

# Engineering education world

*Contributions are invited for this feature. News items on policies that concern the engineering education world, new courses and curricula either of a unique nature or of international interest, new innovative laboratories and concepts, funding news for engineering research projects involving international participation, special international continuing education courses and news, industry-university interaction, engineering faculty news, and developments in engineering education of international interest. Please send news items and conference information to the Editor-in-Chief. Public relations offices of universities and human resources divisions in industry are requested to contact the Editor with news items concerning engineering education and training.*

## USA—United Kingdom—Australia— Canada—Germany

### *Competition for international students intensifies*

The United States is slipping behind in international competition for foreign students: its share has dropped from 40% to 32% since the 1980s. US institutions enrolled a record of 458 000 foreign students in 1996-97, but educators are aware that nothing guarantees the continued growth of such numbers. Many are convinced that, in the absence of a national strategy to insure the maintenance of international education, the numbers, for the first time, will actually go down in the next few years. Foreign students, particularly undergraduates, represent a significant source of revenue to their institutions, and the cities and states in which they are located. Spending by foreign students adds an estimated \$7.5 billion to the US economy every year. Educators in the United States recognize that family financial concerns and steadily improving local universities are among the reasons students might decide to pursue a post-secondary education in their homeland.

A further factor is that, of the students who do seek to be educated outside their home countries, a growing proportion are heading to countries other than the United States. Three other English-speaking nations—Australia, Britain, and Canada—now compete with US institutions for

foreign students. In recent years all three have significantly increased their efforts to recruit fee-paying foreign students, opening information offices and conducting state-sponsored campaigns to market their institutions abroad. Australia, in particular, has been aggressive in marketing its institutions to prospective students in Asia as a closer and more affordable alternative to a US education. Australia also is expected to ease its immigration regulations so that foreigners who complete degrees there can become immediately eligible for permanent residency. Australian universities see such a provision as a powerful selling point, especially in the Asian countries from which they draw a majority of their overseas students. Moreover, recent approval to begin offering Bachelor and Master courses with English language content may add Germany to the competitive field of the international student market.

**Marlene Johnson**, executive director of NAFSA, Association of International Educators, called for US higher education to develop co-operative marketing plans that would help institutions of similar types, from two-year colleges to research universities, share costs, save money, and gain a larger portion of the foreign student market. Acknowledging the 'sheer complexity' of marketing American higher education abroad, she said 'It's fairly clear that efficiencies are there to be had.' She also urged the establishment of 'an

independent, capitalized, self-sustaining, co-operative marketing entity' to take charge of promoting US higher education abroad. She said the proposed operation would be financed by contributions from the federal and state governments, corporate sponsors, trade groups, and colleges and universities.

### United Kingdom

#### *Clampdown on faculty neglecting research*

Faculty at Queen's University in Belfast are combating against more than 100 redundancies, as their vice-chancellor **George Bain** revealed his restructuring plan. Senior staff who have been branded 'research inactive'—the majority of whom are over 50—were being given individual hearings to prove research activity, or lose their jobs, in the second stage review of the restructuring process.

### Germany

#### *Tuition fees will creep in through the back door*

Few higher-education officials in Germany believe that the country's newly elected chancellor, **Gerhard Schröder**, was serious about a campaign promise to prevent state universities from imposing tuition fees. Herr Schröder's centre-left Social Democrats won 41 per cent of the vote in the election to become the largest party in the new parliament. In the waning days of the campaign, he said that, if he had anything to do with it, there would be no tuition fees at Germany's state-run universities. 'I clearly say to you that I never allow the question of higher education to depend on Mama and Papa's money belt,' he said at one rally. Public institutions enrol an overwhelming majority of Germany's post-secondary students. This can be interpreted so that those who can, will probably be made to pay for tuition.

Tuition has been a highly controversial issue in Germany, where many people remain deeply attached to the tradition of a higher-education system that is fully financed by the state. The massive student strikes that swept the country last fall were in reaction to the government's failure to provide enough funds for the universities as well as the looming threat of tuition fees. Passage of the country's long-awaited, higher-education 'framework' law, which includes several major provisions to reform the universities, was delayed for months because of disagreement over one issue: tuition fees. Herr Schröder's Social Democrats had held up passage of the bill because it did not explicitly ban fees, instead leaving the issue to the individual Lander, or states, to decide. Over the party's objections, the law was finally adopted in that form in August. **Klaus Landfried**, president of the University of Kaiserslautern and the current president of the association of German

university rectors, has dismissed the election pledge by Schröder as 'political farce.' In an interview with a German newspaper, Mr. Landfried said, 'Many Social Democratic officials in the Länder are quite openly talking about how to introduce tuition fees under a different name.'

