

AUSTRALIAN ENGINEERING EDUCATION STUDENT AND STAFF STATISTICS FROM NATIONAL DATA COLLECTIONS – NOVEMBER 2015

1. INTRODUCTION

This compilation updates ACED's previous aggregated data with data for the 2014 academic year. The data are from the public websites: <https://www.education.gov.au/higher-education-statistics> and <http://www.graduatecareers.com.au/>, supplemented by information purchased from the Department of Education and Training.

The Higher Education Statistics Collection is sourced from submissions from the universities and other HE providers (VET private providers and TAFE institutes) after the semester census dates. Limitations in the data and their aggregations arise from the collection methods and classifications. The source data are used by national agencies, such as the Office of the Chief Scientist.

The data compilations provided here for ASCED Field of Education code 03 (Engineering and Related Technologies) provide the most detailed and broadly accurate picture of education numbers and trends available. Limitations include:

- Data cells with less than 5 members are recorded as '<5' so that individuals cannot be identified. Summing such cells is clearly imprecise;
- Masters coursework enrolments data do not distinguish between *formative* qualifications (e.g. those that may be accredited by Engineers Australia) and degrees designed to be taken by qualified engineers;
- ASCED FoE 03 (Engineering and Related Technologies) includes program areas that are not normally associated with engineering (eg civil aviation and spatial sciences). Other areas, such as 'software engineering' are not identified in the classification;
- Some universities do not report their graduations against the whole range of available four-digit ASCED codes, rendering it impossible to report accurately on the distribution of graduates by their branch of engineering (see Table 2);
- Some composite faculties do not report the number of their engineering staff (see Table 14).

2. GRADUATIONS (FIGURE 1, FROM DATA IN TABLE 1)

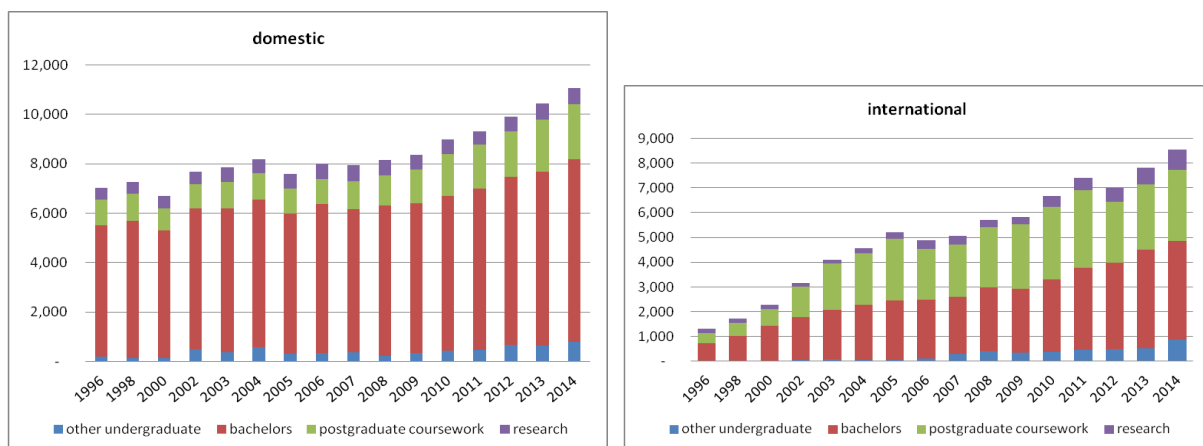


Figure 1 Domestic and international student graduations, 1996 - 2014

Observations:

- PhD graduates have doubled over the decade, with the proportion of international graduates also doubling from 26% to 55% of the totals.
- The proportion of women in the PhD graduating cohort is tending to increase, with a recent surge to 27% of domestic graduations.

- Coursework Masters graduate numbers (domestic and international) have increased; and continue to be dominated by international students (64% in 2013). This proportion is likely to decline as increasing numbers of domestic students graduate of formative MEng degrees.
- 'Other postgraduate' awards (graduate certificates and diplomas) continue to be dominated by domestic students (78% in 2013).
- Bachelors degree graduations continued to increase (to 11,373) with greater growth amongst domestic (to 7,392) than international students. The total includes approximately 1,000 graduates from 3-year degrees (see Table 2).
- Associate degrees and advanced diplomas were awarded to more than 600 students for the third consecutive year.
- 'Other undergraduate' awards have doubled since 2013 (to 1,035): this total includes 771 international graduations; but this may still understate the true number of these, as not all universities assign these foundation diplomas to the engineering field of education.

3. UNDERGRADUATE GRADUATIONS BY DEGREE TYPE AND BRANCH (FIGURE 2, DATA IN TABLE 2)

Observations:

- 3-year bachelors graduates (that include BEngTech or equivalent degrees) make up less than 10% of all bachelors graduations, and note that they may also include areas such as civil aviation.
- About 28% of domestic bachelor graduates have awards of more than 4-years duration, presumably mostly dual degrees. For international graduates, the corresponding proportion has dropped to about 2%, which may be partially due to new MEng models.
- The distribution of graduates across the branches of engineering from bachelors degrees, associate degrees, advanced diplomas and diplomas is impossible to report precisely, due to many universities reporting their graduates against the undifferentiated general codes (0300 and 0399). Figure 2 estimates the relative proportions, and shows flattening of previous rising trends for civil engineering graduates and declining trends for electrical/electronics engineering.

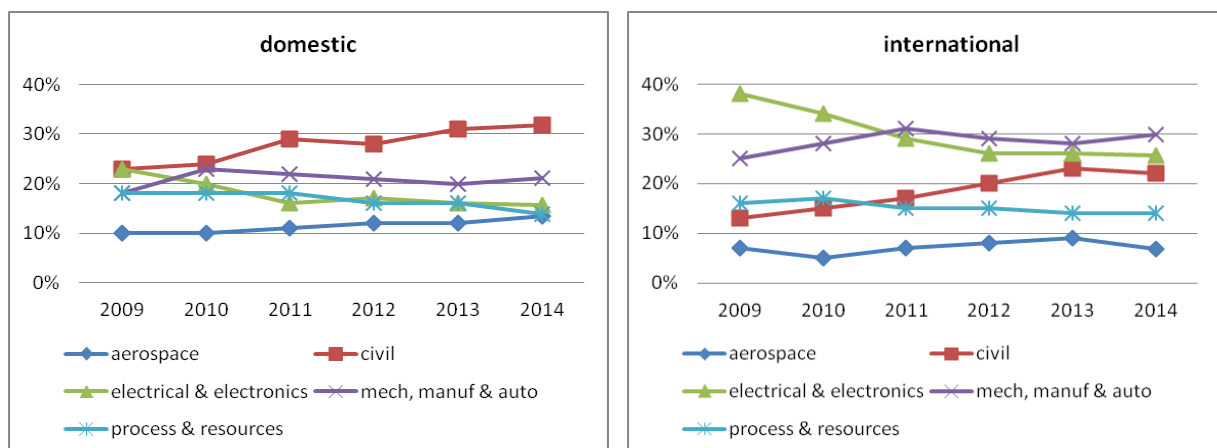


Figure 2 Distribution of undergraduate awards in branches of engineering, 2009 - 14

- In 2014, mechanical/manufacturing plus aerospace engineering make up about one third of all domestic, and a higher proportion of international graduations in engineering.
- In 2014, nearly half of the graduates in both electrical/electronic, and mechanical/manufacturing engineering were international, some studying overseas.

4. TOTAL ENROLMENTS (SUMMARY IN FIGURE 3, DATA IN TABLE 3)

Observations:

- Total enrolments in 2014 exceeded 100,000 for the first time, and were the highest they have ever been in all award categories, except for associate degrees/advanced diplomas.
- International enrolments in 'other postgraduate' awards decreased by one third to 235.

