

Engineering education world

Contributions are invited for this new 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.

European Community

Education policy

The Community has issued a major new policy document on the future of higher education in Europe, 'Memorandum on Higher Education in the European Community'. Issues of concern and development are coupled to the so-called European Dimension in higher education. Particular areas are partnerships between higher education and enterprises, continuing education, distance education, student mobilities, and degree quality and equivalences. These areas are currently being supported by the Commission's Taskforce on Human Resources Development in the COMETT, ERASMUS and TEMPUS programmes.

Education and Eastern Europe

TEMPUS—The Trans European Mobility Programme for University Studies, which is part of the European PHARE initiative for Central and Eastern Europe—is expanding. The programme, intended to help Eastern European higher education both materially and academically to achieve Western standards has just finished an initial applications round for the Baltic countries and Albania on 29 February 1992. This complements the existing programmes involving Poland, Hungary, CSFR, Romania, Yugoslavia and Bulgaria.

The total funding to be allocated for each of the four countries—Latvia, Estonia, Lithuania and Albania—is initially around 1 million ECU (US \$1.25 million), which is mainly to be spent on Joint Educational Programmes (JEPs). Based on levels of previous allocations in this European programme, individual projects concentrating on management studies and engineering can expect to receive up to around 150,000 ECU (US \$187,000) per year.

East-West brain drain

The TEMPUS programme of the Community is showing the first signs of assisting in a brain drain of Eastern European university students and academic staff to the West. Portugal's **University of Beira** has attracted Polish lecturers in environmental protection and solid-state physics. It plans to attract around 30 more from Poland this year. **The University of Copenhagen**, well known for its Niels Bohr Institute, is hiring Russian nuclear and solid-state physicists. Similar stays have been prolonged after the completion of TEMPUS stipends in Germany.

Research, education and training database

A new research database service named CORDIS (Community Research and Development Service) is available within the ECHO service. ECHO is the European Community Host Organization, a database host. The CORDIS database now covers the

European programmes ESPRIT, BRITE, DELTA, COMETT, RACE and others. Information is available from: ECHO customer service, BP 2373, L-1023 Luxemburg. Tel: +352 349811; Fax: +352 34981234.

United Kingdom

Polytechnics become universities

Polytechnics in the UK become universities in April 1992. The following new university names have been chosen for the polytechnics:

- Birmingham Polytechnic—University of Central England at Birmingham
- Bournemouth Polytechnic—Bournemouth University
- Brighton Polytechnic—Brighton University
- Coventry Polytechnic—Coventry University
- Hatfield Polytechnic—University of Hertfordshire
- Huddersfield Polytechnic—University of Huddersfield
- Humberside Polytechnic—Humberside University (name not yet approved)
- Kingston Polytechnic—Kingston University
- Lancashire Polytechnic—University of Central Lancashire at Preston
- Leeds Polytechnic—Leeds Metropolitan University
- Liverpool Polytechnic—Liverpool John Moores University
- Central London Polytechnic—University of Westminster
- City of London Polytechnic—City of London University (name not yet approved)
- North London Polytechnic—University of North London
- East London Polytechnic—University of East London
- South Bank Polytechnic—University of the South Bank
- Thames Polytechnic—University of Greenwich
- Middlesex Polytechnic—Middlesex University
- Newcastle Polytechnic—Northumbria University in Newcastle (name not yet approved)
- Polytechnic South West—University of Plymouth
- Portsmouth Polytechnic—University of Portsmouth
- Staffordshire Polytechnic—University of Staffordshire
- Sunderland Polytechnic—University of Sunderland
- Teeside Polytechnic—University of Teeside
- Polytechnic of Wales—University of Glamorgan
- West London Polytechnic—University of West London (not yet approved)
- Wolverhampton Polytechnic—University of Wolverhampton

The following polytechnics have not yet decided on becoming universities: Sheffield is as yet undecided about its future status (March 1992), and Oxford Polytechnic will not take up university status for the

time being. The polytechnics in Leicester, Nottingham and Manchester have not yet chosen their new names; the decisions on names for these polytechnics are more difficult as these locations already have established universities named after the cities.

