 and China (excluding SAR's and Taiwan) having just 9% of the 2019 total on-shore enrolments in 2022.

In both 2021 and 2022 England, New Zealand and the Philippines were ranked 3rd, 4th and 5th respectively for on-shore commencing student enrolments, with none of these three countries featuring in the top 16 countries in 2019 or 2020.

Commencements and completions by Aboriginal and Torres Strait Islander students

Indigenous students enrol and graduate from Engineering & Related Technologies in small numbers. The following table shows the national figures for commencements and completions in broad award categories over 2016-22[17]:

	Post graduates	Bachelor (inc Hons)	Other		Total	
	Persons	Persons	Persons	Male	Female	Persons
Commencements						
2016	12	102	20	115	19	134
2017	21	143	18	146	36	182
2018	17	120	22	128	31	159
2019	16	137	38	156	35	191
2020	33	151	49	188	45	233
2021	23	144	48	np	np	215
2022	17	143	69	np	np	229
Completions						
2016	7	38	10	51	<5	55
2017	8	34	8	45	5	50
2018	6	52	<5	53	8	61
2019	8	37	13	46	12	58
2020	14	47	7	57	11	68
2021	< 21	51	< 16	71	11	82
2022	6	*46	< 19	66	12	78

[17] *Female bachelors completions not published, cells with a '<' indicate addition of a subtotal of '<5'.

The commencing Indigenous student numbers in peaked in 2020 with some fluctuation over 2021 and 2022. In 2022 the participation rate was 1.11 percent, contrasting with a participation rate of 2.42 percent for all fields of education, ranging from 1.06 percent in Information Technology, 1.62 percent in Natural and Physical Sciences, to 8.72 percent for 'mixed fields' commencements. All other fields of education have a greater participation rate than Engineering.

Evidently, all areas of STEM have much catching-up to do. The inclusion challenge is also evident in terms of gender, given the male bias of most STEM disciplines, with only 15 percent of completions by Aboriginal and Torres Strait Islander women in 2022, below the average for all domestic students and all students.

Completion numbers for Indigenous students in Engineering indicate relatively high attrition, with completion rates of around 50%. The 2022 graduates from bachelor degrees would have commenced study during between 2012-18.

Appendix Table 10 elaborates the Indigenous commencements and completion data by State and Territory. Queensland, NSW and Victoria have consistently enrolled and graduated the largest numbers of Indigenous students.

Bachelor degrees: Success, retention, attrition and completion rates

This section provides detail on educational outcomes on an annual and cohort basis, in terms of success, retention and completion rates for engineering students.

Annual success, retention and attrition rates

The Department of Education ceased publishing annual success, retention and completion rates by field of education with the release of 2021 data and this section will cover the final year of data released.

Success rates

The annual success rate is defined as the proportion of courses (units of study) passed by a cohort of enrolled students in a given year[18]. The following table adds detailed 2021 success rates for domestic and international students enrolled in bachelor degrees in Engineering, to data for the three previous years, and 2005 as a baseline. The success rates are averaged over all years of study.

	Engineering - Domestic	Engineering - International	All Students - Domestic	All Students - Overseas
2005	82.98	84.8	85.72	82.06
2018	85.55	84.22	84.34	86.22
2019	85.93	85.12	84.86	86.02
2020	86.27	87.42	85.79	88.75
2021	85.35	85.81	84.97	88.62

Over the preceding 16 years the success rate for domestic and international students in engineering has trended up slightly, with relative stability over the last four years. The success rate for all domestic students has remained relatively stable, while for all overseas students it has increased by 7 percent since 2005.

The visual analytics tool enables inspection of the success rates of each provider. Differences in average success rates reflect provider location (regional/metropolitan) and history, and the educational

[18] https://www.tcsisupport.gov.au/glossary/glossaryterm/Success%20rate

background, cohort size and the typical patterns of study (full-time/part-time) of their Engineering cohorts:

- amongst ACED members, the average 2021 success rates for domestic bachelor degree students in Engineering ranged from >90 percent (four providers) to <65 percent (one provider).
- for international students this range was from >90% (eight providers) to <65% (one provider).

The data allows for comparison with other fields of education:

The average success rate of 85.35 percent for domestic students in Engineering in 2021 was slightly higher than the average of 84.97 for 'All Fields'. Engineering again placed 5th in 11 fields of education, after Health, Creative Arts, Agriculture & Environment and Education. The average success rates ranged from 76.19 percent (Food, Hospitality and Personal Services) to 89.2 percent (Health).

For internationals students the average success rate in 2021 was 85.81 percent, placing engineering 9th among 11 fields of education. Average success rates varied from 84.2 percent (Information Technology) to 100 percent (Food, Hospitality and Personal Services).

Retention and retention rates

Retention rates[19] record the progression outcome for the identified year as 'retained' for either continuing to the subsequent year of study or for graduating in the year of study or the following year. (The retention rates reported in 2021 therefore record the student outcomes from 2020. Attrition is the corresponding loss of students from their degree program.)

The visual analytics tool reports only on retention for commencing students, (i.e. those in their first year of enrolment in a course of study) in two ways. Put simply, the 'normal' rate applies to retention within an institution (using StudentID), while 'adjusted' rates allow for following year transfer to another higher education provider, using the StudentID and CHESSN (national) identifiers. The following year enrolment may be in a different program or field of education.

The following shows the last four years of retention rate data for bachelor degree students in Engineering & Related Technologies at Table A Providers (public universities), compared with All Fields, and comparable 2005 baseline data:

		Retention Rates (%)				Attrition Rates (%)			
		Domestic		International		Domestic		International	
		Normal	Adjusted	Normal	Adjusted	Normal	Adjusted	Normal	Adjusted
2005	Engineering	85.42	88.87	88.62	88.62	14.48	11.00	11.20	11.20
	All Students	80.95	84.89	88.24	88.24	18.71	14.84	11.30	11.30
2017	Engineering	86.21	91.12	92.84	92.84	13.69	8.80	7.05	7.05
	All Students	78.84	84.77	90.98	90.98	20.76	14.97	8.77	8.76
2018	Engineering	86.37	91.40	91.77	91.78	13.52	8.50	8.12	8.11
	All Students	79.15	85.13	90.09	90.10	20.45	14.61	9.66	9.65
2019	Engineering	87.02	92.18	89.68	89.68	12.87	7.70	10.20	10.20
	All Students	79.93	86.55	87.28	87.29	19.71	13.24	12.37	12.37
2020	Engineering	85.79	91.32	90.31	90.71	14.08	8.60	9.55	9.16
	All Students	81.11	87.09	88.58	89.00	18.57	12.72	11.23	10.82

[19] For further details on how Retention and Attrition are defined, see https://www.tcsisupport.gov.au/glossary/glossaryterm/Retention%20rate and https://www.tcsisupport.gov.au/glossary/glossaryterm/Attrition%20rate

The adjusted rates show that more than 91 percent of domestic commencing bachelor degree students in Engineering return to study in the following year or graduate (although these would be very few in number). This figure compares favourably with the adjusted retention rate of about 87 percent across all fields of education.

The differences between the adjusted and normal rates imply that about 4 – 6% of domestic students in Engineering transfer between institutions after their commencing year of study. International students have comparable retention rates and apparently zero transfer rates, as is to be expected from their student visa conditions. Average retention rates have been quite stable over several years.

Cohort analysis – completion rates

Previously this data was provided by the Department in visual analytics, by field of study for cohorts commencing study by year, ceasing publication after the release of 2021 data in 2022.

This section analyses the data released in 2022, which covers students who commenced study between 2005-2018. It examines the domestic Bachelors cohorts in Engineering at the 4-, 6- and 9-year points post-commencement of study at Australian universities (with all Bachelors students limited to 10 years to complete their initial program of study) against the 'All Students' cohort for each commencing year.

In this data set both Bachelors (Pass) and Bachelors (Honours) students are included, noting that all professional engineering degrees are 4 years in duration, whereas Bachelors (Pass) are 3 years in duration. Other fields of education also have four-year (or more) Bachelor programs, including education, law and medicine.

This distinction is important as there are many who believe that the standard bachelor degree that leads to a professional engineering qualification is of three year's duration (rather than four), and that 'most' graduations are – or should be – achieved in 'minimum time'. For a school leaver undertaking a dual degree, or a program that contained extended industry internships, the minimum enrolled time is already at least five years. Part-time enrolment also, obviously, increases the duration of study, as will disruption arising from pandemics or increasingly high costs of living faced by students.

These rate presented at different points are not estimates of the 'likelihood of completion' of the original degree in which a student was enrolled, because their reported graduation may be in another field of education. The completion data allow for transfers between higher education institutions.

4-year outcomes

Figure 9 below provides 4-year outcomes post commencement. At the four year point, 22.3 percent of engineering students will have completed their Bachelors qualification, this has fallen by 15 percent since 2011. The proportion of engineering students who drop out after the first year or in subsequent years are lower than that of all students, the proportion who are still enrolled is considerably higher.

Note an increase in the proportion of engineering and all students who are still enrolled from the 2016 commencing year, students who commenced study in this year and had not completed prior to the onset of COVID-19 at the start of 2020 are more likely to have had their studies disrupted.

FIGURE 9: 4-YEAR OUTCOMES POST COMMENCEMENT OF STUDY

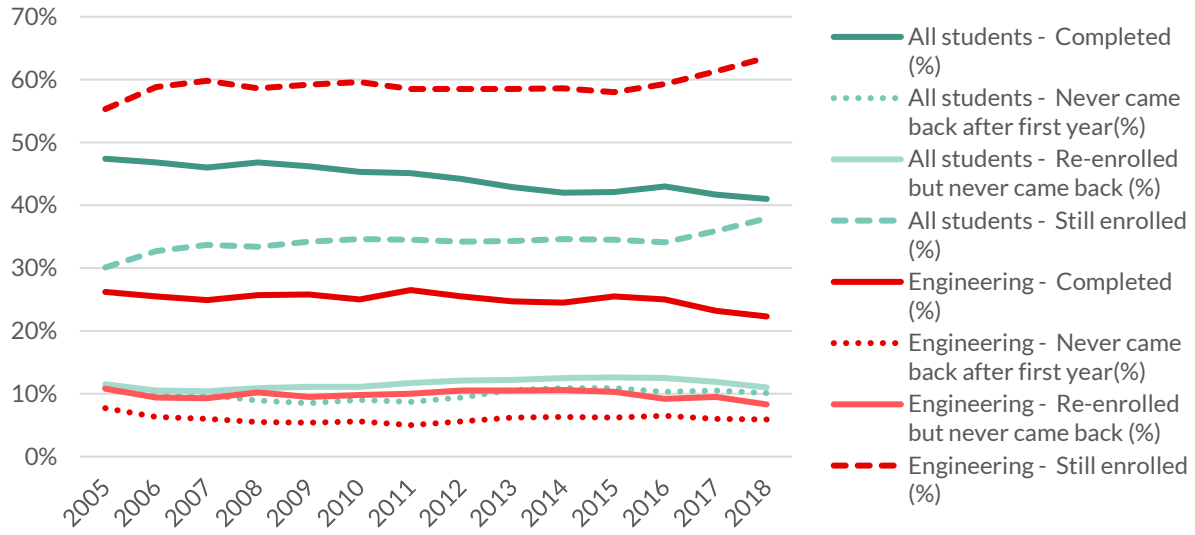


Figure 10 provides 6-year outcomes post commencement, the engineering and all students cohorts have been converging over time in terms of completion at the 6-year point. Note the lower proportion of engineering students who left higher education in their first or subsequent years of study. A higher proportion of engineering students continue to be enrolled at the six year mark, with 21 percent who commenced study in 2016 still enrolled in 2021. Taking a liner interpolation between these points we can state that 50 percent of engineering students have graduated 5.47 years post-commencement of study.

6-year outcomes

FIGURE 10: 6-YEAR OUTCOMES POST COMMENCEMENT OF STUDY

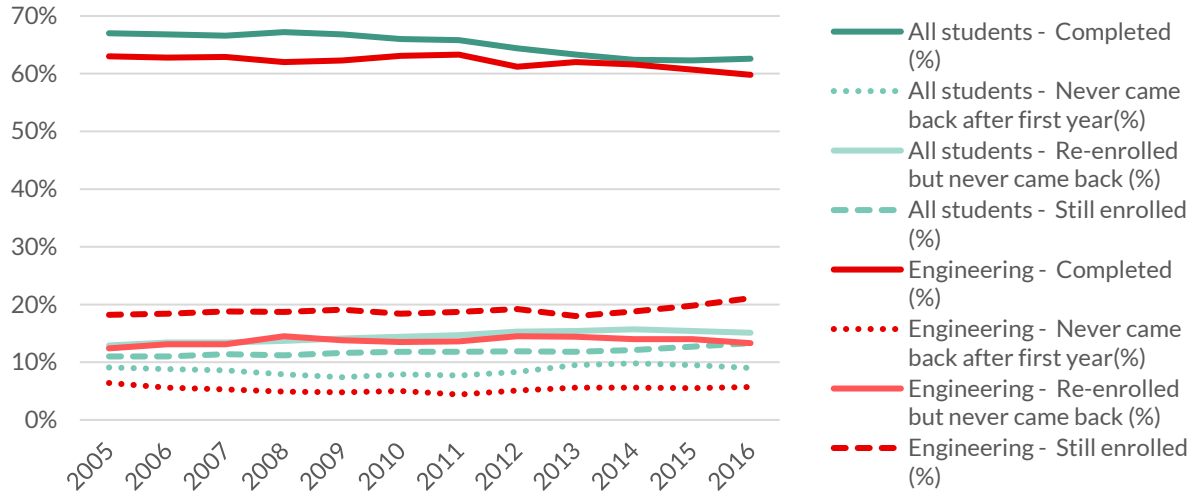
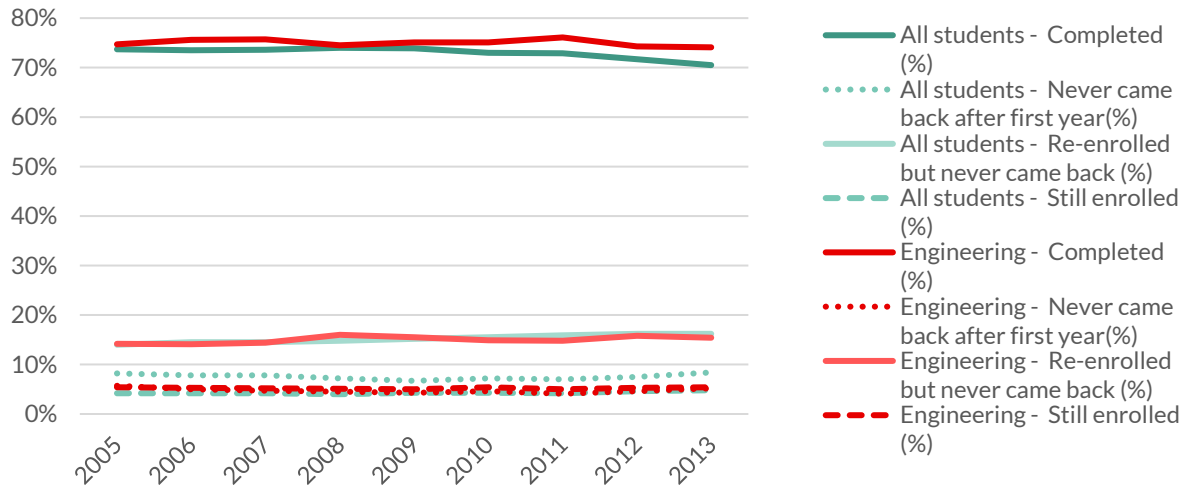


Figure 11 shows that by the 9-year point post commencement, a higher proportion of engineering students have completed their study, at 74.1 percent for those commencing study in 2013, compared to 70.5 percent for all students, we can also see that at the 9-year point a lower proportion of engineering students departed education over their second and subsequent years of study. The proportion of engineering students still enrolled at the 9-year point, 5.4 percent is slightly higher than all students at 4.8 percent.

9-year outcomes

FIGURE 11: 9-YEAR OUTCOMES POST COMMENCEMENT OF STUDY



Appendix 2 contains additional student cohorts for comparison, as a cohort, engineering students perform all others examined, excluding for high socio-economic students.

Student satisfaction and graduate outcomes

All student-related data analysed so far has been aggregated from data submitted to the Department of Education by provider institutions. To understand how students, graduates and employers rate the quality and value of higher education, the Department runs sample surveys under its Quality Indicators for Learning and Teaching (QILT) program[20].