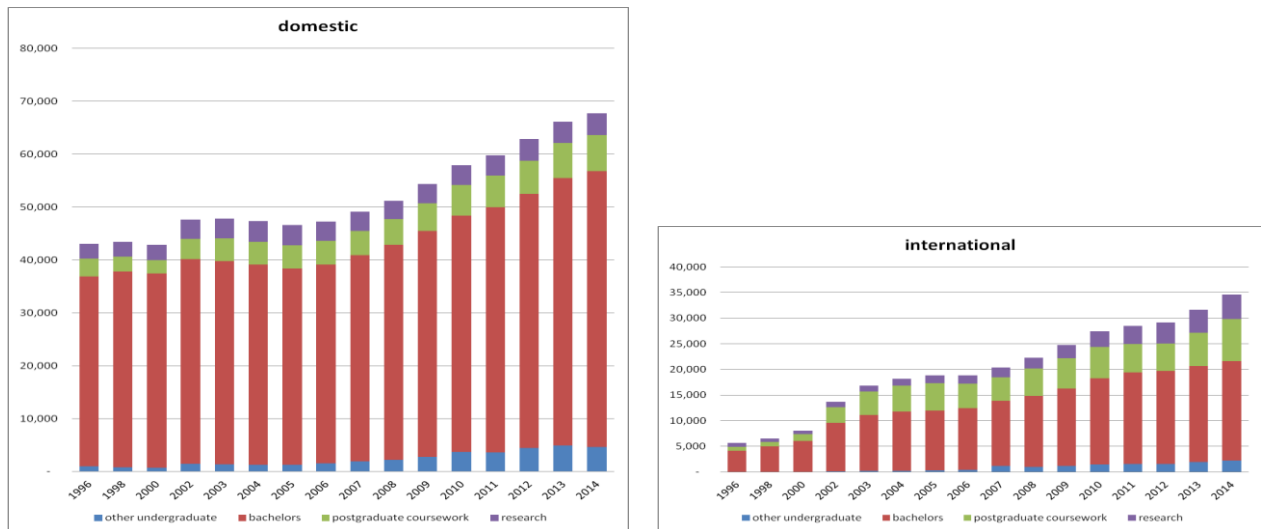


Figure 3 Domestic and international student enrolments, 1996 - 2014

5. COMMENCEMENTS (FIGURES 4 - 6, DETAILED DATA IN TABLES 4 – 6)

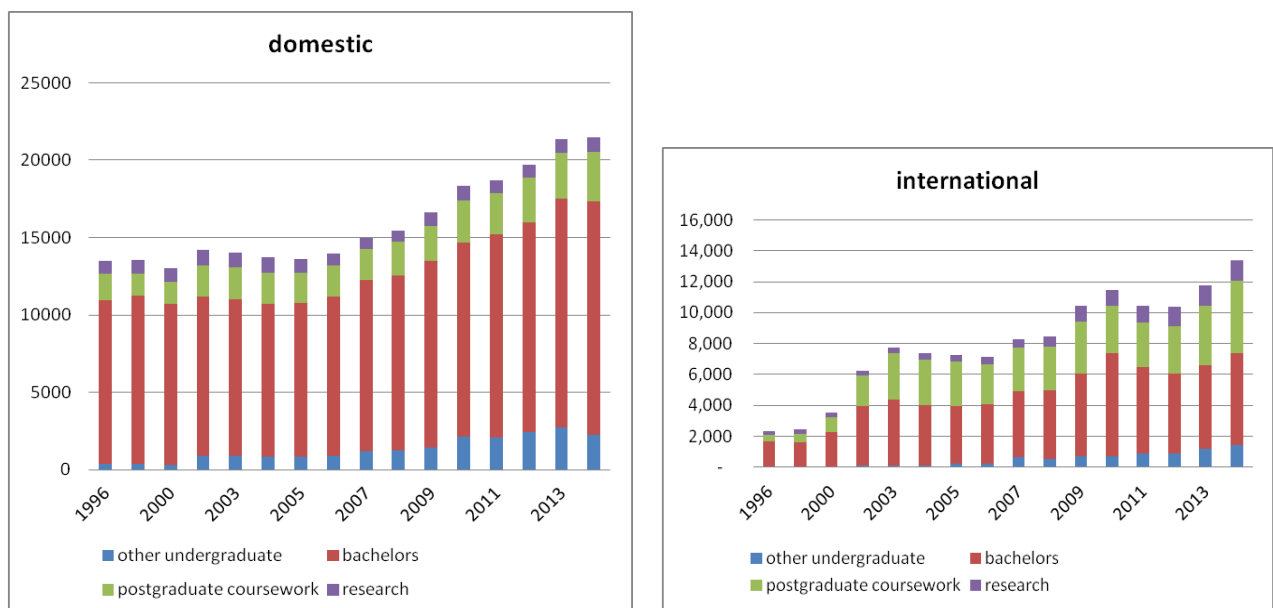


Figure 4 Domestic and international student commencing enrolments, 1996 – 2014

Observations:

- Doctoral commencements in 2014 increased due to growth of both domestic and international enrolments; with the proportion of the latter at approximately 63% since 2012.
- Total commencements into coursework masters increased by 20%; these data include formative masters degrees; bachelors degree enrolments also increased despite two universities no longer offering first degrees in engineering (see below).

- Bachelors degrees - domestic commencements increased slightly; international commencements increased by 10% continuing the trend back to the 2010 peak.
- Women commenced in PhDs in higher proportions than in 2013, to 27% (domestic) and 28% (International) in 2014.
- The proportion of Australian women commencing bachelors degrees increased for a second year, up to 15.1%; the international participation of women rate of 18.4% is the highest on record. The proportion of women commencing all awards increased slightly (see Figure 5), with international women participating at a higher rate than their domestic peers in the larger award categories.

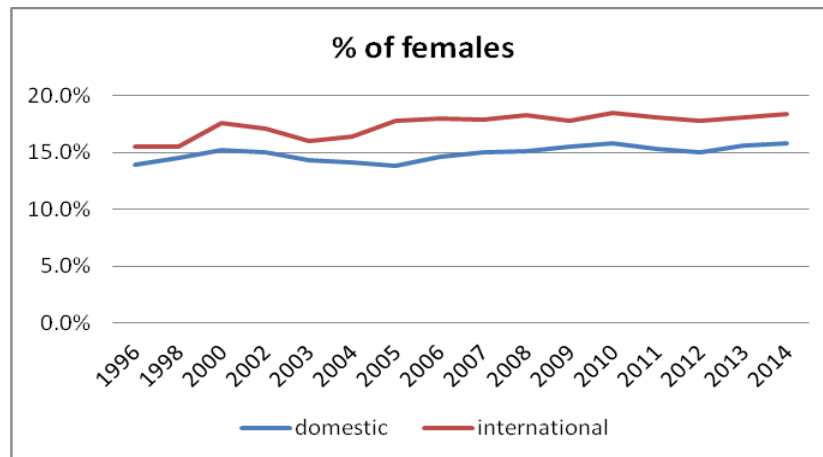


Figure 5 Proportions of women in the commencing cohorts of all award programs in engineering, 1996 - 14

- Associate degrees and advanced diplomas commencements by domestic students declined sharply, from 1,890 to 1,370; alongside about 200 international commencements.
- Commencements into all awards in engineering dropped to 5.3% of all commencing domestic enrolments in 2014, the lowest proportion on record (Table 5, Figure 6).

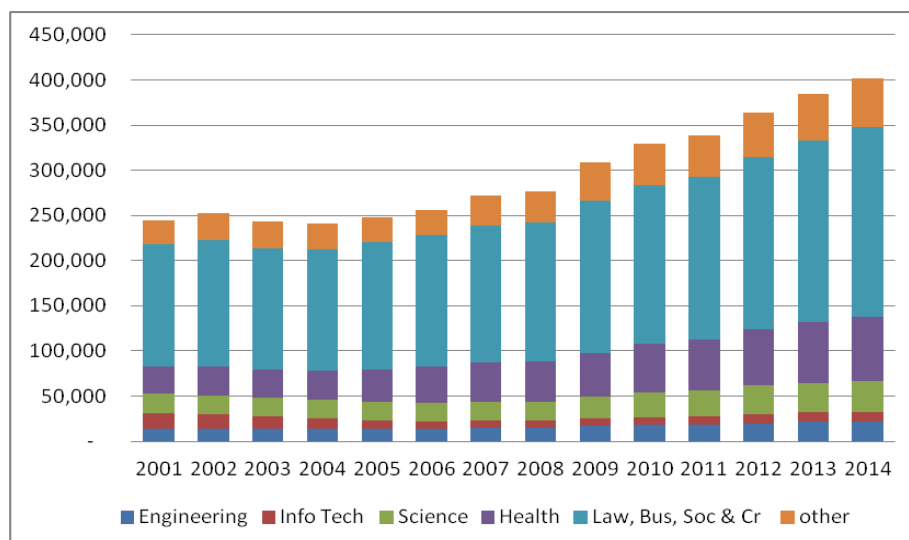


Figure 6 Domestic commencing enrolments (all awards) by selected fields, 2001- 14

- The basis of admission into bachelors degrees (Table 6) shows that non-school-leaver entry has become more common for both domestic and international student categories. More than 24% of all commencing domestic students have a completed or partially completed higher education award, indicating the increased use of articulation pathways. One third of commencing international students enter on the basis of a previous higher education award. The emergence of formative MEng degrees complicates analysis and interpretation of these trends.

6. BACHELOR DEGREE ANNUAL SUCCESS AND RETENTION RATES (DETAILED DATA IN TABLES 7 – 9)

The **success rate** is the proportion of courses passed by a student in a given year. The following summary table shows the aggregated success rates in 2014 in comparison with immediate previous years, and a baseline of 2001.

	Domestic				International			
	male		female		male		female	
	full-time	part-time	full-time	part-time	full-time	part-time	full-time	part-time
<i>For commencing students</i>								
2001	82.1	63.7	86.6	65.4	83.6	70.4	88.5	77.2*
2012	83.9	67.2	86.5	69.9	83.5	77.4	89.1	71.0*
2013	83.6	69.6	87.8	70.7	83.7	79.0	86.3	no data*
2014	83.3	72.0	87.5	73.0	83.1	78.7	89.6	71.3
<i>For all students (eg over 4-years of study)</i>								
2001	85.5	72.0	89.5	77.8	85.7	76.6	89.1	80.6
2012	87.0	74.6	90.2	77.5	86.9	79.5	91.1	80.1
2013	86.6	74.7	90.2	80.3	86.7	77.1	91.6	81.2
2014	86.7	74.3	89.8	79.3	85.9	78.7	91.4	83.6

These data do not change much from year to year, but indicate that most success rates have increased since 2001, particularly for commencing students (note that these with advanced standing are not in the first program year). Note that:

- part-time students' success rates are consistently lower than those of full-time students;
- women perform consistently better than their male peers;
- the 'all student' rates are a few per cent higher than those of commencing students, demonstrating that once students are firmly in their program, they will tend to succeed.

Retention rates record successful progression to a subsequent year of study, or graduation. The most recent validated data is the retention from 2013 into a confirmed enrolment in 2014, or graduation. Two sets of aggregated retention data are provided here.

Retention in the institution:

	Domestic				International			
	male		female		male		female	
	full-time	part-time	full-time	part-time	full-time	part-time	full-time	part-time
<i>For commencing students</i>								
2001	87.7	65.8	89.6	65.4	91.3	71.8	93.5	80.9*
2011	88.9	69.6	90.8	68.2	91.3	77.6	92.8	60.6*
2012	88.7	66.4	90.2	62.8	92.2	82.7	94.5	67.6*
2013	87.6	65.7	89.1	66.5	91.8	84.0	94.5	76.7*
<i>For all students</i>								
2001	89.0	70.1	91.3	72.7	90.3	71.3	94.2	76.6*
2011	89.4	70.7	91.3	69.9	89.9	69.5	91.8	58.3*
2012	89.1	69.3	91.5	68.0	91.5	74.4	94.4	65.1*
2013	88.6	70.3	90.2	70.1	89.9	71.7	93.8	71.5

* small numbers

Retention in the institution allows for students to change program; retention in the institution and engineering indicates progression within the degree. Similar comments to those for the success rates apply. There is causal relationship between retention and success: a student who does not succeed at least to some extent will not progress, although may enroll in another program.

Retention in the institution and in engineering:

	Domestic				International			
	male		female		male		female	
	full-time	part-time	full-time	part-time	full-time	part-time	full-time	part-time
<i>For commencing students:</i>								
2001	82.0	61.7	81.9	59.7	88.1	69.8	91.4	78.8*
2011	83.5	66.1	82.5	62.1	89.9	77.2	92.0	57.6*
2012	84.5	63.9	84.8	58.3	90.7	82.2	93.1	67.6*
2013	83.2	62.1	83.5	62.2	90.6	84.0	92.6	76.7*
<i>For all students:</i>								
2001	85.3	67.2	86.8	68.3	88.0	69.9	91.4	74.8*
2011	86.4	68.5	87.0	66.9	88.9	69.0	90.9	57.3*
2012	86.4	67.2	88.1	64.6	90.4	73.8	93.3	64.3*
2013	85.7	68.1	86.3	66.8	88.8	71.0	92.4	70.0*

* small numbers

The differences between corresponding data in the above tables (the full data are in Tables 8 and 9) provide insight into the loss from engineering into other discipline areas (in the same institution). The mean differences over 2001-13 are:

	Domestic				International			
	male		female		male		female	
	full-time	part-time	full-time	part-time	full-time	part-time	full-time	part-time
commencing	4.3	4.2	6.4	8.6	1.7	-0.1	2.1	0.6
all students	3.1	2.7	4.4	4.7	1.7	0.4	2.0	0.7

It is not surprising that commencing students leave the discipline at higher rates than all students, and that international students appear more committed to their chosen program. The data indicate also that women leave engineering at a higher rate than their male peers. Given the high investment into recruiting women into engineering, this should be addressed.