Four of Germany's 16 states already have passed legislation that authorizes their universities to charge relatively modest tuition, particularly in the case of students who take too long to complete their degree programs. Universities in some states have been trying to reduce the time students spend pursuing an undergraduate degree from an average of more than six years to four and a half.

### USA

#### *Copyright is a hot debate (see also our editorial)*

Academic and library groups are unhappy with copyright and data protection measures moving through Congress. They say the bills would impede research and education, including distance learning and scholarly publishing, in far-reaching ways. In recent weeks, Congress has taken steps toward passing three major bills that are strongly opposed by library and higher education groups—but favoured by the movie industry, the publishing world and the music industry. The academic groups want federal law to better guarantee the right to use copyrighted materials for educational purposes, while the publishing and entertainment industries are seeking more protection from infringement on the materials they own. Recently the House of Representatives adopted a bill that would make it illegal to use, without permission or payment, information that has been collected in a database.

Another bill, which has passed the House and is pending in the Senate, would extend the term of copyright protection by 20 years. The third bill, passed this month by the Senate and designed to update copyright laws for the digital era, would make it a crime to circumvent encryption or other protective measures that publishers and others might use when making works available in electronic formats. Such a step, the library and college groups say, would effectively prevent professors and students from taking advantage of existing exemptions in the law that allow copyrighted materials to be used for teaching and research.

There is little such ambivalence in academia over the database bill, which is opposed by the American Association for the Advancement of Science and other scholarly and scientific organizations. The Collections of Information Anti-piracy Act, as the bill approved by the House is called, was introduced at the urging of information companies, including the largest journal publishing company Reed-Elsevier. The measure is designed to give legal protection to compilations and listings that take time and money to assemble, but which don't qualify for protection under copyright law,

under a 1991 Supreme Court decision, because they don't arrange the information in an original way. The United States is facing pressure to adopt protection for databases, as the member nations of the European Union are; otherwise, databases developed by US companies won't receive protection in Europe. But academic and library groups say the bill adopted by the House is too broad, potentially covering even such material as meteorological tables and bibliographies. They also argue that the 'fair use' provisions in the bill are inadequate, applying only in cases where using the material would not harm any actual or potential market.

The bill's supporters say that fair use would be possible. Academic and library groups have won a few concessions in that bill, including a provision to let libraries use digital technology to make archival copies of copyrighted material. But the measure's basic approach would undermine fair use, the groups say, by prohibiting anyone from circumventing an electronic protection system, even if they did not intend to infringe on copyrighted material.

#### *Computer science and engineering has too few students*

The numbers of computer science and engineering students is falling behind the soaring demand for staff in these fields. The shortage in computing graduates has pushed average starting salaries up to more than \$41 000, a 12 per cent annual rise. Only 3 per cent of the near million students who took the American College Testing Service college entrance examination wanted to study computer and information science, according to a survey. Fewer than 1 per cent intended to take up computer engineering. Students planned to take on such subjects as business, psychology, law, health services and other areas, despite lower pay and scarcer opportunities.

'Students' career aspirations seem to be somewhat out of sync with the jobs,' ACT President **Richard L. Ferguson** said. He blamed poor career guidance and the newness of computer science. Shortage of computer experts in the USA necessitates the recruitment of programmers, engineers and systems analysts from abroad.

#### *An attempt to stop women abandoning science and engineering studies*

A new on-line mentoring scheme should help reduce the number of women students who drop out of engineering and science courses. MentorNet aims to link 5000 female students with industry mentors in the next five years, following a pilot programme which linked 200 students with mentors in industry. Volunteer mentors provide education and career advice to female science students in the US where, as elsewhere, women are a minority in the scientific community. **Carol Muller**, director of MentorNet, said: 'Through e-mail and other emerging

technologies, MentorNet can reach more women than would be possible with traditional mentoring. The medium is perfectly suited to exchanges across long distances and time zones. We already have mentors in other countries paired with students in the US—and many of the students are non-US citizens studying in the US.' MentorNet provides web-based training material, newsletters and support. It has plenty of students wishing to participate, but has a shortage of mentors willing to advise and encourage young women pursuing technical careers. MentorNet will be adding on-line discussion groups for students and mentors later this autumn.