Student satisfaction

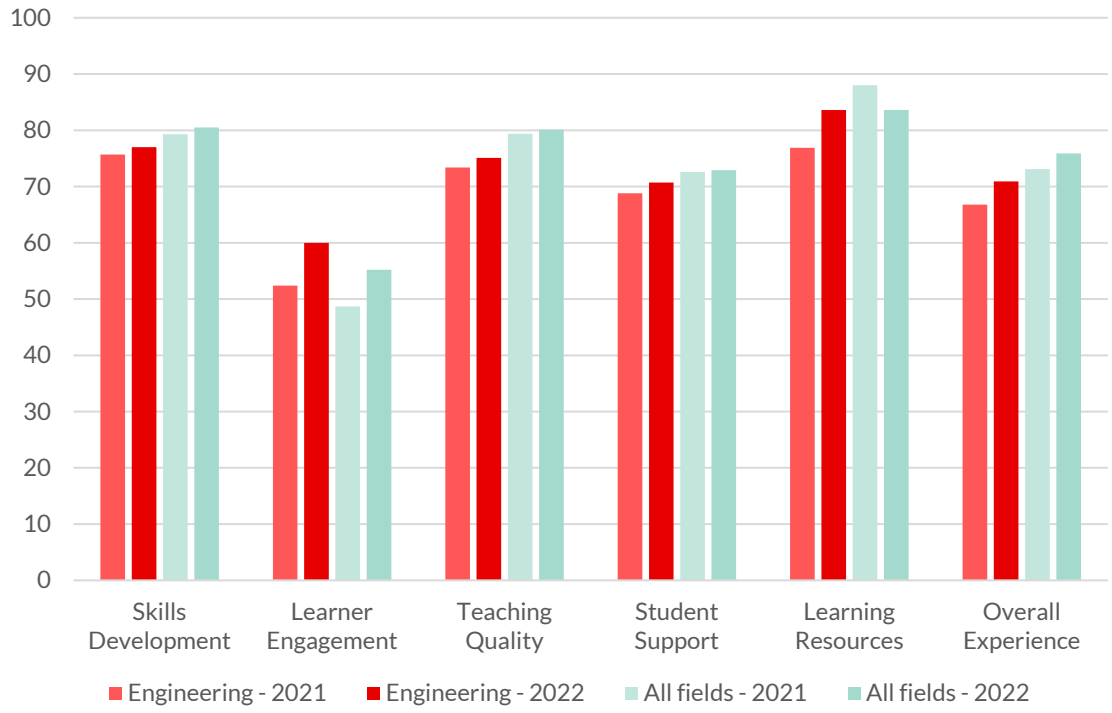
The most recent QILT Student Experience Survey (SES) report was published in June 2023, based on survey collections in Jul-Aug and Sep-Oct of 2022. Comparisons with 2019 data therefore provide the students' view of the impact of COVID-19 on their educational experiences.

Appendix Table 11(a) provides undergraduate student satisfaction ratings for Engineering and the other STEM fields, for 2019 to 2022. Figure 12 compares the Engineering and 'All fields' averages for the six components of satisfaction for these two years. For 'All Fields', satisfaction ratings have been quite stable since the introduction of the survey in 2012.

There was a considerable dip in learner engagement, teaching quality, student support and learning resources, leading to lower overall satisfaction ratings in 2020 and 2021, years both heavily impacted by COVID-19. The 2022 student satisfaction results indicate a return to 2019 levels of satisfaction.

[20] The QILT reports and data for all reports referred to here can be accessed at www.qilt.edu.au

FIGURE 12: PERCENTAGE OF UNDERGRADUATES EXPRESSING 'SATISFACTION' WITH EACH INDICATOR, ENGINEERING AND 'ALL FIELDS' AVERAGES, 2021 AND 2022



In 2022 Engineering students' responses are slightly higher than the 'All fields' ratings in 'learner engagement' and 'learning resources', but lower in the other categories. The higher rate of satisfaction in learner engagement expressed by Engineering students may be attributed to project and studio work throughout their program and the overall satisfaction in 2022 has exceeded that of 2019 (as it has with 'All students' as well).

A notable ongoing impact of COVID-19 has been the decrease in learner engagement and social interaction between students, QILT report discusses findings for 'All Fields', with students reporting that they had interacted with students outside study requirements remained 7.9 percentage points below pre-COVID levels which may indicate less social activity centred around physical higher education institution campuses even in 2022 even where many institutions have seen some level of return to on-campus learning. This is also the item which scored the lowest positive response in 2022, with only 35.0 per cent indicating that they were interacting with students outside study requirements.[21]

The return of student satisfaction levels to their largely pre-COVID rates are testament to the enormous efforts made by academic and support staff to adapt their teaching to changed circumstances over the last four years, and their efforts to ensure the highest possible quality of learning outcomes.

The satisfaction survey of 2022 Engineering postgraduate coursework students provided similar ratings and recovery in satisfaction levels (see Appendix Table 11(b)).

Graduate satisfaction

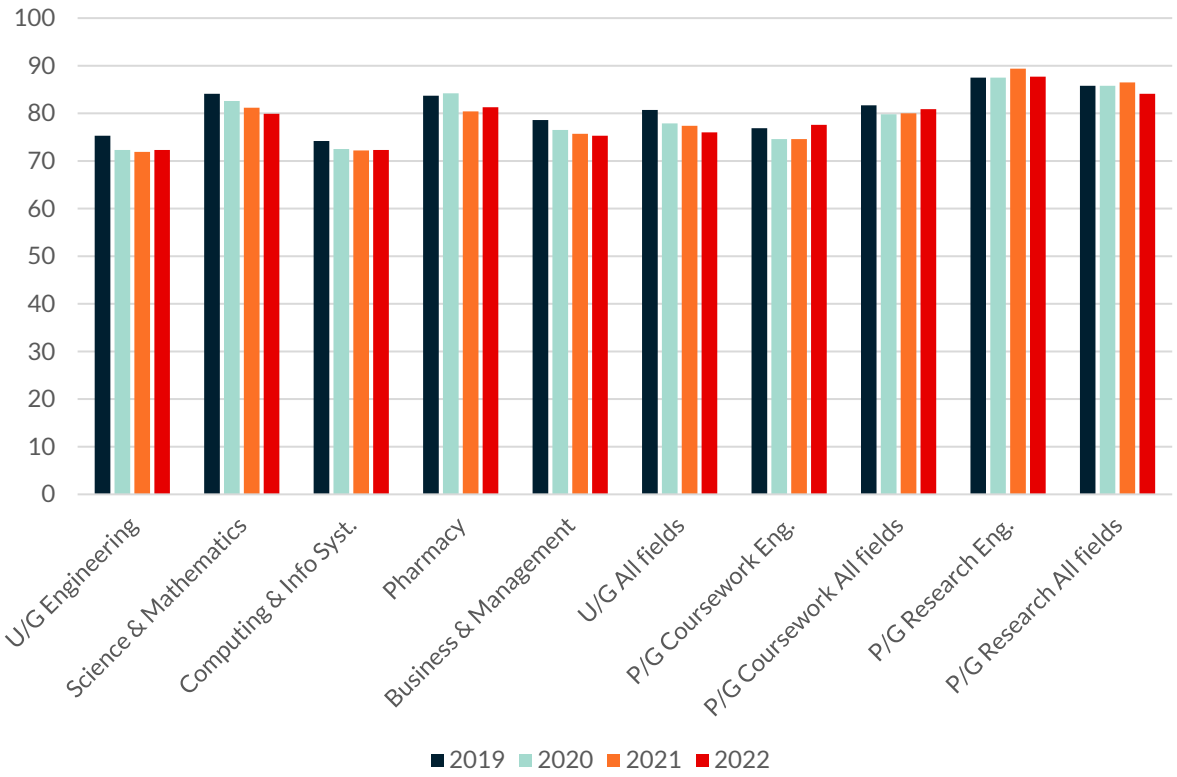
Graduates are surveyed for the QILT Graduate Outcomes Survey (GOS) during the first six months of each calendar year, following qualification for graduation. Appendix Table 11(c) provides the satisfaction ratings for Engineering and selected other fields from graduate surveys conducted in late 2022 and 2023 (thereby applying to 2021 and 2022 graduates), and the comparable figures from the

[21] P78, Appendix 6, SES 2023 National Report

2020 graduating cohort. Note that from 2021 onwards the survey did not include core questions on satisfaction 'teaching quality' and 'generic skills'.

Figure 13 shows the 'overall satisfaction' ratings of graduates from undergraduate programs (Engineering and selected other fields) and postgraduate programs (Engineering and 'All fields') from cohorts graduating in 2019 – 2022 (and surveyed between 2020 – 2023).

FIGURE 13: GRADUATE SATISFACTION RATINGS FOR DEGREES IN ENGINEERING AND SELECTED OTHER FIELDS, AND 'ALL FIELD' AVERAGES, GRADUATED FROM 2019-2022



Satisfaction of undergraduate engineering students graduating in 2020 and beyond are consistently 4 percent lower than the 2019 graduating class. Satisfaction levels for engineering postgraduate and coursework and research graduates are both slightly above their 2019 levels. The undergraduate experience is mirrored by the other select fields and all undergraduate fields. Students who have completed postgraduate research qualifications have the highest satisfaction of those examined here.

Graduates of higher degrees by research (HDR) rate their experience in against seven category areas, as shown in Appendix Table 11(c). COVID appears to have had very little impact on their satisfaction rates. In the survey of 2022 graduates, Engineering research graduates rated all five of the categories higher than their 'All fields' average,

In absolute terms, most category satisfaction rates are high, and only 12 percent of graduates of Engineering and 16 percent of 'All field' graduates are not satisfied with the HDR experience. The Engineering HDRs rate 'infrastructure' and 'goals and expectations' highly.

The two areas of the Australian HDR experience (Engineering and 'All fields') that clearly need attention and received satisfaction ratings below 70%, are the 'intellectual climate', and 'industry and external engagement', although Engineering HDR graduates report their satisfaction with industry engagement as 13 percent higher than 'All fields'.

Employer satisfaction survey

The most recent QILT Employer Satisfaction Survey (ESS) was published on data collected during in during November 2022 – May 2023, published in May 2024. Data from the 2022-2024 reports are included in Appendix Table 11(d) and Table 11(e), along with earlier years results for comparison.

Until the 2023 ESS was published Engineering was the field of education with the highest overall employer (supervisor) satisfaction, in the latest survey it has taken second place at 88.8 percent, to graduates of Agriculture and Environmental Studies at 90.8 percent, both of which rank considerably higher than the overall satisfaction for 'all fields' at 83.7 percent.

Employers rate engineering graduates clearly above the 'All field' averages in 'foundation', 'collaborative', 'technical' and 'employability' skills, as well as in 'overall satisfaction'. Engineering graduates are marginally above the 'All field' rate for 'adaptive skills'.

Graduates' supervisors rate the importance of the graduates' qualification somewhat higher than the graduates themselves (this difference applies to all fields). However, the 67% of supervisors of Engineering graduates rating this measure as 'important or very important', is a lower figure than that for Health graduates (78%), whose education is invariably more specifically focused to well-defined (and regulated) employer needs. About 10% fewer graduates (across all fields) that their supervisors express similar ratings of the importance of their qualification.

The majority (94%) of graduates' supervisors across all fields of education rated as 'well' or 'very well' the extent to which the graduates' qualification prepared them for their current role. Engineering graduates were rated marginally higher than this 96.8%) and higher than those in Health (94.8%). About 12% fewer Engineering graduates themselves expressed the equivalent confidence in the 'fit' of their qualification.

Graduate employment outcomes – short term

The GOS survey also reports on employment and remuneration outcomes for the Engineering & Related Technologies field of education, compared with selected and 'All' fields are provided in Appendix Tables 12(a)(b)(c). 'Short-term' refers to graduates surveyed in the six months of the calendar year following graduation.

Graduates of Undergraduate Programs

The following table shows (as in previous years) that recent Engineering graduates from undergraduate programs have gained full-time employment and received higher median salaries at higher rates than other fields, as represented by the 'All field' values:

Undergradautes	% in full-time employment	median salary		% in any employment	% in further FT study
		men	women		
2019 Engineering	83.0	$69,400	$70,000	87.6	11.1
2019 All fields	68.7	$65,000	$63,400	85.1	18.5
2020 Engineering	80.3	$70,000	$70,000	86.6	14.3
2020 All fields	68.9	$66,800	$64,200	84.8	21.1
2021 Engineering	87.5	$71,900	$71,000	90.8	13.6
2021 All fields	78.5	$69,400	$67,400	88.3	18.6
2022 Engineering	87.5	$75,300	$75,000	91.7	11.4
2022 All fields	79.0	$70,000	$73,100	88.9	18.0

The full time rate of employment for engineering graduates rose by nearly ten percent between 2020 and 2022, and is around 10 percent higher than All fields and is indicative of the strong ongoing demand

for engineering skills in the post-COVID period. Median salaries for engineering students have kept ahead of 'all fields' and the salary disparity between genders is lower than for that of all fields.

As in previous years, the median salaries received by Engineering graduates have been higher than the surveyed population as a whole, and third after Dentistry and Medicine (see Appendix Table 12(c)).

The matches between graduate employment and skill utilisation are also surveyed. The following table shows that in 2022 (and generally in the preceding years), fewer employed graduate Engineers report that their skills are not being fully used, in general, than the 'All field' populations, irrespective of the status of their employment.

This difference can be taken to indicate that Engineering degrees provide their graduates with a broad range of skills, even if they are not fully utilised. Relatively more non-engineers are in (some) employment that does not use their skills. All undergraduates should be pleased at the reduction in the proportion reporting skills underuse due to a 'lack of jobs in area of expertise', with the proportion falling by 75 percent for engineers since 2018 and 65 percent for 'All fields' for both those employed full time and by around 70 and 55 percent for engineering and all fields graduates in any employment.

An apparent lack of availability of jobs that do not use expertise is reported by about 8.5 percent of all graduates who are in work. There are generally lower levels of skill underutilisation for those in full-time employment compared to any employment, indicating that those in full-time roles have found roles which are more aligned with their qualifications.

Year of completion of undergraduate qualification	% of FT employed reporting skills not fully used		% of all employed reporting skills not fully used	
	in general	because of lack of jobs in area of expertise	in general	because of lack of jobs in area of expertise
2018 Engineering	19.8	22.0	26.6	19.8
2018 All fields	28.3	20.8	40.4	19.6
2019 Engineering	21	18	27	21
2019 All fields	28.1	20.1	40.9	19.5
2020 Engineering	22	9	30	10
2020 All fields	29.3	10.2	42.3	11.4
2021 Engineering	22.1	8	28.5	9.6
2021 All fields	28.3	8.1	38.5	8.7
2022 Engineering	20.9	5.1	26.7	6
2022 All fields	27.8	7.2	38	8.5

Graduates of Postgraduate Coursework Programs and Research

Relevant data from Appendix Table 12(a) are reproduced in this table:

HDR Graduates	% in work, of all avail-able for any work	% in FT work, of all available for FT work	% of FT employed reporting skills not fully used		% of all employed reporting skills not fully used	
			in general	because of lack of jobs in area of expertise	in general	because of lack of jobs in area of expertise
2019 Engineering	86	81	26	32	27	32
2019 All fields	90	80.1	25.6	30	28.2	32.2
2020 Engineering	7.8	80.6	22	20	22	19
2020 All fields	6.8	88.1	26.9	25.1	29.9	27.9
2021 Engineering	92.2	84.9	27	15.8	29.5	19.4
2021 All fields	91.9	84.7	26.7	19.3	29.5	24.2
2022 Engineering	89.2	85.5	36.8	7.1	37.6	9.4
2022 All fields	91.4	85.3	27.8	19.1	30	20.7

The employment outcomes for postgraduates are generally stronger than those of first-degree graduates, but do not display any systematic 'Engineering advantage' over the 'All field' averages.

There was a significant drop (around 50 percent) in the number of HDR Engineering graduates reporting a lack of jobs in areas of expertise, for both full-time employed and those in any employment, this accords with reporting over the last few years of shortages of engineering skills.

HDR graduates are still reporting high (although declining) rates for underutilised skills. Curiously, despite a decrease in the proportion reporting a lack of suitable jobs, the proportion of HDR Engineering graduates in both full time and any employment recorded a general increase in underutilisation of skills, with the proportion reporting that their skills were not fully used increasing by over one third for those who graduated in 2022.

The high rates of 'skills not being fully used' for both full-time and 'all-employed' Engineering postgraduate coursework graduates in and relatively low shortage of jobs does not obviously align with the apparent shortages of engineers.

Appendix Table 12(b) shows that the median salaries earned by postgraduates of Engineering and 'All fields' are significantly higher than those of first-degree graduates. Postgraduate Engineers do not, however, have any advantage over those in other fields. Women Engineers in this category are earning several $',000 less than their male peers, which may be an artefact of the data coverage of both 'entry-to-practice graduates, and established professional engineers taking advanced programs.

Women and men with research degrees (of both Engineering and 'All fields') experience smaller median salary differences than postgraduate coursework graduates, presumably because of the public service conditions of most of the positions in which they are working.

Graduate employment outcomes – medium term

A medium-term QILT Longitudinal Survey (GOS-L) graduates is also undertaken each year, to report changes in employment, remuneration and occupational roles, over three years from graduation.

Details for Engineering and 'All fields' from the survey conducted in 2023 are provided in Appendix Table 12(d), for graduates of undergraduate programs, postgraduate coursework and research degrees. The individuals were first surveyed in 2020 after their graduation in the previous year.

The 3-year changes for Engineering graduates reported in the 2023 survey, and for 'All fields', are shown in the following table:

	undergraduate		postgraduate coursework		postgraduate research	
measure	**Engineering**	**All fields**	**Engineering**	**All fields**	**Engineering**	**All Fields**
F/T employment	8.3%	10.2%	9.6%	10.2%	8.1%	12.6%
Overall Employment	7.2%	3.7%	7.2%	3.7%	4.8%	2.6%
Median Salary	$ 30,000	$ 18,500	$ 19,200	$ 19,300	$ 19,600	$ 17,000
Roles (of Overall Employed)						
managers	67.7%	40.8%	-4.3%	26.4%	416.0%	59.7%
professionals	7.7%	25.2%	13.8%	3.3%	-9.1%	-4.7%
other	-42.6%	-37.5%	-39.3%	-29.6%	-25.0%	-1.3%

The GOS-L shows good 3-year increases in employment rates and median remuneration outcomes, especially for undergraduates in engineering. For them, the median salary increase (42 percent over three years) is well ahead of recent (and elevated) CPI, and they move from 'other' roles into professional and managerial roles.