Note however, that these retention rates are *not* based on cohort studies, but aggregated overall enrolments. They do not allow for students moving from one institution to another, for example. ACED members are referred to the ALTC-supported study that examined several ACED members' cohort retention data and pathways in considerable detail. (See <http://www.olt.gov.au/project-curriculum-specification-support-uts-2008>) That study showed the limitations of drawing too much from the aggregated data, and also that the basis of admission plays a large part in predicting the likelihood of graduation. Nevertheless, knowing these national retention data (and their limitations) may be useful for informing future national debates on the performance of the engineering education system. ACED members should also be familiar with their institutions' individual data.

7. STAFF DATA (FIGURES 7-8, DETAILED DATA IN TABLE 10)

Reported total academic staff (FTE) in non-casual positions in 2014 increased slightly from the previous year, although the numbers of research-only positions declined (from 1,694 to 1,650).

The combined number of Teaching & research and Teaching-only positions increased from 2,136 to 2,196, although the number in the latter category dropped from 95 to 84, possibly against the national trend for the introduction of Teaching-only positions in many universities.

These data underestimate total staffing, however, as some universities reported zero engineering staff, despite having many students (see Table 14).

The proportion of women (FTE) in research-only positions has declined slightly from its previous peak, but the proportion of women in teaching/teaching & research positions increased over the past year from 13.1% to 16.4%. The proportion of women in above-Level C and Level B positions increased very slightly from the 2013 figures.

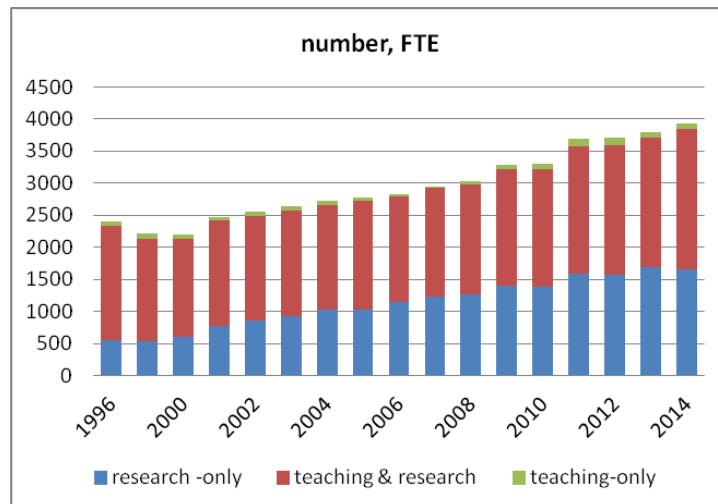


Figure 7 Academic staffing (FTE) in engineering, 1996–2014)

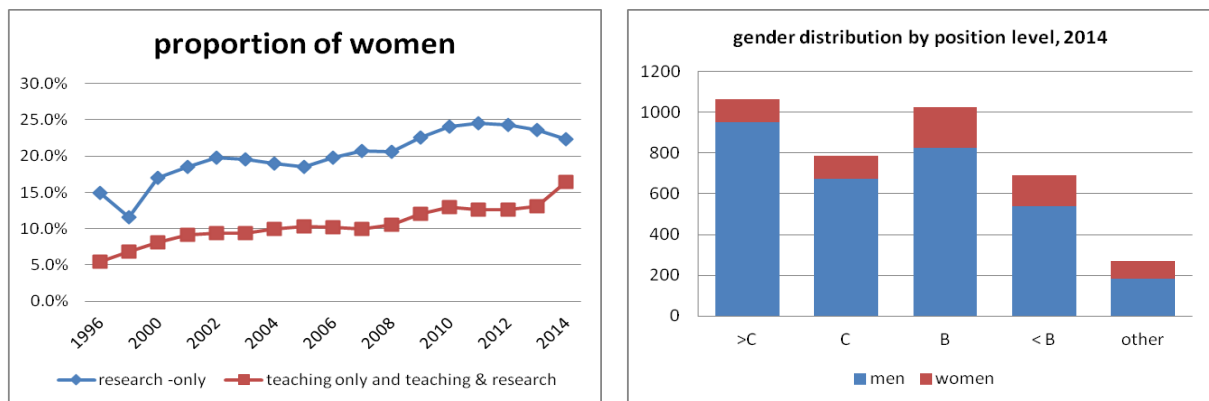


Figure 8 Proportion of women academic staff (FTE) in engineering by roles 1996–2014, and gender distribution by position level, 2014

8. ACTUAL STUDENT LOAD (DETAILS BY 4-DIGIT ASCED CODE ARE IN TABLE 11)

Higher Education Load Tables provide the basis for estimating effective student-staff ratios.

Assuming zero engineering teaching into other disciplines, the 67,931 EFTS of 2014 actual load in engineering is generated by our 102,304 enrolled students. Thus, on average, each student represents approximately 0.65 EFT. The following table summarises load over recent years.

	doctorate	masters	other p/g	bachelors	other u/g	enabling	non-award	total
domestic 2012	2,304	2,080	766	31,962	1,563	65	33	38,890
domestic 2013	2,225	2,399	756	33,571	1,608	62	49	40,856
domestic 2014	2,378	2,730	746	34,681	1,609	55	69	42,267
% change v 2013	6.9%	13.8%	-1.3%	3.3%	0.1%	-11.3%	40.8%	3.5%
total 2012	5,215	5,913	1,033	44,935	2,275	65	141	59,802
total 2013	5,640	7,192	914	47,220	2,408	62	395	63,999
total 2014	5,904	5,650	876	48,503	2,511	55	1,058	67,931
% change v 2013	4.7%	25.5%	-4.2%	2.7%	4.3%	-11.3%	167.8%	6.1%

The most notable growth in load is in the masters (25.5%) and enabling award categories. The former is attributed partly to reasons referred to elsewhere, the latter may be due to changes in university's re-allocation of teaching responsibility. In any event, the overall load has increased by 6.1% without similar an apparent increase in non-casual staffing (2,196 FTE in 2014).

These data allow calculation of a raw student-staff ratio as $(67,931/2,196) = 30.9$, which is an increase from 30.1, for 2013.

Comparable student-staff ratios can be calculated for most of the member faculties from the data in Table 14. Their interpretation is likely to be institution dependent.

The high aggregate figure quoted above are reduced in effect by the contributions of casual staff and research staff to teaching, but may also be increased where staff in Teaching & Research positions are allocated to full-time research or management positions, or are on sabbatical leave.

9. GRADUATE DESTINATION and STARTING SALARY DATA (TABLES 12 and 13)

The latest available data from Graduate Careers Australia is for bachelors degree graduates completing in 2014. These are sample survey data undertaken in the early months of the following year. They show that engineering graduates:

- are employed full-time at higher rates than all graduates;
- take up postgraduate study at lower rates than all graduates;
- in all branches of engineering, the full-time employment rates are decreasing, since high points in 2011-12. Graduate employment rates in most branches of engineering are the lowest they have been over the past decade.

More salary data is included this year, including for postgraduates. The data show that:

- engineering bachelors graduates continue to ranked 3rd compared with other professions, but that most starting salaries have declined;
- women bachelors graduates in engineering continue to earn more than men;
- the relative value of engineering coursework postgraduate awards (including graduate certificates and diplomas), compared with research graduates;
- large volume business masters programs, presumably MBAs, provide salary rewards similar to those from postgraduate (non-formative) engineering coursework programs. .

10. DISTRIBUTION OF ENROLMENTS, ETC. FOR ACED MEMBERS (TABLE 14)

Table 14 provides summary data on the commencing and total enrolments and graduation and staffing from all the ACED members.

From these data it is clear that one institution, the University of New South Wales (including their campus at Canberra) has the most enrolments and graduations by some margin.

The sixteen Australian universities in the eleven member Group of Eight Engineering Deans and Associates (that includes Newcastle, Wollongong and Auckland), plus the six 'technology' universities (ATN plus Swinburne) have more than 85% of total enrolments.

11. CONCLUDING COMMENT

Tables 2 and 14 question the veracity and completeness of the data provided on engineering by their universities to Canberra. I can provide ACED members with their own items if they are interested, although it would be very time consuming to extract a set for each member. I would suggest that members interrogate their own university statistics units to gain insight into any data that appear anomalous.

