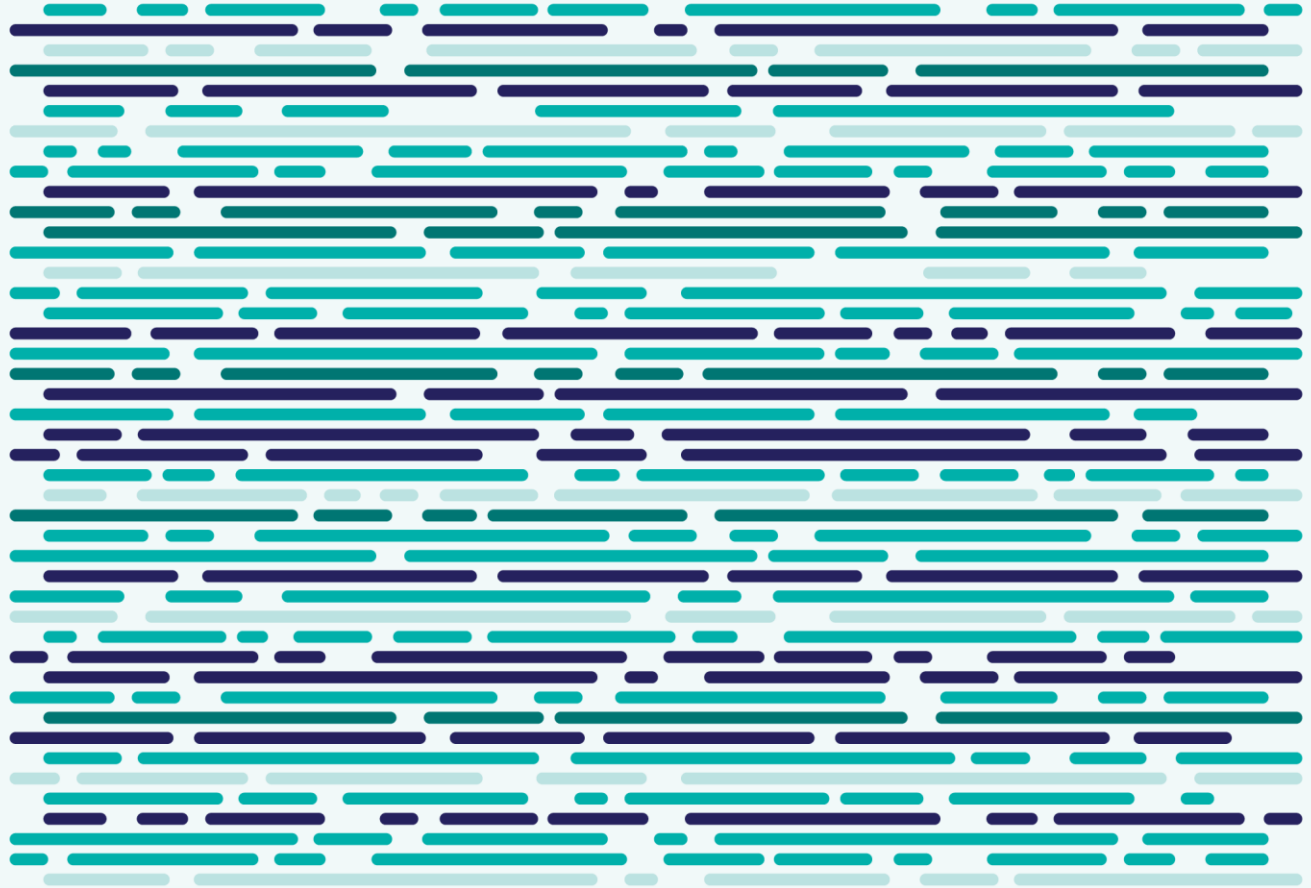




EngineeringUK

INSPIRING FUTURES TOGETHER



GRADUATE OUTCOMES – ENGINEERING AND TECHNOLOGY

March 2024

Content

Key findings	2
1. Introduction	3
2. Characteristics of engineering and technology graduates	4
3. What are engineering graduates doing now?	14
4. Main reason for taking job.....	21
5. Applying their learning.....	23
6. Qualification required for job	24
7. Activity fits with my future plans	25
8. Activity is meaningful.....	26
9. Methodology.....	27
Who we are.....	30
Appendix A	31
Appendix B	33
Appendix C	36
Appendix D.....	44



Key findings

Among 2020/21 graduates surveyed 15 months after completing their qualifications:

Employment:

- Nearly **three-quarters of graduates who studied engineering and technology (72.5%) reported that they were in paid work for an employer**, compared to 69.7% of graduates from all other subjects.
- **Graduates in engineering and technology occupations tended to make more money than graduates in non-engineering occupations.** The most common salary reported by engineers was between £25,000 to £30,000 (30.5%) compared to 26.9% of all other occupations. For every salary range above £20,001-£25,000 there was a higher proportion of engineering and technology graduates compared to all other subjects.
- **Engineers were significantly more likely to agree that their degree was relevant to their job** than non-engineering graduates.
- **Engineers (79.3%) were significantly more likely to agree that they felt “on track” with their plans for the future** compared to non-engineers (72.3%).
- **Over two-thirds (67.8%) of graduates who studied engineering and technology and were in paid work for an employer, went on to work in an engineering and technology occupation.**
- **Two-thirds (66.5%) of engineering and technology graduates in paid work were working in the engineering industry.**
- **Of those in paid work for an employer, 29.2% of male engineering and technology graduates and 43.3% of their female counterparts did not go on to work in an engineering occupation.**

Women in higher education:

- **Women are still considerably underrepresented amongst engineering and technology graduates at only 21.7%.**
- In comparison, women made up 60.4% of graduates for all other subjects combined.

Ethnicity:

- **A higher proportion of graduates from UK minority ethnic groups studied engineering and technology (28.2%)** compared to all other subjects combined (24.0%).
- As a proportion, **twice as many students from ‘other Asian backgrounds’ studied engineering and technology (3.6%)** compared to all other subjects combined (1.9%).
- **Black/Black British (Caribbean) graduates were less likely to have studied engineering and technology (0.8%)** compared to all other subjects (1.3%).
- **Over a quarter (27.5%) of male engineering and technology graduates were from a UK minority ethnic group, however, this figure was higher amongst female engineering and technology graduates (31.4%).**

Socio economic background:

- **A higher percentage of engineering and technology graduates came from the least disadvantaged areas of the UK (35.3%),** compared to all other subjects combined (32.0%)
- **Fewer engineering and technology graduates came from the most disadvantaged areas at only 9.2%,** compared to all other subjects combined (11.0%).

1. Introduction

Higher education (HE) is a key pathway into engineering and technology, and it is important to understand what graduates are doing once they finish their degrees. The HESA Graduate Outcomes dataset allows us to explore graduate activity 15 months on from graduation.

In this report we explore the latest data – from those who graduated during the academic year of 2020/21 and were interviewed 15 months later¹ - and identify:

- The demographics of those who studied engineering and technology subjects, including:
 - gender
 - ethnicity
 - disability
 - parental education
 - socio-economic background
- What jobs engineering and technology graduates are going into
- Whether they feel:
 - their current activity utilises the skills they learnt during their studies
 - their current activity fits with their future plans
 - a qualification was required for their current activity
 - their current activity is meaningful

Notes about the data

Defining engineering and technology

In this report we use the Common Aggregation Hierarchy (CAH) definition provided by HESA² to define ‘engineering and technology’ degrees. This classification does not perfectly match our definition of engineering and technology in the workforce: the engineering footprint³. Therefore, there are a number of degrees outside of this classification that would likely lead on to engineering and technology careers but are not covered in the CAH definition of ‘engineering and technology’.

Significant differences

Differences mentioned throughout the report are statistically significant unless otherwise specified.

Covid-19

It is important to note that the graduates referenced in this dataset had their studies heavily impacted by the Covid-19 pandemic. For the majority, at 15 months after graduation the labour market had significantly improved from the height of the pandemic, but it is reasonable to assume that at least some had their outcomes impacted by this. Compared to those who graduated in 2019/20, we see an improvement in employment outcomes, but this remains below those who graduated in 2017/18⁴. We will continue to monitor this with future datasets.

¹ 214,580 students are included in this survey. They graduated in 2020/2021 and were surveyed in 2021/2022. Results were released in summer 2023.

² Full CAH definitions: <https://www.hesa.ac.uk/support/documentation/hecos/cah>

³ <https://www.engineeringuk.com/research-policy/industry-workforce/the-engineering-footprint/>

⁴ <https://www.engineeringuk.com/media/318874/engineering-in-higher-education-report-engineeringuk-march23-fv.pdf>

2. Characteristics of engineering and technology graduates

Engineering and technology remained one of the most popular subjects studied, with 6.2% of all graduates graduating with an engineering and technology degree⁵ (table 1).

Table 1: Subject of study (CAH1) for the academic year 2020/21

Subject	Percentage
Business and management	14.7
Social sciences	11.9
Subjects allied to medicine	10.1
Education and teaching	7.6
Design, and creative and performing arts	7.0
Engineering and technology	6.2
Language and area studies	4.8
Biological and sport sciences	4.7
Computing	4.6
Psychology	4.5
Historical, philosophical and religious studies	4.0
Law	3.8
Medicine and dentistry	2.7
Physical sciences	2.7
Mathematical sciences	2.2
Media, journalism and communications	2.1
Architecture, building and planning	2.1
Geography, Earth and environmental studies (natural sciences)	1.6
Veterinary sciences	0.9

Degree type

Graduates completed one of 4 main degree types:

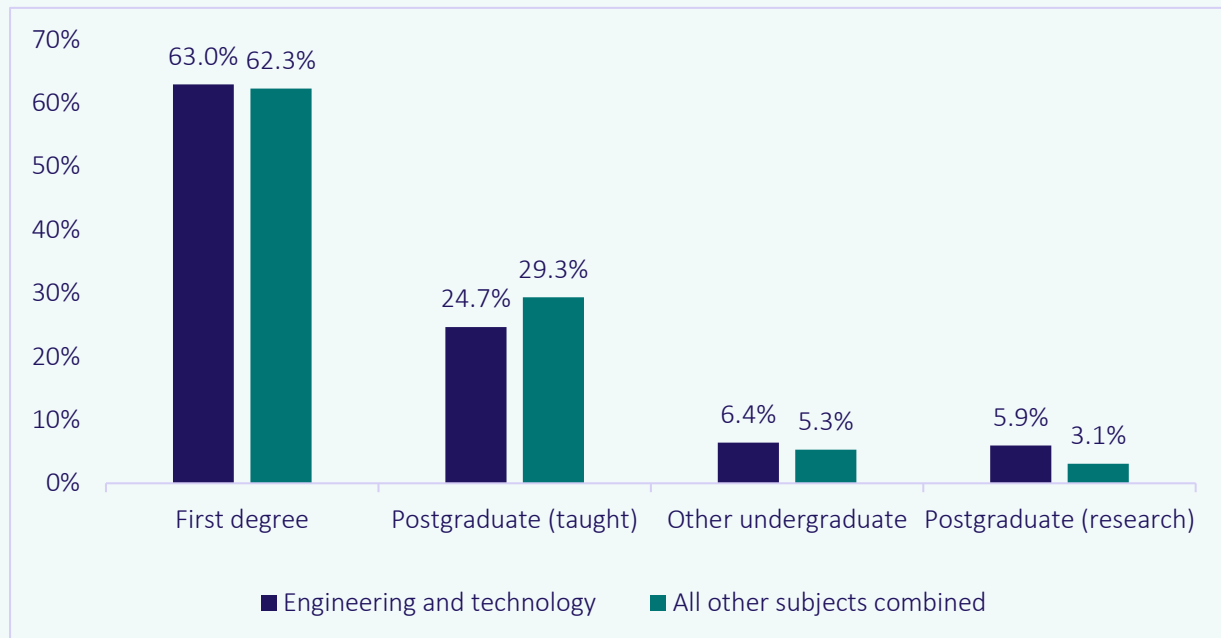
- first undergraduate degree
- postgraduate degree (taught)
- postgraduate degree (research)
- other undergraduate degree

To understand the outcomes of engineering and technology graduates following their graduation, throughout this report we compare graduates who studied engineering and technology subjects to graduates in all other subjects combined.

⁵ 'Engineering and technology' is defined throughout the report using CAH-10 – more details can be found in the methodology section.

Just under two-thirds (63.0%) of engineering and technology graduates received an undergraduate first degree⁶. The second most popular qualification was a postgraduate (taught) degree (24.7%), followed by an ‘other undergraduate degree’ (6.4%), and finally a postgraduate (research) degree (5.9%) (figure 1).