Teaching quality

A new audit system for teaching quality is being launched. Universities will for the first time be assessed for teaching quality by an external body. Polytechnics—now becoming universities—have been accustomed to such procedures before. What the assessment teams are to assess has not yet been clearly revealed. The first institutions to be examined are the Universities of Loughborough, Nottingham, Strathclyde and Heriot Watt, and the (still) polytechnics at Hatfield and Sheffield, as well as Paisley Collge of Technology and Robert Gordon Institute of Technology.

First graduate school

The first graduate school imitating the American practice of separate administrations for graduate and undergraduate studies is being established at the **University of Warwick**. Claimed advantages are that the promotion of graduate quality operations cannot be well handled by a teaching and undergraduate oriented administration. Another factor is the comparably larger proportion of US students enrolled in graduate schools. The University offers several engineering subjects, including mechanical, manufacturing systems, civil, electrical and physical electronics, and computing.

France

Decentralization of education and research

France is planning to spread out its research efforts regionally and away from the concentration in and around Paris. The higher education expansion plan Université 2000 will involve 9% of research institute jobs out of the 54% of research jobs now concentrated in the metropolitan area. This involves the transfer of 2500 scientists from Paris to the provinces. The largest organization, the CNRS, will move over 1000 scientists. The main aim is to create top international research centres in the French provinces. The scheme includes the establishment of new universities and will involve 200 French towns. Estimated costs of the reorganization are around US \$6 billion.

Germany

Higher education expansion under strain

With universities already overflowing with students at around double the planned capacities German institutions of higher education are opening their

doors to hitherto unqualified university and Fachhochschule entrants. The federal states of Schleswig-Holstein and North Rhine Westphalia (NRW) will open their doors to skilled workers with vocational qualifications as from the winter semester starting in the Autumn of 1992. Holders of master craftsmen and certain vocational qualifications will be admitted. This development is part of a worldwide trend to massive higher education and coincides with an increasing pressure by universities and Fachhochschulen to expand staff and facility allocations that are already totally inadequate even with the current levels of student enrolment.

New degrees for old

With German unification, two different education systems were suddenly combined, raising questions about degree equivalences and recognitions. West German engineering degrees are those of Diplomingenieur, either from a technical university or from a Fachhochschule. In the new federal states these institutions have to be established according to the Western pattern. Not all engineering universities will become technical universities, as there were practically twice as many in East Germany as in West Germany, and this for a population of less than a third compared to the West. The professional and engineering schools of the former East Germany roughly corresponded to a level between a vocational school and a higher education institute. Frequently a direct equivalence with West German degrees is not possible. A solution to this problem was quickly put forward by the conference of the German Ministers of Education (KMK). The lower degree will rank as equivalent to a Western Fachhochschule degree provided the graduate has at least a one-year professional experience, and tops up his studies with one year at a Fachhochschule. Otherwise the minimum requirement for equivalence is three years of professional practice.

Evaluation of faculty is coming

For a long time the German maxim of 'freedom of academic research and teaching' at universities also meant that university staff were used to teach without any real controlling constraints. This is now changing. In North Rhine Westphalia and in Berlin student evaluations are in vogue. At the **Technical University of Berlin** results of a survey of 7000 students have revealed that students are particularly dissatisfied with the first phase of their engineering studies. In two of the courses examined only a quarter of the students said that they had learnt anything new in their basic study courses.