R W King
18 November 2015

TABLE 1 ENGINEERING GRADUATIONS 2004 – 2014

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
DOCTORATES	570	637	695	772	697	705	792	782	953	1,113	1,268
domestic total	421	452	487	519	513	479	474	399	496	536	572
% domestic female	20.9%	21.2%	20.1%	21.4%	24.2%	21.1%	22.0%	23.3%	23.2%	24.8%	27.3%
international total	149	185	208	253	184	226	318	383	457	577	696
% international female	14.8%	16.8%	16.8%	18.2%	17.4%	19.9%	19.9%	23.0%	25.2%	27.0%	24.3%
% international	26.1%	29.0%	29.9%	32.8%	26.4%	32.1%	40.2%	49.0%	48.0%	51.8%	54.9%
RESEARCH MASTERS	220	208	264	230	228	185	196	235	212	245	218
domestic total	147	133	139	135	127	99	99	115	100	132	103
% domestic female	17.0%	23.3%	24.5%	25.9%	19.7%	18.2%	23.2%	26.1%	15.0%	22.0%	22.3%
international total	73	75	125	95	101	86	97	120	112	113	115
% international female	19.2%	21.3%	17.6%	21.1%	24.8%	25.6%	33.0%	22.5%	31.3%	26.5%	24.3%
% international	33.2%	36.1%	47.3%	41.3%	44.3%	46.5%	49.5%	51.1%	52.8%	46.1%	52.8%
COURSEWORK MASTERS	2,587	2,934	2,406	2,586	2,878	3,134	3,684	3,829	3,404	3,758	4,138
domestic total	645	635	576	686	690	788	1,024	1,045	1,145	1,335	1,426
% domestic female	16.6%	18.0%	15.5%	20.1%	18.3%	17.6%	18.6%	16.1%	15.4%	17.9%	18.8%
international total	1,942	2,299	1,830	1,900	2,188	2,346	2,660	2,784	2,259	2,403	2,712
% international female	17.1%	17.0%	15.9%	15.4%	18.4%	18.8%	18.7%	18.9%	19.3%	19.5%	19.1%
% international	75.1%	78.4%	76.1%	73.5%	76.0%	74.9%	72.2%	72.7%	66.4%	64.3%	65.5%
OTHER POSTGRADUATE	528	558	655	659	763	829	951	1,098	921	945	958
domestic total	409	363	417	447	522	588	672	746	704	763	794
% domestic female	20.0%	17.9%	16.1%	22.4%	20.9%	19.0%	22.2%	17.8%	19.5%	17.6%	21.8%
international total	119	195	238	212	241	241	279	352	217	219	164
% international female	13.4%	19.0%	13.0%	14.6%	19.5%	17.0%	15.1%	13.6%	11.1%	16.0%	18.9%
% international	22.5%	34.9%	36.3%	32.2%	31.6%	29.1%	29.3%	32.1%	23.6%	22.3%	20.7%
BACHELORS	8,200	8,076	8,369	8,076	8,661	8,652	9,149	9,849	10,261	11,018	11,373
domestic total	5,980	5,680	6,026	5,786	6,077	6,063	6,237	6,534	6,795	7,044	7,392
% domestic female	16.3%	16.7%	16.0%	14.8%	14.7%	14.9%	14.7%	14.6%	14.9%	14.6%	15.3%
international total	2,220	2,396	2,343	2,290	2,584	2,589	2,912	3,315	3,466	3,974	3,981
% international female	19.2%	18.3%	18.7%	19.8%	21.2%	18.3%	18.4%	18.2%	18.1%	18.2%	19.9%
% international	27.1%	29.7%	28.0%	28.4%	29.8%	29.9%	31.8%	33.7%	33.8%	36.1%	35.0%
ASSOC DEG & ADV DIPL	182	190	97	159	564	369	417	384	663	617	620
domestic total	124	141	87	133	175	278	320	327	518	479	523
% domestic female	7.3%	5.0%	4.6%	9.0%	11.4%	8.6%	10.9%	~ 8%	~ 7%	8.1%	9.6%
international total	58	49	10	26	389	91	97	57	145	138	97
% international female	43.1%	14.3%	0.0%	7.7%	20.8%	4.4%	5.2%	~11%	~6%	8.0%	12.4%
% international	31.9%	25.8%	10.3%	16.4%	69.0%	24.7%	8.0%	14.8%	21.9%	22.4%	15.6%
OTHER UNDERGRAD	456	191	376	510	76	314	404	534	501	551	1,035
domestic total	444	173	258	233	60	60	109	130	141	152	264
% domestic female	0.2%	2.9%	1.9%	6.4%	15.0%	8.3%	4.6%	~ 8%	~ 7%	13.2%	7.6%
international total	12	18	118	277	16	254	295	404	360	399	771
% international female	16.7%	27.8%	40.7%	29.2%	31.3%	13.8%	10.8%	~ 11%	~10%	8.0%	10.0%
% international	2.6%	9.4%	31.4%	54.3%	21.1%	80.9%	73.0%	75.7%	71.9%	72.4%	74.5%
ALL GRADUATES	12,743	12,794	12,862	12,992	13,867	14,188	15,590	16,484	16,912	18,286	19,550
domestic total	8,170	7,577	7,990	7,939	8,164	8,355	8,935	9,257	9,896	10,461	11,074
% domestic female	15.8%	16.7%	15.8%	15.9%	16.0%	15.6%	15.9%	15.2%	15.2%	15.5%	16.5%
international total	4,573	5,217	4,872	5,053	5,703	5,833	6,655	7,227	7,016	7,825	8,476
% international female	18.3%	17.7%	17.8%	18.3%	20.0%	18.2%	18.3%	18.0%	18.3%	18.6%	19.2%
% international	35.9%	40.8%	37.9%	38.9%	41.1%	41.1%	42.7%	43.8%	41.5%	42.8%	43.4%

TABLE 2 UNDERGRADUATE GRADUATIONS 2014, BY AWARD, DURATION AND 4-DIGIT FOE CODE

YEAR/SOURCE/LEVEL	TOTAL	0300	0301	0303	0305	0307	0309	0311	0313	0315	0317	0399
Domestic												
Assoc Degree, AD & Dip	517	67	<5	6	0	65	167	<5	29	25	<5	158
up to 3-year Bach	639	11	83	26	<5	<5	<5	34	13	286	25	161
4-year Bach	4938	892	31	438	16	601	1018	85	511	205	25	1116
> 4-year Bach	1910	684	17	151	<5	142	228	9	142	84	18	435
TOTAL DOMESTIC	7971	1654	134	618	22	782	1416	131	695	600	49	1870
~ % of total		20.8%	1.7%	7.8%	0.3%	9.8%	17.8%	1.6%	8.7%	7.5%	0.6%	23.5%
~ % of total (ex 300/399)			3.0%	13.9%	0.5%	17.6%	31.8%	2.9%	15.6%	13.5%	1.1%	
International												
Assoc Degree, AD & Dip	93	<5	0	0	0	30	44	0	13	<5	0	<5
up to 3-year Bach	384	64	57	17	<5	<5	27	<5	52	98	12	57
4-year Bach	3511	570	11	346	12	681	504	10	619	69	20	669
> 4-year Bach	85	11	<5	15	0	6	15	0	<5	12	6	20
TOTAL INTERNATIONAL	4073	648	63	378	15	720	590	13	687	182	41	749
~ % of total		15.9%	1.5%	9.3%	0.4%	17.7%	14.5%	0.3%	16.9%	4.5%	1.0%	18.4%
~ % of total (ex 300/399)			2.4%	14.1%	0.6%	26.9%	22.0%	0.5%	25.7%	6.8%	1.5%	
% international	33.8%	28.1%	32.0%	38.0%	40.5%	47.9%	29.4%	9.0%	49.7%	23.3%	45.6%	28.6%

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

Notes:

ANU, CQUni, Deakin, JCU, Melbourne, UWA, UTS, WSU use code 0300 for most BEng graduates
CDU, Griffith, Monash, QUT, USQ and UTas use code 0399 for most BEng 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.

The 0301 manufacturing engineering sub-code includes "printing", "textile/garment/furniture making", that are likely to be more relevant to sub degree-level VET qualifications.

The full set of ASCED codes is at:

<http://www.abs.gov.au/Ausstats/abs@.nsf/0/E7779A9FD5C8D846CA256AAF001FCA5C?opendocument>

TABLE 3 TOTAL ENROLMENTS (STUDENTS) 2004 - 2014

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
DOCTORATES	3,985	4,110	4,199	4,340	4,559	5,054	5,567	6,258	7,059	7,427	7,668
domestic total	3,001	2,999	2,935	2,917	2,852	2,866	2,982	3,183	3,404	3,389	3,372
% domestic female	21.2%	21.2%	21.2%	21.6%	22.4%	22.9%	23.8%	23.9%	23.7%	24.9%	25.5%
international total	984	1,111	1,264	1,423	1,707	2,188	2,585	3,075	3,655	4,038	4,296
% international female	19.6%	18.9%	20.8%	21.8%	24.8%	26.0%	26.4%	27.1%	26.6%	25.7%	25.9%
% international	24.7%	27.0%	30.1%	32.8%	37.4%	43.3%	46.4%	49.1%	51.8%	54.4%	56.0%
RESEARCH MASTER'S	1,287	1,253	1,214	1,178	1,018	1,120	1,245	1,191	1,194	1,148	1,191
domestic total	927	852	786	732	598	697	769	704	689	662	684
% domestic female	20.2%	21.6%	20.6%	19.4%	20.9%	19.5%	20.0%	19.9%	20.6%	22.4%	21.8%
international total	360	401	428	446	420	423	476	487	505	486	507
% international female	15.0%	20.2%	21.0%	25.1%	26.4%	29.8%	28.6%	27.9%	29.9%	29.8%	27.6%
% international	28.0%	32.0%	35.3%	37.9%	41.3%	37.8%	38.2%	40.9%	42.3%	42.3%	42.6%
COURSEWORK MASTERS	7,102	7,178	6,656	6,699	7,706	8,630	9,266	8,999	9,078	10,566	12,776
domestic total	2,293	2,266	2,312	2,536	2,764	3,164	3,630	3,856	4,061	4,434	4,822
% domestic female	17.0%	17.1%	18.6%	18.1%	18.3%	17.0%	17.3%	16.9%	16.9%	17.7%	18.6%
international total	4,809	4,912	4,344	4,163	4,942	5,466	5,636	5,143	5,017	6,132	7,954
% international female	15.8%	16.3%	15.7%	16.6%	17.5%	17.1%	18.1%	18.4%	18.5%	17.6%	17.7%
% international	67.7%	68.4%	65.3%	62.1%	64.1%	63.3%	60.8%	57.2%	55.3%	58.0%	62.3%
OTHER POSTGRADUATE	2,263	2,456	2,546	2,398	2,486	2,556	2,611	2,555	2,554	2,525	2,286
domestic total	2,005	2,072	2,122	2,007	2,085	2,085	2,151	2,122	2,206	2,177	2,051
% domestic female	17.2%	17.5%	19.1%	18.6%	19.1%	19.0%	19.6%	20.0%	18.8%	19.4%	17.8%
international total	258	384	424	391	401	471	460	433	348	348	235
% international female	19.4%	12.8%	15.3%	15.1%	15.7%	13.8%	16.1%	17.1%	17.2%	19.5%	20.0%
% international	11.4%	15.6%	16.7%	16.3%	16.1%	18.4%	17.6%	16.9%	13.6%	13.8%	10.3%
BACHELORS	49,441	48,851	49,676	51,848	54,556	57,842	61,518	64,236	66,207	69,342	71,560
domestic total	37,821	37,111	37,622	39,058	40,693	42,726	44,656	46,385	48,083	50,547	52,135
% domestic female	14.3%	13.8%	13.5%	13.6%	13.7%	13.7%	14.0%	13.8%	13.4%	13.7%	14.1%
international total	11,620	11,740	12,054	12,790	13,863	15,116	16,862	17,851	18,124	18,795	19,425
% international female	17.3%	17.5%	17.6%	17.9%	17.7%	17.5%	17.6%	17.5%	17.4%	17.7%	18.1%
% international	23.5%	24.0%	24.3%	24.7%	25.4%	26.1%	27.4%	27.8%	27.4%	27.1%	27.1%
ASSOC DEG & AQF DIPL	827	963	1,238	1,559	1,911	2,419	3,050	3,408	4,318	4,199	3,746
domestic total	710	774	957	1,199	1,681	2,095	2,740	2,980	3,818	3,752	3,401
% domestic female	4.2%	7.0%	8.9%	11.0%	10.7%	9.5%	10.3%	n/a	9.0%	9.5%	9.1%
international total	117	189	281	360	230	324	310	428	500	447	345
% international female	29.1%	27.5%	40.6%	50.0%	3.0%	4.0%	3.2%	n/a	24.6%	11.9%	9.0%
% international	14.1%	19.6%	22.7%	23.1%	12.0%	13.4%	10.2%	12.6%	11.6%	10.6%	9.2%
OTHER UNDERGRADUATE	612	546	636	1,405	1,214	1,470	2,082	1,540	1,649	2,609	3,077
domestic total	560	486	552	658	509	671	971	576	596	1,175	1,206
% domestic female	6.1%	14.8%	18.5%	19.9%	27.7%	26.8%	28.1%	n/a	40.4%	24.0%	18.3%
international total	52	60	84	747	705	799	1,111	1,101	1,053	1,434	1,871
% international female	19.2%	20.0%	14.3%	25.0%	17.6%	12.6%	11.9%	n/a	n/a	8.5%	9.2%
% international	8.5%	11.0%	13.2%	53.2%	58.1%	54.4%	53.4%	71.5%	63.9%	55.0%	60.8%
ALL ENROLMENTS	65,517	65,357	66,165	69,427	73,450	79,091	85,339	88,777	92,059	97,816	102,304
domestic total	47,317	46,560	47,286	49,107	51,182	54,304	57,899	60,251	62,857	66,136	67,671
% domestic female	14.9%	14.6%	14.5%	14.6%	14.8%	14.7%	15.0%	14.8%	14.5%	14.8%	15.0%
international total	18,200	18,797	18,879	20,320	22,268	24,787	27,440	28,526	29,202	31,680	34,633
% international female	17.1%	17.4%	17.7%	18.8%	18.1%	18.0%	18.3%	18.7%	18.4%	18.4%	18.6%
% international	27.8%	28.8%	28.5%	29.3%	30.3%	31.3%	32.2%	32.1%	31.7%	32.4%	33.9%