Trends for graduates in the most recent longitudinal survey have departed from their longer term stability. In contrast to graduates in 2017, undergraduate engineering graduates received the largest medium term increase, of $30,000, considerably higher than postgraduates and undergraduates of 'All fields' and their median salary increase of 42 percent over three years is far ahead of undergraduates of 'all fields' (28 percent increase), postgraduate coursework engineering graduates (19 percent) and HDR engineering graduates (21 percent).

Graduates of engineering undergraduate programs move from 'other' occupations into professional roles and both undergraduates and graduates of HDR programs move into management roles (with considerable growth in medium-term outcomes for HDR graduates), while postgraduate coursework engineering graduates had a small decrease in the number moving into management roles over the medium term.

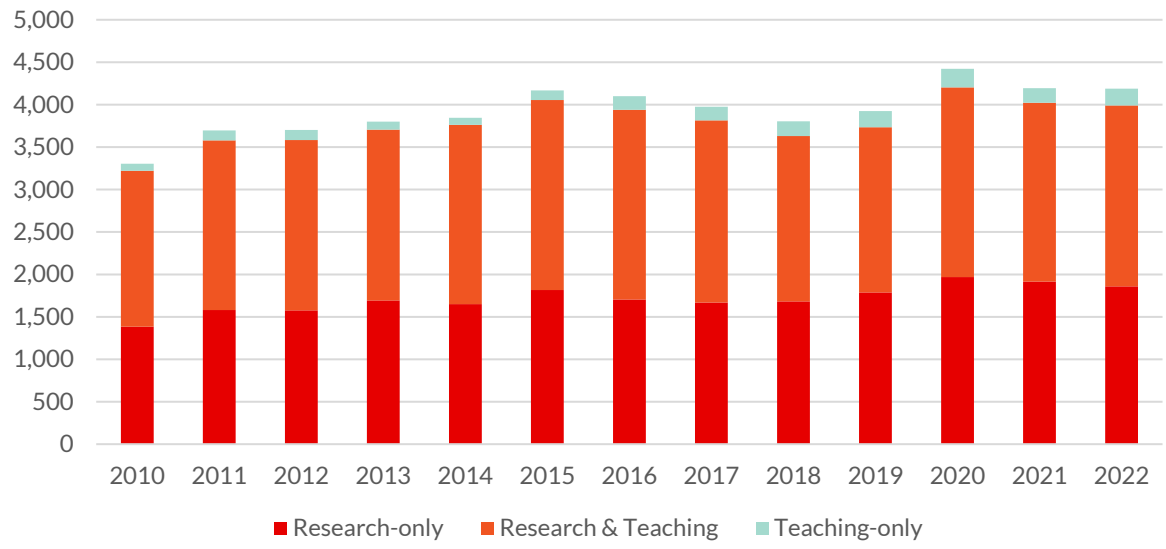
While student quality is a significant factor in determining graduate outcomes, broader economic conditions can heavily influence the job market and the opportunities available to new graduates in any given year, which complicates the comparison of graduating cohorts over the long term.

Academic staff data and student-staff ratios for ACED members

Academic staff numbers

From Departmental higher education statistics sources, in 2022, there were 4,189 academic staff (full time equivalent) in non- casual positions in Engineering in 26 of the ACED member universities (see Appendix Table 13, and Figure 14). Of these 1,859 were research only positions, with 2,131 teaching and research positions and 199 full time staff in teaching-only positions.

FIGURE 14 ACADEMIC STAFF (FTE) IN ENGINEERING & RELATED TECHNOLOGIES IN 26 ACED UNIVERSITIES FOR 2010-19, AND 27 ACED UNIVERSITIES IN 2020, 26 UNIVERSITIES IN 2021 AND 2022.



The decrease in staffing for 2022 is due to the unavailability of data from one additional large ACED member institution which ceased reporting of Engineering academic staff separately under FoE3 in 2021.

Nine universities did not report any academic staff in Engineering[22], in 2022, but it is estimated that collectively, they employed approximately around 350 FTE academic staff in teaching positions.

Accordingly, the total number of total number of FTE teaching staff (in Teaching-only and Teaching & Research positions) is accordingly estimated to be 2,680. The number of FTE Research-only staff is estimated to be 2000 (with an estimate of around 100 research only-positions for non-reporting providers). The number of Teaching-only positions in 2022 was at least 210

According to higher education statistics data[23], Engineering also employed 420 FTE casual staff in 2022 in Teaching and Teaching & Research roles, down from 505 in 2021. Adding estimates for the eight non-reporting providers, a more accurate figure is likely to be around 460 in 2022 and around 550 in 2021. That figure is 54 percent less than the 990 estimate for 2019, a decrease that correlates with the staff reductions arising from the COVID-19 pandemic and the ongoing recovery in onshore international student enrolments, which may not be guaranteed.

Women in academic positions

The contribution of women (in FTE) in Teaching & Research and Research-only academic positions Engineering has been fairly constant over the last five years. Their contribution to Teaching-only positions in the reporting institutions increased from 43 FTE in 2018 to 62 FTE in 2022. This rate of increase is slightly higher than that of men (130 to 137 FTE) over the same period.

Overall, the proportion of FTE in academic positions increased to 21.3 percent in 2022, the highest on record.

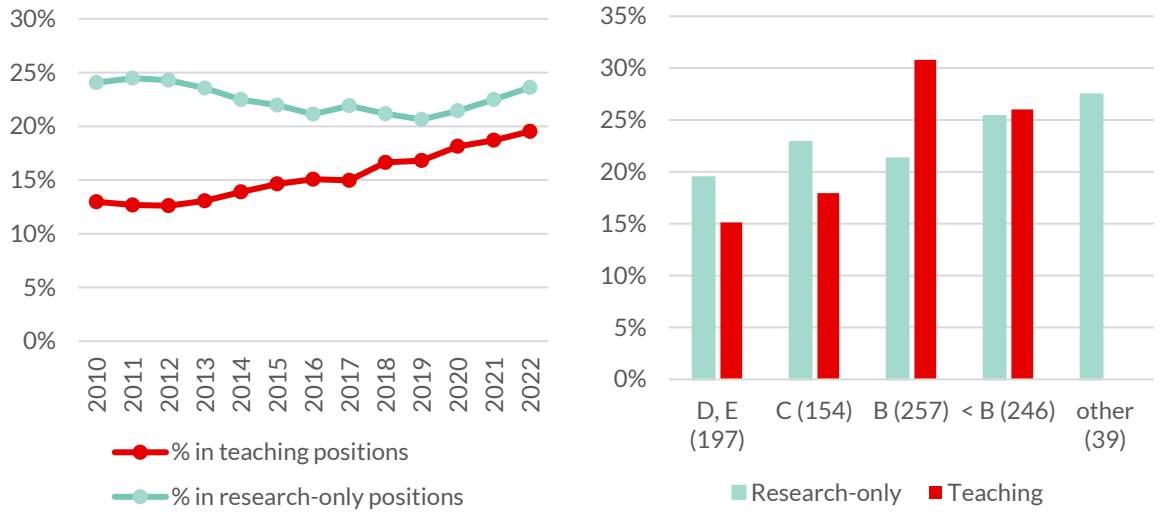
Figure 15(a) shows that this increase has been in both Teaching & Research and Teaching-only positions and research only positions.

Figure 15(b) shows that the proportions of women are highest (>30%) in academic Level B teaching roles, and in 'other' academic roles assigned here to research. Women make up only 13.7 percent of non-

[22] Most of these universities operate a multi-field academic structure and would have reported their engineering staff in Science.
[23] Table A1.12, 2023 Staff A1 Actual Staff Full-time Equivalence, Higher Education Statistical Collection, Department of Education Staff Data 2023.

research staffing at levels C and above, lending numeric weight to the many initiatives to rapidly promote Engineering women into higher level academic positions.

FIGURE 15: PROPORTIONS OF WOMEN ACADEMIC STAFF (FTE) IN ENGINEERING & RELATED TECHNOLOGIES: (A) PROPORTIONS BY ROLE, 2010-22, AND (B) PROPORTIONS AND NUMBER AT EACH ACADEMIC LEVEL, 2022.



Student-academic-staff ratios (SSR)

The aggregate ratio of Engineering student load to academic teaching staff (including the estimated figure for casual staff), calculated from 2022 data is estimated as 68,240 EFTSL / (2,680 + 550) FTE = 21.12. Undertaking this estimation on the basis of the known combined student load for universities who reported staff under FoE3 we arrive at 63,385 / (2,330 + 505) = 24.12. This provides a range of between 21.13 and 24.12, with an average of 22.62.

The national average SSR for on-shore teaching for all providers and fields of study is 21.83 in 2022[24], with individual institutions ranging between 11.38 and 29.82 for universities that provide engineering programs, most have an SSR between 16 and 26.

ACED member profiles and graduations by university groupings

Appendix 1 Table 14 provides summary data for 2022 on the commencing and total enrolments and graduation and student load of all the ACED member universities, listed alphabetically. The University of New South Wales (including its Canberra campus which is a member of ACED in its own right) has the largest number of enrolments and graduations, followed by Monash University and RMIT.

Appendix Table 15 provides a tabulation of the coursework awards offered by each ACED member as of May 2024. For each member, the table shows the number of engineering branches covered by Engineers Australia accredited awards (including entry-to-practice Master degrees). Aggregated, there are 17, 17 and 429 fully accredited programs at the Engineer Associate, Engineering Technologist and Professional Engineer levels, respectively, and 7, 12 and 143 provisionally accredited at each corresponding level.

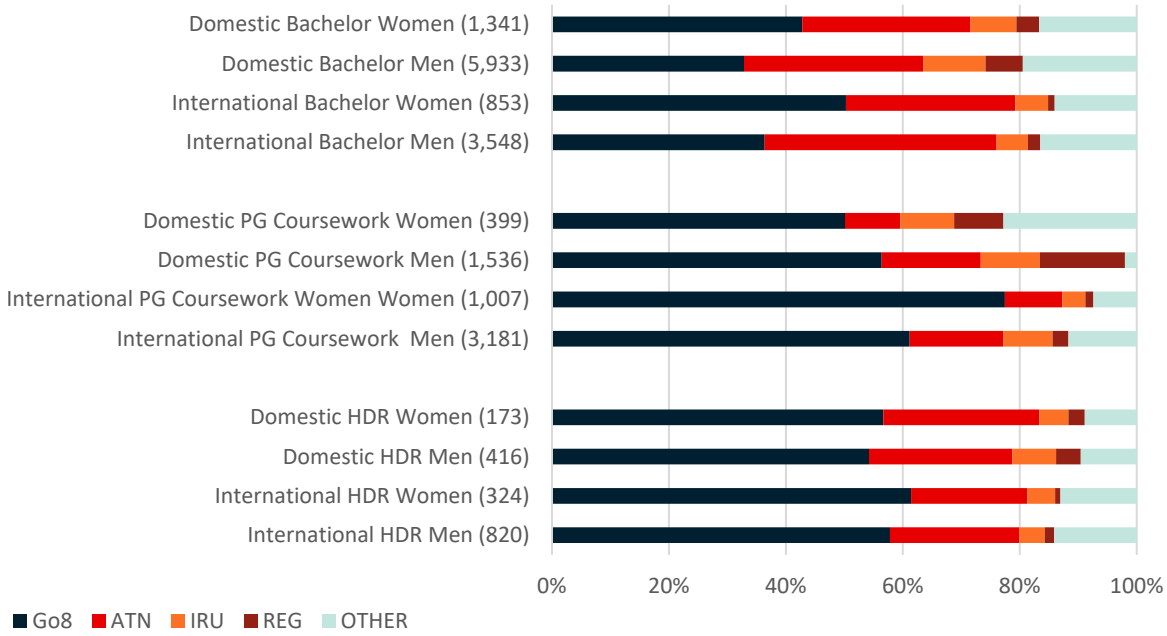
Table 16 (a) elaborates the branches of engineering in which the professional engineering degrees accredited programs are offered onshore, and Table 16(b) the corresponding data for the accredited program offered offshore by six universities.

[24] Table A2.1, Appendix 2.1, Student-Staff Ratios for Table A and B Institutions, 2013 to 2022, Staff Data 2023, Department of Education

Australian universities operate in a four formal groupings, according to their focus, history and location. The ACED members of the formal groups[25] are listed below Table 14, together with the 'other' ACED members that are not members of the groups.

Figure 16 shows the distributions of Engineering graduates for 2022, by graduate citizenship, program level and gender across the formal groups, and 'others'. The numbers of graduates in each sub-category are shown.

FIGURE 16: DISTRIBUTION OF ENGINEERING GRADUATES BY AWARD COURSE LEVEL, CITIZENSHIP AND GENDER ACROSS UNIVERSITY GROUPS, 2022



We can observe from Figure 15 that:

- The Group of Eight (Go8) universities award more than half of all higher degrees by research (HDR) for domestic and international students.
- The Go8 universities also graduate more than 50 percent of postgraduate coursework awards, with UNSW, the University of Melbourne and the University of Western Australia graduating the majority of domestic students.
- the Go8 universities graduate higher proportions of women than men, in all categories. The ATN group has a higher proportion of women (than it does of the men) of domestic HDRs (27 percent versus 25 percent);
- the ATN group awards the highest proportion of international Bachelor graduates, and similar proportions of Bachelor degrees as the Go8 group.
- together, the Go8 and ATN group (14 universities, all of which are in Australia's capital cities or largest regional cities) graduate about two-thirds of the domestic Bachelors graduates, and about 80 percent of the postgraduate coursework and research degrees;
- the 'other' category (of 7 universities) has several large providers in major cities, and contributes a further 10-20% of graduates in most categories
- the smaller contributions of the Innovative Research Universities (8 in number) and the 6 Regional Universities Network to the graduate supply of Engineers are significant in terms of their provision of programs of special interest to their communities. For many regional universities, Engineering is one of their highest prestige professional programs.

[25] In addition, the 11-member Group of Eight Deans of Engineering and Associates, includes the Go8 members plus The Universities of Newcastle, Wollongong and Auckland.

Conclusion

The central purpose of this document is to inform ACED members and stakeholders of the state of engineering education in Australian universities, in terms of graduations, enrolments and admissions, graduate outcomes and staffing, from national data compiled by the Commonwealth Department of Education.

This edition has provided detailed data on the numbers of graduates from accredited programs designed to prepare students to enter the professional engineering workforce. The commentary highlights the impact of COVID-19 on engineering higher education and provides some comparisons with other fields, for context. The data in the report and commentary are intended to be resources for the higher education and professional engineering communities.

Australian engineering graduates have sound employment outcomes, and have been rated highly by their employers on a consistent basis over the last few years. Furthermore, the ACED members have published their public proposal for the implementation of the Engineering 2035 project on the required directions of future engineering education to satisfy employers' needs, and those of increased numbers of prospective students[26].

With Australia's borders officially closed between 20 March 2020 and 6 February 2022, COVID-19 has had a lasting impact on the number of commencing enrolments (and corresponding completions) by international students, with the total EFTSL reduced by 14 percent compared to 2019 levels, with the reduction coming almost entirely form the international student cohort. Domestic commencements in engineering have held up well compared to the drop experienced by nearly all other fields in 2022.

The demand and supply of future engineering graduates and engineers are the subjects of current national debate within the faculties and the profession. The impacts of reduced international student commencements will have an impact on the engineering workforce over the medium term, as while most international students return to their home countries, many utilised their Australian study as a pathway to stay in Australia permanently. At a time of considerable national action to address climate change and meet Australia's 2050 net-zero commitments, there will be an ongoing and elevated need for engineers to ensure that these commitments can be met.