CeBIT 1992 multimedia

At CeBIT 1992, taking place in Hanover from 11-18 March, multimedia is one of the highlights. The CeBIT fair is one of the world's main exhibitions of new presentations of computer and communications technologies. The emergence of multimedia

as a major presentation, corporate training, point of information and educational tool is shown in numerous exhibits. The US market of \$1.2 billion in 1991 is expected to expand to \$6.5-7 billion by 1995. That the educational market is one of the targets of this expansion is a novelty in industrial fairs of this type. Already, engineering school laboratories are concentrating on multimedia developments for engineering education. The publishers of this journal operate a networked development facility in multimedia for engineering education. However, except for simulation software already in use, large-scale teaching aids for engineering require considerable investment of time and resources, and are as yet not available.

CeBIT 1992 university exhibits

The CeBIT information technology fair in Hanover is a platform for the progress made by German universities in this area. Presentations were given in Hall 22. Highlights are teaching programmes in medical subjects but engineering is also represented. The **University of Kassel** is presenting an interactive teaching programme for microprocessor and storage devices. The **Technical University of Berlin** is presenting a multimedia medical working platform. It incorporates the manipulation of images and a conferencing system.

Austria

New Fachhochschulen

The move towards internationally regionally related systems for engineering education, producing graduates with recognized engineering qualifications, is exemplified by a response to an appeal by the Director of the Young Industry Association, Martin Bartenstein, for the establishment of the equivalent of the German Fachhochschulen in Austria.

His demands are for a pilot project to gather information on its feasibility. School leavers and industry require such intermediate institutions. Up to now technology education in Austria was the prerogative of the HTL type of technical vocational institutes associated with the school system, and long-cycle higher engineering education is the monopoly of the technical universities. The first institutions of this kind will be established in 1993. It is projected that around two-thirds of Austrian engineers will come from the new institutions. This percentage is similar to the current situation for the German Fachhochschulen.

Ireland

Brain less drained

Reduction in brain drain to the United Kingdom: Irish engineering graduates who in the mid-1980s emigrated *en masse* to the UK are now remaining in Ireland due to the recession in the UK. The

reduction is particularly noticeable for engineers. In 1989, for example, 70% of Irish civil engineering graduates emigrated; this has dropped to 46% in 1990. For electrical and electronic engineers the drop has been from 39 to 23%.

USA-Japan

R&D expenditure race

Japan is overtaking the USA in industrial R&D expenditures. This is the result of a study by the National Science Foundation in the USA recently published under the name of 'Science and Engineering Indicators'. Industrial expenditure for R&D in Japan in 1990 was \$79.4 billion versus US expenditure of \$78.83 billion in 1989 down to \$77.84 in 1990. At least two factors complicate comparisons of these sums. Firstly, the conversion rate between the yen and the dollar does not conform to the equivalents in buying power; and secondly, industrial funding is complemented by other funding sources in both Japan and the USA.

Japan-Eastern Europe

Technology brain pickers

Japan has a serious high-technology labour shortage (see the paper by K. Noda on 'Adapting Engineering Education to Better Serve Japanese Industry' in Vol. 7(6) of this journal). The Valcon Systems Service Company with offices in Poland and Hungary is recruiting graduates for work in Japanese industry. The number of university students in Japan is falling and the country will increasingly look for high-quality foreign graduates to bolster the Japanese economy through their research contributions.

USA-UK

Funding crises

Financial constraints in the USA and the UK partly due to economic recession threaten the existence of engineering and science departments. King's College London Mechanical Engineering and Computer Science Departments face serious difficulties. At New York's Columbia University professors and heads of departments threaten to

resign due to budget cuts. Some research schools in the USA are threatened by unmanageable overhead costs. Harold Shapiro, president of Princeton University, has said that 'The cost of providing the quality of research we deliver has exceeded the growth in our revenue for years. There is a growing sense that our way of doing things is just not working.'

China

International learning activities

The Chinese Institution of Scientific and Technical information has signed an agreement with the Confederation College of Applied Arts and Sciences of Canada for the training of senior Chinese science and technology administrators. This follows a successful initial training of 47 heads of scientific institutions and companies in Canada and Singapore. China plans to extend these international links in the near future.