Figure 1: Qualification type comparing engineering and technology graduates to all other subjects combined



Highest qualification obtained

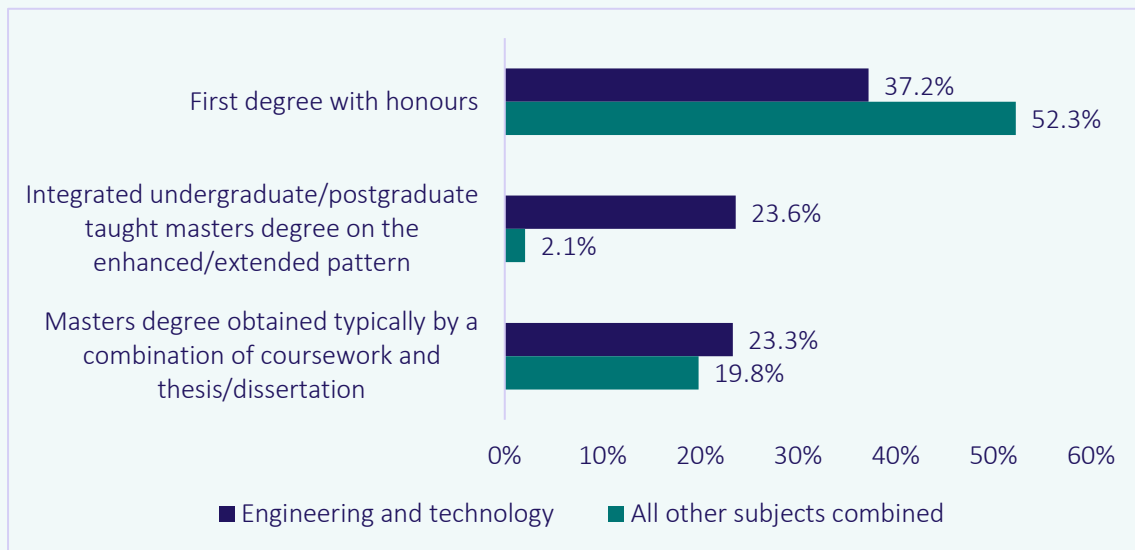
Alongside qualification type, there was also a noticeable difference between engineering and technology graduates and all other subjects combined for the highest qualification obtained, a longer list of which can be found in appendix A.

Whilst a similar proportion of those surveyed had achieved a first degree (figure 1), there was a notable difference in the *type* of first degree achieved. Over a third of engineering and technology graduates had achieved a ‘first degree with honours’ (37.2%), while this total was substantially higher amongst graduates for all other subjects at 52.3%. At the same time, while nearly a quarter of engineering and technology graduates achieved an integrated masters (23.6%), only 2.1% of graduates for all other subjects combined achieved the same.

The third most popular ‘highest qualification’ amongst engineering and technology graduates was a ‘masters degree obtained typically’ (23.3%), which a similar number of graduates for all other subjects also achieved (19.8%) (figure 2).

⁶ An undergraduate first degree includes (but is not limited to) ‘first degree with honours’ and ‘integrated undergraduate/postgraduate taught masters’. Click [here](#) for HESA’s definition of first degrees.

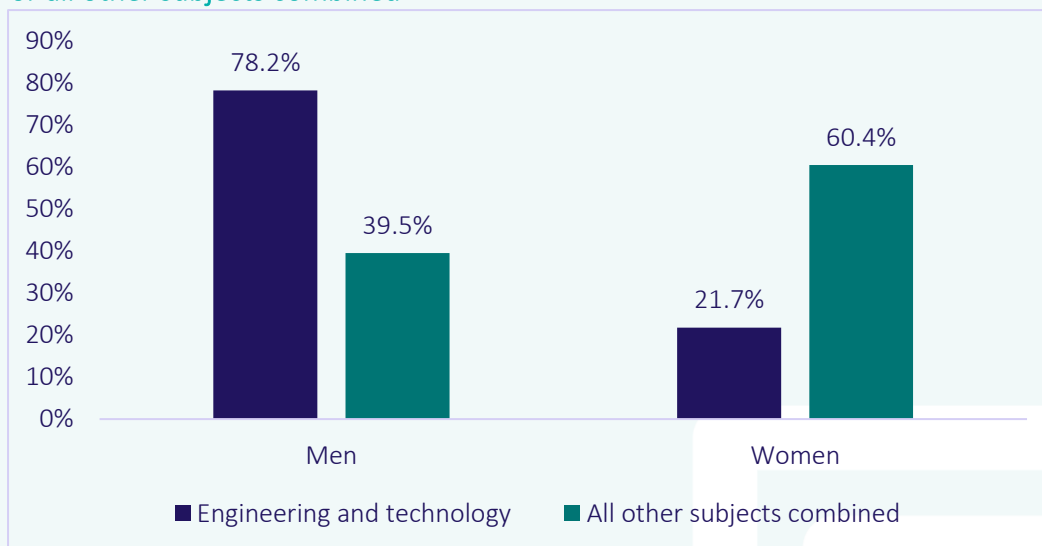
Figure 2: Top 3 'highest qualification obtained' for engineering and technology graduates, compared to all other subjects combined



Gender

The latest Graduate Outcomes data showed women are still considerably underrepresented within engineering and technology subjects, making up only 21.7% of graduates. In comparison, women made up 60.4% of graduates for all other subjects combined (figure 3).

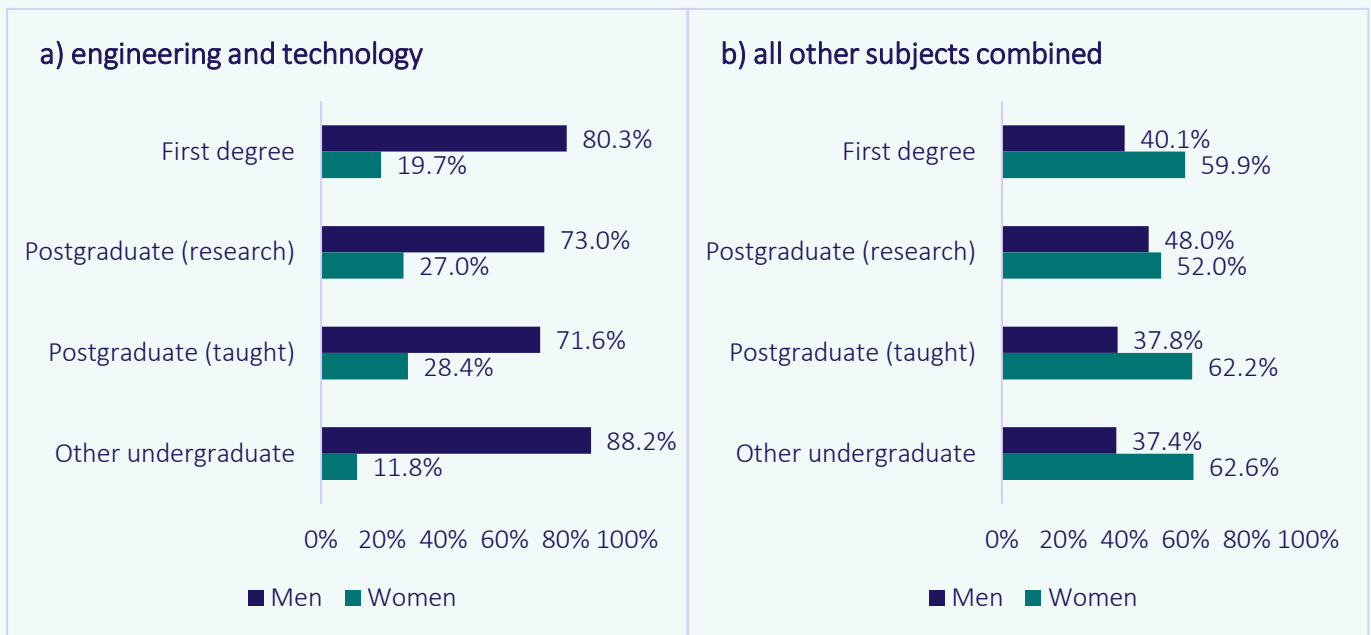
Figure 3: Percentage of male and female graduates who studied engineering and technology or all other subjects combined



This underrepresentation of women amongst engineering and technology graduates was consistent regardless of degree level. When looking specifically at engineering and technology graduates who earned a first degree, fewer than one-fifth were women (19.7%). The picture was slightly better for postgraduate degrees (both taught and research) with women accounting for over a quarter of engineering and technology graduates who obtained these degree types (28.4% and 27.0%

respectively) (figure 4a). However, these figures remained well below those seen for all other subjects combined (figure 4b).

Figure 4: Degree type by gender of graduates



Ethnicity⁷

Results showed a higher proportion of graduates from UK minority ethnic groups studied engineering and technology (28.2%) compared to all other subjects combined (24.0%). However, we see different trends across the UK minority ethnic groups. A higher proportion of Asian or Asian British - Indian, Asian or Asian British - Pakistani, and 'other Asian backgrounds' graduates studied engineering and technology (4.6%, 3.9% and 3.6% respectively) compared to all other subjects combined (3.7%, 3.3% and 1.9%). By comparison, Black/Black British (Caribbean) graduates were less likely to have studied engineering and technology (0.8%) compared to all other subjects (1.3%) (table 2).

⁷ HESA only includes ethnicity data for UK residents, so we are unable to report on this data for graduates from the EU or the rest of the world (RoW).

Table 2: Ethnicity of engineering and technology graduates compared to all other subjects

Ethnicity	Engineering and technology	All other subjects
Asian or Asian British - Bangladeshi	1.1	1.4
Asian or Asian British - Indian	4.6	3.7
Asian or Asian British - Pakistani	3.9	3.3
Other Asian Background	3.6	1.9
Black or Black British - African	5.9	5.4
Black or Black British - Caribbean	0.8	1.3
Other Black British	0.2	0.4
Chinese	1.5	1.0
Mixed	3.9	4.0
Other	2.7	1.7
White	71.8	76.0

Ethnicity and gender

Over a quarter (27.5%) of male engineering and technology graduates were from a UK minority ethnic group, and this figure was higher amongst female engineering and technology graduates (31.4%). Both of these figures are higher for engineering and technology graduates than graduates from all other subjects (25.3% and 23.3% respectively), though the gap is larger for women (table 3).

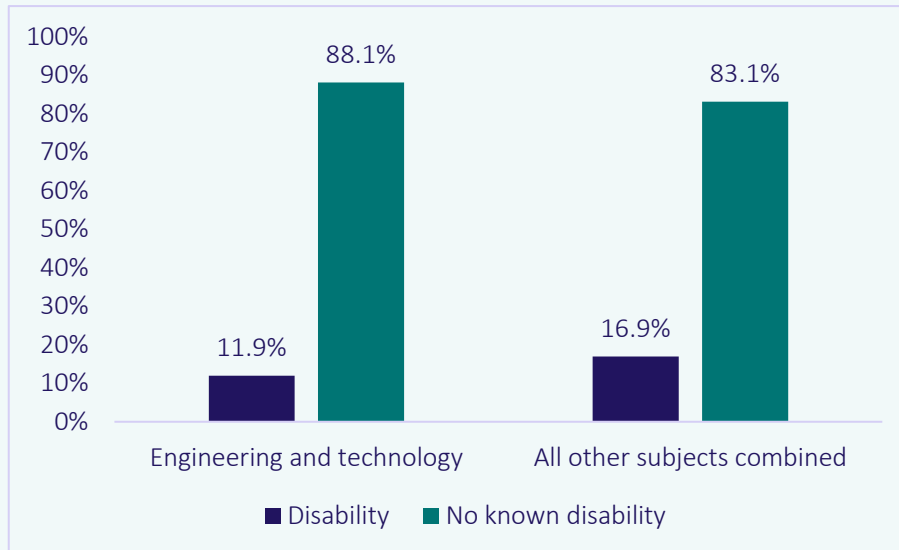
Table 3: Ethnicity of graduates who studied engineering and all other subjects, by gender

Ethnicity	Engineering and technology graduates (%)		All other subjects (%)	
	Men	Women	Men	Women
Asian or Asian British - Bangladeshi	1.2	0.8	1.5	1.3
Asian or Asian British - Indian	4.5	4.7	4.3	3.3
Asian or Asian British - Pakistani	3.9	4.0	3.5	3.2
Other Asian Background	3.4	4.2	2.1	1.7
Black or Black British - African	5.8	6.0	5.3	5.6
Black or Black British - Caribbean	0.8	0.7	1.1	1.4
Other Black British	0.2	0.3	0.3	0.4
Chinese	1.4	2.1	1.0	1.0
Mixed	3.7	5.1	4.3	3.8
Other	2.5	3.3	1.9	1.6
White	72.5	68.6	74.6	76.9

Disability

Fewer engineering and technology graduates reported a disability (11.9%) compared to all other subjects combined (16.9%) (figure 5).

Figure 5: Percentage of engineering and technology graduates for all other subjects who disclosed a disability



Of those who reported a disability, the top reported disabilities for engineering and technology graduates and all other subjects combined were:

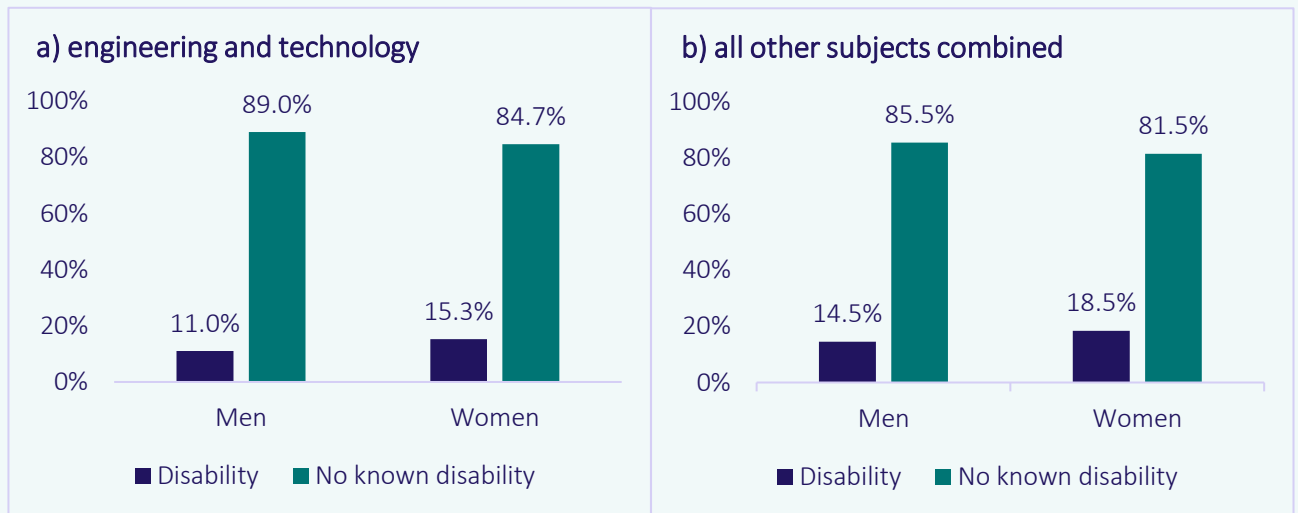
- Specific learning difficulties (5.2% and 5.6% respectively)
- Mental health conditions (2.4% and 4.9% respectively)
- A long-standing illness or health condition (1.3% and 1.8% respectively)⁸

Disability and gender

A higher percentage of women reported a disability for both engineering and technology graduates and all other subjects combined (15.3% and 18.5% respectively) compared to men (11.0% and 14.5% respectively) (figure 6).