[26] Australian Council of Engineering Deans, March 2023 Engineering 2035 Implementation Proposal Public, March 2023 https://www.aced.edu.au/downloads/March%202023%20Engineering%202035%20Implementation%20Proposal%20Public.pdf

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Table C.1Timeline of key events in Australian Government response to COVID-19, Parliament of Australia, https://www.aph.gov.au/Parliamentary_Business/Committees/Joint/Public_Accounts_and_Audit/DFATcrisismanagement/Report_494_Inquiry_into_the_Department_of_Foreign_Affairs_and_Trades_crisis_management_arrangem/C_Timeline_of_key_events

Quality Indicators for Learning and Teaching, https://www.qilt.edu.au/ (Inclusive of the Student Experience Survey (SES), Graduate Outcomes Survey (GOS), Graduate Outcomes Survey – Longitudinal (GOS-L), Employer Satisfaction Survey (ESS), National Reports and Supporting Tables 2021, 2022 and 2023

Appendix 1 – supporting tables

Table 1 - completions in engineering & related technologies 2012-2022

COURSE LEVEL	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
DOCTORATES	**953**	**1,113**	**1,268**	**1,259**	**1,358**	**1,417**	**1,437**	**1,542**	**1,556**	**1,451**	**1,554**
domestic total	496	536	572	603	603	637	641	674	628	609	523
% domestic female	23.20%	24.80%	27.30%	23.20%	27.00%	25.00%	28.70%	27.70%	24.80%	28.24%	30.78%
international total	457	577	696	656	755	780	796	868	928	842	1,031
% international female	25.20%	27.00%	24.30%	26.70%	23.00%	27.40%	22.90%	25.50%	26.80%	28.15%	27.64%
% international	48.00%	51.80%	54.90%	52.10%	55.60%	55.00%	55.40%	56.30%	59.60%	58.03%	66.34%
RESEARCH MASTER	**212**	**245**	**218**	**229**	**244**	**226**	**222**	**235**	**207**	**196**	**221**
domestic total	100	132	103	108	116	105	93	93	76	67	60
% domestic female	15.00%	22.00%	22.30%	31.50%	31.00%	21.90%	32.30%	22.60%	27.60%	20.90%	18.33%
international total	112	113	115	121	128	121	129	142	131	129	161
% international female	**31.30%**	26.50%	24.30%	41.30%	27.30%	23.10%	26.40%	25.40%	21.40%	19.38%	26.09%
% international	52.80%	46.10%	52.80%	52.80%	52.50%	53.50%	58.10%	60.40%	63.30%	65.82%	72.85%
COURSEWORK MASTER	**3,404**	**3,758**	**4,138**	**4,748**	**5,431**	**6,348**	**8,074**	**8,662**	**8,267**	**9,043***	**5757***
domestic total	1,145	1,335	1,426	1,543	1,567	1,590	1,601	1,477	1,149	1,412	1,352
% domestic female	15.40%	17.90%	18.80%	19.40%	17.70%	17.60%	18.30%	19.20%	22.90%	21.10%^	20.12%
international total	2,259	2,403	2,712	3,205	3,864	4,758	6,473	7,185	7,118	7,631*	4,405
% international female	19.30%	19.50%	19.10%	19.50%	20.70%	22.40%	22.10%	20.50%	20.50%	22.78%	30.69%
% international	66.40%	64.30%	65.50%	67.50%	71.10%	75.00%	80.20%	82.90%	86.10%	84.39%	76.52%
OTHER POSTGRADUATE	**921**	**945**	**958**	**1,008**	**774**	**681**	**577**	**646**	**652**	**771**	**886**
domestic total	704	763	794	848	643	545	466	513	563	694	775
% domestic female	19.50%	17.60%	21.80%	18.40%	17.90%	16.90%	17.20%	19.70%	20.80%	20.31%^	19.61%^
international total	217	219	164	160	137	136	111	133	89	77	111
% international female	11.10%	16.00%	18.90%	21.30%	18.20%	19.30%	21.60%	15.80%	20.20%	20.78%	21.62%
% international	23.60%	22.30%	20.70%	18.90%	17.70%	25.00%	19.20%	20.60%	13.70%	9.99%	12.53%
BACHELOR	**10,261**	**11,018**	**11,373**	**11,117**	**11,561**	**12,043**	**12,987**	**12,597**	**12,458**	**12,505**	**12,717**
domestic total	6,795	7,044	7,392	7,634	7,743	7,742	8,295	7,729	7,428	7,626	7,960

COURSE LEVEL	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
% domestic female	14.90%	14.60%	15.30%	14.30%	14.60%	14.90%	15.30%	16.00%	17.10%	17.88%^	18.42%
international total	3,466	3,974	3,981	3,483	3,818	4,301	4,692	4,868	5,030	4,879	4,757
% international female	18.10%	18.20%	19.90%	19.40%	19.60%	20.30%	22.20%	21.70%	21.90%	20.02%	18.88%
% international	33.80%	36.10%	35.00%	31.30%	33.00%	33.00%	36.10%	38.60%	40.40%	39.02%	37.41%
ASSOC DEG & ADV DIPL	**663**	**617**	**620**	**699**	**670**	**670**	**699**	**634**	**667**	**562**	**574**
domestic total	518	479	523	570	543	493	541	472	475	435	482
% domestic female	~ 7%	8.10%	9.60%	9.50%	10.10%	7.30%	8.90%	10.00%	9.70%	9.25%^	8.54%
international total	145	138	97	129	127	165	158	162	192	127	92
% international female	~6%	8.00%	12.40%	12.40%	3.90%	13.90%	16.50%	12.30%	17.70%	22.83%^	15.22%
% international	21.90%	22.40%	15.60%	18.50%	19.00%	19.00%	22.60%	25.60%	28.80%	22.60%	16.37%
OTHER UNDERGRAD	**501**	**551**	**1,035**	**1,029**	**1,350**	**1,350**	**1,364**	**1,555**	**1,469**	**1,263**	**997**
domestic total	141	152	264	239	285	291	278	319	358	507	451
% domestic female	~ 7%	13.20%	7.60%	7.50%	7.40%	10.30%	8.60%	11.60%	12.80%	10.65%	10.64%^
international total	360	399	771	790	1,065	1,099	1086	1,236	1,111	756	546
% international female	~10%	8.00%	10.00%	14.10%	12.00%	13.90%	15.50%	14.00%	14.70%	15.74%	14.10%
% international	71.90%	72.40%	74.50%	76.80%	78.80%	81.40%	79.60%	79.50%	75.60%	59.86%	54.76%
ALL GRADUATES	**16,912**	**18,286**	**19,550**	**20,089**	**21,394**	**22,735**	**25,360**	**25,871**	**25,276**	**25,838**	**22,776**
domestic total	9,896	10,461	11,074	11,545	11,500	11,403	11,915	11,277	10,677	11,422	11,671
% domestic female	15.20%	15.50%	16.50%	15.50%	15.70%	15.60%	14.90%	17.00%	18.00%	18.54%^	18.42%
international total	7,016	7,825	8,476	8,544	9,894	11,360	13,445	14,594	14,599	14,416	11,105
% international female	18.30%	18.60%	19.20%	19.70%	19.30%	20.90%	21.60%	20.50%	20.90%	21.78%	21.63%
% international	41.50%	42.80%	43.40%	42.50%	46.20%	50.00%	53.00%	56.40%	57.80%	55.79%	48.76%

^Please note that some percentage values in this table have been calculated based on available data and totals, the derived values should be interpreted with caution and are not exact figures. Certain award level completions data is not published by the Department of Education. These calculated values are indicated where appropriate.

*Includes 27 Masters (Extended) Completions by overseas students in 2021, 5 in 2022

Table 2 - undergraduate completions 2022, by award, duration and 4-digit foe code

CITIZENSHIP/LEVEL	TOTAL	300	301	303	305	307	309	311	313	315	317	399
DOMESTIC												
Assoc. Deg./Adv. Dip	482	98	7	< 5	0	11	29	35	8	50	< 5	242
3-year Bach	634	25	18	0	< 5	11	< 5	29	40	334	46	127
4-year Bach	4808	1659	74	105	9	413	661	139	557	147	10	1044
> 4-year Bach	2,135	1,686	16	74	0	93	185	18	135	37	10	357
TOTAL DOMESTIC	8,059	3,468	115	179	9	528	875	221	740	568	66	1,770
% female	17.67%	21.25%	16.52%	32.96%	0.00%	11.55%	15.54%	7.69%	8.65%	19.01%	0.00%	18.64%
~ % of total (ex 300/399)	2,821	-	4.08%	6.35%	0.32%	18.72%	31.02%	7.83%	26.23%	20.13%	2.34%	-
INTERNATIONAL												
Assoc. Deg./Adv. Dip	92	< 5	0	0	0	0	46	0	6	< 5	5	32
3-year Bach	617	58	26	0	< 5	41	5	< 5	59	270	31	123
4-year Bach	3788	1683	48	105	10	410	598	7	561	50	< 5	318
> 4-year Bach	276	0	< 5	0	< 5	5	0	8	< 5	5	48	328
TOTAL INTERNATIONAL	4,773	1,741	74	105	10	456	649	15	626	325	84	801
% female	16.91%	25.90%	0.00%	29.52%	0.00%	9.65%	17.87%	73.33%	19.97%	3.69%	16.67%	24.47%
~ % of total (ex 300/399)	2,231	-	3.32%	4.71%	0.45%	20.44%	29.09%	0.67%	28.06%	14.57%	3.77%	-
% INTERNATIONAL	37.20%	33.42%	39.15%	36.97%	52.63%	46.34%	42.59%	6.36%	45.83%	36.39%	56.00%	31.16%

ASCED 4-digit codes

0300 Engineering & Related Technologies 0301 Manufacturing Eng. & Tech.
0303 Process & Resources Engineering 0305 Automotive Eng. & Tech.
0307 Mechanical & Industrial Eng & Tech. 0309 Civil Engineering
0311 Geomatic Eng. & Tech
0313 Electrical & Electronic Eng. & Tech, 0315 Aerospace Eng. & Tech.
0317 Maritime Eng. & Tech
0399 Other Engineering & Related Tech's
6-digit ASCED codes are shown in Table 20

Notes:

Low numbers (<5) are suppressed in providers' returns to avoid identification of individuals and are not included in calculated totals per FoE. Overseas graduations are excluded (hence the lower totals compared to Table 1).

ANU, Curtin, CQUni, JCU, Murdoch, UNSW, UTS, UWA and WSU use code 0300 for most Bachelor degree graduates. CDU, Griffith, Monash, QUT, USQ and UTas use code 0399 for most Bachelor graduates. Monash uses codes 300 and 399 for most Bachelor degree graduates.

"Software engineering" does not appear specifically in the ASCED codes for either engineering or Information Technology (ASCED FOE code 02), so may be classified in the universities' returns in different ways. See Table 19.

The 0301 Manufacturing sub-code includes "printing", "textile/garment/furniture making", that are likely to be more relevant to qualifications offered by the VET sector.

0315 Aerospace Eng. and Technology includes 3-year civil aviation degrees, taken primarily by students aiming towards the aviation industry. Many of these programs offer commercial pilot training in parallel with the academic award, some of these are overseas programs.

The full set of ASCED codes is available at: https://www.abs.gov.au/statistics/classifications/australian-standard-classification-education-asced/latest-release

Table 3 - total enrolments (students) in engineering & related technologies 2012-22

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
DOCTORATES	7,059	7,427	7,668	8,035	8,338	8,718	8,971	9,117	9,120	8,704	9,353
domestic total	3,404	3,389	3,372	3,617	3,788	3,877	3,664	3,456	3,561	3,267	3,238
% domestic female	23.70%	24.90%	25.50%	25.50%	26.10%	26.30%	26.20%	26.80%	27.90%	27.95%^	28.57%
international total	3,655	4,038	4,296	4,418	4,550	4,841	5,307	5,661	5,559	5,437	6,115
% international female	26.60%	25.70%	25.90%	25.90%	26.00%	26.80%	27.50%	27.60%	28.50%	29.3%	41.4%
% international	51.80%	54.40%	56.00%	55.00%	54.60%	55.50%	59.20%	62.10%	61.00%	62.5%	65.4%
RESEARCH MASTER	1,194	1,148	1,191	1,182	1,070	1,017	933	909	961	966^	1,160^
domestic total	689	662	684	712	660	590	493	431	400	410^	604^
% domestic female	20.60%	22.40%	21.80%	21.50%	21.40%	21.50%	18.20%	19.00%	20.30%	20.5%^	13.9%^
international total	505	486	507	470	410	427	440	478	561	556^	556^
% international female	29.90%	29.80%	27.60%	26.60%	28.80%	26.70%	22.50%	25.50%	25.80%	29.7%^	34.0%^
% international	42.30%	42.30%	42.60%	39.80%	38.30%	42.00%	47.20%	52.60%	58.40%	57.6%^	47.9%^
COURSEWORK MASTER	9,078	10,566	12,776	15,237	18,381	21,605	24,663	25,722	23,892	18,711	16,279
domestic total	4,061	4,434	4,822	5,159	5,358	5,342	5,014	4,743	4,949	5,050	4,638
% domestic female	16.90%	17.70%	18.60%	18.80%	17.90%	17.80%	19.20%	19.40%	19.70%	19.8%	21.2%
international total	5,017	6,132	7,954	10,078	13,023	16,263	19,649	20,979	18,943	13,661	11,641
% international female	18.50%	17.60%	17.70%	18.90%	20.20%	20.40%	19.40%	19.40%	20.60%	22.1%	22.2%
% international	55.30%	58.00%	62.30%	66.10%	70.90%	75.30%	79.70%	81.60%	79.30%	73.0%	71.5%
OTHER POSTGRADUATE	2,554	2,525	2,286	1,924	1,533	1,390	1,221	1,371	1,762	1,838	1,812
domestic total	2,206	2,177	2,051	1,698	1,328	1,175	1,059	1,155	1,557	1,672	1,622
% domestic female	18.80%	19.40%	17.80%	17.40%	17.10%	18.60%	18.20%	18.00%	19.90%	18.9%	10.2%
international total	348	348	235	226	205	215	162	216	205	166	190
% international female	17.20%	19.50%	20.00%	21.20%	21.50%	17.20%	23.40%	20.80%	19.00%	19.3%	25.8%
% international	13.60%	13.80%	10.30%	11.70%	13.40%	15.50%	13.30%	15.80%	11.60%	9.0%	10.5%
BACHELOR	66,207	69,342	71,560	73,138	74,874	75,767	77,365	77,851	76,755	76,172	74,477
domestic total	48,083	50,547	52,135	52,755	52,722	51,885	52,254	52,491	52,831	54,509	54,631
% domestic female	13.40%	13.70%	14.10%	14.40%	14.90%	15.50%	16.40%	17.30%	18.10%	18.8%	19.2%
international total	18,124	18,795	19,425	20,383	22,152	23,882	25,111	25,360	23,924	21,663	19,846
% international female	17.40%	17.70%	18.10%	19.00%	19.30%	20.00%	19.90%	19.10%	18.90%	18.2%	17.9%

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
% international	27.40%	27.10%	27.10%	27.90%	29.60%	31.50%	32.50%	32.60%	31.20%	28.4%	26.6%
ASSOC DEG & AQF DIPL	4,318	4,199	3,746	3,654	3,400	3,233	3,218	3,192	3,284	3,545	3,078
domestic total	3,818	3,752	3,401	3,240	2,937	2,719	2,715	2,612	2,768	3,180	3,078
% domestic female	9.00%	9.50%	9.10%	9.50%	9.40%	9.50%	10.00%	10.60%	12.00%	11.8%	12.9%
international total	500	447	345	414	463	514	503	580	516	365	382
% international female	24.60%	11.90%	9.00%	6.80%	8.00%	10.30%	12.10%	14.50%	15.50%	18.36%	20.94%
% international	11.60%	10.60%	9.20%	11.30%	13.60%	15.90%	15.60%	18.20%	15.70%	10.3%	0.0%
OTHER UNDERGRAD	1,649	2,609	3,077	3,040	3,463	3,500	3,529	3,818	1,876	1,509	1,595
domestic total	596	1,175	1,206	847	918	869	876	1,027	1,360	913	943
% domestic female	40.40%	24.00%	18.30%	14.50%	17.00%	8.90%	10.00%	12.40%	12.70%	19.1%	20.0%
international total	1,053	1,434	1,871	2,193	2,545	2,631	2,653	2,791	516	596	652
% international female	n/a	8.50%	9.20%	10.20%	11.30%	13.00%	13.40%	12.10%	15.50%	27.0%	25.3%
% international	63.90%	55.00%	60.80%	72.10%	73.50%	75.20%	75.20%	73.10%	27.50%	39.5%	40.9%
ALL ENROLMENTS	92,059	97,816	102,304	106,210	111,059	115,420	119,433	121,980	117,650	112,931	109,811
domestic total	62,857	66,136	67,671	68,028	67,711	66,647	66,075	65,915	67,426	69,702	69,620
% domestic female	14.50%	14.80%	15.00%	14.90%	15.60%	16.00%	16.90%	17.60%	18.40%	23.3%	19.6%
international total	29,202	31,680	34,633	38,182	43,348	48,773	53,358	56,065	50,224	43,229	40,191
% international female	18.40%	18.40%	18.60%	16.90%	19.80%	14.90%	20.20%	19.70%	20.60%	20.8%	20.9%
% international	31.70%	32.40%	33.90%	35.90%	39.00%	42.30%	44.70%	46.00%	42.70%	38.3%	36.6%

Notes

^Please note that some percentage values in this table have been calculated based on available data and totals, the derived values should be interpreted with caution and are not exact figures. Certain award level completions data is not published by the Department of Education. These calculated values are indicated where appropriate.

Doctorates do not include doctorate by coursework, <13 in 2021, 26 in 2022.

Masters by coursework includes Masters (Extended).