TABLE 4 ENGINEERING COMMENCEMENTS (STUDENTS) 2004 - 2014

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
DOCTORATES	951	822	847	950	1,039	1,390	1,476	1,528	1,629	1,789	1,834
domestic number	687	550	486	519	498	586	678	621	601	662	673
% domestic female	21.8%	20.5%	22.2%	19.5%	23.7%	24.4%	24.2%	22.7%	27.6%	25.1%	27.2%
international number	264	272	361	431	541	804	798	907	1028	1127	1161
% international female	19.3%	18.4%	24.7%	22.0%	27.5%	28.0%	24.8%	27.9%	24.8%	26.4%	28.3%
% international	27.8%	33.1%	42.6%	45.4%	52.1%	57.8%	54.1%	59.4%	63.1%	63.0%	63.3%
RESEARCH MASTER'S	519	429	392	369	320	506	521	451	456	433	469
domestic number	346	292	257	234	187	298	303	219	231	234	258
% domestic female	22.5%	20.5%	17.9%	23.5%	23.5%	17.1%	19.5%	21.9%	24.7%	23.5%	19.4%
international number	173	137	135	135	133	208	218	232	225	199	211
% international female	14.8%	22.6%	24.2%	27.3%	27.2%	30.8%	24.8%	28.9%	28.9%	27.6%	26.1%
% international	33.3%	31.9%	34.4%	36.6%	41.6%	41.1%	41.8%	51.4%	49.3%	46.0%	45.0%
COURSEWORK MASTER'S	3,751	3,455	3,238	3,560	3,680	4,549	4,311	3,997	4,448	5,372	6,560
domestic number	964	876	943	1,032	1,128	1,449	1,541	1,562	1,690	1,780	2,043
% domestic female	17.5%	17.0%	19.5%	17.2%	18.8%	16.4%	16.7%	17.6%	15.8%	18.7%	19.2%
international number	2,787	2,579	2,295	2,528	2,552	3,100	2,770	2,435	2,758	3,592	4,517
% international female	15.9%	16.9%	15.5%	16.9%	18.3%	16.8%	20.0%	19.4%	18.7%	17.4%	18.6%
% international	74.3%	74.6%	70.9%	71.0%	69.3%	68.1%	64.3%	60.9%	62.0%	66.9%	68.9%
OTHER POSTGRADUATE	1,157	1,363	1,322	1,203	1,331	1,103	1,447	1,511	1,448	1,416	1,247
domestic number	1,023	1,103	1,053	952	1,080	787	1,132	1,101	1,186	1,167	1,118
% domestic female	16.3%	17.3%	18.8%	17.0%	20.0%	17.7%	19.8%	21.4%	18.7%	19.6%	16.5%
international number	134	260	269	251	251	316	315	410	262	249	129
% international female	17.3%	11.9%	16.5%	16.6%	17.7%	13.4%	19.4%	13.2%	16.4%	19.3%	16.3%
% international	11.6%	19.1%	20.3%	20.9%	18.9%	28.6%	21.8%	27.1%	18.1%	17.6%	10.3%
BACHELORS	13,846	13,698	14,142	15,340	15,760	17,363	19,167	18,741	18,818	20,234	21,048
domestic number	9,908	9,916	10,288	11,051	11,295	12,052	12,541	13,152	13,595	14,817	15,085
% domestic female	13.5%	12.7%	13.4%	14.4%	14.1%	14.5%	14.4%	13.9%	13.7%	14.4%	15.1%
international number	3,938	3,782	3,854	4,289	4,465	5,311	6,626	5,589	5,186	5,417	5,963
% international female	16.6%	17.7%	17.4%	17.9%	17.6%	17.4%	15.1%	11.9%	17.1%	18.3%	18.4%
% international	28.4%	27.6%	27.3%	28.0%	28.3%	30.6%	34.6%	29.8%	27.8%	26.8%	28.3%
ASSOC DEG & ADV DIP	336	568	602	686	975	1,111	1,514	1,532	1,959	2,094	1,562
domestic number	294	419	438	524	842	930	1,357	1,257	1,659	1,890	1,370
% domestic female	3.1%	10.0%	10.0%	12.4%	9.9%	8.7%	10.0%	8.2%	7.8%	9.3%	8.3%
international number	42	149	164	162	133	181	157	275	300	204	192
% international female	4.8%	30.2%	42.1%	1.9%	3.0%	5.2%	na	7.2%	8.3%	18.6%	4.7%
% international	12.5%	26.2%	27.2%	23.6%	13.6%	16.3%	10.4%	18.0%	15.3%	54.6%	12.3%
ENABLING & OTHER	565	481	553	1,172	786	1,056	859	1,434	1,307	1,841	2,144
domestic number	523	430	480	688	410	521	798	811	748	836	909
% domestic female	5.2%	14.9%	17.9%	16.3%	26.8%	28.6%	24.4%	45.3%	32.8%	28.1%	19.4%
international number	42	51	73	484	376	535	61	623	559	1,005	1,235
% international female	22.2%	11.6%	7.6%	21.7%	13.8%	14.0%	12.7%	1.8%	8.8%	8.2%	9.7%
% international	7.4%	10.6%	13.2%	41.3%	47.8%	50.7%	37.6%	43.4%	42.8%	0.0%	57.6%
ALL COMMENCEMENTS	21,125	20,816	21,096	22,704	23,591	27,508	28,975	29,199	30,065	33,179	34,864
domestic number	13,745	13,586	13,945	14,312	15,030	16,994	18,352	18,813	19,710	21,386	21,456
% domestic female	14.1%	13.8%	14.6%	15.0%	15.1%	15.5%	15.8%	15.3%	15.0%	15.6%	15.8%
international number	7,380	7,230	7,151	8,392	8,561	10,514	10,623	10,386	10,355	11,793	13,408
% international female	16.4%	17.7%	18.0%	17.9%	18.3%	17.8%	18.5%	18.1%	17.8%	18.1%	18.4%
% international	34.9%	34.7%	33.9%	37.0%	36.3%	38.2%	36.7%	35.6%	34.4%	35.5%	38.5%

TABLE 5 PROPORTION OF ALL DOMESTIC COMMENCEMENTS (TO ALL AWARD LEVELS), ENGINEERING & RELATED TECHNOLOGIES AND OTHER AREAS 1996 - 2014

year	Engineering & Surveying Engineering & Related Technologies	% of total	Health	Science/ Natural & Physical Science	Information Technology (from 2001)	Law, Business, Society, Creative Arts (composite FoE's)	total commencing award programs
1996	13,493	6.1%	26,730	32,785		115,062	219,817
1997	13,960	6.0%	26,775	35,774		123,373	231,402
1998	13,520	6.0%	26,892	34,961		120,667	226,238
1999	13,482	5.9%	27,314	36,707		123,357	230,359
2000	13,026	5.6%	27,687	37,278		125,246	234,399
2001	14,031	5.7%	29,969	20,999	17,436	135,454	244,491
2002	14,171	5.6%	31,834	20,610	16,085	139,678	252,932
2003	14,033	5.7%	31,256	20,717	13,553	137,184	246,726
2004	13,742	5.7%	32,057	21,355	11,122	134,158	241,208
2005	13,579	5.5%	35,492	20,715	9,277	141,544	248,356
2006	13,931	5.4%	39,283	20,943	8,198	145,742	256,382
2007	15,000	5.5%	43,099	21,076	7,839	151,508	271,743
2008	15,440	5.6%	44,812	20,811	7,470	153,908	276,200
2009	16,994	5.5%	49,217	23,633	8,328	167,817	308,821
2010	18,172	5.5%	54,097	26,619	8,704	175,649	329,248
2011	18,813	5.6%	56,628	28,169	9,263	179,222	338,188
2012	19,710	5.4%	61,864	31,847	10,060	190,917	364,197
2013	21,433	5.6%	66,827	33,163	10,292	201,234	384,251
2014	21,456	5.3%	71,419	34,064	11,187	209,246	401,356