⁸ Refer to appendix A for full list of disabilities included in the data, split by engineering and technology graduates and graduates from all other subjects combined

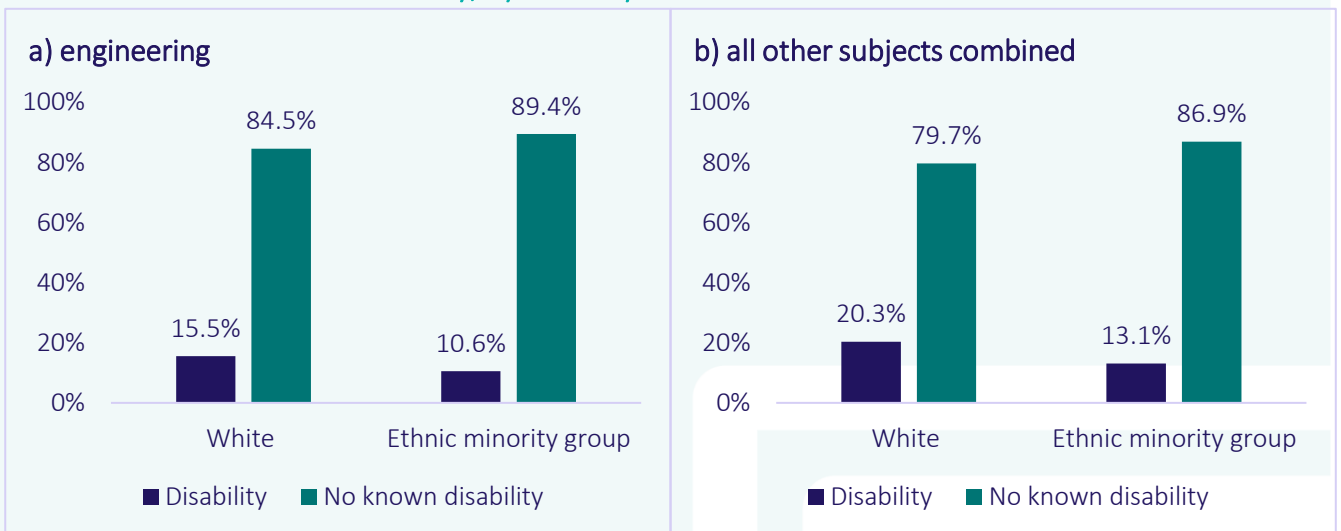
Figure 6: Percentage of engineering graduates and graduates from all other subjects combined who disclosed a disability, by gender



Disability and ethnicity

A higher proportion of white graduates (both engineering and technology and all other subjects) reported a disability compared to those from UK minority ethnic groups. For engineering and technology specifically, whilst 15.5% of white graduates reported a disability, only 10.6% of graduates from an ethnic minority group also declared a disability (figure 7). Due to small numbers in the sample, we were unable to look at each ethnic group or type of disability for possible differences.

Figure 7: Percentage of engineering graduates and graduates from all other subjects combined who disclosed a disability, by ethnicity

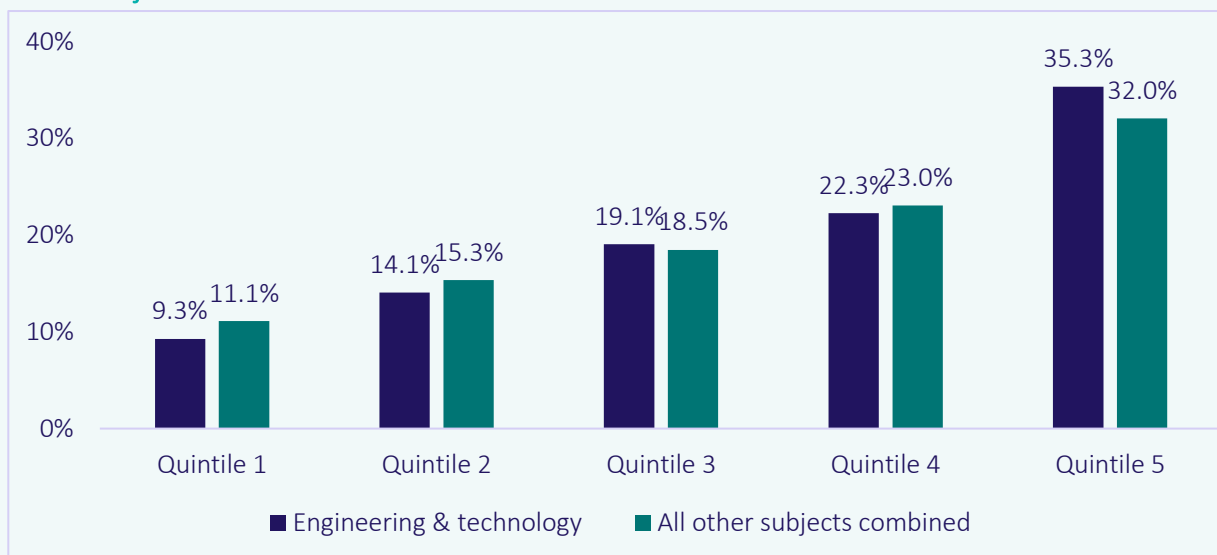


Socioeconomic background (POLAR4)

An index created by the Office for Students⁹ identifies how likely young people are to participate in higher education across the UK based on where they live. If participation in HE was equal for all, then each quintile would contain 20% of the student population. While this is not a perfect comparison, we have used POLAR4 in this report as a proxy for socioeconomic background, as this is the best data available. Quintile 1 represents the lowest rate of participation (“most disadvantaged”), whilst quintile 5 shows the highest rate of participation (“most advantaged”). This data is also only collected for UK residents; therefore, we cannot present the equivalent statistics for engineering and technology graduates whose normal place of residence is the EU or the Rest of the World (RoW).

A higher percentage of engineering and technology graduates came from the most advantaged areas of the UK (35.3%), compared to all other subjects combined (32.0%). In addition, fewer engineering and technology graduates came from the lowest participation neighbourhood (9.2%), compared to all other subjects combined (11.0%) (figure 8).

Figure 8: Low participation neighbourhood marker comparing engineering graduates by all other subjects

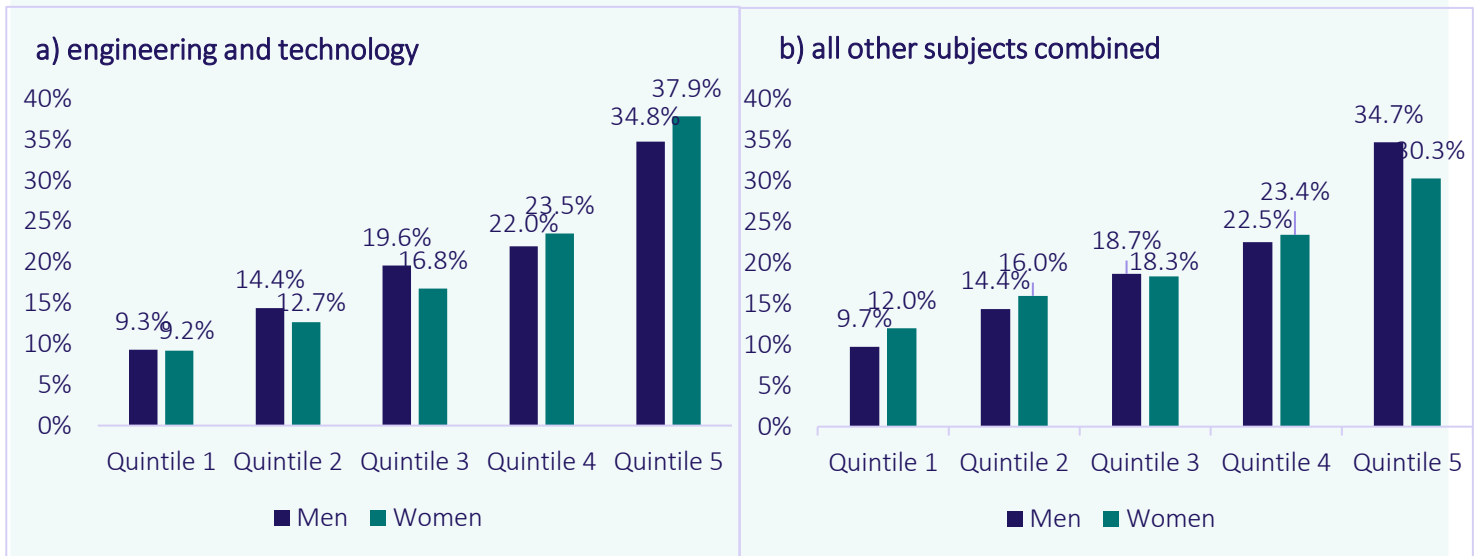


The overrepresentation of those from the most advantaged areas in engineering and technology is more pronounced among women. The proportion of female engineering graduates from the most advantaged areas (quintile 5) was higher (37.9%), compared to men (34.8%). Interestingly, when looking at the same quintile (5) for graduates of all other subjects combined, results showed the opposite effect, with a higher percentage of men (34.7%) compared to women (30.3%).

Conversely, we do not see a gender difference for the most disadvantaged areas (quintile 1) for engineering and technology (9.3% men, 9.2% women), but we do see a difference for all other subjects combined (9.7% men vs. 12.0% women) (figure 9).

⁹ Office for Students. (2022). *Young participation by area*. Available at: <https://www.officeforstudents.org.uk/data-and-analysis/young-participation-by-area/about-polar-and-adult-he/>

Figure 9: Low participation neighbourhood markers, comparing engineering and technology and all other subjects combined graduates by gender



Parental education

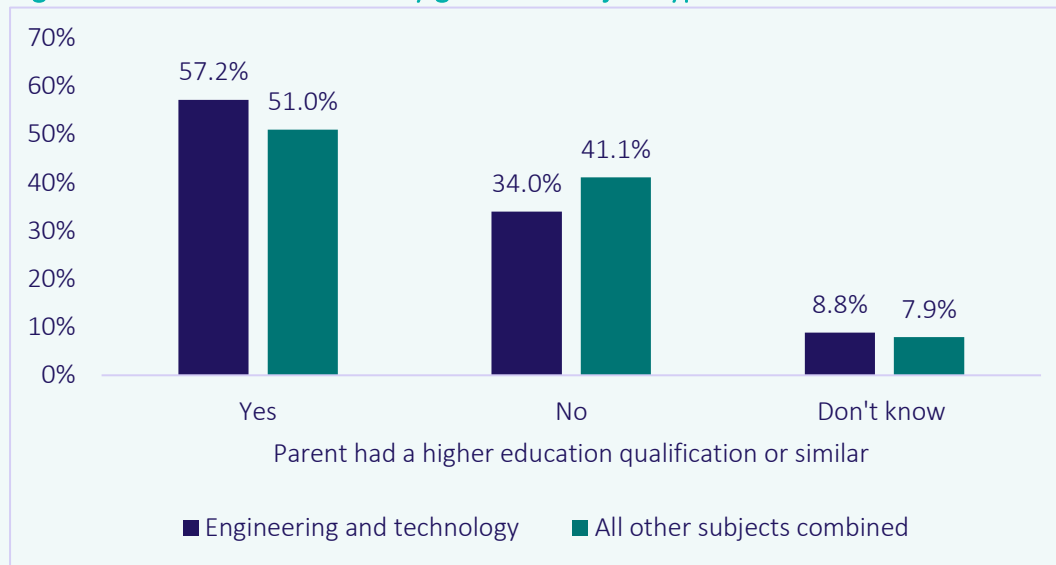
Parental education refers to whether graduates’ parent(s) also have a higher education qualification. Data was unavailable for 24.2% of cases and a further 6.0% of graduates said they did not know. Of the missing data, over half was for graduates from the RoW (54.7%), compared to 42.2% for the EU and 19.1% for the UK. A similar percentage of graduates across these three regions responded to say they ‘didn’t know’ when asked about their parents’ education (table 4).