Table 4 - domestic and all student load (EFT) in engineering and related technologies 2022, by sub-field and program level, and summary eft load totals from 2012

(a) Domestic student load (2012 - 2022)

Sub-field of education	Doctorates	Master	other p-grad	Bachelors	other u-grad	Enab	Non-award	TOTAL
Manufacturing Engineering & Technology	13	54	13	951	137	0	0	1,168
Process and Resources Engineering	428	227	143	2,048	130	0	15	2,992
Automotive Engineering & Technology	0	1	0	53	0	0	0	55
Mech/Industrial Eng & Technology	354	286	63	5,530	251	0	4	6,488
Civil Engineering	358	449	73	6,843	266	0	10	7,998
Geomatic Engineering	36	91	33	1,053	107	0	1	1,321
Electrical/Electronic Eng & Technology	495	456	78	6,790	324	0	15	8,159
Aerospace Engineering & Technology	64	71	139	1,347	165	0	5	1,790
Maritime Engineering & Technology	11	15	6	153	1	0	0	185
Other Engineering & Related Tech's	545	825	124	9,390	493	13	21	11,411
DOMESTIC TOTAL 2022	2,304	2,475	672	34,158	1,874	13	71	41,567
DOMESTIC TOTAL 2021	2,275	2,726	708	35,220	1,841	19	73	42,863
DOMESTIC TOTAL 2020	2,322	2,694	608	35,028	1,686	15	52	42,401
DOMESTIC TOTAL 2019	2,257	2,700	515	33,969	1,420	17	59	40,936
DOMESTIC TOTAL 2018	2,514	2,888	457	33,545	1,390	3	45	40,839
DOMESTIC TOTAL 2017	2,721	3,164	469	33,730	1,437	5	61	41,587
DOMESTIC TOTAL 2016	2,695	3,249	546	34,783	1,455	7	51	42,787
DOMESTIC TOTAL 2015	2,588	3,114	629	35,134	1,521	46	58	43,087
DOMESTIC TOTAL 2014	2,378	2,730	746	34,681	1,609	55	69	42,267
DOMESTIC TOTAL 2013	2,225	2,399	756	33,571	1,608	62	49	40,856
DOMESTIC TOTAL 2012	2,304	2,080	766	31,962	1,563	65	33	38,890

(b) All student load (2022-2012)

Sub-field of education	Doctorates	Master	other p-grad	Bachelors	other u-grad	Enab	Non-award	TOTAL
Manufacturing Engineering & Technology	43	341	13	1302	162	0	5	1,867
Process and Resources Engineering	1471	905	154	3,079	185	0	32	5,827
Automotive Engineering & Technology	0	16	0	88	0	0	1	105
Mech/Industrial Eng & Technology	980	1240	73	7,819	346	0	31	10,489
Civil Engineering	1400	2221	102	9,491	380	0	37	13,633
Geomatic Engineering	69	327	38	1,196	107	0	4	1,742
Electrical/Electronic Eng & Technology	1576	2558	117	10,089	482	0	70	14,892
Aerospace Engineering & Technology	124	127	146	1,904	200	0	8	2,509
Maritime Engineering & Technology	29	34	7	207	12	0	1	290
Other Engineering & Related Tech's	1592	3252	154	12,658	736	13	60	18,465
TOTAL (ALL STUDENTS) 2022	7,284	11,021	804	47,833	2,610	13	249	69,819
TOTAL (ALL STUDENTS) 2021	6,657	12,789	839	50,496	2,555	19	113	73,471
TOTAL (ALL STUDENTS) 2020	6,866	16,296	753	51,980	2,656	15	213	78,778
TOTAL (ALL STUDENTS) 2019	6,721	18,351	664	52,597	2,639	17	420	81,406
TOTAL (ALL STUDENTS) 2018	6,786	17,813	563	52,055	2,512	3	358	80,089
TOTAL (ALL STUDENTS) 2017	6,661	15,714	594	51,272	2,659	5	378	77,284
TOTAL (ALL STUDENTS) 2016	6,440	13,264	662	50,828	2,600	7	723	74,525
TOTAL (ALL STUDENTS) 2015	6,207	10,931	749	49,765	2,529	46	975	71,201
TOTAL (ALL STUDENTS) 2014	5,904	9,025	876	48,503	2,511	55	1,058	67,931
TOTAL (ALL STUDENTS) 2013	5,640	7,192	914	47,220	2,408	62	395	63,999
TOTAL (ALL STUDENTS) 2012	5,215	5,913	1,033	44,935	2,275	65	141	59,802

Table 5 - commencing enrolments (students) in engineering & related technologies 2012-22

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
DOCTORATES	1,629	1,789	1,834	1,870	1,833	2,140	2,080	1,919	1,726	1,978	1,899
domestic number	601	662	673	718	701	712	589	562	597	580	480
% domestic female	27.60%	25.10%	27.20%	25.20%	24.50%	25.40%	27.50%	29.50%	26.30%	28.79%	27.50%
international number	1,028	1,127	1,161	1,152	1,132	1,428	1,491	1,357	1,129	1,406	1,419
% international female	24.80%	26.40%	28.30%	24.70%	27.70%	27.50%	29.20%	27.30%	31.20%	30.26%	29.95%
% international	63.10%	63.00%	63.30%	61.60%	61.80%	66.70%	71.70%	70.70%	65.40%	71.08%	74.72%
RESEARCH MASTERS	456	433	469	416	375	380	316	329	382	327	313
domestic number	231	234	258	253	214	176	128	120	140	121	90
% domestic female	24.70%	23.50%	19.40%	19.40%	24.30%	24.40%	24.30%	21.70%	25.70%	24.79%	31.11%
international number	225	199	211	163	161	204	188	209	242	206	223
% international female	28.90%	27.60%	26.10%	26.40%	31.10%	26.00%	16.50%	29.70%	26.40%	25.73%	25.11%
% international	49.30%	46.00%	45.00%	39.20%	42.90%	53.70%	59.50%	63.50%	63.40%	63.00%	71.25%
COURSEWORK MASTER	4,448	5,372	6,560	7,564	8,787	10,032	11,035	10,949	8,106	5,837	7154
domestic number	1,690	1,780	2,043	2,091	2,023	1,931	1,671	1,646	2,003	1,866	1,511
% domestic female	15.80%	18.70%	19.20%	18.70%	17.50%	17.30%	20.70%	20.70%	19.00%	19.51%	23.69%
international number	2,758	3,592	4,517	5,473	6,764	8,101	9,364	9,303	6,103	3,971	5,643
% international female	18.70%	17.40%	18.60%	20.30%	20.90%	20.20%	19.20%	20.20%	22.50%	24.63%	21.87%
% international	62.00%	66.90%	68.90%	72.40%	77.00%	80.80%	84.90%	85.00%	75.30%	68.03%	78.88%
OTHER POSTGRADUATE	1,448	1,416	1,247	1,021	835	772	639	789	1,193	1076	1071
domestic number	1,186	1,167	1,118	844	682	594	519	609	1,040	951	909
% domestic female	18.70%	19.60%	16.50%	18.40%	17.30%	19.40%	18.10%	17.20%	21.60%	18.82%	19.58%
international number	262	249	129	177	153	178	120	180	153	125	162
% international female	16.40%	19.30%	16.30%	21.50%	24.80%	19.10%	24.20%	19.40%	21.60%	23.20%	28.40%
% international	18.10%	17.60%	10.30%	17.30%	18.30%	23.10%	18.80%	22.80%	12.80%	11.62%	15.13%
BACHELOR	18,818	20,234	21,048	21,406	21,484	21,218	21,685	21,349	19,935	19,776	19,924
domestic number	13,595	14,817	15,085	14,896	14,390	13,736	14,238	14,291	13,938	15,224	15,087
% domestic female	13.70%	14.40%	15.10%	15.20%	15.70%	16.90%	18.10%	18.60%	19.80%	20.99%	20.98%
international number	5,186	5,417	5,963	6,510	7,094	7482	7,447	7,058	5,997	4,552	4,837
% international female	17.10%	18.30%	18.40%	21.00%	19.10%	20.30%	18.70%	17.20%	18.20%	17.79%	17.92%

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
% international	27.80%	26.80%	28.30%	30.40%	33.00%	35.30%	34.30%	33.10%	30.10%	23.02%	24.28%
ASSOC DEG & ADV DIP	1,959	2,094	1,562	1,374	1,372	1,275	1,342	1,302	1,445	1,607	1,386
domestic number	1,659	1,890	1,370	1,178	1,136	1,031	1,095	995	1,239	1,488	1,212
% domestic female	7.80%	9.30%	8.30%	10.80%	10.10%	10.80%	10.90%	11.60%	14.20%	11.90%	13.76%
international number	300	204	192	196	236	244	247	307	206	119	174
% international female	8.30%	18.60%	4.70%	6.10%	12.70%	10.70%	14.20%	17.90%	15.00%	20.17%	24.14%
% international	15.30%	54.60%	12.30%	14.30%	17.20%	19.10%	18.40%	23.60%	14.30%	7.41%	12.55%
ENABLING & OTHER	1,307	1,841	2,144	1,988	2,249	2,304	2,263	2,393	1,943	1,820	2,371
domestic number	748	836	909	564	655	631	616	687	943	1,257	1,515
% domestic female	32.80%	28.10%	19.40%	14.50%	20.00%	n/a	10.60%	12.10%	13.30%	17.58%	23.89%
international number	559	1,005	1,235	1,424	1,594	1,673	1,647	1,706	1,000	890	1,164
% international female	8.80%	8.20%	9.70%	10.50%	12.70%	13.80%	12.60%	12.70%	13.00%	16.97%	18.13%
% international	42.80%	0.00%	57.60%	71.60%	70.90%	72.60%	72.80%	71.30%	51.50%	48.90%	49.09%
ALL COMMENCEMENTS	30,065	33,179	34,864	35,639	36,935	38,121	39,360	39,030	34,730	32,419	34,127
domestic number	19,710	21,386	21,456	20,544	19,801	18,811	18,856	18,910	19,900	21,353	20,719
% domestic female	15.00%	15.60%	15.80%	15.80%	16.10%	16.70%	18.00%	18.40%	19.40%	20.17%	20.77%
international number	10,355	11,793	13,408	15,095	17,134	19,310	20,504	20,120	14,830	11,066	13,408
% international female	17.80%	18.10%	18.40%	19.90%	19.90%	20.20%	19.30%	19.00%	20.70%	21.73%	21.20%
% international	34.40%	35.50%	38.50%	42.40%	46.40%	50.70%	52.10%	51.60%	42.70%	34.13%	39.29%

Table 6 - domestic commencing enrolments (all award levels) in engineering & related technologies and other selected fields, 2012-22

Year	Engineering & Related Technologies	% of total	Health	Natural & Physical Science	Information Technology	Law, Business, Society, Creative Arts (several FoEs)	total commencing award programs
2012	19,710	5.40%	61,864	31,847	10,060	190,917	364,197
2013	21,433	5.60%	66,827	33,163	10,292	201,234	384,251
2014	21,456	5.30%	71,419	34,064	11,187	209,246	401,356
2015	20,544	5.20%	75,170	33,639	11,488	209,164	397,296
2016	19,902	4.90%	80,364	35,682	12,347	208,351	405,085
2017	18,816	4.60%	82,657	36,235	14,223	210,302	410,167
2018	18,941	4.60%	82,995	36,828	14,902	204,902	409,594
2019	19,005	4.70%	81,390	36,521	15,365	202,993	408,222
2020	19,070	4.20%	89,383	33,676	18,638	204,421	449,723
2021	20,462	4.58%	95,485	36,015	20,577	192,896	446,701
2022	19,070	4.76%	87,115	31,687	18,251	172,191	400,332

Table 7 - domestic bachelor degree commencing enrolments, all fields of education, 2012-22

Field of Education	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Natural & Physical Sciences	27,225	28,220	29,088	28,380	30,289	30,815	31,045	30,665	30,104	29,142	25,378
Information Technology	7,492	7,541	8,502	8,866	9,169	10,567	10,851	10,898	12,092	10,954	11,038
Engineering & Rel'd Technologies	13,602	14,837	15,074	14,914	14,375	13,726	14,283	14,272	13,938	14,308	14,211
Architecture & Building	6,064	5,953	5,878	6,350	6,692	6,727	7,337	7,647	7,999	8,065	7,558
Agriculture, Envir'l &Related Studies	3,748	3,900	3,584	3,370	3,481	3,098	3,096	3,187	3,881	3,366	3,130
Health	41,247	46,584	49,394	52,901	55,450	56,843	57,838	55,052	55,993	56,972	50,983
Education	24,783	25,225	26,466	25,382	23,845	23,708	21,553	21,326	22,192	22,608	21,878
Management & Commerce	41,169	42,792	47,200	45,968	45,395	44,943	43,838	41,003	39,083	31,355	30,478
Society & Culture	63,620	67,588	69,204	70,416	69,953	70,937	69,322	67,852	70,847	63,107	54,885
Creative Arts	22,216	24,794	24,739	24,861	24,171	23,711	22,388	22,258	21,742	19,631	17,550
Food. Hospitality & Personal Services	36	19	15	16	9	4		3	2	0	0
TOTAL	233,154	248,747	259,107	260,486	261,287	262,698	259,495	252,179	256,728	259,508	237,089
Proportion in Engineering, %	5.80	6.00	5.80	5.70	5.50	5.20	5.50	5.70	5.40	5.51	5.99

Table 8 - admission profiles of domestic students commencing undergraduate award programs in engineering & related technologies 2012-22

(a) Basis of Admission into Bachelor Degrees, 2011- 22

Year	Total	Higher Ed completed/in-complete in Aus. or o/s	TAFE/VET award completed or incomplete	Completion of final year of secondary schooling, in school or TAFE (Aus or o/s)	Other
2012	13,595	2,604	904	8,835	1,252
2013	14,817	2,989	1,184	9,119	1,525
2014	15,085	3,665	1,013	8,791	1,534
2015	14,896	3,357	964	8,686	1,889
2016	14,390	3,323	1,046	8,332	1,689
2017	13,736	2,978	897	8,461	1,400
2018	14,228	2,989	872	9,027	1,340
2019	14,291	2,936	907	9,024	1,424
2020	13,993	3,074	772	8,592	1,495
2021 total	15,214	3581	740	9567	1,223
2021 females	3,097	720	90	2,098	137
2022 total	15,087	3331	549	10,112	929
2022 females	3,063	698	87	2,130	107
		AS PERCENTAGES			
2012		19.20%	6.60%	65.00%	9.20%
2013		20.20%	8.00%	61.50%	10.30%
2014		24.30%	6.70%	58.30%	10.20%
2015		22.50%	6.50%	58.30%	12.70%
2016		23.10%	7.30%	57.90%	11.70%
2017		21.70%	6.50%	61.60%	10.20%
2018		21.00%	6.10%	63.40%	9.40%
2019		20.50%	6.30%	63.10%	10.00%
2020		22.10%	5.50%	61.70%	10.70%
2021 total		23.54%	4.86%	62.88%	8.04%
2021 females		23.25%	2.91%	67.74%	4.42%
2022 total		22.08%	3.64%	67.02%	6.16%
2022 females		22.79%	2.84%	69.54%	3.49%

'**Other'** covers admission on the basis of 'mature age special provisions', 'professional qualifications', and 'other', 'not specified' are excluded.

(b) Distributions of Undergraduate Offers in ATAR bands to school leavers in Engineering and other selected fields, 2022 (and previous year for Engineering)

field of education	< 50	50.05-60	60.05-70	70.05-80	80.05-90	> 90.05	Number of ATAR offers	% of ATAR offers
Engineering 2022	1.3%	3.4%	7.4%	14.7%	27.7%	45.5%	9,215	10.6%
Engineering 2021	1.4%	3.2%	7.2%	15.5%	28.2%	44.6%	8,957	9.7%
Health	3.7%	6.8%	13.4%	19.8%	25.7%	30.5%	15,894	18.4%
Management & Commerce	3.0%	6.4%	12.8%	18.6%	25.1%	34.1%	15,411	17.8%
Natural & Physical Sciences	1.2%	3.2%	7.5%	14.7%	25.1%	48.2%	15,051	17.4%
Information Technology	3.3%	7.2%	12.1%	18.9%	25.0%	33.4%	5,380	6.2%
Architecture and Building	2.3%	5.7%	13.1%	27.4%	28.3%	23.2%	3,401	3.9%
Agriculture, Environmental and Related Studies	2.2%	7.1%	18.5%	26.7%	26.0%	19.4%	1,068	1.2%
Society and Culture	3.3%	7.1%	12.3%	18.6%	25.8%	32.9%	20,917	24.2%
Creative Arts	3.9%	8.3%	16.1%	23.5%	25.8%	22.3%	6,744	7.8%
All fields	3.3%	6.8%	12.9%	19.6%	25.3%	32.1%	86,566	100.0%

Table 9 - top 16 countries of origin of onshore commencing enrolments in engineering & related technologies, 2021 and 2022, by broad program level

A) Top 16 countries of origin of onshore commencing enrolments in engineering & related technologies, 2021 and 2022, by broad program level

2022	P/G Research & Coursew'k	Bachelors (inc Hons)	Other	Total	P/G Research & Coursew'k	Bachelor s (inc Hons)	Other	Total	overall rank
India	138	549	63	750	18.4%	73.2%	8.4%	12.3%	1
China (excludes SARs and Taiwan Province)	180	283	27	490	36.7%	57.8%	5.5%	8.0%	2
England	66	327	56	449	14.7%	72.8%	12.5%	7.3%	3
New Zealand	53	263	53	369	14.4%	71.3%	14.4%	6.0%	4
Philippines	48	228	58	334	14.4%	68.3%	17.4%	5.5%	5
South Africa	46	190	38	274	16.8%	69.3%	13.9%	4.5%	6
Sri Lanka	59	161	30	250	23.6%	64.4%	12.0%	4.1%	7
United States of America	21	142	17	180	11.7%	78.9%	9.4%	2.9%	8
Not provided	32	106	35	173	18.5%	61.3%	20.2%	2.8%	NA
Pakistan	48	99	16	163	29.4%	60.7%	9.8%	2.7%	9
Malaysia	37	113	6	156	23.7%	72.4%	3.8%	2.6%	10
Iran	72	45	10	127	56.7%	35.4%	7.9%	2.1%	11
Bangladesh	53	56	7	116	45.7%	48.3%	6.0%	1.9%	12
Iraq	16	79	21	116	13.8%	68.1%	18.1%	1.9%	13
Hong Kong (SAR of China)	22	73	9	104	21.2%	70.2%	8.7%	1.7%	14
Viet Nam	19	73	10	102	18.6%	71.6%	9.8%	1.7%	15
Zimbabwe	42	36	23	101	41.6%	35.6%	22.8%	1.7%	16
All other Countries	400	1,201	255	1,856	21.6%	64.7%	13.7%	30.4%	
Total on-shore	1,352	4,024	734	6,110					
Total international (from Table 5)	7,447	4,837	1,338	13,408					

B) top 16 countries of origin of onshore commencing enrolments in engineering & related technologies, 2022, by broad program level