Malaysia

Technical engineering education

Malaysian Polytechnics are upgrading their certificate courses to diploma status. Industrial skilled workers will be accepted at polytechnics provided they have relevant work experience. New high-level technical courses are being introduced such as in biomedical technologies.

Hong Kong

The world's newest science and technology university

New high technology campus. The Hong Kong University of Science and Technology opened its doors in the Autumn of 1991. It is the largest technological university development currently being undertaken and will grow in 5 years from 560 to 7000 students—with over 2000 of them at graduate level—and 700 academic staff. The university has strong ties with the US west coast: it has an agreement with UCLA on the establishment of a joint business school; and its president is Woo Chia Wei, former president of San Francisco State University.

COURSES AND CONFERENCES

Courses

Hatfield Polytechnic (now the University of Hertfordshire) in the UK and the Fachhochschule Hamburg, Germany, announce a new modular European inter-university course in **Automobile Engineering**. The course is scheduled to begin in Autumn 1992 and is intended as a part-time course to be given in a modular scheme for graduates who are interested in a higher degree in vehicle engineering. The course will be shared between the UK and German locations with participation of other European institutions in Spain, France, The Netherlands, Italy and Germany in this area also planned. The degree is an M.Sc. in Automobile Engineering.

Address enquiries to: Dr P. R. Bullen, School of Engineering, Hatfield Polytechnic, College Lane, Hatfield, Herts AL10 9AB, UK.
Tel: +44 707 279250; Fax: +44 707 279115

Educational Technology in Higher Education

15-27 November 1992, Loughborough, UK
Information: Ms J. Coghiel, The British Council, 10 Spring Garden, London SW1A 2BN, UK
Tel: +44 71 389 4264; Fax: +44 71 389 4154

Conferences

Third World Conference on Engineering Education

20-25 September, Portsmouth, UK
Information: Professor T. V. Duggan, Faculty of Engineering, Portsmouth Polytechnic, Portsmouth PO1 3DJ, UK
Tel: +44 705 842012; Fax: +44 705 842584

Fifth World Conference on Continuing Engineering Education

2-5 June 1992, Helsinki University of Technology, Helsinki, Finland
Information: Ms Mari Suvanto, Revontulentie 6, SF-02100 Espoo, Finland
Tel: +358 0 451 4078; Fax: +358 0 451 4068

Curriculum Development—Does Europe Need Generalists and/or Specialists?

17-20 June 1992, Miskolc, Hungary
SEFI Curriculum Development Group
Information: Dr J.-O. Hjalmered, Chalmers University of Technology, S-41296 Goteborg, Sweden
Tel: +46 31 721179

Fourth International Conference on Computers and Learning—ICCAL 92

17-20 June 1992, Acadia University, Nova Scotia, Canada
Tel: +1 902 542 2201; Fax: +1 902 542 7224

Third International Conference on Internationalizing Higher Education Partnerships with Business and Industry

15-18 June 1992, St Andrews University, Scotland
Information: H+E Associates Ltd, 12a Church St., Stiffkey, Norfolk NR23 1QJ, UK
Tel: +44 328830355; Fax: +44 328 830339

Trans European Cooperation in Engineering Education

24-26 June 1992, Technical University, Prague, Czechoslovakia
Information: Dr Karel Kveton, Zikova 4, CS-16607 Praha 6, Czechoslovakia
Tel: +42 2 3114042; Fax: +42 2 3111 2463

IGIP International Association for Engineering Pedagogics Annual Conference

21-24 September 1992, Esslingen, Germany
Information: IGIP Secretariat, University of Klagenfurt, Universitätsstrasse 65, A-9022 Klagenfurt, Austria
Tel: +43 463 5317371; Fax: +43 463 5317 100

European Training Technology Event (ETTE) and Exhibition

27-29 October 1992, CNIT, Paris, France
Information: ETTE Conference Office, NOVEP Conference Organisers, Potterstraat 40, 1071 DB Amsterdam, The Netherlands
Tel: +31 20 67511808; Fax: +31 20 6628136