Table 4: Parental education and percentage of graduates across the UK, EU and the RoW as a percentage

Parental education	UK	EU	RoW
Yes – their parent had a higher education qualification or similar	40.5	36.6	27.8
No - their parents did not have a higher education qualification or similar	34.9	11.5	9.5
Don’t know	5.5	9.6	8.3
Unknown/missing data	19.1	42.2	54.7

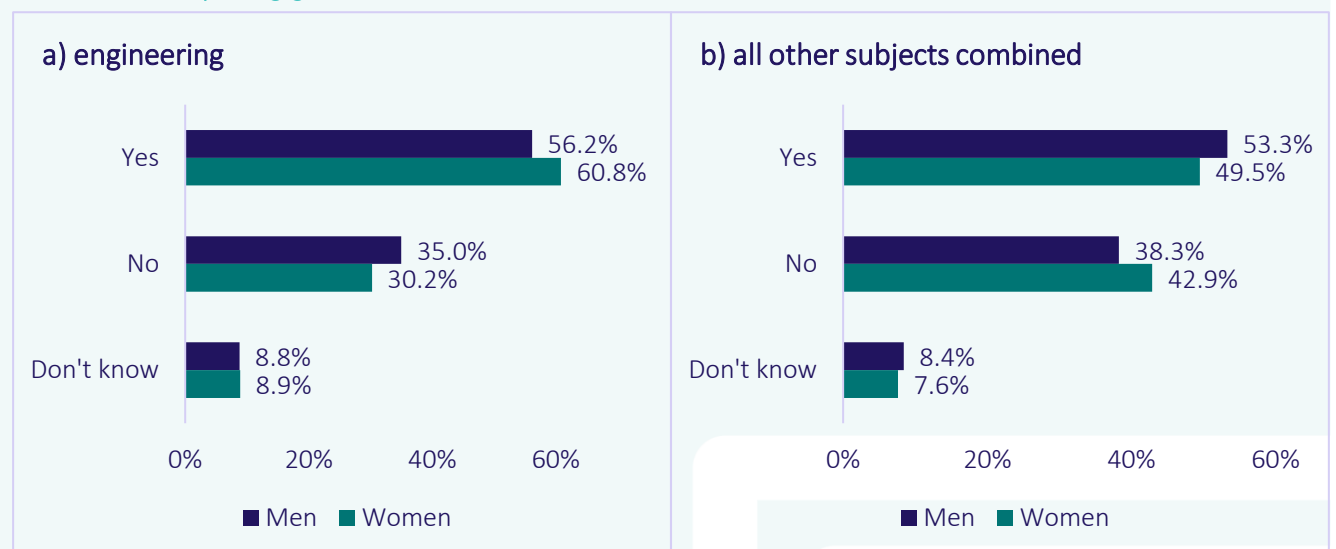
Where data is available, engineering and technology graduates were statistically more likely to say their parent(s) also have a higher education qualification compared to all other subjects combined (57.2% vs. 51.0%).

Figure 10: Parental education by graduate subject type



Female engineering and technology graduates were more likely to say their parents also had a higher education qualification or similar (60.8% vs. 56.2% of men). In contrast, just under half of women who graduated from all other subjects (49.5%) said their parents also had a higher education qualification or similar, compared to 53.3% of men (figure 11).

Figure 11: Parental education for graduates from engineering and all other subjects combined comparing gender



3. What are engineering graduates doing now?

Main activity

Following graduation, nearly three-quarters of graduates who studied engineering and technology (72.5%) reported they were in paid work for an employer. This compared to 69.7% of graduates from all other subjects combined. A similar number of engineering and technology graduates and graduates from all other subjects combined went on to engage in a course of study, training or research (11.4% and 11.5% respectively). Less than a tenth of engineering and technology graduates reported being unemployed or looking for work (6.3%), compared to 5.3% of graduates for all other subjects.

Table 5: Percentage of engineering and technology graduates and all other subjects combined by their main reported activity

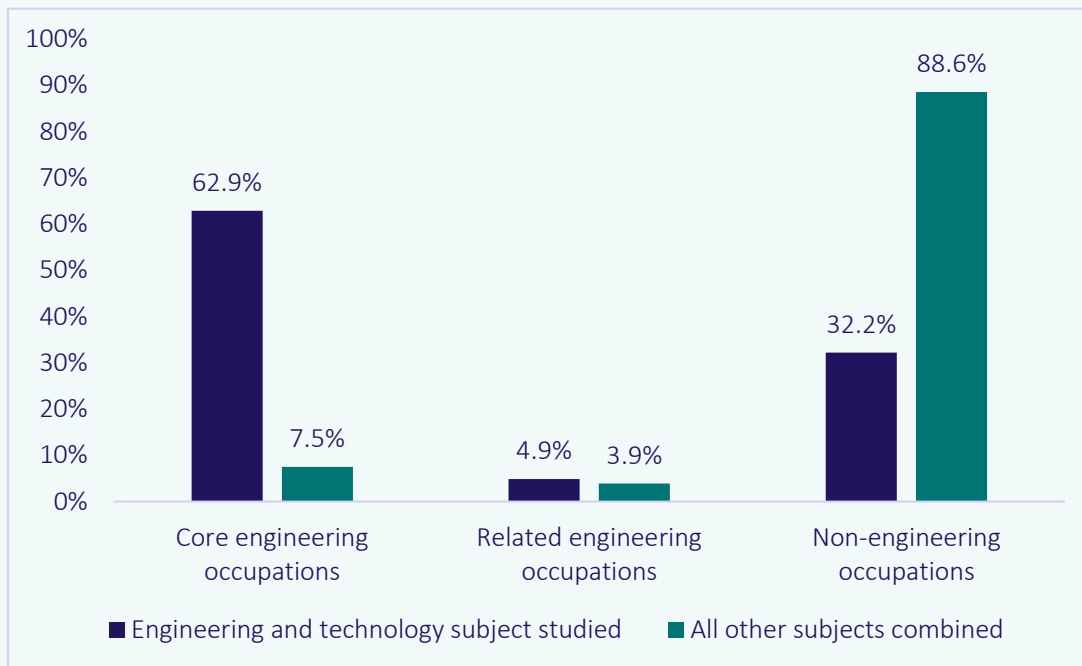
Main activity	Engineering and technology	Graduates from all other subjects
In paid work for an employer	72.5	69.7
Engaged in a course of study, training or research	11.4	11.5
Unemployed and looking for work	6.3	5.3
Doing something else	2.0	2.5
Self-employment/freelancing	2.0	3.4
Developing a creative, artistic or professional portfolio	1.6	2.1
Running my own business	1.8	1.8
Taking time out to travel - this does not include short-term holidays	1.0	1.1
Caring for someone (unpaid)	0.7	1.2
Voluntary/unpaid work for an employer	0.5	1.0
Retired	0.1	0.3

Graduates working in engineering and technology occupations

Of those who reported being in paid work for an employer, over two-thirds of graduates who studied engineering and technology went on to work in an engineering and technology occupation (67.8%). In addition, 11.4% of graduates who graduated from other subjects reported working in engineering occupations (see page 18 for more details). The majority of engineering and technology graduates (62.9%) were working in core engineering and technology occupations and 4.9% in related occupations¹⁰ (figure 12).

¹⁰ Please see appendix B for the full list of core and related engineering occupations

Figure 12: Percentage of graduates working in engineering and technology occupations, comparing engineering and technology graduates to all other subjects combined

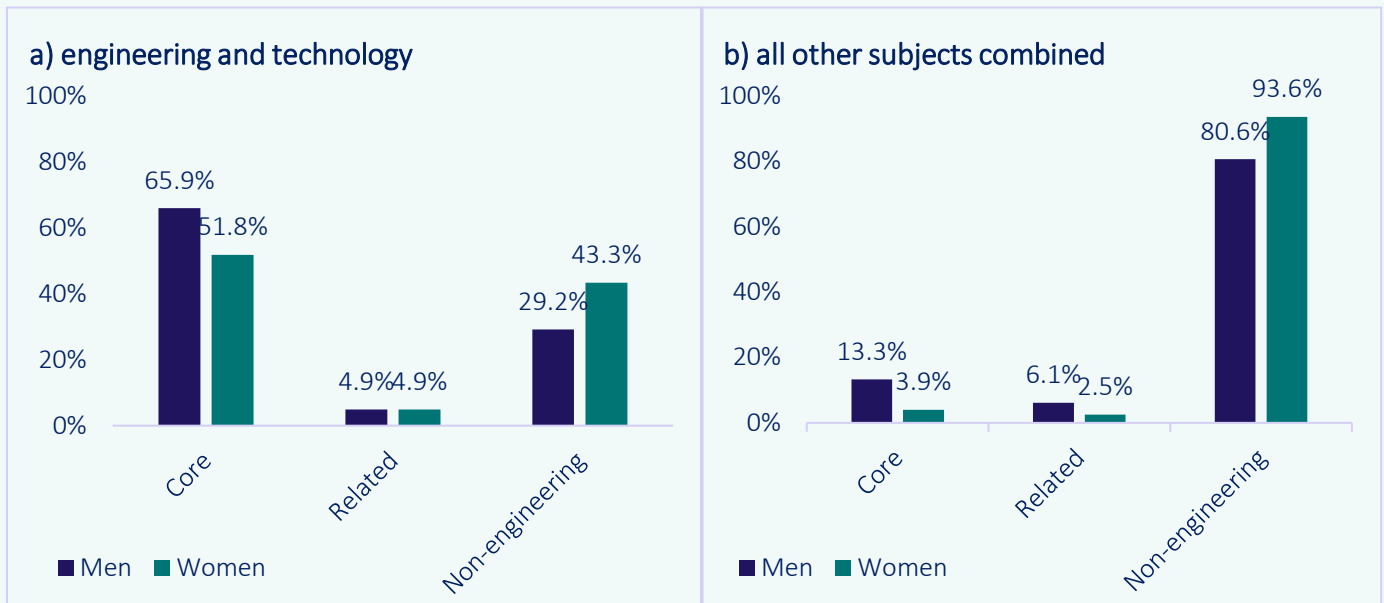


We also looked at possible gender differences among engineering and technology graduates who left the engineering career pathway despite having graduated with a relevant degree. We found more female engineering and technology graduates did *not* go on to work as an engineer compared to male engineering and technology graduates. Whilst nearly a third (29.2%) of male engineering and technology graduates went on to work in a non-engineering and technology occupation, this figure was over 10 percentage points higher amongst women, at 43.3%.

This difference was concentrated in core engineering occupations. Nearly two-thirds (65.9%) of male engineering and technology graduates went on to work in a core occupation, compared to only 51.8% of female engineering and technology graduates. There was an equal proportion of male and female engineering and technology graduates, however, who went on to work in a related engineering and technology occupation (4.9%) (figure 13a).

In addition, a higher proportion of men who graduated from all other subjects combined (19.4%) went on to work in an engineering and technology occupation compared to women (6.4%) (figure 13b).

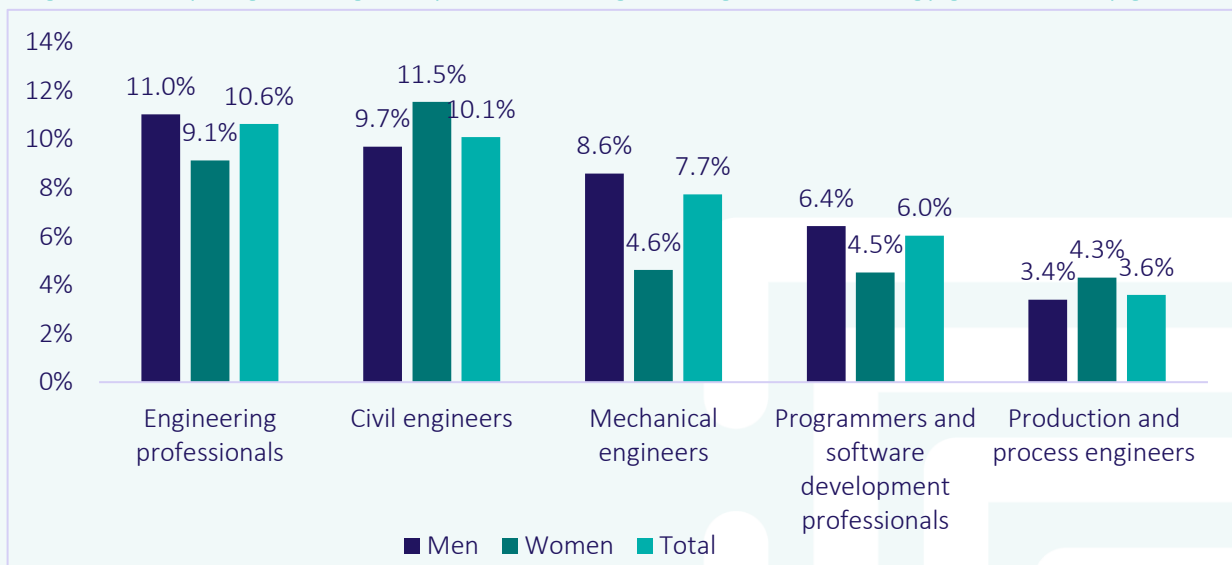
Figure 13: Percentage of graduates in paid work working in engineering and technology occupations, by gender



Where data was available¹¹, the most popular occupation across engineering and technology graduates was ‘engineering professionals not elsewhere classified (n.e.c.)’ (10.6%), followed by civil engineers (10.1%) and mechanical engineers (7.7%).

The most popular engineering occupation amongst men who studied engineering and technology was ‘engineering professionals n.e.c.’ at 11.0%, followed by civil engineers (9.7%). In comparison, for women, 11.5% went on to work as civil engineers and 9.1% reported working as ‘engineering professionals n.e.c.’ (figure 14).

Figure 14: Top engineering occupations for engineering and technology graduates, by gender



¹¹ Data was missing for 4.4% of engineering graduates

Most common engineering occupations by subject

As part of these analyses, we also looked at which occupations were most common amongst graduates for each of the 7 most popular principal engineering subjects:

- Aeronautical and aerospace engineering
- Chemical, process and energy engineering
- Civil engineering
- Electrical and electronic engineering
- General engineering
- Mechanical engineering
- Production and manufacturing engineering

The top 3 most popular engineering and technology occupations amongst those in paid work for an employer varied depending on the subject studied (table 6).