2021	P/G Research & Coursew'k	Bachelors (inc Hons)	Other	Total	P/G Research & Coursew'k	Bachelor s (inc Hons)	Other	Total	overall rank
India	172	482	63	717	23.99%	67.22%	8.79%	11.37%	1
China (excludes SARs and Taiwan Province)	232	253	39	524	44.27%	48.28%	7.44%	8.31%	2
England	68	297	69	434	15.67%	68.43%	15.90%	6.88%	3
New Zealand	66	235	50	351	18.80%	66.95%	14.25%	5.56%	4
Philippines	51	220	51	322	15.84%	68.32%	15.84%	5.10%	5
South Africa	57	192	36	285	20.00%	67.37%	12.63%	4.52%	6
Sri Lanka	53	152	26	231	22.94%	65.80%	11.26%	3.66%	7
Iran	100	69	24	193	51.81%	35.75%	12.44%	3.06%	8
United States of America	27	145	17	189	14.29%	76.72%	8.99%	3.00%	9
Malaysia	51	126	11	188	27.13%	67.02%	5.85%	2.98%	10
Pakistan	62	73	14	149	41.61%	48.99%	9.40%	2.36%	11
Not provided	8	121	5	134	5.97%	90.30%	3.73%	2.12%	NA
Hong Kong (SAR of China)	37	85	8	130	28.46%	65.38%	6.15%	2.06%	12
Bangladesh	51	64	5	120	42.50%	53.33%	4.17%	1.90%	13
Singapore	22	90	6	118	18.64%	76.27%	5.08%	1.87%	14
Viet Nam	18	79	13	110	16.36%	71.82%	11.82%	1.74%	15
Nepal	31	58	11	100	31.00%	58.00%	11.00%	1.59%	16
All other Countries	488	1,221	304	2,013	24.24%	60.66%	15.10%	31.91%	
Total on-shore	1,594	3,962	752	6,308					
Total international	5,708	4,552	806	11,066					

Table 10 – Aboriginal and Torres Strait Islander commencements and completions in engineering & related technologies, 2020, 2021 and 2022

A) Commencements

2021	PG research and course work	Bachelor	Other	Total
ACT	7	52	13	72
NSW	7	15	<5	22
NT	5	51	17	73
QLD	<5	6	<5	6
SA	<5	13	8	21
TAS	.	<5	<5	0
VIC	<5	<5	<5	0
WA	<5	<5	.	0
Multi-state	.	.	.	0
Totals	23	144	48	215

2022	PG research and course work	Bachelor	Other	Total
ACT	7	50	21	78
NSW	<5	10	<5	10
NT	5	51	22	78
QLD	<5	11	<5	11
SA	.	<5	13	13
TAS	<5	8	<5	8
VIC	.	6	6	12
WA	.	<5	.	0
Multi-state	.	<5	.	0
Totals	17	143	69	229

B) Completions

2021	Females				Males			
	Bachelor	Other	PG research and course work	Subtotal: Females	Bachelor	Other	PG research and course work	Subtotal: Males
NSW	np	<5	.	7	13	<5	<5	18
VIC	<5	.	.	<5	8	<5	<5	14
QLD	<5	<5	.	<5	14	6	10	30
WA	.	.	.	.	<5	.	.	<5
SA	.	.	.	.	<5	<5	.	5
TAS	.	.	.	.	<5	.	.	<5
NT	.	.	.	.	<5	.	.	<5
ACT	.	.	<5	<5	.	.	.	.
Total	8	<5	<5	11	43	11	17	71

2022	Females				Males			
	Bachelor	Other	PG research and course work	Subtotal: Females	Bachelor	Other	PG research and course work	Subtotal: Males
NSW	<5	<5	.	5	16	9	.	25
VIC	<5	.	.	<5	7	<5	<5	12
QLD	<5	<5	.	<5	15	<5	<5	17
WA	<5	.	.	<5	<5	<5	.	6
SA	.	.	.	.	<5	<5	.	<5
TAS	.	.	.	.	<5	.	.	<5
NT	.	.	.	.	.	.	.	.
ACT	.	.	.	.	<5	.	<5	<5
Total	np	<5	.	12	46	14	6	66

Table 11 - student, graduate, and employer satisfaction

(a) Undergraduate student satisfaction surveys, 2019 - 2022

Year of graduation / field of education	Skills Development	Learner Engagement	Teaching Quality	Student Support	Learning Resources	Overall Experience
2019						
Science & mathematics	80	61	83	75	88	80
Computing & Info Syst.	74	58	74	73	81	72
Engineering	78	65	75	71	84	73
All fields	81	60	81	74	84	78
2020						
Science & mathematics	75	42	79	73	78	67
Computing & Info Syst.	72	46	71	70	70	62
Engineering	75	48	71	69	72	61
All Fields	78	44	78	74	76	69
2021						
Science & mathematics	77.5	47.8	81	72.1	84	77.2
Computing & Info Syst.	72.2	46.4	72.5	69.6	73.6	65.5
Engineering	75.7	52.4	73.4	68.8	76.9	66.8
All fields	79.3	48.7	79.4	72.6	88	73.1
2022						
Science & mathematics	79	56	82.1	72.3	87.2	77.2
Computing & Info Syst.	74.4	53.8	74.9	72.7	80.8	70.4
Engineering	77	60	75.1	70.7	83.6	70.9
All Fields	80.5	55.2	80.1	72.9	83.6	75.9

(b) Postgraduate coursework student satisfaction surveys, 2019 -2022

Year	Skills Development	Learner Engagement	Teaching Quality	Student Support	Learning Resources	Overall Experience
2019						
Engineering	80	59	78	75	88	74
All fields	81	54	81	73	83	76
2020						
Engineering	76	45	72	72	70	62
All Fields	78	42	78	74	73	69
2021						
Engineering	76	44	74	70	75	66
All fields	79	42	80	74	77	73
2022						
Engineering	79.7	55	79.5	72.9	86.4	74.2
All Fields	81.1	48.7	82.1	75.3	83.5	76.7

(c) Graduate satisfaction surveys, 2019 - 2022 graduates

Note From 2021 onwards Good Teaching and Generic skills were removed from the Core GOS and are not available.

2019 (year of graduation)	Overall satisfaction	Good teaching	Generic skills	Super-vision	Intellect'l climate	Skills develop't	Infra-structre	Thesis examin'n	Goals & expect's	Ind. & ext. eng
U/G Engineering	75.3	49.4	83.8							
Science & Mathematics	84.1	67.5	85.7							
Computing & Info Syst.	74.2	59.7	77.6							
Pharmacy	83.7	64.6	80.8							
Business & Management	78.6	58.6	79.7							
U/G All fields	80.7	63.7	82.4							
P/G Coursework Eng.	76.9	63	82							
P/G Coursework All fields	81.7	69.4	79.7							
P/G Research Eng.	87.5			79.9	69.3	93.2	81.9	82.3	92.2	66.7
P/G Research All fields	85.8			82.3	64.4	92.5	76.8	81.5	91.3	57.9

2020 (year of graduation)	Overall satisfaction	Good teaching	Generic skills	Super-vision	Intellect'l climate	Skills develop't	Infra-structre	Thesis examin'n	Goals & expect's	Ind. & ext. eng
U/G Engineering	72.3									
Science & Mathematics	82.6									
Computing & Info Syst.	72.5									
Pharmacy	84.2									
Business & Management	76.5									
U/G All fields	77.9									
P/G Coursework Eng.	74.6									
P/G Coursework All fields	79.8									
P/G Research Eng.	84.7			81.5	68.7	93.1	83.1	82.2	93.1	64.6
P/G Research All fields	84.8			83.1	64.4	94.5	78.8	82.4	93	57.1
2021 (year of graduation)	Overall satisfaction	Good teaching	Generic skills	Super-vision	Intellect'l climate	Skills develop't	Infra-structre	Thesis examin'n	Goals & expect's	Ind. & ext. eng
U/G Engineering	71.9									
Science & Mathematics	81.2									
Computing & Info Syst.	72.2									
Pharmacy	80.4									
Business & Management	75.7									
U/G All fields	77.4									
P/G Coursework Eng.	74.6									
P/G Coursework All fields	80									
P/G Research Eng.	89.4			85	67.3	95.4	84.8	85.3	94.1	65.8
P/G Research All fields	86.5			84.2	63.5	94.2	78.2	83	93.6	57.7
2022 (year of graduation)	Overall satisfaction	Good teaching	Generic skills	Super-vision	Intellect'l climate	Skills develop't	Infra-structre	Thesis examin'n	Goals & expect's	Ind. & ext. eng
U/G Engineering	72.3									
Science & Mathematics	79.9									
Computing & Info Syst.	72.3									

Pharmacy	81.3							
Business & Management	75.3							
U/G All fields	76							
P/G Coursework Eng.	77.6							
P/G Coursework All fields	80.9							
P/G Research Eng.	87.7	83.5	67.7	94.5	82.9	82.7	94.4	63.4
P/G Research All fields	84.1	83.4	61.7	94	75.5	81	92.7	56

(d) Employer Satisfaction Surveys, for graduates from 2017-23 – skills areas, selected fields of education. Percentages of employers expressing agreement or strong agreement with a relevant statement on graduate skills. Previous year data in parentheses.

Field of education	Foundation	Adaptive	Collaborative	Technical	Employability	Overall satisfaction
Engineering & Related Technologies	95.0	90.9	86.6	95.3	87.3	88.8
Natural & Physical Sciences	92.0	87.8	86.4	91.9	84.0	84.8
Information Technology	89.5	87.0	83.9	86.0	80.0	80.8
Health	91.3	86.6	87.0	92.2	82.0	85.8
Management & Commerce	90.1	88.3	85.5	90.8	87.1	78.7
Agriculture and Environmental Studies	96.6	96.4	90.7	96.5	90.4	90.8
2017 All fields	93.4	90.1	85.9	93.3	85.0	83.6
2018 All fields	93.5	89.9	88.7	93.8	86.5	84.8
2019 All fields	92.7	89.3	87.8	92.7	85.4	84.0
2020 All fields	93.5	90.3	89.3	93.7	86.6	85.3
2021 All fields	93.5	90.3	89.3	93.7	86.6	85.3
2022 All fields	93.0	90.1	88.2	92.7	86.8	84.1
2023 All fields	91.2	88.7	86.0	92.2	84.1	83.7

(e) Employer Satisfaction Survey, for 2021, 2022 and 2023 graduates, selected fields of education

2022/2021 (2021 in parenthesis)	% of respondents rating qualification 'important' or 'very important' for current employment		% of respondents rating 'well' or 'very well' the extent to which qualification prepared graduates for current employment	
Field of education	**Graduates**	**Supervisors**	**Graduates**	**Supervisors**
All fields	53.7 (51)	61.7 (60.4)	87.6 (84.6)	94.3 (92.1)
Engineering & Related Technologies	60.1 (54.1)	62.4 (66.0)	90.2 (82.3)	96.2 (91.8)
Natural & Physical Sciences	44.8 (43.3)	62.3 (43.3)	81.9 (78.4)	94.7 (88.4)
Information Technology	41.6 (42.3)	46.1 (42.3)	82.4 (80.5)	93.5 (87.2)
Health	68.3 (65.0)	76.3 (65.0)	92.6 (91.6)	93.5 (95.2)
Management & Commerce	40.4 (37.2)	40.4 (45.9)	86.2 (83.6)	94.5 (90.9)

2023/2022 (2022 in parenthesis)	% of respondents rating qualification 'important' or 'very important' for current employment		% of respondents rating 'well' or 'very well' the extent to which qualification prepared graduates for current employment	
Field of education	**Graduates**	**Supervisors**	**Graduates**	**Supervisors**
All fields	53.6 (53.7)	62.9 (61.7)	86.9 (87.6)	94.0 (94.3)
Engineering & Related Technologies	57.5 (60.1)	67.1 (62.4)	87.9 (90.2)	96.8 (96.2)
Natural & Physical Sciences	43.2 (44.8)	52.6 (62.3)	80.3 (81.9)	92.1 (94.7)
Information Technology	36.6 (41.6)	48.9 (46.1)	78.9 (82.4)	89.6 (93.5)
Health	69.8 (68.3)	78.2 (76.3)	92.3 (92.6)	94.8 (93.5)
Management & Commerce	41.5 (40.4)	48.0 (40.4)	87.5 (86.2)	95.2 (94.5)

Table 12 - graduate outcomes: employment status and median salaries

(a) Short-term employment status, short-term surveys of graduates from 2021-2023

Year of Graduation Level and field	% in full-time study	% in work, of all avail- able for any work	% in FT work, of all avail-able for FT work	% in PT work, of all employed	% in PT work seeking more hours	% in PT work not seeking more hours	% of FT employed reporting skills not fully used - in general	% of FT employed reporting skills not fully used - because of lack of jobs in area of expertise	% of all employed reporting skills not fully used - in general	% of all employed reporting skills not fully used - because of lack of jobs in area of expertise
2020										
U/G Engineering	14.3	86.6	80.3	18	9	7	22	9	30	10
ALL U/G	21.1	84.8	68.9	40.5	19.3	16.1	29.3	10.2	42.3	11.4
P/G C'swk Engin'g	6.1	88.6	86.6				36	16	43	17
ALL P/G Coursew'k	7.6	90.8	84.9				28.7	10.8	31.5	11.6
P/G Res'ch Engin'g	7.8	80.6	74.3				22	20	22	19
All Research	6.8	88.1	77.7				26.9	25.1	29.9	27.9
2021										
U/G Engineering	13.6	90.8	87.5	14.9	6.4	6.6	22.1	8	28.5	9.6
ALL U/G	18.6	88.3	78.5	35.3	13.9	16.6	28.3	8.1	38.5	8.7
P/G C'swk Engin'g	5.7	92.6	91.9				35	9.5	37	10.9
ALL P/G Coursew'k	7.5	93.3	89.4				28.3	8.6	30.3	9.1
P/G Res'ch Engin'g	5.1	92.2	84.9				27	15.8	29.5	19.4
All Research	6.7	91.9	84.7				26.7	19.3	29.5	24.2
2022										
U/G Engineering	11.4	91.7	87.5	13.1	5.6	5.6	20.9	5.1	26.7	6.0
ALL U/G	18.0	88.9	79.0	35.5	15.0	15.7	27.8	7.2	38.0	8.5
P/G C'swk Engin'g	6.9	90.9	92.6				32.7	6.4	34.0	7.1
ALL P/G Coursew'k	7.1	90.3	93.9				28.9	8.6	30.5	9.0
P/G Res'ch Engin'g	7.2	89.2	85.5				36.8	7.1	37.6	9.4
All Research	6.9	91.4	85.3				27.8	19.1	30.0	20.7

"(b) Short-term graduate salaries (medians) for full-time work by broad course level, engineering and all fields, graduates from 2017-22"

Program level and field	2017	2017	2018	2018	2019	2019	2020	2020	2021	2021	2022	2022
	male	female	male	female	male	female	male	female	male	female	male	female
U/G Engineering	$65,000	$65,000	$67,800	$67,000	$69,400	$70,000	$70,000	$70,000	$71,900	$71,000	$75,300	$75,000
ALL U/G	$63,000	$60,000	$64,700	$61,500	$65,000	$63,400	$66,800	$64,200	$69,400	$67,400	$70,000	$73,100
P/G Coursework Engineering	$90,000	$79,100	$87,500	$ 80, 000	$100,000	$93,000	$100,000	$78,000	$104,400	$88,000	$114,700	$98,500
ALL P/G	$92,500	$79,000	$95,000	$81,300	$96,000	$85,300	$99,000	$85,000	$100,000	$89,200	$105,000	$92,000
P/G Research Engineering	$90,000	$83,000	$90,000	$90,500	$93,900	$90,800	$89,600	$90,000	$91,600	$95,000	$100,000	$92,300
ALL P/G Research	$90,200	$90,000	$92,000	$90,000	$95,000	$91,900	$96,000	$93,900	$97,000	$96,000	$100,000	$98,000

"(c) Short-term median salary comparisons for engineering and other fields, undergraduate degrees, graduates form 2014-22 (year of graduation)"

Program field	2014	2015	2016	2017	2018	2019	2020	2021	2022
Dentistry	$80,000	$83,500	$78,300	$83,700	$88,200	$84,000	$100,000	$100,000	$94,400
Medicine	$65,000	$69,200	$70,300	$73,000	$73,100	$75,000	$76,000	$79,800	$85,000
Engineering	$60,000	$62,600	$64,000	$65,000	$67,500	$69,500	$70,000	$71,500	$75,000
Computing & Information Systems	$54,000	$60,000	$59,900	$60,000	$64,000	$65,000	$65,500	$69,000	$74,400
Science & Mathematics	$60,000	$55,200	$57,500	$61,000	$60,000	$64,000	$63,000	$66,000	$69,000
Business & Management	$50,000	$55,000	$55,200	$58,000	$59,500	$60,000	$60,700	$65,000	$69,200

"(d) Longitudinal employment surveys, 2019 graduates surveyed in 2020 and resurveyed in 2023"

Level	Engineering, 2020-23		All fields, 2020-23		gain for Engineering	gain for All fields
measure	**short**	**medium**	**short**	**medium**	**(2020-23)**	**(2020-23)**
Undergraduate						
F/T employment	87.70%	95.00%	86.00%	94.80%	8.32%	10.23%
Overall Employment	91.10%	97.70%	92%	96%	7.24%	3.68%
Median Salary	$70,000	$100,000	$65,000	$83,500	42.86%	28.46%
Roles (of Overall Employed)						
managers	3.10%	5.20%	4.90%	6.90%	67.74%	40.82%
professionals	77.90%	83.90%	54.30%	68.00%	7.70%	25.23%
other	19.00%	10.90%	40.80%	25.50%	-42.63%	-37.50%
Postgraduate Coursework						
F/T employment	87.70%	96.10%	86.00%	94.80%	9.58%	10.23%
Overall Employment	91.10%	97.70%	92.30%	95.70%	7.24%	3.68%
Median Salary	$97,500	$116,700	$88,700	$108,000	19.69%	21.76%
Roles (of Overall Employed)						
managers	14.10%	13.50%	12.90%	16.30%	-4.26%	26.36%
professionals	64.60%	73.50%	70.00%	72.30%	13.78%	3.29%
other	21.40%	13.00%	16.20%	11.40%	-39.25%	-29.63%
Postgraduate Research						
F/T employment	84.00%	90.80%	81.10%	91.30%	8.10%	12.58%
Overall Employment	87.90%	92.10%	91.10%	93.50%	4.78%	2.63%
Median Salary	$94,000	$113,600	$93,000	$110,000	20.85%	18.28%
Roles (of Overall Employed)						
managers	2.50%	12.90%	6.70%	10.70%	416.00%	59.70%
professionals	88.20%	80.20%	85.30%	81.30%	-9.07%	-4.69%
other	9.20%	6.90%	8.00%	7.90%	-25.00%	-1.25%

Table 13 - "academic staff (FTE) in engineering & related technologies, majority of ACED members (see note), 2012-22 (not including casual staffing)"

"(a) Academic staff (FTE) by gender and function"

staff categories	2012	2013	2014*	2015	2016	2017	2018	2019	2020*	2021	2022
academics, male											
teaching-only	69	100	98	76	67	88	127	121	130	135	158
research –only	1,051	1,194	1,194	1,295	1,279	1,417	1,344	1,304	1,326	1,419	1,546
teaching & research	1,602	1,747	1,759	1,755	1,824	1,919	1,907	1,839	1,639	1,642	1,851
sub-total, male	2,722	3,040	3,052	3,126	3,170	3,424	3,378	3,264	3,095	3,196	3,555
academics, female											
teaching-only	13	16	20	18	17	24	33	38	43	55	60
research –only	333	387	383	399	371	399	360	366	356	369	422
teaching & research	236	252	248	257	288	320	328	307	310	304	385
sub-total, female	621	656	652	675	676	743	721	711	709	728	867
total academics	3,343	3,696	3,704	3,801	3,846	4,167	4,099	3,975	3,804	3,924	4,422
% research-only	41.4%	42.8%	42.6%	44.6%	42.9%	43.6%	41.6%	42.0%	44.2%	45.6%	44.5%
% female	18.6%	17.7%	17.6%	17.8%	17.6%	17.8%	17.6%	17.9%	18.6%	18.6%	19.6%
total teaching	1,920	2,115	2,125	2,106	2,196	2,351	2,395	2,305	2,122	2,136	2,454

* Up to 2019, 26 of the 35 ACED member universities provided staff data for FoE3 to the Higher Education Statistics Unit.