TABLE 6 BASIS OF ADMISSION INTO BACHELORS DEGREES IN ENGINEERING & RELATED TECHNOLOGIES, 2001 - 2014

	DOMESTIC STUDENTS								INTERNATIONAL STUDENTS							
	Total	Higher Ed compl. or in-compl Aus or O/S	TAFE/VET award compl or incomp	Mature, prof' qual, employ't	Complete final year second'ry school or TAFE (Aus or O/S)	Exam or assess't by institution	Other, inc. Open Learning & Special Entry	Not stated	Total	Higher Ed compl. or in-compl Aus or O/S	TAFE/VET award compl. or incomp	Mature, prof' qual, employ't	Complete final year second'ry school or TAFE (Aus or O/S)	Exam or assess't by institution	Other, inc. Open Learning & Special Entry	Not stated
2001	10,786	1,363	443	303	7,606	419	618	34	3,374	1,010	138	15	948	130	1,111	22
2002	10,278	1,229	526	336	7,381	257	549	0	3,859	1,121	421	3	1,274	185	855	0
2003	10,089	1,347	750	338	7,096	281	277	0	4,280	1,038	507	11	1,355	486	883	0
2004	9,910	1,430	671	304	7,042	262	201	0	3,936	1,078	391	6	1,249	191	1,021	0
2005	9,920	1,609	700	264	6,517	0	830	0	3,778	1,020	450	8	1,143	0	1,157	0
2006	10,288	1,376	638	225	6,603	0	1,268	178	3,854	1,023	439	29	1,314	0	1,005	54
2007	11,051	1,588	704	245	7,420	0	805	289	4,289	1,220	389	5	1,452	0	1,127	96
2008	11,295	1,723	691	262	7,313	0	978	328	4,465	1,495	251	13	1,393	0	1,250	63
2009	12,052	1,851	727	419	8,125	0	738	192	5,311	1,461	389	22	1,706	0	1,657	76
2010	no data															
2011	13,154	2,435	978	301	8,542	0	880		5,589	1,556	359	11	1,597	0	2,066	
2012	13,595	2,604	904	348	8,835	0	904		5,223	1,392	388	15	1,366		2,062	
2013	14,817	2,989	1,184	530	9,119	0	995		5,417	1,310	438	5	1,694		1,970	
2014	15,085	3,665	1,013	476	8,791	0	1,058	0	5,963	2,005	312	6	1,666	0	1,974	
2001	10,786	12.6%	4.1%	2.8%	70.5%	3.9%	5.7%	0.3%	3,374	29.9%	4.1%	0.4%	28.1%	3.9%	32.9%	0.7%
2002	10,278	12.0%	5.1%	3.3%	71.8%	2.5%	5.3%	0.0%	3,859	29.0%	10.9%	0.1%	33.0%	4.8%	22.2%	0.0%
2003	10,089	13.4%	7.4%	3.4%	70.3%	2.8%	2.7%	0.0%	4,280	24.3%	11.8%	0.3%	31.7%	11.4%	20.6%	0.0%
2004	9,910	14.4%	6.8%	3.1%	71.1%	2.6%	2.0%	0.0%	3,936	27.4%	9.9%	0.2%	31.7%	4.9%	25.9%	0.0%
2005	9,920	16.2%	7.1%	2.7%	65.7%	0.0%	8.4%	0.0%	3,778	27.0%	11.9%	0.2%	30.3%	0.0%	30.6%	0.0%
2006	10,288	13.4%	6.2%	2.2%	64.2%	0.0%	12.3%	1.7%	3,854	26.5%	11.4%	0.8%	34.1%	0.0%	26.1%	1.4%
2007	11,051	14.4%	6.4%	2.2%	67.1%	0.0%	7.3%	2.6%	4,289	28.4%	9.1%	0.1%	33.9%	0.0%	26.3%	2.2%
2008	11,295	15.3%	6.1%	2.3%	64.7%	0.0%	8.7%	2.9%	4,465	33.5%	5.6%	0.3%	31.2%	0.0%	28.0%	1.4%
2009	12,052	15.4%	6.0%	3.5%	67.4%	0.0%	6.1%	1.6%	5,311	27.5%	7.3%	0.4%	32.1%	0.0%	31.2%	1.4%
2010	no data															
2011	13,154	18.5%	7.4%	2.3%	64.9%	0.0%	6.7%		5,589	27.8%	6.4%	0.2%	28.6%	0.0%	37.0%	
2012	13,595	19.2%	6.6%	2.6%	65.0%	0.0%	6.6%	%	5,223	26.7%	7.4%	0.3%	26.2%	0.0%	39.5%	
2013	14,817	20.2%	8.0%	3.6%	61.5%	0.0%	6.7%	0.0%	5,417	24.2%	8.1%	0.1%	31.3%	0.0%	36.4%	0.0%
2014	15,085	24.3%	6.7%	3.2%	58.3%	0.0%	7.0%	0.0%	5,963	33.6%	5.2%	0.1%	27.9%	0.0%	33.1%	0.0%

TABLE 7 ANNUAL SUCCESS RATES FOR BACHELORS DEGREE STUDENTS IN ENGINEERING & RELATED TECHNOLOGIES, 2001 - 2014

		Domestic Students								Overseas Students							
		Males				Females				Males				Females			
		Full-time		Part-time		Full-time		Part-time		Full-time		Part-time		Full-time		Part-time	
		Number	Success, %	Number	Success, %	Number	Success, %	Number	Success, %	Number	Success, %	Number	Success, %	Number	Success, %	Number	Success, %
2001	Commencing	8,149	82.1	1,147	63.7	1,571	86.6	126	65.4	2,320	83.6	525	70.4	497	88.5	69	77.2
2001	Overall	26,518	85.5	6,591	72.0	5,189	89.5	795	77.8	5,494	85.7	1,210	76.6	1,233	91.2	172	80.6
2002	Commencing	7,854	81.7	1,066	67.5	1,419	86.0	102	63.6	2,847	84.5	401	58.1	617	89.1	41	51.4
2002	Overall	26,569	85.8	6,497	73.6	5,078	89.8	816	78.1	6,661	85.9	1,194	72.0	1,537	90.5	150	79.3
2003	Commencing	7,773	81.5	1,020	68.8	1,348	86.2	109	70.6	3,075	85.9	533	68.8	648	89.8	76	70.6
2003	Overall	26,745	85.7	6,255	72.9	4,960	90.0	781	78.3	7,606	86.7	1,475	76.1	1,722	90.7	210	79.7
2004	Commencing	7,758	83.1	986	68.4	1,268	87.0	103	64.3	2,843	85.3	480	75.0	621	88.6	42	82.0
2004	Overall	26,470	85.8	6,153	73.3	4,703	90.2	762	75.4	8,202	86.6	1,434	76.9	1,840	91.0	193	85.7
2005	Commencing	7,825	82.4	1,000	69.6	1,182	86.6	118	71.7	2,749	84.7	424	79.0	620	88.7	78	89.2
2005	Overall	26,274	85.8	5,791	74.2	4,415	90.0	735	78.1	8,293	86.1	1,429	79.6	1,872	90.4	216	80.3
2006	Commencing	8,163	83.2	923	69.4	1,315	86.4	101	70.4	2,802	83.0	442	77.2	618	89.4	60	76.5
2006	Overall	26,952	86.6	5,870	74.8	4,418	90.5	717	78.9	8,463	85.6	1,547	80.7	1,906	91.0	231	79.6
2007	Commencing	8,639	83.6	1,008	68.5	1,538	87.9	103	68.1	3,055	83.6	503	74.6	709	90.0	68	80.0
2007	Overall	28,158	87.0	5,924	74.2	4,676	90.4	702	76.2	8,887	85.8	1,680	79.0	2,054	90.7	246	80.5
2008	Commencing	8,900	84.1	991	69.8	1,503	87.3	138	65.8	3,137	85.6	588	82.6	719	91.6	79	83.2
2008	Overall	29,559	88.0	5,846	75.0	4,912	91.0	733	76.0	9,672	87.0	1,824	82.0	2,186	92.0	281	81.0
2009	Commencing	9,481	84.6	994	71.1	1,682	88.1	114	69.0	3,952	86.5	489	84.8	864	89.8	70	84.0
2009	Overall	31,167	87.5	6,046	75.2	5,625	90.8	682	76.2	10,962	87.6	1,637	83.5	2,424	90.1	247	86.3
2010	Commencing	nd	84.0	nd	68.0	nd	88.0	nd	75.0	nd	85.0	nd	82.0	nd	92.0	nd	71.0
2010	Overall	nd	87.0	nd	75.0	nd	90.0	nd	78.0	nd	88.0	nd	82.0	nd	92.0	nd	83.0
2011	Commencing	10,276	83.8	1,021	71.0	1,662	87.5	139	72.6	4,125	83.4	517	78.1	943	89.8	33	69.3
2011	Overall	33,421	86.9	6,530	74.6	5,605	90.6	793	77.7	13,102	87.0	1,665	81.0	2,961	91.4	176	82.7
2012	Commencing	10,720	83.9	1,185	67.2	1,740	86.5	161	69.9	3,953	83.5	427	77.4	860	89.1	37	71.0
2012	Overall	34,698	87.0	7,062	74.6	5,708	90.2	816	77.5	11,328	86.9	1,693.0	79.5	2,958	91.1	212	80.1
2013	Commencing	nd	83.6	nd	69.6	nd	87.8	nd	70.7	nd	83.7	nd	79.0	nd	86.3	nd	nd
2013	Overall	nd	86.6	nd	74.7	nd	90.2	nd	80.3	nd	86.7	nd	77.1	nd	91.6	nd	81.2
2014	Commencing	nd	83.3	nd	72.0	nd	87.5	nd	73.0	nd	83.1	nd	78.7	nd	89.6	nd	71.3
2014	Overall	nd	86.7	nd	74.3	nd	89.8	nd	79.3	nd	85.9	nd	78.7	nd	91.4	nd	83.6

TABLE 8 ANNUAL RATES OF RETENTION IN INSTITUTION FOR BACHELORS DEGREE STUDENTS IN ENGINEERING & RELATED TECHNOLOGIES, 2001 - 2013

		Domestic Students								Overseas Students							
		Males				Females				Males				Females			
		Full-time		Part-time		Full-time		Part-time		Full-time		Part-time		Full-time		Part-time	
		Number	Retention %	Number	Retention %	Number	Retention %	Number	Retention %	Number	Retention %	Number	Retention %	Number	Retention %	Number	Retention %
2001	Commencing	8,313	87.7	1,117	65.8	1,593	89.6	123	66.7	2,357	91.3	507	71.8	494	93.5	68	80.9
2001	Overall	23,150	89.0	5,399	70.1	4,388	91.3	597	72.7	4,474	90.3	874	71.3	1,003	94.2	111	76.6
2002	Commencing	8,058	87.3	1,082	68.5	1,452	89.5	106	65.1	2,788	92.0	397	63.7	609	91.6	39	61.5
2002	Overall	23,400	88.3	5,391	68.3	4,333	90.8	631	68.9	5,489	90.0	946	64.7	1,256	92.3	108	65.7
2003	Commencing	7,973	86.9	1,036	66.4	1,402	89.4	109	67.9	3,054	91.7	536	73.9	634	92.0	77	72.7
2003	Overall	23,576	88.3	5,098	65.8	4,215	90.5	587	66.6	6,295	90.7	1,203	60.1	1,389	92.0	165	60.6
2004	Commencing	8,023	83.5	989	66.8	1,326	84.5	103	60.2	2,898	87.7	476	71.9	635	89.3	45	82.2
2004	Overall	23,249	88.3	4,934	68.3	3,983	91.0	565	64.3	6,844	89.9	1,110	62.3	1,485	92.1	126	63.5
2005	Commencing	8,058	88.0	1,007	67.4	1,195	89.8	120	70.0	2,816	90.5	390	73.3	650	91.4	54	83.3
2005	Overall	23,337	88.7	4,692	69.1	3,731	91.5	557	71.5	6,969	89.6	988	68.0	1,539	90.9	128	71.9
2006	Commencing	8,356	87.3	918	69.8	1,347	88.3	102	73.5	2,822	90.4	433	78.1	620	92.6	59	81.4
2006	Overall	23,676	87.9	4,658	69.4	3,701	89.7	521	70.3	7,068	89.2	1,115	67.1	1,563	91.7	158	69.0
2007	Commencing	8,855	86.6	1,013	69.6	1,588	90.2	105	67.6	3,097	90.4	503	68.0	702	92.3	71	67.6
2007	Overall	25,715	88.1	4,853	70.1	4,239	91.6	524	72.9	7,781	88.6	1,283	70.0	1,744	90.7	186	66.7
2008	Commencing	8,714	89.3	945	69.4	1,450	89.5	129	64.3	3,064	91.7	582	81.1	686	94.2	79	78.5
2008	Overall	26,101	90.4	4,626	72.2	4,240	91.8	555	69.4	8,214	89.2	1,335	72.9	1,752	93.2	193	74.1
2009	Commencing	nd	88.6	nd	64.3	nd	89.5	nd	66.1	nd	93.7	nd	83.2	nd	94.4	nd	69.1
2009	Overall	nd	89.6	nd	69.1	nd	91.4	nd	70.5	nd	91.2	nd	72.6	nd	93.4	nd	70.6
2010	Commencing	9,678	88.1	973	69.2	1,657	90.6	115	80.0	4,069	92.9	487	83.6	899	94.7	73	79.5
2010	Overall	29,085	89.1	4,882	69.5	4,840	91.5	527	72.1	10,633	89.7	1,154	71.3	2,285	92.6	178	66.9
2011	Commencing	10,226	88.9	1,011	69.6	1,650	90.8	132	68.2	4,032	91.3	514	77.6	916	92.8	33	60.6
2011	Overall	29,967	89.4	5,270	70.7	4,872	91.3	599	69.9	11,170	89.9	1,166	69.5	2,475	91.8	96	58.3
2012	Commencing	nd	88.7	nd	66.4	nd	90.2	nd	62.8	nd	92.2	nd	82.7	nd	94.5	nd	67.6
2012	Overall	nd	89.1	nd	69.3	nd	91.5	nd	68.0	nd	91.5	nd	74.4	nd	94.4	nd	65.1
2013	Commencing	nd	87.6	nd	65.7	nd	89.1	nd	66.5	nd	91.8	nd	84.0	nd	94.5	nd	76.7
2013	Overall	nd	88.6	nd	70.3	nd	90.2	nd	70.1	nd	89.9	nd	71.7	nd	93.8	nd	71.5