Table 6: Top 3 most common occupations amongst graduates who were working in paid employment, by subject of study (CAH03) for the academic year 2020/21

Principal subject	Top 3 Occupations	% of graduates from subject
Aeronautical and aerospace engineering	Aerospace engineers	16.8
	Engineering professionals n.e.c	11.6
	Programmers and software development professionals	6.1
Chemical, process and energy engineering	Production and process engineers	18.0
	Engineering professionals n.e.c	8.9
	Management consultants and business analysts	4.0
Civil Engineering	Civil engineers	51.3
	Engineering professionals n.e.c	3.6
	Environment professionals	3.3
Electrical and electronic engineering	Programmers and software development professionals	14.7
	Electrical engineers	12.2
	Engineering professionals n.e.c	9.5
General engineering	Engineering professionals n.e.c	11.3
	Programmers and software development professionals	8.2
	Mechanical engineers	5.8
Mechanical engineering	Mechanical engineers	25.1
	Engineering professionals n.e.c	13.4
	Engineering project managers and project engineers	5.2
Production and manufacturing engineering	Engineering professionals n.e.c	16.6
	Mechanical engineers	9.4
	Programmers and software development professionals	6.8

When looking at graduates who did not study engineering and technology, but entered an engineering and technology occupation, the only occupation with over 1% was 'programmers and software development professionals' at 2.7%. The most common course studied by these graduates was computer science (45.0%), followed by 9.0% who studied software engineering and 6.8% who studied mathematics¹².

Of those who graduated from engineering and technology subjects but did *not* go on to work in an engineering and technology occupation, the most common occupations were 'management consultations and business analysts' (1.9%), 'other researchers' (1.4%), and 'higher education teaching professionals' (1.2%) (table 7).

Table 7: Top 5 occupations for engineering and technology graduates in paid employment who reported working in non-engineering occupations

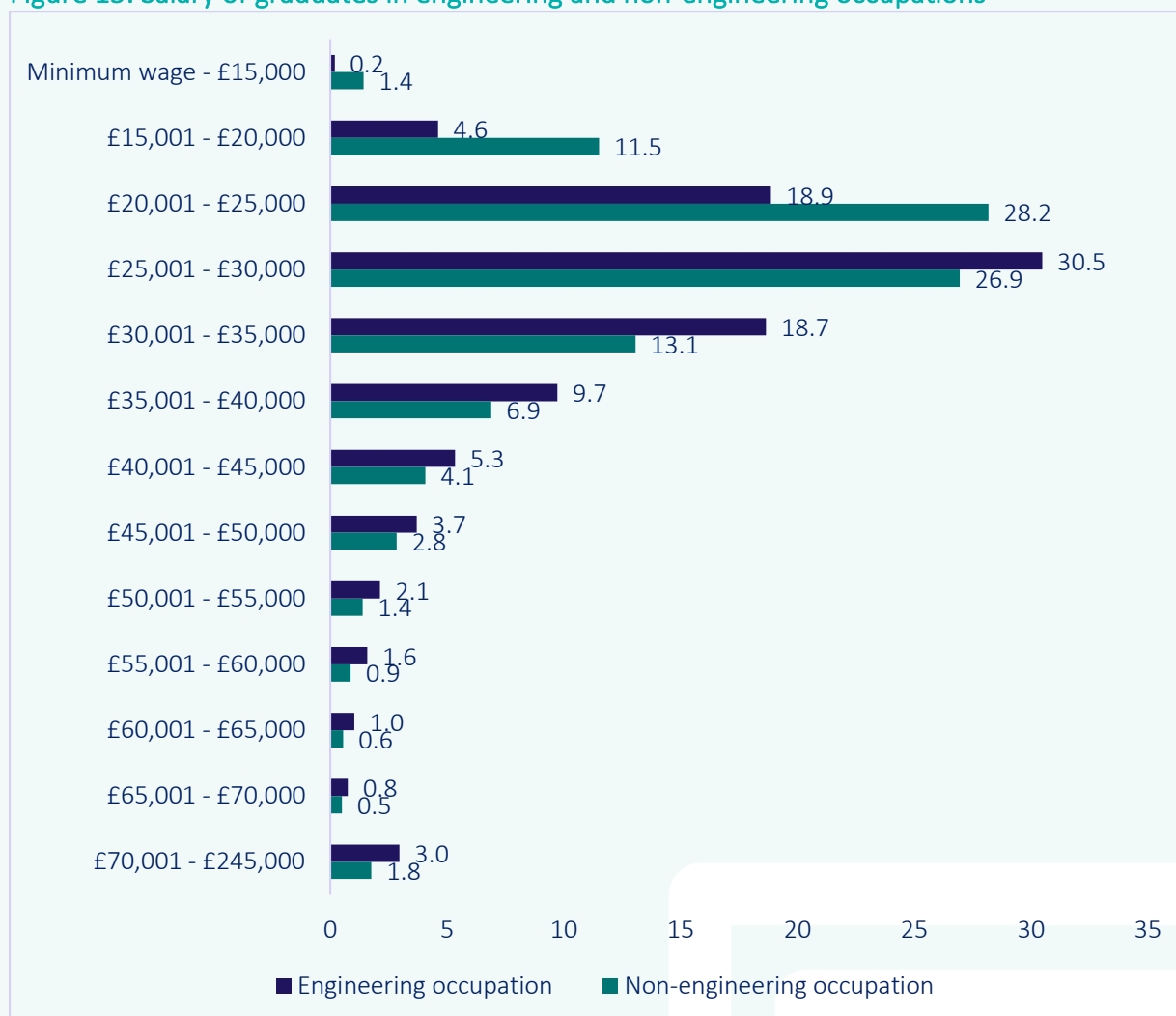
Rank	Occupation	Percentage
1	Management consultations and business analysts	1.9
2	Other researchers, unspecified discipline	1.4
3	Higher education teaching professionals	1.2
4	Sales and retail assistants	1.1
5	Business sales executives	1.0

¹² It is important to note that these subjects are core to engineering and technology. They are excluded from 'engineering and technology' in this analysis due to the way the data is coded.

Salary

Graduates in engineering and technology occupations tended to report making more money than graduates in non-engineering occupations. The largest proportion of engineers reported being on a salary of between £25,000-£30,000 (30.5% vs. 26.9% of all other occupations). In comparison, the largest proportion of graduates in non-engineering occupations were on a lower salary band of £20,000-£25,000 (28.2% vs. 18.9% of engineers). In addition, fewer engineers reported being on or around minimum wage (4.8% vs. 12.9%). For every salary range above £20,001-£25,000 there was a higher proportion of engineering and technology graduates compared to all other subjects combined (figure 15). This mirrors previous EngineeringUK research, which showed the median advertised salary of engineering roles was higher than the national average for all occupations¹³.

Figure 15: Salary of graduates in engineering and non-engineering occupations



¹³ EngineeringUK. (2023). *Engineering skills needs – now and into the future*. Available at: https://www.engineeringuk.com/media/318944/engineering-skills-needs-now-and-into-the-future_report_fv.pdf

Engineering occupations and industries

We have already seen that of those who reported being in paid work for an employer, nearly three-quarters of graduates who studied engineering and technology went on to work in an engineering occupation (72.3%).

When we looked at the percentage of engineering and technology graduates in paid work who were working in the engineering *industry*¹⁴, results showed this was two-thirds (66.5%)¹⁵. Over half (56.1%) were working in engineering occupations in the engineering industry and a further 10.4% were working in the industry, but not necessarily as an engineer (table 8).

Table 8: Percentage of engineering and technology graduates working in engineering and technology occupations and/or industry

Occupation and industry	% of engineering graduates in paid employment
working as an engineer in the engineering industry	56.1
working in the engineering industry but not as an engineer	10.4
working as an engineer in a different sector	9.6
neither working as an engineer nor in an engineering company	21.0

Women who graduated in engineering and technology were more likely not to be working in either the engineering industry or an engineering occupation than men (30.2% vs. 19.3%). Additionally, they were more likely to be working in the engineering and technology industry but not in an engineering occupation (13.4% vs. 10.0% of men).

Of the engineering and technology graduates who were working in an engineering occupation, but not necessarily in the engineering industry, this figure was similar amongst men and women (10.1% and 9.2% respectively) (table 9).

Table 9: Percentage of men and women engineering and technology graduates in paid work for an employer working in an engineering and technology occupation and/or industry

Occupation and industry	% of engineering graduates in paid employment	
	Men	Women
working as an engineer in the engineering industry	60.6	47.3
working in the engineering industry but not as an engineer	10.0	13.4
working as an engineer in a different sector	10.1	9.2
neither working as an engineer nor in an engineering company	19.3	30.2

¹⁴ Using SIC Codes rather than SOC and please see appendix C for occupations classed as engineering.

¹⁵ Only 2.8% of data for engineering graduates was missing and analyses were conducted after this data was removed

4. Main reason for taking job

Graduates were also asked what the ‘main reason’ was for taking their current job. For the following analysis we looked at graduates working in engineering and technology occupations, regardless of whether they studied an engineering subject or not.

Half of graduates working in paid employment as an engineer reported that their main reason for taking their job was because ‘it fitted into [their] career plan / it was exactly the type of work [they] wanted’ (50.8%), which was a similar percentage to non-engineers (47.6%). Interestingly, over twice as many non-engineers said they were in their current employment ‘in order to earn a living’ (9.9%) compared to engineers (4.4%) and whilst 10.7% of engineers said they took their current job because ‘it was the best job offer [they’d] received’, only 7.4% of non-engineers said the same. (table 10).

Table 10: Main reason for taking their current job comparing engineering and non-engineering occupations

Main reason for taking job	Engineering (%)	Non-engineering (%)
It fitted into my career plan/it was exactly the type of work I wanted	50.8	47.6
To gain and broaden my experience in order to get the type of job I really want	12.8	14.0
It was the best job offer I received	10.7	7.4
It was an opportunity to progress in the organisation	9.2	9.3
To see if I would like the type of work it involved	5.3	5.0
In order to earn a living	4.4	9.9
The job was well paid	3.7	2.6
It was the right location	2.5	3.4
To work in my family business	0.4	0.5
In order to pay off debts	0.2	0.3

Socio-economic impact on reasons for taking current job

We also investigated whether socio-economic background influenced engineering and technology graduates' reasons for taking their current job and the full results for engineers can be found in table 11. As mentioned in chapter 2, as socio-economic background data is only available for UK residents, we are unable to comment on whether this influenced the motivation of engineering graduates whose main residence is outside the UK.

Engineers from the most advantaged areas (quintile 5) were significantly more likely to select: ‘it fitted into my career plan/was exactly the type of work I wanted’ as the top answers as their main reason for taking their current job. This may indicate that this group saw their advantage continue into the job market, being able to find jobs that are most relevant to them and set them up for the future.

We also investigated possible financial motivations for taking their current job and found that no significant difference between engineers and non-engineers who reported ‘*the job was well paid*’ and ‘*in order to earn a living*’ as their main reason.

Table 11: Percentage of engineers working in paid employment and the main reason they took their current job, by low participation neighbourhood marker (POLAR4 quintiles)

Main reason	Quintile (%)				
	Quintile 1 (most disadvantaged)	Quintile 2	Quintile 3	Quintile 4	Quintile 5 (least disadvantaged)
It fitted into my career plan/it was exactly the type of work I wanted	47.1	50.0	51.9	52.4	52.2
To gain and broaden my experience in order to get the type of job I really want	13.0	12.0	11.5	12.9	12.4
It was an opportunity to progress in the organisation	13.0	11.5	9.9	8.7	8.4
It was the best job offer I received	9.3	9.3	9.7	10.0	11.4
In order to earn a living	5.5	5.8	4.7	4.2	3.9
To see if I would like the type of work it involved	4.9	4.0	4.9	5.1	5.9
The job was well paid	4.2	4.1	3.8	3.7	3.0
It was the right location	2.6	2.8	2.9	2.6	2.2
To work in my family business	0.2	0.4	0.7	0.5	0.3
In order to pay off debts	0.2	0.1	0.0	0.1	0.2

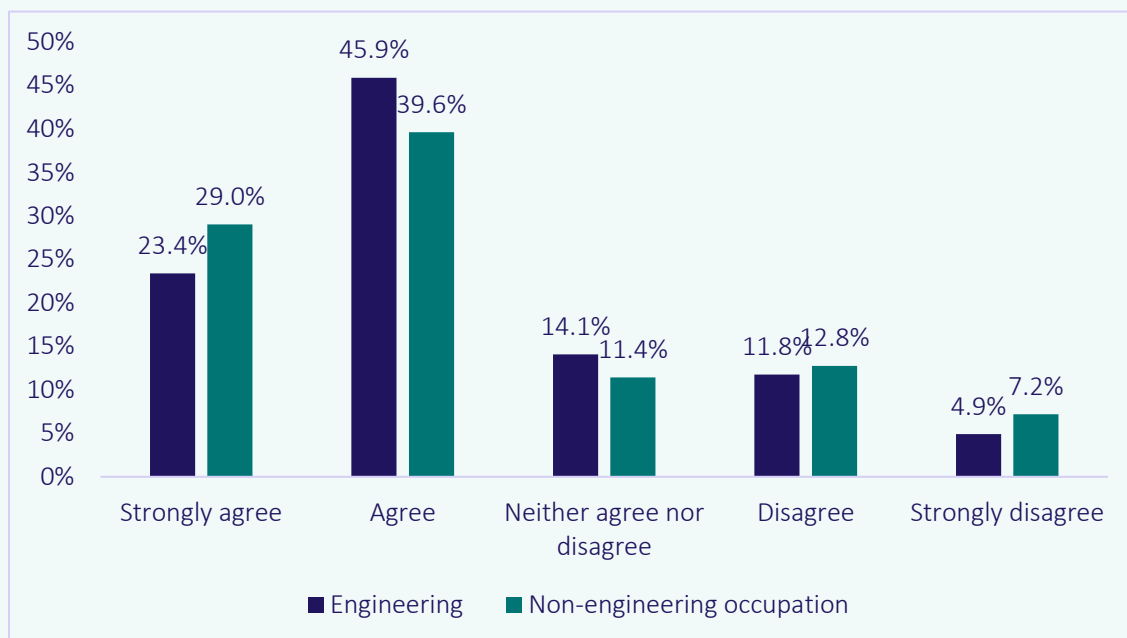
5. Applying their learning

One question asked of graduates was whether they thought their current activity applied what they had learnt during their studies. For this, we did not focus solely on graduates who were in paid work for an employer, as learning could be relevant for those running their own business, 'developing a creative, artistic or professional portfolio' or engaged in a course, training or research, for example.

