

## **OPENING STATEMENT TO DAIL COMMITTEE ON EDUCATION & SKILLS**

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UCD attracts the largest cohort of engineering students entering Ireland's 3<sup>rd</sup> level sector. Our courses require the highest CAO points of all engineering courses nationally. I speak today from my experience as Head of the UCD School of Mechanical and Materials Engineering. In doing so, I point to the key areas where additional resources would be applied if the Cassells report's proposals on funding were implemented.

### **1: Increase in Student Numbers, in Student/Staff Ratio, and in Student Diversity**

- a) Student numbers entering First Year Engineering have risen by 20% in the last 10 years, from 250 to 300 per annum. These extra students include EU and non-EU students. We need to provide additional supports for these students because of the wider spread of mathematics ability across this wider student cohort coming from the Leaving Cert, and to support our non-EU and mature students. Budgets for these supports were used previously for small-group learning opportunities for our students via Teaching Assistants, Tutorials and Laboratory Attendants.
- b) Taught Masters student numbers have also increased dramatically. Ten years ago, my own School delivered only one Taught Masters programme to complement our honours BE degree in Mechanical Engineering; we now lead nine. This welcome growth has been largely in response to market needs in key industry sectors including Energy and Biomedical engineering, but it led directly to my Student/Staff ratio exceeding 27:1 two years ago. The FTE student cohort across our five engineering schools has increased by more than 35% since 2008. A key challenge for staff on our taught programmes is to provide good student feedback and to have small-group interactions with students. This can only be done with adequate Student/Staff ratios. International comparators indicate ratios of less than 15:1 in leading engineering schools, and less than 10:1 in the world's top ranked universities.

### **2: Reduction in Supports for Students**

A constant concern that we face is how to ensure that the quality of education provided to our students does not diminish. Two issues make this increasingly difficult to achieve, despite the constant use of newer technologies.

- (a) We have relatively fewer Postgraduate Research students. These people largely deliver the supports I mentioned earlier. Academics have increasingly less time or capacity to carry out research with PhD students and Postdocs and to seek the competitive funding that supports them. Within my own Engineering School, we previously budgeted approximately €100k pa to pay these as Teaching Assistants. It is almost ten years since our budget permitted this.
- (b) The lack of adequate space is an acute problem. In my own School, the dramatic growth in our taught student numbers has meant that rooms and laboratory spaces that were previously available for students for project work are almost in constant use for

classroom and teaching purposes. Effectively, our students now have no dedicated space available to them for project work in either our computer rooms, our workshops or our laboratories.

### **3: Reduction in Technician Numbers**

When I joined UCD, there were eight full-time technicians in our workshop. Last year, we had only two full-time technicians here. A key requirement underpinning the quality of our engineering programmes is the workshop, laboratory and hands-on project support that technicians provide as a major part of all students' training.

### **4: Sustained Lack of Investment in Infrastructure and Equipment**

The vast majority of the laboratory teaching equipment in my School is beyond its useful service life and its residual value has depreciated to zero. In the past five years since I have been HoS, we have only spent c. €50k to either repair or replace such equipment. Putting this figure in context, less than 0.5% of my annual operating budget is available for this.

### **5: Funding for Research & Innovation**

Engineering at UCD is very ambitious for its Research & Innovation activities. The relationship between these and our Teaching & Learning activities is deeply intertwined, impacting positively on the experience our undergraduate students have when they work on cutting-edge topics with our research students. We have a diverse research income stream. 40% comes from SFI, including direct funding for two Research Professors in the areas of Precision Manufacturing and the Internet of Things. The EU provides ¼ of our research funding and we are home to 5 ERC awardees. Industry provide a similar level of funding for research equipment and for people. However, the key factor that is beginning to limit our ambitions and future successes is the availability of suitable laboratory and office space to carry out engineering research.

### **6: Commercialisation and Spin-out Activities**

In the last decade, there have been 9 spin-out companies from UCD Engineering including:

- OxyMem, who develop novel wastewater treatments and are the only Irish Global Cleantech Top 100 company.
- APC, who employ 60 people and are recruiting a further 100 for their Cherrywood premises.
- BiancaMed, now part of ResMed, specialise in non-contact sleep monitoring equipment and are based at NexusUCD.

It is talent and innovation that will be key to developing Ireland's future indigenous industries and MNCs. Education and research are fundamental to this. We simply must address the gaps in our higher education system, as it is the foundation for our future economic growth and for a vibrant society.