Note: 2013 data is for students who graduated in 2013, or were retained in 2014

TABLE 9 ANNUAL RATES OF RETENTION IN INSTITUTION & ENGINEERING FOR BACHELORS DEGREE STUDENTS IN ENGINEERING & RELATED TECHNOLOGIES, 2001 - 2013

		Domestic Students								Overseas Students							
		Males				Females				Males				Females			
		Full-time		Part-time		Full-time		Part-time		Full-time		Part-time		Full-time		Part-time	
		Number	Retention %	Number	Retention %	Number	Retention %	Number	Retention %	Number	Retention %	Number	Retention %	Number	Retention %	Number	Retention %
2001	Commencing	7,977	82.0	1,095	61.7	1,503	81.9	119	59.7	2,245	88.1	500	69.8	474	91.4	66	78.8
2001	Overall	23,145	85.3	5,397	67.2	4,387	86.8	597	68.3	4,470	88.0	873	69.9	1,003	91.4	111	74.8
2002	Commencing	7,716	81.6	1,040	62.3	1,382	82.7	98	46.9	2,686	89.2	387	62.5	584	88.7	39	61.5
2002	Overall	23,392	84.8	5,391	65.4	4,332	86.4	631	63.1	5,486	87.6	946	63.9	1,256	89.0	108	64.8
2003	Commencing	7,624	81.4	989	60.5	1,308	80.7	103	58.3	2,927	88.9	528	73.1	613	89.1	77	70.1
2003	Overall	23,562	84.6	5,097	62.9	4,214	85.5	587	62.2	6,294	88.2	1,203	59.7	1,388	89.9	165	58.8
2004	Commencing	7,667	82.3	950	62.6	1,246	82.3	96	53.1	2,783	87.5	473	74.0	605	88.6	44	75.0
2004	Overall	23,405	85.0	4,956	65.7	4,014	86.7	566	60.4	6,907	87.8	1,117	62.0	1,507	89.8	128	60.9
2005	Commencing	7,648	82.8	960	62.4	1,129	81.6	113	58.4	2,684	88.2	385	72.7	603	88.7	53	83.0
2005	Overall	23,332	85.8	4,692	66.2	3,730	87.0	557	65.9	6,968	87.5	988	67.2	1,539	89.2	128	71.9
2006	Commencing	7,988	84.2	882	65.0	1,270	83.0	95	63.2	2,733	87.8	427	77.1	603	89.9	57	79.0
2006	Overall	23,668	86.7	4,658	66.9	3,701	87.7	521	66.8	7,067	87.6	1,115	66.9	1,561	89.9	158	67.7
2007	Commencing	8,451	83.6	969	64.2	1,481	84.1	93	54.8	2,999	89.7	501	74.1	682	90.5	68	80.9
2007	Overall	24,841	86.3	4,717	66.7	4,034	87.8	502	68.1	7,600	88.1	1,274	72.4	1,704	89.0	183	72.1
2008	Commencing	8,714	84.7	945	66.8	1,450	82.1	129	60.5	3,064	89.9	582	80.9	686	91.0	79	78.5
2008	Overall	26,101	87.2	4,626	69.9	4,240	87.2	555	64.5	8,214	87.5	1,335	72.5	1,752	90.9	193	73.1
2009	Commencing	nd	85.0	nd	60.3	nd	83.8	nd	57.8	nd	92.7	nd	82.5	nd	92.1	nd	67.7
2009	Overall	nd	87.2	nd	67.0	nd	87.7	nd	65.6	nd	90.5	nd	72.4	nd	92.2	nd	70.0
2010	Commencing	9,678	83.9	973	66.7	1,657	84.6	115	72.2	4,069	92.0	487	83.6	899	93.3	73	78.1
2010	Overall	29,085	86.7	4,882	67.9	4,840	87.5	527	67.0	10,633	88.8	1,154	70.8	2,285	91.6	178	66.3
2011	Commencing	10,226	83.5	1,011	66.1	1,650	82.5	132	62.1	4,032	89.9	514	77.2	916	92.0	33	57.6
2011	Overall	29,967	86.4	5,270	68.5	4,872	87.0	599	66.9	11,170	88.9	1,166	69.0	2,475	90.9	96	57.3
2012	Commencing	nd	84.5	nd	63.9	nd	84.8	nd	58.3	nd	90.7	nd	82.2	nd	93.1	nd	67.6
2012	Overall	nd	86.4	nd	67.2	nd	88.1	nd	64.6	nd	90.4	nd	73.8	nd	93.3	nd	64.3
2013	Commencing	nd	83.2	nd	62.1	nd	83.5	nd	62.2	nd	90.6	nd	84.0	nd	92.6	nd	76.7
2013	Overall	nd	85.7	nd	68.1	nd	86.3	nd	66.8	nd	88.8	nd	71.0	nd	92.4	nd	70.0

Note: 2013 data is for students who graduated in 2013, or were retained in 2014

TABLE 10 STAFF (FTE) IN ENGINEERING & RELATED TECHNOLOGIES, 1996 – 2014 (not including casual staffing)

staff groups	1996	1998	2000	2002	2004	2006	2008	2009	2010	2011	2012	2013	2014
academics, male													
teaching-only	62	71	63	60	66	41	38	51	69	100	98	76	67
research –only	474	479	503	686	834	915	1,010	1,082	1,051	1,194	1,194	1,295	1,279
teaching & research	1,687	1,485	1,399	1,477	1,464	1,478	1,529	1,611	1,062	1,747	1,759	1,779	1,824
sub-total, male	2,223	2,035	1,965	2,223	2,364	2,434	2,577	2,744	2,722	3,040	3,052	3,126	3,170
academics, female													
teaching-only	2	3	4	3	12	1	3	9	13	16	20	18	17
research –only	83	63	103	169	195	225	262	315	333	387	383	399	371
teaching & research	99	111	125	156	157	171	181	218	236	252	248	262	288
sub-total, female	184	177	232	328	364	397	446	543	621	656	652	675	676
total academics	2,407	2,212	2,197	2,551	2,728	2,831	3,023	3,287	3,343	3,696	3,704	3,830	3,864
% research-only	23.1	24.5	27.6	33.5	37.7	40.3	42.1	42.5	41.4	42.8	42.6	44.6	42.9
% female	7.6	8	10.6	12.9	13.3	14	14.8	16.5	18.6	17.7	17.6	17.8	17.6
total teaching	1,850	1,670	1,591	1,696	1,699	1,691	1,751	1,889	1,920	2,115	2,125	2,135	2,196

FTE by academic position	>C	C	B	< B	other
Men, 2013	907	692	796	553	178
Women, 2013	104	104	204	169	95
Men, 2014	951	675	826	537	184
Women, 2014	115	111	201	156	85

Note: USQ and Swinburne had no staffing data for 2014, so 2013 values are carried forward in 2014 totals

TABLE 11 ACTUAL STUDENT LOAD (EFT) IN ENGINEERING AND RELATED TECHNOLOGIES, 2014

DOMESTIC STUDENTS (2014)	Doctor-ates	Masters	other post grad	Bachelor	other u-grad	Enab	Non award	TOTAL
Manufacturing Engineering & Technology	58	83	4	796	67	0	0	1,008
Process and Resources Engineering	403	313	220	3,766	144	0	12	4,859
Automotive Engineering & Technology	0	8	0	31	0	0	0	39
Mechanical/Industrial Engineering & Technology	407	310	57	6,508	212	1	4	7,498
Civil Engineering	449	717	104	7,947	312	1	6	9,536
Geomatic Engineering	59	121	61	1,265	183	0	1	1,689
Electrical/Electronic Engineering & Technology	559	463	31	6,781	276	0	13	8,123
Aerospace Engineering & Technology	60	83	150	1,062	106	0	1	1,463
Maritime Engineering & Technology	14	11	8	304	5	0	1	342
Other Engineering & Related Technologies	369	621	111	6,221	304	53	31	7,710
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
DOMESTIC TOTAL 2011	2,273	1,918	673	30,118	1376	62	25	36,630
ALL STUDENTS (2014)								
Manufacturing Engineering & Technology	137	460	6	1,091	93	0	31	1,817
Process and Resources Engineering	1,218	933	260	5,666	239	0	209	8,525
Automotive Engineering & Technology	0	42	0	43	0	0	0	85
Mechanical/Industrial Engineering & Technology	902	973	66	9,386	397	1	170	11,895
Civil Engineering	1,133	1,723	129	10,802	421	1	201	14,410
Geomatic Engineering	123	252	68	1,397	195	0	23	2,057
Electrical/Electronic Engineering & Technology	1,354	2,334	48	10,125	477	0	199	14,537
Aerospace Engineering & Technology	85	141	152	1,387	116	0	20	1,901
Maritime Engineering & Technology	37	19	9	470	75	0	4	614
Other Engineering & Related Technologies	915	2,148	138	8,136	498	53	201	12,090
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	4,789	5,650	982	42,911	2,089	62	130	56,816
TOTAL (ALL STUDENTS) 2011	4,789	5,650	982	42,911	2,089	62	130	56,816