Results showed no statistical significance difference between engineers and non-engineers with both scoring a mean score of 3.71 out of 5¹⁶ and both had a median of 4.

Over two-thirds of graduates in engineering and technology occupations (69.3%) either 'strongly agreed' or 'agreed' with this statement and a similar percentage of graduates in non-engineering occupations felt the same (68.8%). In addition, 16.7% of engineers either 'strongly disagreed' or 'disagreed' with this statement alongside a fifth of non-engineers (20.0%) (figure 20).

Figure 16: Skills are useful comparing those in engineering and non-engineering occupations



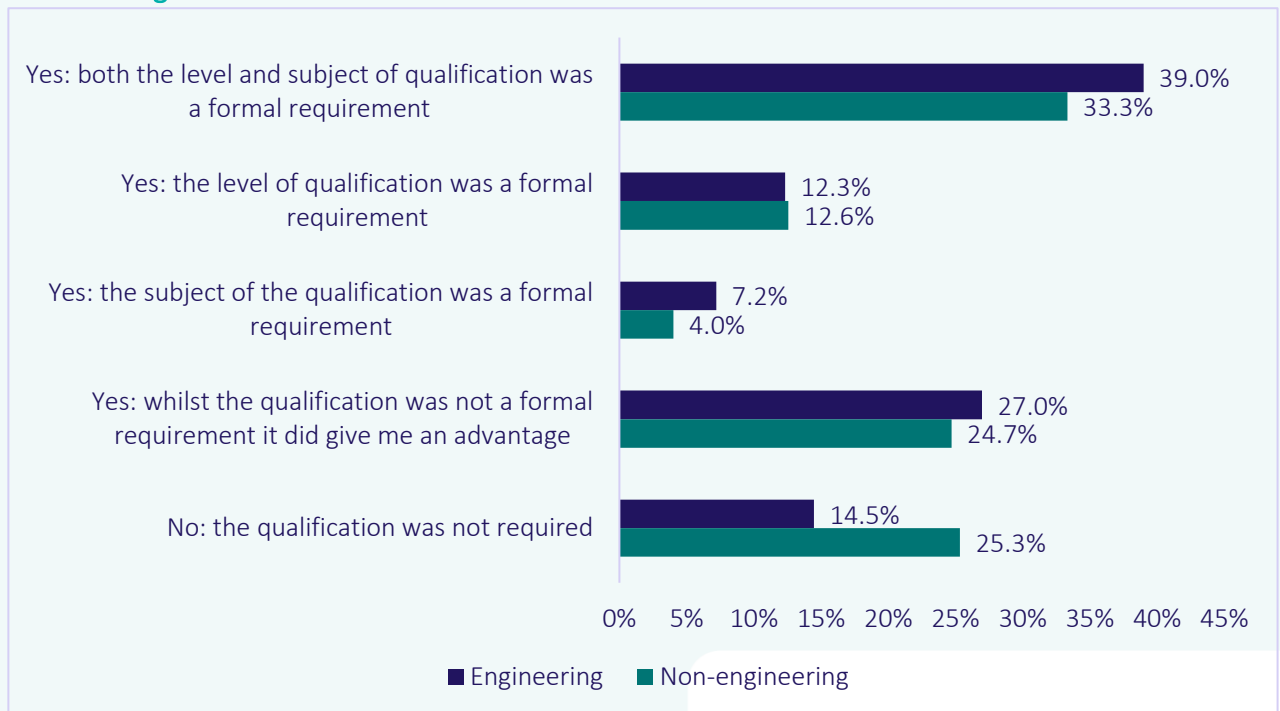
¹⁶ Likert scale with strongly disagree marked as 1 and strongly agree marked as 5. Whilst non-parametric tests are recommended for ordinal data, due to the large sample size an independent t test was chosen and equal variance within the data was not assumed.

6. Qualification required for job

The graduate outcomes survey also asked whether respondents felt their current activity formally required a qualification or whether having a qualification gave them an advantage. Where data was available, engineers were significantly more likely to agree 'yes: both the level and subject of their qualification was a formal requirement' and also 'yes: the subject of the qualification was a formal requirement'. They were also less likely to declare that 'no: the qualification was not required' compared to non-engineers.

Over a third of engineers (39.0%) said both the level and subject of their qualification was a formal requirement of their current job, compared to 33.3% of non-engineers. In addition, over a quarter of engineers indicated that whilst the qualification was not a formal requirement it did give [them] an advantage (27.0%), compared to 24.7% of non-engineers. Over a quarter of non-engineers agreed a qualification was not required (25.3%), whilst only 14.5% of engineers said the same (figure 20).

Figure 17: A qualification was required for graduates' current activity, comparing engineers and non-engineers



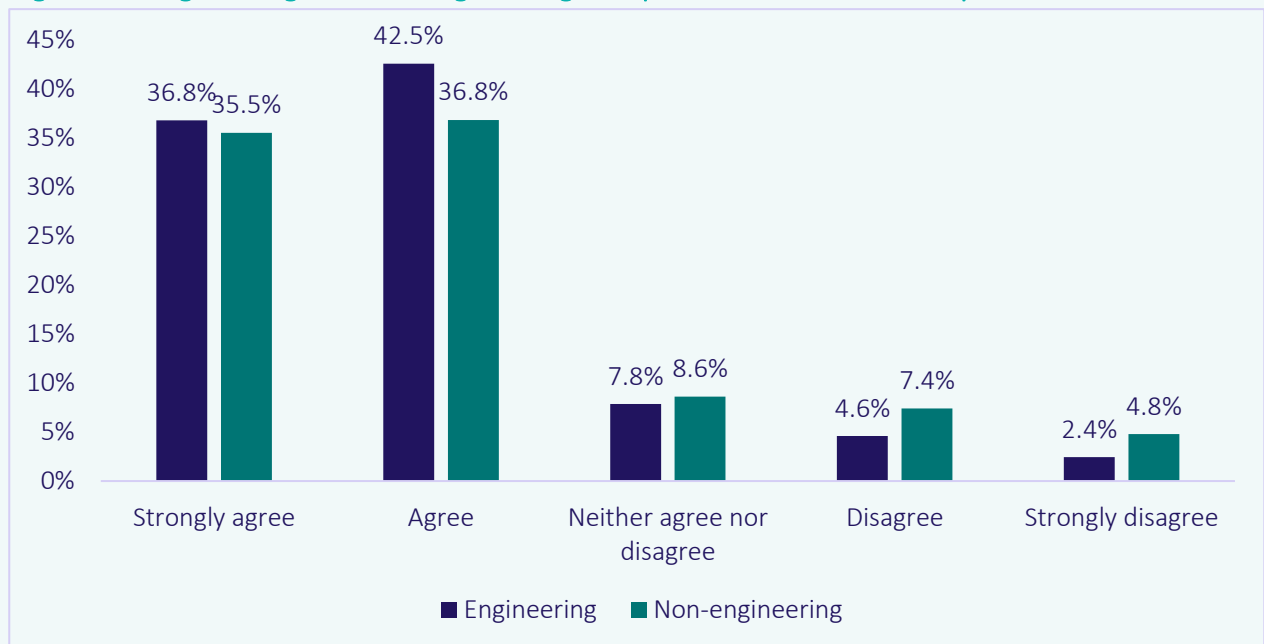
We also investigated possible differences between those in core and related engineering occupations in response to this question. Results showed, engineers in related occupations were more likely to say 'no: the qualification was not required' compared to engineers working in core occupations. The descriptive statistics for this analysis can be found in appendix D.

7. Activity fits with my future plans

When asked if they felt their current activity fit with their future plans, be that in paid employment, further study or volunteering (for example), engineers (mean = 3.36, SD = 3.212) were significantly more likely to agree with this statement, compared to non-engineers (mean = 3.08, SD = 3.456).

Whilst over three-quarters of engineers either strongly agreed or agreed they felt on track (79.3%), only 72.3% of non-engineers felt the same. In addition, a smaller proportion of engineers disagreed and strongly disagreed (4.6% and 2.4% respectively) compared to non-engineers (7.4% and 4.8% respectively) (figure 21).

Figure 18: Engineering and non-engineering occupations and whether they feel 'on track'

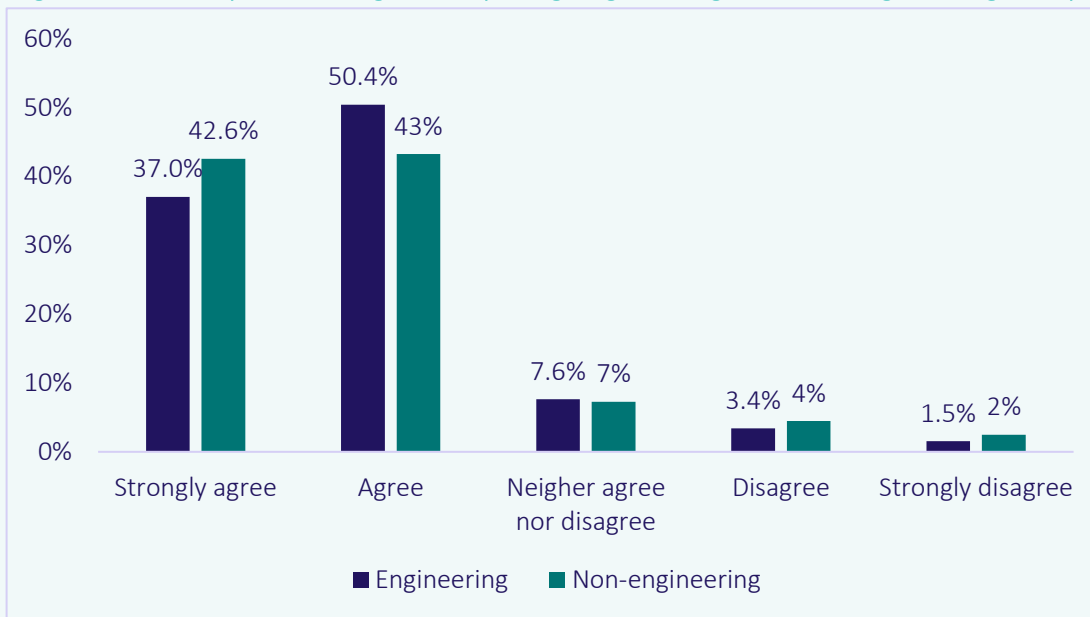


Results also showed those in core engineering occupations (mean = 3.41, SD = 3.158) were more likely to agree their current activity was on track compared to those in related engineering occupations (mean = 3.24, SD = 3.350) (appendix D for descriptive statistics).

8. Activity is meaningful

When looking at whether engineers and non-engineers felt their current activity was meaningful, engineers were significantly more likely to score higher on this scale (mean = 3.27, SD = 3.442) compared to non-engineers (mean = 3.15, SD = 3.657). A total of 87.4% of engineers either strongly agreed or agreed with this statement compared to 85.8% of non-engineers. In addition, fewer engineers either strongly disagreed or disagreed with this statement (4.9%) compared to non-engineers (6.9%) (figure 22).

Figure 19: Activity is meaningful comparing engineering and non-engineering occupations



Those working in core engineering roles (mean = 3.31, SD = 3.403) also had a significantly higher mean score than those in related engineering occupations (mean = 3.15, SD = 3.543). A total of 87.9% of core engineers either strongly agreed or agreed with this statement compared to those in related engineering occupations (86.1%) (appendix D).

9. Methodology

The data used in this report is from the Graduate Outcomes dataset from the Higher Education Statistics Agency (HESA).

There have been some changes to coding for subjects in the higher education dataset in recent years and HESA have developed a Common Aggregation Hierarchy (CAH) to bridge the gap between the previously used Joint Academic Coding System (JACS) coding system and the newly developed Higher Education Classification of Subjects (HECoS).

In this report we use the CAH10 codes to identify engineering and technology degrees within which there are 10 separate engineering and 7 technology subjects.

Engineering:	Technology:
<ul style="list-style-type: none">• (CAH10-01-01) engineering (non-specific)• (CAH10-01-02) mechanical engineering• (CAH10-01-03) production and manufacturing engineering• (CAH10-01-04) aeronautical and aerospace engineering• (CAH10-01-05) naval architecture• (CAH10-01-06) bioengineering, medical and biomedical engineering• (CAH10-01-07) civil engineering• (CAH10-01-08) electrical and electronic engineering• (CAH10-01-09) chemical, process and energy engineering• (CAH10-01-10) others in engineering	<ul style="list-style-type: none">• (CAH10-03-01) minerals technology• (CAH10-03-02) materials technology• (CAH10-03-03) polymers and textiles• (CAH10-03-04) maritime technology• (CAH10-03-05) biotechnology• (CAH10-03-06) others in technology• (CAH10-03-07) materials science

Graduate data

In this report we look specifically at graduate data from students who graduated in 2021 and were surveyed in 2022, 15 months later. The data was then released in 2023.

We explore levels of study. Students were classified as studying at one of four levels:

- First degree undergraduate: students participating in their first programmes of study in a subject leading to qualifications at first or foundation degree level.
- Other undergraduate: includes qualification aims equivalent to and below first degree level, including, but not limited to, foundation degrees, diplomas in higher education, Higher

National Diploma (HND), Higher National Certificate (HNC), and foundation courses at higher education level.