"(b) Academic staff (FTE) by gender and level of appointment for ACED member universities*, 2013-22"

Year, gender and role	D, E	C	B	< B	other
2013 Men	907	692	796	553	178
Women	104	104	204	169	95
2014 Men	951	675	826	537	184
Women	115	111	201	156	85
2015 Men	1031	751	908	636	99
Women	127	132	212	201	61
2016 Men	1078	735	867	618	80
Women	145	132	198	191	56
2017 Men	1061	693	764	663	83
Women	132	129	195	208	47
2018 Men	989	651	696	689	73
Women	132	127	215	196	38
2019 Men	1026	657	708	735	69
Women	148	117	222	202	38
2020 Men	1136	724	805	804	86
Women	191	141	268	222	45
2021 Men, Total	1043	670	794	739	91
Women, Total	178	142	263	231	43
Men, Research	127	123	472	672	91
Women, Research	23	36	119	210	43
2022 Men, Total	1,067	658	746	721	103
Women, Total	197	154	257	246	39
Men, Research	124	128	436	629	103
Women, Research	30	38	118	214	39

Table 14 - summary enrolments, completions and load data for ACED members, 2022

University	Commencing students					Completions			Total enrolled students			Load
	domestic		international		total	dom	int'nat	total	dom	int'nat	total	EFTSL
	#	% fem	#	% fem								
Charles Darwin University	148	17.57%	131	13.74%	279	46	49	95	365	233	598	278
Charles Sturt University	45	28.89%	.	.	45	33	.	33	154	<5	154 +(<5)	86
CQUniversity	340	21.76%	99	8.08%	439	221	39	260	1,166	199	1,365	710
Curtin University	949	17.07%	626	22.52%	1,575	498	546	1,044	3,241	2,105	5,346	3,296
Deakin University	228	15.35%	352	18.47%	580	152	249	401	1,101	1,069	2,170	1,335
Edith Cowan University	243	15.23%	434	18.20%	677	99	274	373	689	1,066	1,755	945
Federation University Australia	106	6.60%	147	7.48%	253	67	91	158	335	325	660	310
Flinders University	406	42.12%	174	21.84%	580	124	51	175	975	297	1,272	815
Griffith University	488	19.26%	225	20.00%	713	302	150	452	1,586	588	2,174	1,319
James Cook University	120	20.00%	30	16.67%	150	41	22	63	398	81	479	302
La Trobe University	63	14.29%	194	17.01%	257	43	101	144	237	328	565	387
Macquarie University	437	8.01%	215	20.00%	652	157	113	270	1357	567	1,924	822
Monash University	1,097	20.24%	790	22.53%	1,887	734	1,091	1,825	4,748	4,019	8,767	5,062
Murdoch University	70	28.57%	52	23.08%	122	62	56	118	277	110	387	187
Queensland University of Technology	1,322	14.75%	222	17.12%	1,544	604	163	767	4,417	709	5,126	2,740
RMIT University	1,949	17.75%	991	16.15%	2,940	1173	1049	2,222	6,313	3,910	10,223	6,742
Southern Cross University	190	15.79%	34	20.59%	224	54	31	85	372	87	459	133
Swinburne University of Technology	609	18.56%	838	20.76%	1,447	537	448	985	2,582	2,308	4,890	3,166
The Australian National University	231	26.41%	152	28.95%	383	188	162	350	947	598	1,545	767
The University of Adelaide	680	23.53%	441	24.04%	1,121	369	315	684	2275	1,202	3,477	2,115
The University of Melbourne	341	29.62%	550	28.55%	891	302	617	919	1,106	1,790	2,896	2,827
The University of Newcastle	599	15.86%	119	11.76%	718	321	133	454	2,165	545	2,710	2,008
The University of Queensland	1,124	27.67%	533	20.64%	1,657	617	533	1,150	4,144	1,729	5,873	4,047
The University of Sydney	815	30.92%	1179	34.18%	1,994	327	989	1,316	3235	3,360	6,595	5,079
The University of Western Australia	806	23.95%	194	16.49%	1,000	256	180	436	1,368	497	1,865	1,594
University of Canberra	73	27.40%	np	np	78	47	11	58	219	39	258	239
University of New South Wales	2,366	19.19%	1541	23.10%	3,907	1548	1537	3,085	8089	4,802	12,891	7,178

University	Commencing students					Completions			Total enrolled students			Load
	domestic		international		total	dom	int'nat	total	dom	int'nat	total	EFTSL
	#	% fem	#	% fem								
University of South Australia	541	12.94%	341	17.01%	882	287	250	537	1534	890	2,424	1,300
University of Southern Queensland	861	16.84%	123	17.89%	984	460	53	513	3032	241	3,273	1,300
University of Tasmania	267	14.23%	158	20.25%	425	192	126	318	np	414	np	857
University of Technology Sydney	1,078	22.45%	513	22.03%	1,591	588	471	1,059	4,687	1,554	6,241	5,004
University of the Sunshine Coast	124	11.29%	13	23.08%	137	56	np	np	450	32	482	244
University of Wollongong	482	17.22%	564	20.04%	1,046	294	316	610	1580	1,366	2,946	1,908
Victoria University	74	17.57%	45	11.11%	119	48	43	91	377	221	598	717
Western Sydney University	554	14.98%	311	15.11%	865	433	217	650	1940	762	2,702	2,423
TOTAL 2022	19,826	21.73%	12,331	21.70%	32,162	11,280	10,476	21,700	68,325	38,043	106,373	68,240
TOTAL 2021	20,650	21.20%	10,283	20.00%	36,056	11,076	13,705	24,135	68,502	41,162	109,664	71,998
% change 2021-2022	-3.99%	2.50%	19.92%	8.50%	-10.80%	1.84%	-23.56%	-10.09%	-0.26%	-7.58%	-3.00%	-5.22%

Notes

Data source: Higher Education Statistics pivot tables for FoE03 Engineering and Related Technologies.

Engineering and Related Technologies includes surveying, maritime, and civil aviation, but may not include software engineering. UNSW Sydney and UNSW Canberra are separate ACED members, but their DESE data are combined.

Totals are a few percent less than those in Tables 1, 3 and 6 because of non-inclusion of private higher education and VET/TAFE providers.

University Group members of ACED (referred to in Section 10)

Group of Eight: Adelaide U, ANU, Monash U, Uni of Melbourne, Uni of Queensland, Uni of Sydney, UNSW, UWA

Australian Technology Network: Curtin U, Deakin U, RMIT U, Uni of Newcastle, Uni of SA, Uni of Tech Sydney

Innovative Research Universities: Charles Darwin U, Flinders U, Griffith U, James Cook U, La Trobe U, Murdoch U, Uni of Canberra, Wester Sydney U. Regional Universities Network: Charles Sturt U, CQ University, Federation U, Southern Cross U, Uni of Southern Queensland, Uni of Sunshine Coast Other: Edith Cowan U, Macquarie U, Queensland Uni of Tech, Swinburne Uni of Tech, Uni of Tasmania, Victoria U, Uni of Wollongong

Table 15 - number of coursework programs offered in Australia by ACED members, May 2024

Education Provider	BEng Tech	Associate Degree / Adv. Dip	Bachelor	Bachelor & Diploma	Bachelor & Master	Master
Australian Maritime College			6F			1F
Australian National University			7F			3P
Central Queensland University	3F	4F	4F, 6P	4F, 6P	6P	3F
Charles Darwin University	3F		3F			3F
Charles Sturt University	1F		1P		1F	1P
Curtin University Of Technology	1F		8F, 1P			2F, 9P
Deakin University			6F, 4P			
Edith Cowan University	1F		12F			12F, 1P
Federation University			4F, 1P			3F, 2P
Flinders University	1P		6F, 1P			3F, 2P
Griffith University			7F, 3P			3P
James Cook University			5F, 1P			2F
La Trobe University			2F			6F
Macquarie University			3F, 3P			1P
Monash University			9F, 1P			3F, 2P
Murdoch University			6F			3P
Queensland University Of Technology			8F, 5P			7P
RMIT University		6F	15F			10F, 1P
Southern Cross University		2P	2P			
Swinburne University Of Technology		3F, 1P	17F			6F, 1P
University Of Adelaide			13F			9F
University Of Canberra			1F			
University Of Melbourne						10F, 1P
UNSW Australia			23F, 2P		1F	5F, 4P
UNSW Canberra	2F		8F, 2P			
University of Newcastle			10F, 1P			3P
University of Queensland			6F		15F, 1P	5F, 3P
University of South Australia			8F, 1P			4P
University of Southern Queensland	6F, 3P	4F, 4P	9F, 3P			13F, 1P
University of The Sunshine Coast			2F, 4P			
University of Sydney			8F			10F, 2P
University of Tasmania			5F			2F, 3P
University of Technology Sydney			11F, 3P	11F, 3P		4F, 3P
University of Western Australia			9P			8F
University of Wollongong			18F, 1P			5F, 5P
Victoria University			4F			2F, 1P
Western Sydney University	8P		10F, 6P			6F
Total	17F, 12P	17F, 7P	264F, 61P	15F, 9P	17F, 7P	133F, 66P

Table 16 - accredited BEng(hons) and MEng programs offered by branch of engineering, ACED members, may 2024

(A) Offered in Australia - Fully Accredited BEng(Hons) and MEng Programs by branch of engineering, ACED members, May 2024

	Biomedical	Chemical	Civil	Communication Systems	Computer	Control	Electrical	Electrical and Electronic	Electronic	Electronic and Energy	Environmental	Industrial	Marine	Maritime	Naval	Ocean	Materials	Mechanical	Mechatronic	Metallurgical	Mining	Petroleum	Renewable Energy	Robotics	Software	Telecommunications
AUSTRALIAN MARITIME COLLEGE													2B	6B, 1M	2B	2B										
AUSTRALIAN NATIONAL UNIVERSITY				2B					2B										2B				2B		1B	
CENTRAL QUEENSLAND UNIVERSITY			2B, 1M				2B, 1M											2B, 1M	2B							
CHARLES DARWIN UNIVERSITY			1B, 1M				1B, 1M	1B, 1M	1B, 1M									1B, 1M								
CHARLES STURT UNIVERSITY			1B, 1M																							
CURTIN UNIVERSITY OF TECHNOLOGY		1B	1B				1B, 1M	1B	1B									1B	1B	1B	1B	1B, 1M				
DEAKIN UNIVERSITY			1B				1B	1B	1B		1B							1B	1B						1B	
EDITH COWAN UNIVERSITY		1B, 1M	2B, 1M		1B, 1M	1B, 1M	2B, 2M		1B, 1M		1B		1B	1B, 2M	1M	1M		1B, 1M	1B, 1M			1B, 1M	1B, 1M				
FEDERATION UNIVERSITY			1B, 1M															1B, 1M	1B		1B, 1M			1B		
FLINDERS UNIVERSITY	1B, 1M		1B, 1M				1B, 1M	1B, 1M	1B, 1M									1B						1B	1B	
GRIFFITH UNIVERSITY			1B				1B	1B	3B	1B	1B							1B							1B	
JAMES COOK UNIVERSITY		1B	1B				1B, 1M	1B	2B									1B					1M			
LA TROBE UNIVERSITY			1B, 2M						1M			1B														1M
MACQUARIE UNIVERSITY																		1B	1B						1B	
MONASH UNIVERSITY		1B, 1M	1B, 1M		1B		1B				1B						1B	1B, 1M	1B					1B	1B	
MURDOCH UNIVERSITY		1B			1B	1B	1B				1B	1B								1B			1B			
QUEENSLAND UNIVERSITY OF TECHNOLOGY		1B	1B		1B		2B											1B	1B						1B	
RMIT UNIVERSITY	1B	1B	1B, 1M		2B		1B, 1M	1M	3B, 1M		1B, 1M							1B, 1M	1B, 1M					1M		1B
SOUTHERN CROSS UNIVERSITY																										
SWINBURNE UNIVERSITY OF TECHNOLOGY	2B		3B, 1M				2B, 1M	2B	2B, 1M									2B, 1M	2B					2B	2B	1M
UNIVERSITY OF ADELAIDE		2B, 1M	2B, 2M				1B, 1M	1B	1B, 1M		1B, 1M							2B, 1M	1M		2B, 1M	3B			1B	
UNIVERSITY OF BALLARAT																										
UNIVERSITY OF CANBERRA				1B*																						
UNIVERSITY OF MELBOURNE	1M	1M	1M				1M				1M	1M						1M	1M						1M	
UNSW AUSTRALIA		2B	2B, 1M		1B		2B, 2M				1B, 1M						4B	2B, 1M	1B		1B	1B	1B		1B	1B, 1M
UNSW CANBERRA			2B				2B											2B								
UNIVERSITY OF NEWCASTLE		1B	1B		1B		1B	1B	1B		1B							1B	1B				1B		1B	
UNIVERSITY OF QUEENSLAND	2B, 2M	7B, 7M	2B, 2M		1B, 1M		4B, 4M				1B, 1M						2B, 2M	4B, 4M	2B, 1M	1B, 1M					2B, 1M	
UNIVERSITY OF SOUTH AUSTRALIA			3B				2B	1B	1B									3B	2B							
UNIVERSITY OF SOUTHERN QUEENSLAND			1B, 2M		1B	1B	1B, 2M	1B, 2M	1B, 2M		1B, 2M							1B, 2M	1B							
UNIVERSITY OF THE SUNSHINE COAST			1B															1B								
UNIVERSITY OF SYDNEY	1B, 1M	1B, 1M	1B, 1M				1B, 1M											1B, 1M	1B						1B, 1M	1M
UNIVERSITY OF TASMANIA			1B, 1M				2B	1B	2B									1B, 1M								
UNIVERSITY OF TECHNOLOGY SYDNEY	2B, 1M		4B, 1M				2B		2B		2B							4B, 1M	4B						2B	

*One program titled 'Network Engineering'

A) Offered in Australia - Provisionally Accredited BEng(Hons) and MEng Programs by branch of engineering, ACED members, May 2024

	Biomedical	Chemical	Civil	Computer	Control	Electrical	Electrical and Electronic	Electronic	Environmental	Industrial	Naval	Materials	Mechanical	Mechatronic	Metallurgical	Mining	Petroleum	Renewable Energy	Resource Systems	Robotics	Software	Telecommunications
AUSTRALIAN NATIONAL UNIVERSITY														1M				1M				1M
CENTRAL QUEENSLAND UNIVERSITY			7B, 2M		1B	5B, 1M							1B, 1M	1B, 1M					3B, 1M			
CHARLES STURT UNIVERSITY			1B, 1M																			
CURTIN UNIVERSITY OF TECHNOLOGY		1M	1M			1M				1B			1M		1M	1M					1M	1M
DEAKIN UNIVERSITY			1B			1B	1B	1B					1B	1B								
EDITH COWAN UNIVERSITY			1M						1M													
FEDERATION UNIVERSITY						1B, 1M				1M				1M				1M				
FLINDERS UNIVERSITY									1B			1M	1M									
GRIFFITH UNIVERSITY			1M					1B, 1M	1M					1B							1B	
JAMES COOK UNIVERSITY						1B	1B	1B														
MACQUARIE UNIVERSITY			1B			2B	1B	1B, 1M														
MONASH UNIVERSITY	1B					1M						1M										
MURDOCH UNIVERSITY					1M	1M			1M													
QUEENSLAND UNIVERSITY OF TECHNOLOGY			3M	1B		3B, 2M							2M	1B							1B	
RMIT UNIVERSITY						1M																
SOUTHERN CROSS UNIVERSITY			1B										1B									
SWINBURNE UNIVERSITY OF TECHNOLOGY																						
UNSW AUSTRALIA	1M											1B				1M	1M	1M				
UNSW CANBERRA											2B											
UNIVERSITY OF NEWCASTLE			1M			1M	1M	1M					1M									
UNIVERSITY OF QUEENSLAND			1B, 1M						1B, 1M			1M									1M	
UNIVERSITY OF SOUTH AUSTRALIA			1M			1M																1M
UNIVERSITY OF SOUTHERN QUEENSLAND						1B	1B	1B					1B	1B								
UNIVERSITY OF THE SUNSHINE COAST			1B			1B	1B	1B					1B	1B								
UNIVERSITY OF SYDNEY													1M									
UNIVERSITY OF TASMANIA						1M		1M										1M				
UNIVERSITY OF TECHNOLOGY SYDNEY		2B				2B, 1M	2B	2B, 1M										2B		1M		1M