Most of the students joining MentorNet's first semester are undergraduates and Muller explained: 'The first and second years are a particularly critical time when female students majoring in engineering or other sciences are most likely to leave their chosen fields of study or drop out.' For more information look up: <http://www.mentornet.net>; HYPERLINK <http://www.mentornet.net>

### Italy

#### *Ultra-short degree courses are being introduced*

Italy is introducing short degrees for young people who have all the qualifications for university entry but who prefer to get into the workplace quickly. University minister **Luigi Berlinguer** announced that the 'super-diplomas' will be the result of one or two years of study outside university, plus hands-on internships in companies taking part. The project is seen as a new phase in Professor Berlinguer's campaign to modernise Italian higher education and make it respond better to the needs of the job market. 'This type of training is demanded by social realities, by the companies and by the European Community,' said Professor Berlinguer. 'The training courses will also be worth credits that the students will be able to use should they subsequently want to go to university.' Super-diploma courses will also be open to people with school-leaving certificates who are already working and wish to improve their qualifications.

Universities have introduced 'short degrees' of two to three years in technical fields but they have not proved very popular among students, who see them as second class. There are also three-month vocational training programmes for young people who have not finished school. Short degrees introduced four years ago provoked protests from left-wing student organisations, who saw them as an attempt to re-create a class structure in higher education and a shift from the ideal of a full university education. But the scheme announced by Professor Berlinguer, who is a member of the post-communist DS Party, is so closely linked to the needs of the job market that it is unlikely to arouse opposition. A university ministry spokesman said the courses will be organised by the regions in conjunction with local companies.

Teachers will be drawn from schools, universities and technical colleges but also from industry or the professions. The first courses will begin this academic year, and the project should be fully operational by 1999–2000.

### China

#### *China streamlines educational choice for students*

Students at Chinese universities have a choice of 249 specialities in 11 degree subjects next year after a ministry of education curriculum restructuring exercise. Previously there were 504 specialities. The subjects are: philosophy, education, science, medicine, management, economics, law, literature, history, engineering and agronomy. The move aims to assist the country's economic and social development as it transforms itself from a planned to a market economy

### Conferences

Pedagogics in Design Education  
19–20 November 1998  
State Scientific Library,  
University of West Bohemia,  
Pilsen, Czech Republic  
Contact: Prof. Stanislav Hosnedl,  
Dept. of Machine Design,  
Univerzitni 8,306 14 Pilsen, Czech Republic  
Tel: +420 19276253; Fax: +420 19279990  
e-mail: boruskio@kks.zcu.cz

#### **CAL 99**

#### **Virtuality in Education**

28–31 March 1999  
The Institute of Education, London, UK

Contact: Phillipa Orme  
12 Church St., Wantage OX12 OLN, UK  
Tel: +44 1235 868811; Fax: +44 1235 86811  
e-mail: p.orme@dial.pipex.com  
HYPERLINK <http://www.elsevier.nl/locate/cal99>

#### **10th International Conference on College Teaching and Learning**

14–17 April 1999  
Jacksonville FL, USA  
Contact: Bill Martin  
Tel: +1 904 646 2150; Fax: +1 904 646 2188  
e-mail: wmartin@fccj.org  
HYPERLINK <mailto:wmartin@fccj.org>  
<http://www.fccj.cc.fl.us/~conf/>

#### **The 4th European Forum for Continuing Engineering Education**

9–11 June 1999  
Trondheim, Norway  
Contact: Mari Saterbakk,  
SEVU Congress Department N-7034,  
Trondheim, Norway  
Tel: +47 73 5956 69; Fax +47 7359 51 50  
e-mail: Mari.Saterbakk@sevu.ntnu.no  
HYPERLINK <mailto:Mari.Saterbakk@sevu.ntnu.no>  
<http://www.ntnu.no/sevu/4thforum>

#### **American Society for Engineering Education Annual Conference**

20–23 June 1999  
Charlotte, North Carolina, USA  
Contact: Dyanne Hughes,  
1818 N. St. NW,  
Washington DC 20036, USA  
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e-mail: d.hughes@asee.org  
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