

Higher Education White Paper

Response on behalf of the Engineering Professors' Council

The Engineering Professors' Council (EPC) provides a forum for senior academics responsible for engineering teaching and research in higher education. It has over 1600 members and represents virtually all of the universities in the UK which offer degrees in engineering.

The EPC has major areas of concern over the White Paper, including the unintended consequences for engineering of the fee regime; and of the AAB market. More generally, we are concerned that engineering, which is crucial for the UK economy but a relatively expensive subject to teach, may suffer disproportionately from the new regime. We also comment on the question of two-year degrees..

1. Fee regime

We are particularly concerned about take-up of four year courses such as the MEng and the potential risks to the postgraduate taught provision as students are deterred from taking on the extra years of debt.

The four year integrated master's is currently the 'gold standard'. It is precisely the sort of qualification that the government should be working to retain for its direct relevance to the skills agenda and the wider economy. Entry is highly selective, there is high demand from industry for the graduates and it is the exemplifying academic qualification, under the Engineering Council's UK Standard for Professional Engineering Competence (UK-SPEC), for eventual professional qualification as a Chartered Engineer. If a student has a BEng (from a 3-year course) rather than an MEng s/he will need an MSc (or equivalent further learning) to satisfy the Engineering Council for registration against the UK-SPEC criteria. We are worried that students will be deterred from taking the four year MEng course purely on financial grounds; or be deterred from following a BEng with an MSc, which would need to be privately funded on top of the accumulated student debt.

In addition, we are concerned that students will be deterred from undertaking courses with an industrially-relevant sandwich year, industrial placement or year abroad where this would increase the debt.

2. AAB

The AAB policy may also have some unintended consequences. A substantial part of engineering provision is in institutions with a proportion of, but not all, students with AAB+. There is substantive evidence (assembled by the Institute of Physics and the Royal Society) that maths and physics are 'grades harder' than other 'A' levels, for example from analyzing A results of students with the same GCSE grades. With the AAB policy, institutions, particularly those which do not fill every place with AAB+ students at the moment but have a significant percentage, may slant their provision to subjects for which they think it easier to recruit AAB+ students. Subjects such as engineering and the physical sciences, despite being SIVS, may then be discriminated against (i.e. provision will be threatened).

In addition, the AAB+ policy discriminates against students with high potential but who may have achieved more modest grades because they have attended a disadvantaged school.

3. Cost of teaching engineering

As a subject critical to the well-being and success of the UK economy and society, engineering has to be a core subject in HE in order to produce the graduates industry requires. Engineering departments are able to exist because of the student demand for places and the industry demand for graduates. However, in order to sustain that position, departments must be financially viable to provide the sort of education and the skills that industry needs. Engineering is a relatively expensive subject to teach; hands-on laboratory experience is important to the development of highly competent engineers (as important as it is, for example, to medics) and the expense relates, at least in part, to the costs of laboratory equipment and its updating, laboratory supervision (including safety issues), licenses for software to enable students to learn computer-aided design amongst other topics, and the support of workshops and technical staff for students' research and design projects.

The EPC has demonstrated in the past that funding under the previous system did not cover the costs of teaching engineering, which had to be supplemented by a premium on overseas student fees and other methods. Of the £9000 maximum, which itself would not cover the costs of teaching engineering for many departments, a portion has to be allocated to meet the diversity / outreach agenda. Cross-subsidizing from cheaper, classroom-based subjects, where HEIs charge the same fee for all subjects, may therefore be inevitable. Alternatively, where HEIs chose to reflect actual costs by subject for undergraduate fees, the relatively higher costs of engineering would be a strong disincentive to potential students.

For all these reasons, it is crucial that HEFCE SIVS funding be maintained for engineering, although this will address only part of the problem.

4. Two Year Degrees

Industrial interaction and research-informed teaching are the bedrock of a high-quality higher education in engineering. Any institution running degrees which compressed three years of work into two would need to increase the annual fee commensurately in order to cover the cost of the extra teaching, particularly if staff are unable to generate the research income that they currently generate during the summer (when undergraduates are not resident). If staff were delivering teaching all year it is hard to see how maintaining interaction with industry and carrying out research could be maintained. Challenging and interesting undergraduate project work is also highly dependent on the range of industrial interactions most engineering academics nurture through the supposed 'vacations'. Given the intensity of engineering programmes, many students use the vacations for private study and often to gain experience working in industry. Two year degrees threaten this private study and more importantly threaten the ability of students to meet their learning outcomes because of the available time for study.

Two year degrees would also not be recognized outside the UK, regardless of learning outcomes achieved, because they would fail to meet the Bologna requirement for a 3-year first cycle degree. They would be seen as highly undesirable in the vital overseas market, as well by home/EU students looking to work for multinationals, or interested in other forms of mobility.

We have consulted senior industrialists in framing our response. A chief executive of a major UK power generation company has said to us:

'Engineering is critical to the future success of the UK Economy. The additional costs of engineering teaching need to be recognised, but this additional cost should not be placed on the student or we will discourage students from studying this important discipline.'

A Chief Executive of a major energy infrastructure company has added:

'In recent years we have found it necessary to recruit abroad, particularly for specialist electrical and commissioning engineers. Although we do value the wider experience and perspective that overseas recruits can often bring, we believe that the UK should be broadly self sufficient in the skills necessary to build, maintain and operate vital national infrastructure. We are willing to work with Government and HEIs to ensure the quality of students' experience and learning at UK universities, but we expect public policy similarly to recognise the strategic importance of core engineering skills.'