TABLE 12 GRADUATE DESTINATIONS 2014 AND RECENT HISTORY

Source: Graduate Careers Australia

2014 Graduates, sample survey in early 2015

Australian Citizens and permanent residents only, 2015 survey (2014 graduates)	sample size	% in full-time study	% available for FT work	% in PT or casual work, not seeking employment	% not working, seeking PT or casual work	% not available for FT study or FT work
Aeronautical Eng	253	9.5	79.4	5.5	0.4	5.1
Chemical Eng	299	15.7	77.6	2.7	0.0	4.0
Civil Eng	1,288	9.2	83.9	2.9	0.3	3.7
Electrical Eng	447	13.2	81.2	2.2	0.2	3.1
Electron/Comp Eng	268	11.2	77.2	3.7	0.0	7.8
Mechanical Eng	775	10.1	82.7	3.7	0.3	3.2
Mining Eng	143	7.0	89.5	1.4	0.7	1.4
Other Eng	846	18.1	73.6	4.8	0.6	2.8
ENGINEERING TOTAL/AVERAGE	4,319	12.0	80.5	3.5	0.3	3.7
ALL FIELDS	72,737	20.8	61.2	12.2	0.9	4.9

of those available for full time employment

	sample size	% available ... and in FT work	... seeking FT work, not employed	... seeking FT, employed casual	had job in final year, and still in it
Aeronautical Eng	201	58.2	19.4	22.4	14.5
Chemical Eng	232	61.6	22.0	16.4	1.4
Civil Eng	1081	74.9	14.2	10.8	16.2
Electrical Eng	363	78.0	14.3	7.7	18.4
Electron/Comp Eng	207	74.9	14.5	10.6	23.9
Mechanical Eng	641	71.0	16.7	12.3	14.7
Mining Eng	128	82.8	9.4	7.8	8.5
Other Eng	623	70.5	16.7	12.8	15.0
ENGINEERING TOTALS	3,476	72.2	15.8	12.0	15.0
TOTAL (ALL FIELDS)	44,490	68.1	11.6	20.3	11.5

% available for employment and in Full Time Work

	2002	2004	2006	2008	2009	2010	2011	2012	2013	2014
Aeronautical Eng	82.9	76.3	88.4	89.5	78.4	73.9	74.7	81.4	69.9	58.2
Chemical Eng	89.2	84.2	83.2	90.6	82.8	67.7	71.7	77.5	73.6	61.6
Civil Eng	91.1	96.5	95.4	97.3	94.4	92.5	89.9	90.5	85.4	74.9
Electrical Eng	83.3	80.7	92.0	91.9	84.5	76.9	85.9	88.0	86.0	78.0
Electron/Comp Eng	74.7	77.7	86.4	89.9	78.3	76.9	82.2	79.5	80.9	74.9
Mechanical Eng	81.5	85.4	89.9	93.9	86.2	80.5	87.1	88.4	82.4	82.8
Mining Eng	90.9	96.6	99.9	99.9	92.3	90.5	97.3	93.9	96.0	70.5
Other Eng	83.5	85.8	92.5	92.4	88.9	84.9	82.3	85.4	81.9	70.5

TABLE 13 STARTING SALARIES BY AREA OF EMPLOYMENT FOR 2014 GRADUATES

Bachelors Degree Graduate Salaries 2014 graduations (medians)

	Aust Gov.	State Gov	Prof Prac	Industry	Education	Total	Men	Women
Engineering (medians)	\$ 65,000	\$ 61,500	\$ 59,300	\$ 63,000	\$ 58,000	\$ 62,000	\$ 60,000	\$ 65,000
number of responses	38	16	250	692	10	1048		
all fields	\$ 60,000	\$ 55,000	\$ 52,000	\$ 50,000	\$ 58,000	\$ 52,500	\$ 55,000	\$ 52,000

in first full time employment, age less than 25

Comparisons, by Discipline, Bachelors Graduates 2012-14

	2014	2013	2012
Dentistry	\$ 75,000	\$ 80,000	\$ 80,000
Optometry	\$ 70,000	\$ 70,000	\$ 79,000
Engineering	\$ 62,000	\$ 64,000	\$ 63,000
Earth Sciences	\$ 60,000	\$ 60,000	\$ 73,000
Medicine	\$ 60,000	\$ 60,000	\$ 60,000
Mathematics	\$ 60,000	\$ 57,000	\$ 55,000
Physical Science	\$ 55,000	\$ 55,000	\$ 55,000
Computer Science	\$ 55,000	\$ 52,500	\$ 53,000

Postgraduate Commending Salaries 2014

	PG Cert/Dip	Masters Courswk	Masters Research	PhD	
Engineering (median)	\$ 102,000	\$ 95,000	\$ 82,000	\$ 80,000	
number of responses	369	606	22	98	
Physical Sciences	\$ 70,000	\$ 77,500	\$ 86,000	\$ 74,000	
Computer Science	\$ 80,000	\$ 85,000	\$ 80,000	\$ 85,000	
Biological Sciences	\$ 78,000	\$ 70,000	\$ 77,000	\$ 74,300	
Mathematics	\$ 94,000	\$ 80,000		\$ 80,000	
Agricultural Science	\$ 77,300	\$ 75,000		\$ 78,500	
Earth Sciences	\$ 82,000	\$ 74,500		\$ 82,000	
Commerce/Economics	\$ 92,000	\$ 98,000		\$ 93,000	big groups
male	\$ 85,000	\$ 88,000	\$ 85,000	\$ 81,000	
female	\$ 70,000	\$ 72,000	\$ 79,100	\$ 80,000	includes all disciplines
total	\$ 75,000	\$ 80,000	\$ 80,000	\$ 80,000	
respondents	8,823	11,925	224	1,730	

TABLE 14 Student and staff summary data for ACED Members, 2014

University	commencing students			completions			total enrolled students			Load EFTSL	Staff (FTE - non-casual)			
	dom	intern'l	total	dom	intern'l	total*	dom	intern'l	total		T-only	R-only	T & R	Total
Macquarie U	101	18	119	14	11	25	269	50	319	367	0	5	20	25
Southern Cross U	33	2	35	-	-	-	57	2	59	63	nd	nd	nd	nd
UNSW (inc. Canb'a)	2,491	1,528	4,019	1,364	1,057	2,421	7,742	4,026	11,768	7,191	<5	226	353	580
Uni of Newcastle	586	208	794	227	126	353	2,080	730	2,810	1,750	0	107	68	175
Uni of Sydney	1,022	803	1,825	591	395	986	3,292	1,778	5,070	3,604	<5	99	78	181
UTS	792	579	1,371	445	430	875	3,369	1,394	4,763	3,682	<5	50	128	182
Western Sydney Uni	521	114	635	179	48	227	1,482	262	1,744	1,478	7	<5	83	92
Uni of Wollongong	406	497	903	292	255	547	1,916	1,125	3,041	2,079	0	53	76	129
Deakin Uni	421	317	738	122	104	226	1,182	675	1,857	1,213	0	5	30	35
Federation Ulni	274	49	323	36	24	60	528	144	672	351	nd	nd	nd	nd
La Trobe Uni	92	165	257	54	122	176	292	393	685	392	0	<5	19	20
Monash Uni	777	863	1,640	752	481	1,233	3,576	2,834	6,410	4,500	7	135	106	248
RMIT Uni	1,792	1,059	2,851	986	870	1,856	5,323	3,048	8,371	5,498	0	59	127	187
Swinburne U of Tech	897	846	1,743	490	517	1,007	3,020	2,711	5,731	3,951	14	14	102	131
Uni of Melbourne	446	734	1,180	389	432	821	1,271	1,495	2,766	2,793	6	123	98	228
Victoria Uni	423	110	533	92	22	114	1,054	344	1,398	797	11	8	55	74
CQ University	448	10	458	169	10	179	1,126	35	1,161	642	nd	nd	nd	nd
Griffith Uni	647	408	1,055	328	210	538	1,956	813	2,769	1,615	0	10	48	58
James Cook Uni	247	28	275	89	6	95	682	61	743	507	0	<5	18	20
QUT	1,023	242	1,265	457	187	644	3,551	746	4,297	3,066	<5	36	86	123
Uni of Queensland	1,131	446	1,577	719	318	1,037	4,417	1,384	5,801	4,113	7	403	138	549
USQ	1,710	185	1,895	487	81	568	4,045	421	4,466	1,913	<5	<5	66	70
Sunshine Coast Uni	109	5	114	21	nd	np	319	nd	nd	139	nd	nd	nd	nd
Curtin Uni of Tech	1,389	948	2,337	551	635	1,186	3,971	2,852	6,823	4,501	9	60	94	163
Edith Cowan Uni	279	287	566	109	96	205	881	688	1,569	981	<5	7	27	35
Murdoch Ulni	169	56	225	94	28	122	518	141	659	286	nd	nd	nd	nd
Uni of WA	209	176	385	478	244	722	1,394	579	1,973	2,072	<5	69	57	127
Flinders Uni	201	55	256	55	13	68	561	97	658	437	<5	13	36	51
Uni of Adelaide	748	455	1,203	462	348	810	2,842	1,308	4,150	2,891	0	64	90	154
UniSA	558	496	1,054	381	485	866	1,478	1,387	2,865	1,752	9	30	21	60
UTas (inc. AMC)	484	212	696	202	72	274	1,165	518	1,683	1,157	0	6	34	40
Charles Darwin Uni	164	57	221	33	17	50	416	126	542	246	<5	<5	20	25
ANU	176	173	349	121	120	241	403	808	1,211	740	0	58	31	88
Canberra	24	5	29	<5	nd	<5	51	10	61	52	nd	nd	nd	nd
TOTAL 2014	20,790	12,136	32,926	10,789	7,743	18,532	66,229	32,985	98,895	66,819	84	1,650	2,196	3,846
TOTAL 2013	20,616	10,720	31,336	10,231	7,414	17,645	64,797	30,167	94,964	63,171	94	1,694	2,031	3,830
TOTAL 2012	18,396	9,730	28,126	9,271	6,846	16,117	59,385	27,354	86,739	55,523	118	1,577	2,007	3,702
% change 2013 to 2014	0.84%	13.21%	5.07%	5.45%	4.44%	5.03%	2.21%	9.34%	4.14%	5.77%	0.64%	2.60%	8.12%	0.42%

Notes

1. Student data for FoE3 from the Higher Education Statistics Collection website
2. FoE3 includes surveying and civil aviation, and may exclude software engineering, if the university classifies the latter in IT.
3. Staff data is from Higher Education Statistics, purchased by ACED, underestimates totals due to no data (nd) from some providers.
4. Staff data for Swinburne and USQ taken from 2013 data; none included in 2014 data.