B – Offered Off-Shore,

		Civil, Construction	Environmental	Chemical	Petroleum	Electrical	Electronic, Comp Syst, Telecoms	Software	Mechanical	Mechatronics, Robotics
CURTIN UNIVERSITY	Sarawak Malaysia	1B	1B	1B	1B	1B^			1B	1B(P)
	SLIIT/Malabe	1B				1B^			1B	1B
	Dubai								1B	
MONASH UNIVERSITY	Malaysia	1B		1B			1B	1B	1B	1B
RMIT UNIVERSITY	Saigon South, Vietnam					1B^ (P)		1B (P)		1B (P)
	Hkive Tsing Yi Campus, Hong Kong	1B				1B			1B	
	Kaplan, Singapore								1B (P)	
SWINBURNE UNIVERSITY OF TECHNOLOGY	Sarawak Malaysia	1B		1B		1B^		1B (P)	1B	1B
UNIVERSITY OF NEWCASTLE	Singapore					1B^			1B	
	Singapore BCAA	1B								
UNIVERSITY OF WOLLONGONG	Dubai	1B (P)				1B	2B		1B (P)	

^ Electrical and Electronic
(P) denotes Provisional Accreditation, all others have Full Accreditation.

https://www.engineersaustralia.org.au/sites/default/files/2024-04/engineers-australia-accredited-tertiary-programs-apr-24.pdf

Table 17 - subfields in ASCED fields of education 03 engineering and related technologies and 02 information technology

03 - Engineering and Related Technologies

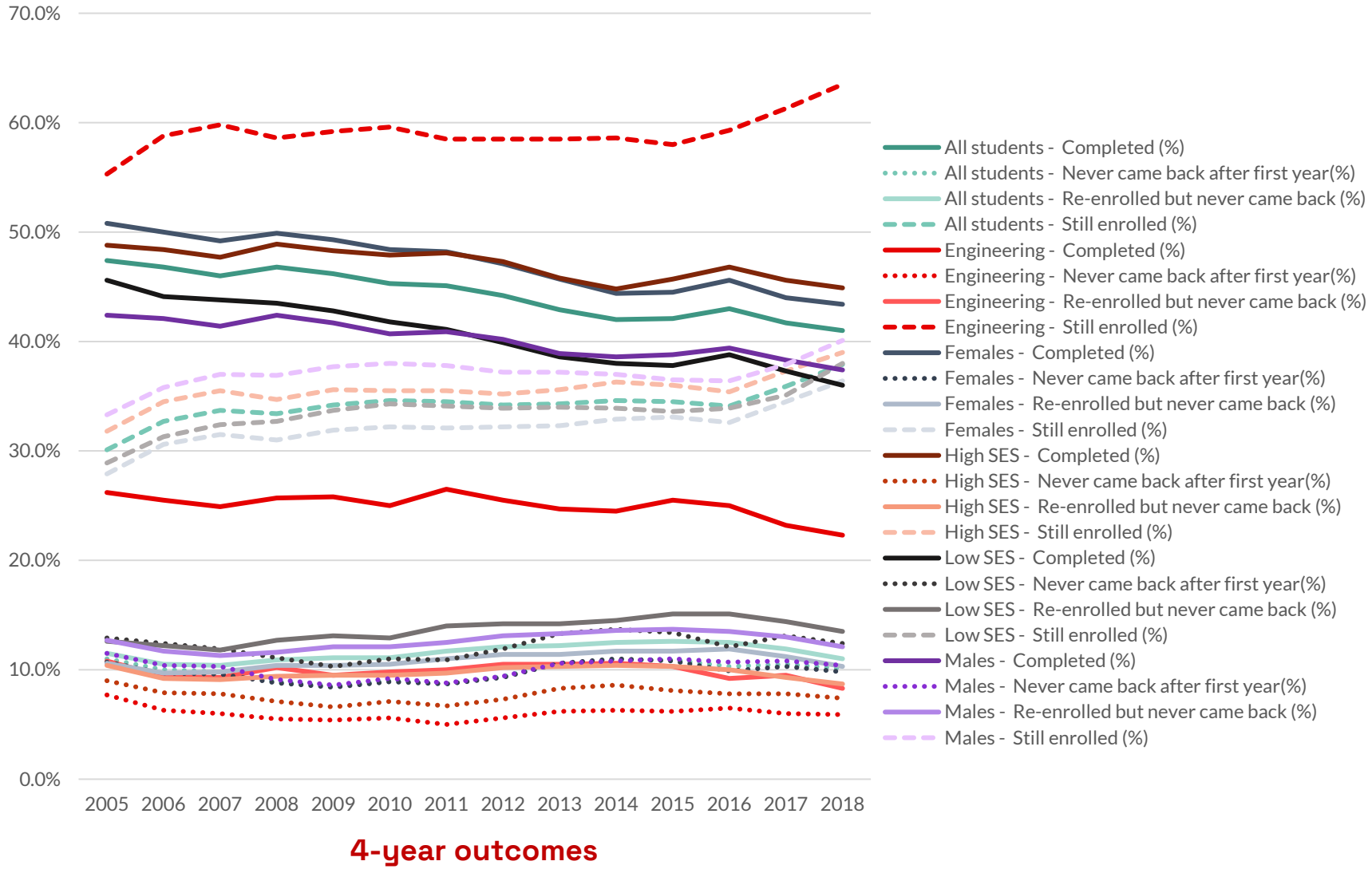
301	MANUFACTURING ENGINEERING AND TECHNOL'Y	309	CIVIL ENGINEERING
30101	Manufacturing Engineering	30901	Construction Engineering
30103	Printing	30903	Structural Engineering
30105	Textile Making	30905	Building Services Engineering
30107	Garment Making	30907	Water and Sanitary Engineering
30109	Footwear Making	30909	Transport Engineering
30111	Wood Machining and Turning	30911	Geotechnical Engineering
30113	Cabinet Making	30913	Ocean Engineering
30115	Furniture Upholstery and Renovation	30999	Civil Engineering, n.e.c.
30117	Furniture Polishing	311	GEOMATIC ENGINEERING
30199	Manufacturing Engineering and Technology, n.e.c.	31101	Surveying
303	PROCESS AND RESOURCES ENGINEERING	31103	Mapping Science
30301	Chemical Engineering	31199	Geomatic Engineering, n.e.c.
30303	Mining Engineering	313	ELECTRICAL & ELECTRONIC ENG'G AND TECHNOL'Y
30305	Materials Engineering	31301	Electrical Engineering
30307	Food Processing Technology	31303	Electronic Engineering
30399	Process and Resources Engineering, n.e.c.	31305	Computer Engineering
305	AUTOMOTIVE ENGINEERING AND TECHNOLOGY	31307	Communications Technologies
30501	Automotive Engineering	31309	Communications Equip't Installation & Mainten'ce
30503	Vehicle Mechanics	31311	Powerline Installation and Maintenance
30505	Automotive Electrics and Electronics	31313	Electrical Fitting, Electrical Mechanics
30507	Automotive Vehicle Refinishing	31315	Refrigeration and Air Conditioning Mechanics
30509	Automotive Body Construction	315	AEROSPACE ENGINEERING AND TECHNOLOGY
30511	Panel Beating	31501	Aerospace Engineering
30513	Upholstery and Vehicle Trimming	31503	Aircraft Maintenance Engineering
30515	Automotive Vehicle Operations	31505	Aircraft Operation
30599	Automotive Engineering and Technology, n.e.c.	31507	Air Traffic Control
307	INDUSTRIAL ENGINEERING AND TECHNOLOGY	31599	Aerospace Engineering and Technology, n.e.c.
30701	Mechanical Engineering	317	MARITIME ENGINEERING AND TECHNOLOGY
30703	Industrial Engineering	31701	Maritime Engineering
30705	Toolmaking	31703	Marine Construction
30707	Metal Fitting, Turning and Machining	31705	Marine Craft Operation
30709	Sheetmetal Working	31799	Maritime Engineering and Technology, n.e.c.
30711	Boilermaking and Welding	399	OTHER ENGINEERING AND RELATED TECHNOLOGIES

30713	Metal Casting and Patternmaking	39901	Environmental Engineering
30715	Precision Metalworking	39903	Biomedical Engineering
30717	Plant and Machine Operations	39905	Fire Technology
30799	Mechanical and Industrial Eng'g and Tech'y, n.e.c.	39907	Rail Operations
		39909	Cleaning
		39999	Engineering and Related Technologies, n.e.c.

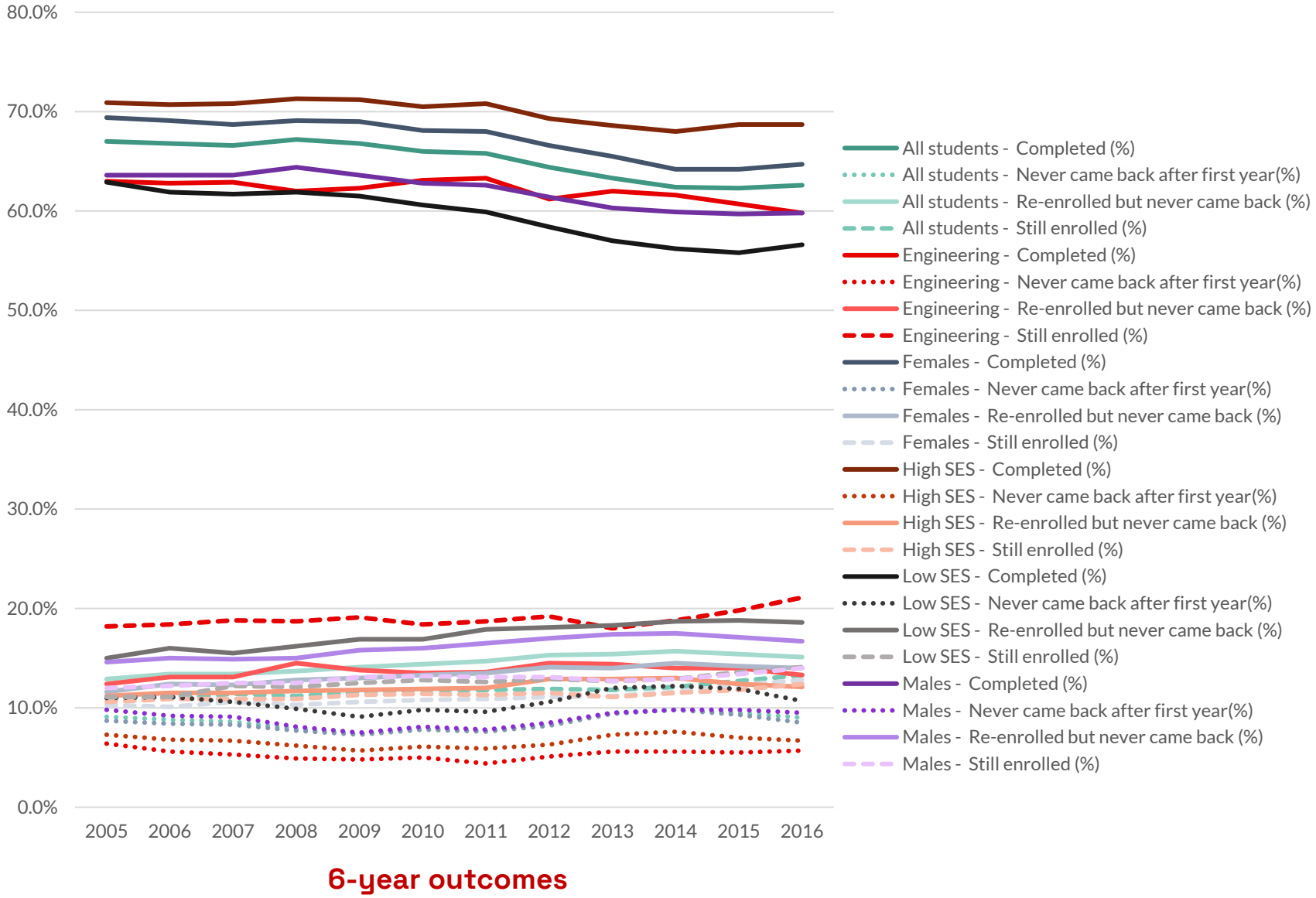
02 – INFORMATION TECHNOLOGY

201	COMPUTER SCIENCE	203	INFORMATION SYSTEMS
20101	Formal Language Theory	20301	Conceptual Modelling
20103	Programming	20303	Database Management
20105	Computational Theory	20305	Systems Analysis and Design
20107	Compiler Construction	20307	Decision Support Systems
20109	Algorithms	20399	Information Systems, n.e.c.
20111	Data Structures	299	OTHER INFORMATION TECHNOLOGY
20113	Networks and Communications	29901	Security Science
20115	Computer Graphics	29999	Information Technology, n.e.c
20117	Operating Systems		
20119	Artificial Intelligence		
20199	Computer Science, n.e.c.		

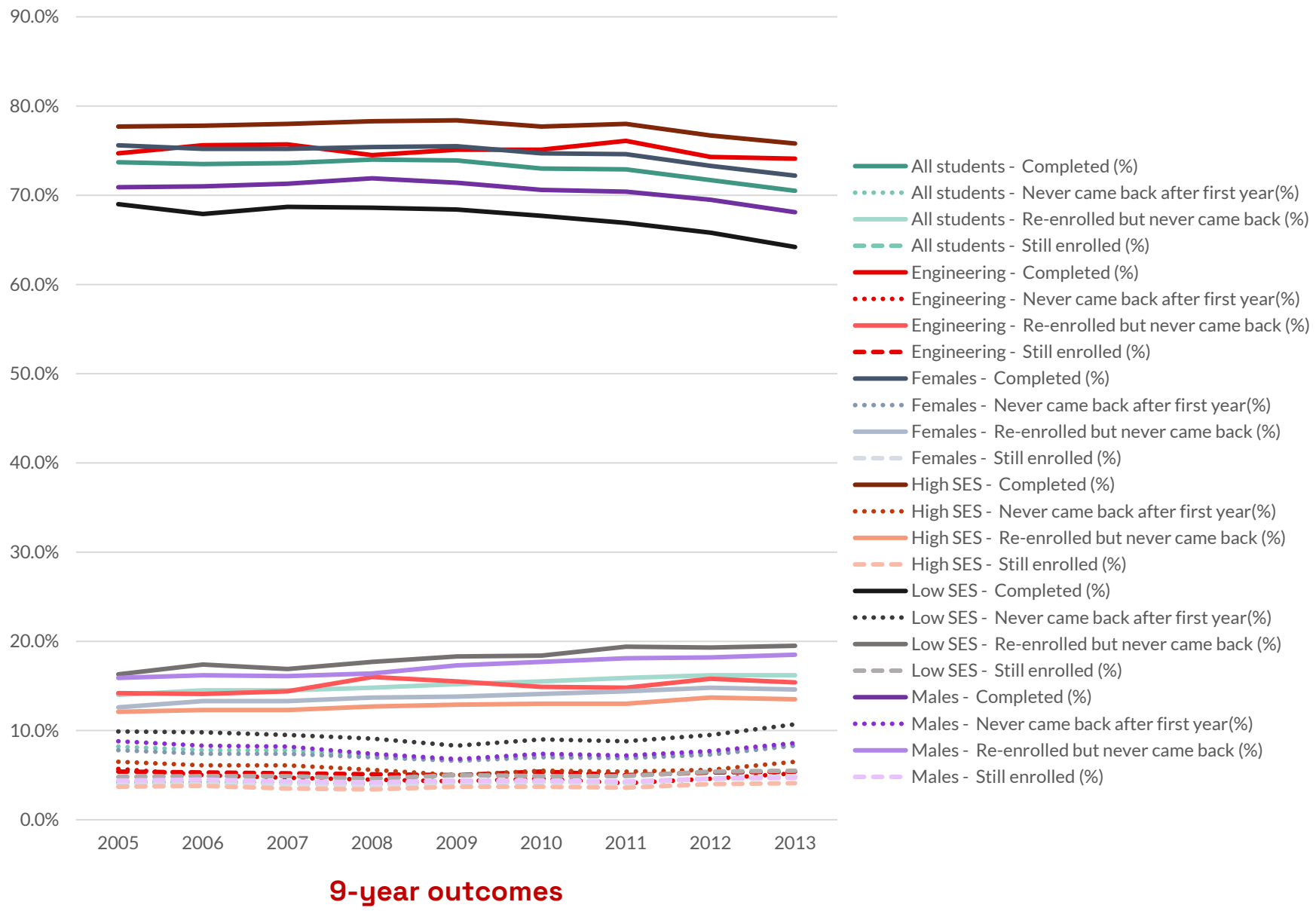
Appendix 2 – Cohort analyses - attrition, retention and success



4-year outcomes



6-year outcomes



9-year outcomes