- Postgraduate (taught): doctorate and masters degrees, postgraduate bachelors degrees and postgraduate diplomas or certificates not studied primarily through research.
- Postgraduate (research): includes doctorate (incorporating New Route PhD), masters degrees and postgraduate diplomas or certificates (not Postgraduate Certificate in Education (PGCE) at level M) studied primarily through research.

Demographic data

In the report, we explore various demographics of students and graduates, comparing the composition of the engineering and technology student population with the student population studying other subjects. Below each demographic is briefly explained to assist with understanding of the results throughout the report.

Gender

The data collected by HESA records the sex of the student, as opposed to the gender with which they identify. There are three categories in the dataset: male, female and other (for students whose sex aligns with terms such as intersex, androgyne, intergender, ambigender, gender fluid, polygender and gender queer).

However, due to small numbers, in this report we are only able to display results for male and female students and graduates.

Ethnicity

HESA record the ethnicity of students whose permanent address is in England, Wales, Scotland, Northern Ireland, Guernsey, Jersey and the Isle of Man. It is therefore necessary to restrict our analysis to these students when looking at ethnicity.

The data are aligned to the categories used in the Census as recommended by the Office for National Statistics (ONS). Due to small numbers when looking at each of the individual ethnic groups, in this report we looked at whether graduates were white or from a UK minority ethnic background to explore intersectionality with additional factors such as disability.

Those recorded as 'unknown/not applicable' are not included in our analysis. This is used not only to denote those who do not have a permanent address in the UK, but also for those whose permanent address is unknown (2014/15 onwards), those who have refused to give ethnic information or whose ethnicity is unknown.

Disability

Students are not required to report a disability should they not wish to do so, and therefore in the report we categorise disability into 'known disability' and 'no known disability'. HESA specifies disabilities to include: a specific learning difficulty, blind or a serious visual impairment, deaf or a serious hearing impairment, a physical impairment or mobility issues, personal care support, mental health condition, social communication/autistic spectrum disorder or a long-standing illness or health condition.

Low participation neighbourhoods (POLAR4)

To help assess UK students attending HE courses from disadvantaged areas, the POLAR4 classification was formed to identify where participation in HE is usually low. Areas were ranked based on the combined participation rates of those who entered HE between the academic years 2009-10 and 2013-14, if they entered aged 18, or between 2010-11 and 2014-15 if they entered aged 19.

Five groups were then formed, each representing 20% of the UK young cohort, with quintile 1 having the lowest young participation (most disadvantaged), up to quintile 5 which are the areas with the highest participation (most advantaged). Students were allocated to the neighbourhoods on the basis of their postcode and those whose postcode falls within middle layer super output areas with the lowest participation (quintile 1) are denoted as being from a low participation neighbourhood.

Analysis

Counts displayed throughout the report are rounded to the nearest 5, as required by HESA, to avoid any potential disclosure issues. However, percentages are calculated based on unrounded data. Statistical significance is indicated throughout. Differences mentioned throughout the report are significant unless otherwise specified.

Who we are

Established in 2001, EngineeringUK is a not-for profit organisation, funded predominantly via the professional registration fees of individual engineers, as well as the support of a range of businesses, trusts and foundations, and a corporate membership scheme. Our ambition is to enable more young people from all backgrounds to be informed, inspired and progress into engineering and technology.

Working in partnership to inspire more young people from a greater range of backgrounds to pursue the exciting career opportunities in modern engineering and technology is at the heart of EngineeringUK's purpose. Collaboration is essential to reach our long-term vision: for the UK to have the diverse workforce needed for engineering and technology to thrive and to drive economic prosperity, improve sustainability and achieve net zero

Driven by data

Our work is rooted in our understanding of the current and future needs of the engineering and technology workforce. We complement that understanding by establishing which activities help increase the number and diversity of young people choosing engineering, technology and technician careers, especially those in sustainability and net zero.

We base everything we do on evidence and we share our analysis and insight widely. We publish comprehensive data on all aspects of engineering and technology in the UK – providing a detailed examination of the economic contribution, the workforce composition, as well as the extent to which workforce supply through education and training is likely to meet future demand for engineering and technology skills.

We evaluate all our activity to help ensure our engagements with young people are as effective as possible. It is through evaluation that we can identify the extent to which our programmes are winning the hearts and minds of young people, increasing their understanding of engineering and technology, and changing their perceptions of a career in it as something they'd consider for themselves, regardless of background and gender.

Appendix A

Sample

		Engineering and technology	Other subjects
Total number of graduates (academic year 2020/21)		13,240	201,345
Level of most recent study			
	Undergraduate first degree	8,335	125,380
	Undergraduate other	850	10,665
	Postgraduate taught	3,265	59,075
	Postgraduate research	790	6,220
Characteristics of graduates			
		% of engineering and technology graduates	% of other graduates
Gender			
	Male	78.2	39.5
	Female	21.7	60.4
Ethnicity*			
	Asian or Asian British – Bangladeshi	1.1	1.3
	Asian or Asian British – Indian	4.5	3.6
	Asian or Asian British – Pakistani	3.8	3.3
	Other Asian Background	3.5	1.8
	Black or Black British - African	5.8	5.3
	Black or Black British - Caribbean	0.8	1.3
	Other Black British	0.2	0.4
	Chinese	1.5	1.0
	Mixed	3.9	3.9
	Other	2.6	1.7
	White	70.4	74.8
	Unknown/Not applicable	1.6	1.9
HE participation quintile*			
	1 – least disadvantaged	11.0	11.0
	2	15.2	15.2
	3	18.3	18.3
	4	22.9	22.9
	5 - least disadvantaged	31.8	31.8
	Unknown/not applicable	0.6	11.0
Usual place of residence			
	UK	74.1	83.9
	EU	8.4	6.8
	RoW	17.5	9.2
Disability			

	No known disability	88.1	83.1
	Blind or serious visual impairment	0.2	0.2
	Deaf or serious hearing impairment	0.2	0.3
	A physical impairment or mobility issue	0.2	0.5
	Mental health condition	2.4	4.9
	A long-standing illness or health condition	1.3	1.8
	Two or more conditions	1.0	1.8
	Social communication /ASD	0.6	0.7
	Specific learning disability	5.2	5.6
	Another	0.9	1.3
Highest qualification obtained**			
	First degree with honours	37.2	52.3
	Integrated undergraduate/postgraduate taught masters degree on the enhanced/extended pattern	23.6	2.1
	Masters degree obtained typically by a combination of coursework and thesis/dissertation, that does not meet the criteria for a research-based higher degree	23.3	19.8
	Doctorate degree that meets the criteria for a research-based higher degree	5.4	2.6
	Higher National Certificate (HNC)	2.5	0.3
	Foundation degree	1.4	1.2
	Certificate of Higher Education (CertHE)	1.3	1.6
	Diploma at level M	0.5	1.1
	Certificate at level M	0.4	1.3
	Other taught qualification at level M	0.4	1.7
	Pre-registration first degree with honours leading towards obtaining eligibility to register to practice with a health or social care or veterinary statutory regulatory body	0.0	5.1
	Postgraduate Certificate in Education or Professional Graduate Diploma in Education	0.0	3.1
	Master of Business Administration (MBA)	0.0	1.0

*UK students only due to data provided

** Where data from 'engineering and technology' and 'all other subjects combined' graduates is greater than 1%

Appendix B

Engineering footprint

Code	SOC 2020 description	CORE/RELATED
1121	Production managers and directors in manufacturing	CORE
1122	Production managers and directors in construction	CORE
1123	Production managers and directors in mining and energy	CORE
2121	Civil engineers	CORE
2122	Mechanical engineers	CORE
2123	Electrical engineers	CORE
2124	Electronics engineers	CORE
2125	Production and process engineers	CORE
2126	Aerospace engineers	CORE
2127	Engineering project managers and project engineers	CORE
2129	Engineering professionals n.e.c.	CORE
2133	IT business analysts, architects and systems designers	CORE
2134	Programmers and software development professionals	CORE
2135	Cyber security professionals	CORE
2136	IT quality and testing professionals	CORE
2137	IT network professionals	CORE
2139	Information technology professionals n.e.c.	CORE
2152	Environment professionals	CORE
2161	Research and development (R&D) managers	CORE
2481	Quality control and planning engineers	CORE
2482	Quality assurance and regulatory professionals	CORE
3112	Electrical and electronics technicians	CORE
3113	Engineering technicians	CORE
3114	Building and civil engineering technicians	CORE
3115	Quality assurance technicians	CORE
3116	Planning, process and production technicians	CORE
3119	Science, engineering and production technicians n.e.c.	CORE
3581	Inspectors of standards and regulations	CORE
5211	Sheet metal workers	CORE
5212	Metal plate workers, smiths, moulders and related occupations	CORE
5213	Welding trades	CORE
5214	Pipe fitters	CORE
5221	Metal machining setters and setter-operators	CORE
5222	Tool makers, tool fitters and markers-out	CORE

5223	Metal working production and maintenance fitters	CORE
5224	Precision instrument makers and repairers	CORE
5225	Air-conditioning and refrigeration installers and repairers	CORE
5231	Vehicle technicians, mechanics and electricians	CORE
5232	Vehicle body builders and repairers	CORE
5234	Aircraft maintenance and related trades	CORE
5235	Boat and ship builders and repairers	CORE
5236	Rail and rolling stock builders and repairers	CORE
5241	Electricians and electrical fitters	CORE
5242	Telecoms and related network installers and repairers	CORE
5243	TV, video and audio servicers and repairers	CORE
5244	Computer system and equipment installers and servicers	CORE
5245	Security system installers and repairers	CORE
5246	Electrical service and maintenance mechanics and repairers	CORE
5249	Electrical and electronic trades n.e.c.	CORE
5250	Skilled metal, electrical and electronic trades supervisors	CORE
5315	Plumbers and heating and ventilating installers and repairers	CORE
5330	Construction and building trades supervisors	CORE
8114	Plastics process operatives	CORE
8115	Metal making and treating process operatives	CORE
8120	Metal working machine operatives	CORE
8131	Paper and wood machine operatives	CORE
8132	Mining and quarry workers and related operatives	CORE
8133	Energy plant operatives	CORE
8134	Water and sewerage plant operatives	CORE
8139	Plant and machine operatives n.e.c.	CORE
8143	Routine inspectors and testers	CORE
8153	Rail construction and maintenance operatives	CORE
1137	Information technology directors	RELATED
1254	Waste disposal and environmental services managers	RELATED
2131	IT project managers	RELATED
2132	IT managers	RELATED
2141	Web design professionals	RELATED
2451	Architects	RELATED
2452	Chartered architectural technologists, planning officers and consultants	RELATED
2453	Quantity surveyors	RELATED
2454	Chartered surveyors	RELATED
2455	Construction project managers and related professionals	RELATED
3120	CAD, drawing and architectural technicians	RELATED

3131	IT operations technicians	RELATED
3132	IT user support technicians	RELATED
3133	Database administrators and web content technicians	RELATED
3511	Aircraft pilots and air traffic controllers	RELATED
5233	Vehicle paint technicians	RELATED
5311	Steel erectors	RELATED
5312	Stonemasons and related trades	RELATED
5313	Bricklayers	RELATED
5314	Roofers, roof tilers and slaters	RELATED
5316	Carpenters and joiners	RELATED
5317	Glaziers, window fabricators and fitters	RELATED
5319	Construction and building trades n.e.c.	RELATED
8111	Food, drink and tobacco process operatives	RELATED
8113	Chemical and related process operatives	RELATED
8119	Process operatives n.e.c.	RELATED
8141	Assemblers (electrical and electronic products)	RELATED
8142	Assemblers (vehicles and metal goods)	RELATED
8145	Tyre, exhaust and windscreen fitters	RELATED
8149	Assemblers and routine operatives n.e.c.	RELATED
8151	Scaffolders, staggers and riggers	RELATED
8152	Road construction operatives	RELATED
8159	Construction operatives n.e.c.	RELATED
8221	Crane drivers	RELATED
8232	Marine and waterways transport operatives	RELATED

Appendix C

Engineering industry

4-digit equivalent	Description
510	Deep coal mines
510	Open cast coal working
520	Mining of lignite
610	Extraction of crude petroleum
620	Extraction of natural gas
710	Mining of iron ores
721	Mining of uranium and thorium ores
729	Mining of other non-ferrous metal ores
811	Quarrying of ornamental and building stone, limestone, gypsum, chalk and slate
812	Operation of gravel and sand pits; mining of clays and kaolin
891	Mining of chemical and fertilizer minerals
893	Extraction of salt
899	Other mining and quarrying n.e.c.
910	Support activities for petroleum and natural gas extraction
990	Support activities for other mining and quarrying
1013	Production of meat and poultry meat products
1020	Processing and preserving of fish, crustaceans and molluscs
1031	Processing and preserving of potatoes
1032	Manufacture of fruit and vegetable juice
1039	Other processing and preserving of fruit and vegetables
1041	Manufacture of oils and fats
1042	Manufacture of margarine and similar edible fats
1051	Liquid milk and cream production
1051	Butter and cheese production
1051	Manufacture of other milk products
1052	Manufacture of ice cream
1061	Grain milling
1061	Manufacture of breakfast cereals and cereals-based food
1062	Manufacture of starches and starch products
1071	Manufacture of bread; manufacture of fresh pastry goods and cakes
1072	Manufacture of rusks and biscuits; manufacture of preserved pastry goods and cakes
1073	Manufacture of macaroni, noodles, couscous and similar farinaceous products
1081	Manufacture of sugar
1082	Manufacture of cocoa and chocolate confectionery
1082	Manufacture of sugar confectionery
1083	Tea processing
1083	Production of coffee and coffee substitutes

