



Summary: estimating the ability of UK university engineering departments to double their capacity to respond to the demand for trained engineers

Results of a survey conducted in May 2013

Susan Kay, Engineering Professors Council (EPC) and Dr Anil Kumar, EngineeringUK



EngineeringUK through its annual report *EngineeringUK 2103: The State of Engineering*¹, identified that in order to meet the future UK demand for engineers with Level 4+ skills, the UK needs to roughly double its output of students with Level 4+ qualifications via universities and colleges of further education. A clear question arising is: if the number of students applying for engineering at university did double, would universities actually have the capacity to recruit them? And if not, how long would it take for departments to build the capacity to be able to accommodate a doubling of numbers? This of course, always assumes that the actions had been taken to improve the numbers of applicants in the first instance. This brief report presents the key findings from a poll² carried out by the Engineering Professors' Council amongst its members which asked the simple question:

Over what time period could you accommodate a doubling of your intake of undergraduate (and separately) postgraduate engineering students?

The majority of respondents said that increasing capacity to accommodate twice as many students would take 3-5 years

51% of those responding said that it would take 3-5 years to accommodate double the number of **undergraduate students**. 25% said it would take 6-10 years, or even longer. With respect to **postgraduate students**, 34% said it would also take 3-5 years to accommodate twice as many with a further 58% saying that they could do so immediately or within 1-2 years. Only 8% indicated that it would take longer than 5 years. A number of respondents elaborated on their response regarding postgraduate students, explaining that spare capacity was emerging owing to the reduction in the numbers of overseas postgraduate students (which have traditionally represented a high proportion of postgraduate engineering students) being seen now as a result of the new visa regulations². There were no significant differences in the pattern of response by engineering discipline or university type, with the proportion of responses largely following a normal distribution with the majority indicating it would take 3-5 years to double capacity.

However, there are many components to the issue of increasing departmental capacity beyond cash, physical space and equipment

Increasing capacity in university departments is a complex issue. In this case, respondents were asked to assume that they were not competing with other departments for limited resource and that cash was available for investment in physical infrastructure and equipment. But these were clearly not the only constraints. Respondents were keen to highlight a number of other considerations which included: concerns around ensuring the quality of the student intake and the need for curriculum development at secondary school level; the challenges of managing such complex change by existing staff whose time is already stretched (more so when taking into account the difficulty of recruiting staff, particularly in the UK³, and the trend in student-staff ratios which have increased by an average of more than 2 students per staff member in the last 5 years⁴, a significant increase for a laboratory-based subject); the need to ensure that assessment techniques reflected the needs of employers and not just address the imperative to simply find ways to assess the higher volume of students; the need to invest in associated university infrastructure (pastoral, living accommodation, library etc) and the need to provide scholarships and bursaries to overcome the issues associated with increased fees. While not specifically asked about the issues around demand from postgraduate research (PhD) students, respondents noted that without a pipeline of such students, the challenge of recruiting academics to meet the needs of the increased undergraduate and postgraduate taught student numbers was only going to become more acute.

¹ http://www.engineeringuk.com/Research/Engineering_UK_Report/

² This poll was conducted during the period 22nd-31st May, 2013. A total of 108 responses were received from amongst the membership of 78 UK institutions, all from unique IP addresses. The poll did not ask the respondent to identify themselves or their university to encourage response, however, this means that it cannot be guaranteed that a unique response per university department was received.

³ See also the [Engineering Professors' Council report on the impact of the visa regulations](#) on the recruitment of overseas staff and students, the proportions of which are higher on average for engineering than for other disciplines.

⁴ Analysis of Higher Educational Statistical Agency (HESA) staff and student data by the [Engineering Professors' Council](#)