1084	Manufacture of condiments and seasonings
1085	Manufacture of prepared meals and dishes
1086	Manufacture of homogenized food preparations and dietetic food
1089	Manufacture of other food products n.e.c.
1091	Manufacture of prepared feeds for farm animals
1092	Manufacture of prepared pet foods
1101	Distilling, rectifying and blending of spirits
1102	Manufacture of wine from grape
1103	Manufacture of cider and other fruit wines
1104	Manufacture of other non-distilled fermented beverages
1105	Manufacture of beer
1106	Manufacture of malt
1107	Manufacture of soft drinks; production of mineral waters and other bottled waters
1200	Manufacture of tobacco products
1310	Preparation and spinning of textile fibres
1320	Weaving of textiles
1330	Finishing of textiles
1391	Manufacture of knitted and crocheted fabrics
1392	Manufacture of soft furnishings
1392	manufacture of canvas goods, sacks, etc.
1392	manufacture of household textiles
1393	Manufacture of woven or tufted carpets and rugs
1393	Manufacture of other carpets and rugs
1394	Manufacture of cordage, rope, twine and netting
1395	Manufacture of non-wovens and articles made from non-wovens, except apparel
1396	Manufacture of other technical and industrial textiles
1399	Manufacture of other textiles n.e.c.
1411	Manufacture of leather clothes
1412	Manufacture of workwear
1413	Manufacture of other men's outerwear
1413	Manufacture of other women's outerwear
1414	Manufacture of men's underwear
1414	Manufacture of women's underwear
1419	Manufacture of other wearing apparel and accessories n.e.c.
1420	Manufacture of articles of fur
1431	Manufacture of knitted and crocheted hosiery
1439	Manufacture of other knitted and crocheted apparel
1511	Tanning and dressing of leather; dressing and dyeing of fur
1512	Manufacture of luggage, handbags and the like, saddlery and harness
1520	Manufacture of footwear
1610	Sawmilling and planing of wood
1621	Manufacture of veneer sheets and wood-based panels
1622	Manufacture of assembled parquet floors
1623	Manufacture of other builders' carpentry and joinery

1624	Manufacture of wooden containers
1629	Manufacture of other products of wood; manufacture of articles of cork, straw and plaiting materials
1711	Manufacture of pulp
1712	Manufacture of paper and paperboard
1721	Manufacture of corrugated paper and paperboard, sacks and bags
1721	Manufacture of other paper and paperboard containers
1722	Manufacture of household and sanitary goods and of toilet requisites
1723	Manufacture of paper stationery
1724	Manufacture of wallpaper
1729	Manufacture of other articles of paper and paperboard n.e.c.
1811	Printing of newspapers
1812	Manufacture of printed labels
1812	Printing n.e.c.
1813	Pre-press and pre-media services
1814	Binding and related services
1820	Reproduction of sound recording
1820	Reproduction of video recording
1820	Reproduction of computer media
1910	Manufacture of coke oven products
1920	Mineral oil refining
1920	Other treatment of petroleum products (excluding petrochemicals manufacture)
2011	Manufacture of industrial gases
2012	Manufacture of dyes and pigments
2013	Manufacture of other inorganic basic chemicals
2014	Manufacture of other organic basic chemicals
2015	Manufacture of fertilizers and nitrogen compounds
2016	Manufacture of plastics in primary forms
2017	Manufacture of synthetic rubber in primary forms
2020	Manufacture of pesticides and other agrochemical products
2030	Manufacture of paints, varnishes and similar coatings, mastics and sealants
2030	Manufacture of printing ink
2041	Manufacture of soap and detergents
2041	Manufacture of cleaning and polishing preparations
2042	Manufacture of perfumes and toilet preparations
2051	Manufacture of explosives
2052	Manufacture of glues
2053	Manufacture of essential oils
2059	Manufacture of other chemical products n.e.c.
2060	Manufacture of man-made fibres
2110	Manufacture of basic pharmaceutical products
2120	Manufacture of pharmaceutical preparations
2211	Manufacture of rubber tyres and tubes; retreading and rebuilding of rubber tyres
2219	Manufacture of other rubber products

2221	Manufacture of plastic plates, sheets, tubes and profiles
2222	Manufacture of plastic packing goods
2223	Manufacture of builders ware of plastic
2229	Manufacture of other plastic products
2311	Manufacture of flat glass
2312	Shaping and processing of flat glass
2313	Manufacture of hollow glass
2314	Manufacture of glass fibres
2319	Manufacture and processing of other glass, including technical glassware
2320	Manufacture of refractory products
2331	Manufacture of ceramic tiles and flags
2332	Manufacture of bricks, tiles and construction products, in baked clay
2341	Manufacture of ceramic household and ornamental articles
2342	Manufacture of ceramic sanitary fixtures
2343	Manufacture of ceramic insulators and insulating fittings
2344	Manufacture of other technical ceramic products
2349	Manufacture of other ceramic products n.e.c.
2351	Manufacture of cement
2352	Manufacture of lime and plaster
2361	Manufacture of concrete products for construction purposes
2362	Manufacture of plaster products for construction purposes
2363	Manufacture of ready-mixed concrete
2364	Manufacture of mortars
2365	Manufacture of fibre cement
2369	Manufacture of other articles of concrete, plaster and cement
2370	Cutting, shaping and finishing of stone
2391	Production of abrasive products
2399	Manufacture of other non-metallic mineral products n.e.c.
2410	Manufacture of basic iron and steel and of ferro-alloys
2420	Manufacture of tubes, pipes, hollow profiles and related fittings, of steel
2431	Cold drawing of bars
2432	Cold rolling of narrow strip
2433	Cold forming or folding
2434	Cold drawing of wire
2441	Precious metals production
2442	Aluminium production
2443	Lead, zinc and tin production
2444	Copper production
2445	Other non-ferrous metal production
2446	Processing of nuclear fuel
2451	Casting of iron
2452	Casting of steel
2453	Casting of light metals
2454	Casting of other non-ferrous metals

2511	Manufacture of metal structures and parts of structures
2512	Manufacture of doors and windows of metal
2521	Manufacture of central heating radiators and boilers
2529	Manufacture of other tanks, reservoirs and containers of metal
2530	Manufacture of steam generators, except central heating hot water boilers
2540	Manufacture of weapons and ammunition
2550	Forging, pressing, stamping and roll-forming of metal; powder metallurgy
2561	Treatment and coating of metals
2562	Machining
2571	Manufacture of cutlery
2572	Manufacture of locks and hinges
2573	Manufacture of tools
2591	Manufacture of steel drums and similar containers
2592	Manufacture of light metal packaging
2593	Manufacture of wire products, chain and springs
2594	Manufacture of fasteners and screw machine products
2599	Manufacture of other fabricated metal products n.e.c.
2611	Manufacture of electronic components
2612	Manufacture of loaded electronic boards
2620	Manufacture of computers and peripheral equipment
2630	Manufacture of telegraph and telephone apparatus and equipment
2630	Manufacture of communication equipment other than telegraph, and telephone apparatus and equipment
2640	Manufacture of consumer electronics
2651	Manufacture of electronic measuring, testing etc. equipment, not for industrial process control
2651	Manufacture of electronic industrial process control equipment
2651	Manufacture of non-electronic measuring, testing etc. equipment, not for industrial process control
2651	Manufacture of non-electronic industrial process control equipment
2652	Manufacture of watches and clocks
2660	Manufacture of irradiation, electromedical and electrotherapeutic equipment
2670	Manufacture of optical precision instruments
2670	Manufacture of photographic and cinematographic equipment
2680	Manufacture of magnetic and optical media
2711	Manufacture of electric motors, generators and transformers
2712	Manufacture of electricity distribution and control apparatus
2720	Manufacture of batteries and accumulators
2731	Manufacture of fibre optic cables
2732	Manufacture of other electronic and electric wires and cables
2733	Manufacture of wiring devices
2740	Manufacture of electric lighting equipment
2751	Manufacture of electric domestic appliances
2752	Manufacture of non-electric domestic appliances

2790	Manufacture of other electrical equipment
2811	Manufacture of engines and turbines, except aircraft, vehicle and cycle engines
2812	Manufacture of fluid power equipment
2813	Manufacture of pumps
2813	Manufacture of compressors
2814	Manufacture of taps and valves
2815	Manufacture of bearings, gears, gearing and driving elements
2821	Manufacture of ovens, furnaces and furnace burners
2822	Manufacture of lifting and handling equipment
2823	Manufacture of office machinery and equipment (except computers and peripheral equipment)
2824	Manufacture of power-driven hand tools
2825	Manufacture of non-domestic cooling and ventilation equipment
2829	Manufacture of other general-purpose machinery n.e.c.
2830	Manufacture of agricultural tractors
2830	Manufacture of agricultural and forestry machinery other than tractors
2841	Manufacture of metal forming machinery
2849	Manufacture of other machine tools
2891	Manufacture of machinery for metallurgy
2892	Manufacture of machinery for mining
2892	Manufacture of earthmoving equipment
2892	Manufacture of equipment for concrete crushing and screening and roadworks
2893	Manufacture of machinery for food, beverage and tobacco processing
2894	Manufacture of machinery for textile, apparel and leather production
2895	Manufacture of machinery for paper and paperboard production
2896	Manufacture of plastics and rubber machinery
2899	Manufacture of other special-purpose machinery n.e.c.
2910	Manufacture of motor vehicles
2920	Manufacture of bodies (coachwork) for motor vehicles (except caravans)
2920	Manufacture of trailers and semi-trailers
2920	Manufacture of caravans
2931	Manufacture of electrical and electronic equipment for motor vehicles and their engines
2932	Manufacture of other parts and accessories for motor vehicles
3011	Building of ships and floating structures
3012	Building of pleasure and sporting boats
3020	Manufacture of railway locomotives and rolling stock
3030	Manufacture of air and spacecraft and related machinery
3040	Manufacture of military fighting vehicles
3091	Manufacture of motorcycles
3092	Manufacture of bicycles and invalid carriages
3099	Manufacture of other transport equipment n.e.c.
3101	Manufacture of office and shop furniture
3102	Manufacture of kitchen furniture

3103	Manufacture of mattresses
3109	Manufacture of other furniture
3211	Striking of coins
3212	Manufacture of jewellery and related articles
3213	Manufacture of imitation jewellery and related articles
3220	Manufacture of musical instruments
3230	Manufacture of sports goods
3240	Manufacture of professional and arcade games and toys
3240	Manufacture of other games and toys, n.e.c.
3250	Manufacture of medical and dental instruments and supplies
3291	Manufacture of brooms and brushes
3299	Other manufacturing n.e.c.
3311	Repair of fabricated metal products
3312	Repair of machinery
3313	Repair of electronic and optical equipment
3314	Repair of electrical equipment
3315	Repair and maintenance of ships and boats
3316	Repair and maintenance of aircraft and spacecraft
3317	Repair and maintenance of other transport equipment n.e.c.
3319	Repair of other equipment
3320	Installation of industrial machinery and equipment
3511	Production of electricity
3512	Transmission of electricity
3513	Distribution of electricity
3521	Manufacture of gas
3522	Distribution of gaseous fuels through mains
3530	Steam and air conditioning supply
3600	Water collection, treatment and supply
3700	Sewerage
3821	Treatment and disposal of non-hazardous waste
3822	Treatment and disposal of hazardous waste
3831	Dismantling of wrecks
3832	Recovery of sorted materials
3900	Remediation activities and other waste management services
4120	Construction of commercial buildings
4120	Construction of domestic buildings
4211	Construction of roads and motorways
4212	Construction of railways and underground railways
4213	Construction of bridges and tunnels
4221	Construction of utility projects for fluids
4222	Construction of utility projects for electricity and telecommunications
4291	Construction of water projects
4299	Construction of other civil engineering projects n.e.c.
4311	Demolition

4312	Site preparation
4313	Test drilling and boring
4321	Electrical installation
4322	Plumbing, heat and air-conditioning installation
4329	Other construction installation
4399	Other specialised construction activities n.e.c.
4520	Maintenance and repair of motor vehicles
4950	Transport via pipeline
5122	Space transport
5920	Sound recording and music publishing activities
6110	Wired telecommunications activities
6120	Wireless telecommunications activities
6130	Satellite telecommunications activities
6190	Other telecommunications activities
6201	Ready-made interactive leisure and entertainment software development
6201	Business and domestic software development
6202	Information technology consultancy activities
6203	Computer facilities management activities
6209	Other information technology service activities
6311	Data processing, hosting and related activities
6312	Web portals
7111	Architectural activities
7111	Urban planning and landscape architectural activities
7112	Engineering design activities for industrial process and production
7112	Engineering related scientific and technical consulting activities
7112	Other engineering activities
7120	Technical testing and analysis
7211	Research and experimental development on biotechnology
7219	Other research and experimental development on natural sciences and engineering
7490	Environmental consultancy activities
7490	Quantity surveying activities
8020	Security systems service activities
8422	Defence activities
9511	Repair of computers and peripheral equipment
9512	Repair of communication equipment
9521	Repair of consumer electronics
9522	Repair of household appliances and home and garden equipment

Appendix D

Percentage of core and related engineering occupations and whether a qualification was required for their current activity.

	<i>Engineering occupation</i>	
	Core	Related
Was a qualification required?		
Yes: both the level and subject of qualification was a formal requirement	39.3	38.2
Yes: the level of qualification was a formal requirement	12.8	10.9
Yes: the subject of the qualification was a formal requirement	7.5	6.3
Yes: whilst the qualification was not a formal requirement it did give me an advantage	27.2	26.5
No: the qualification was not required	13.2	18.1
Activity is on track		
Strongly agree	39.1	38.8
Agree	45.9	43.1
Neither agree nor disagree	8.2	8.7
Disagree	4.4	6.2
Strongly disagree	2.4	3.2
Activity is meaningful		
Strongly agree	37.9	34.6
Agree	50.0	51.5
Neither agree nor disagree	7.5	8.2
Disagree	3.2	3.9
Strongly disagree	1.4	1.9