

The MEng in Engineering Design at the University of Bristol

▶ **The University of Bristol has just started up a five year multi-disciplinary MEng Degree programme, complete with deep specialisation, and industrial involvement. This is aimed at the country's leading engineers of 2010 and beyond.**

The programme consists of a 2+1+2 sandwich, which includes a common Year 1; deep specialisation from Year 2; Year 3 spent in industry; and Years 4 and 5 in further specialisation and multi-disciplinary project work, often in teams. The concept of the programme came from the university's Visiting Design Professors and the Royal Academy of Engineering who, back in 1997, recommended that Bristol provide a 'premier formation' for those in charge of strategic and as yet unprecedentedly large scale projects as might, for example, occur in space technology, globally integrated transport systems and deep sea ocean mining. As well as being a specialised engineer such a person would need a strong grasp of the concepts and magnitudes relevant to engineering as a whole. We have built a new unit, to run throughout the 5 year course, that focuses on key understandings and an ability to use these in "back-of-the-envelope" calculations. In addition this unit focuses on key issues regarding the environment, affordability and the law. Equally important is a need to work and engage with other people and to be able to communicate at every level.

Clearly, getting all of these qualities is impossible, but the aim is to identify potential at the outset. Selection to the programme is therefore critical, and entrant hopefuls undergo a full day of admissions interviewing, testing, and employment selection screening. Bristol's 12 industrial sponsoring companies, the



The scholarship winners of the Engineering Design Partnership sponsored award

Engineering Design Partnership, have been totally involved in the process. The list includes big names such as ABB, Arup, BAe Systems Airbus, Corus, GKN, Renishaw and Rolls-Royce. Candidates must also have the potential to get 28+ UCAS points, or international equivalent, including a Grade A in A level mathematics and physics. The content and pace of the programme is not for the faint-hearted, and includes, in Year 1, specially enriched units in mathematics and engineering physics as well as common purpose cross-disciplinary engineering with design at the focus. From Year 2, specialisation starts in themes often bi-disciplinary, e.g. aerodynamics and propulsion, dynamical systems modelling, software engineering or water resource engineering. So far there have been most encouraging sounds as to accreditation from the many Engineering Institutions that will be involved. In Year 3, students will be placed with the sponsor companies, but contacts will begin much earlier with summer placement opportunities with the companies between Years 1 and 2. In Years 4 and 5, a key focus will be on interdisciplinary projects many of which will hopefully emerge out of the Year 3 placement. The aim ultimately is that students graduate fully educated and conversant with industrial working practice, and thus seamlessly fit into employment. From then on it's up to them.

The Faculty of Engineering at Bristol has needed to prepare special composite units to accommodate the common Year 1 and the themes; some of these are appearing increasingly attractive to other specialised MEng programmes. New staff too are being recruited but a big impact is expected when placements come into operation. Bristol was fortunate to receive £15M JISC funding last year for the Bristol Laboratory for Advanced Dynamical Engineering (BLADE) and expects that the large interdisciplinary opportunities that this offers will meld in well with the industrially inspired projects that emerge with Year 4/5 Design students. The first entry, Cohort 01, came in October 2001. It consists of 26 students, 7 of whom are young women, twice the faculty average. So far they have settled in well, and much enjoy team-working, but admit the work is demanding. Bristol is pleased with its investment in selection, and is now recruiting Cohort 02.

Dr Mike Barry, University of Bristol

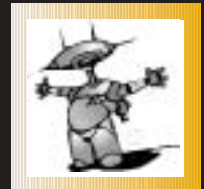
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New Course in Engineering Design

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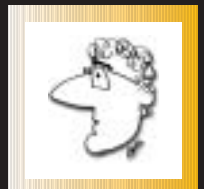
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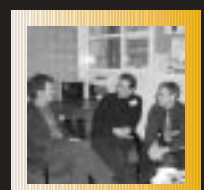
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Talking Point, About, Contacts, Stop Press & Future Events

LTSN Engineering Progress Report

October 2001 – January 2002

Events

- The repeat *Maths Toolkit for Scientist and Engineers* workshop was again a joint venture between ourselves, LTSN Physical Sciences and the LTSN Maths, Stats & OR Network. The 40 delegates learnt about diagnostic tests and different support mechanisms and were given hope that this issue had moved forward since the last event in April 2001.
- Our Midlands Regional Event *Running Group Projects* was hosted by the PBLE project and held at the University of Nottingham. Over 30 delegates enjoyed talks on ideas about how to put groups together, how to manage groups and how to cope with possible cheating and plagiarism. Lots of discussion ensued!
- LTSN Engineering's Northeast Regional Event *Promoting a Deep Learning Approach* was held at the University of Durham. Prof. Erik Meyer began the day with a session on how students differ in their learning styles, followed by presentations on what's happening on this topic from 3 different institutions in the Northeast. The event provided an excellent networking opportunity for all attendees who now intend to set up a regional network to do more in-depth work in this area.

Latest recruits to LTSN Engineering

LTSN Engineering would like to welcome:

- **Warren Houghton**, University of Exeter, as our 3rd Academic Consultant. Warren takes up this part-time role from 1 March and will be developing resources that translate educational theory into 'engineering language'.
- **Christine Hirst** as the LTSN MathsTEAM Project Co-ordinator. More information on this project can be found on page 5.

Resources

In addition to the resources that will be developed by our new recruits, the successful Mini-Projects and Working Groups, we currently have available:

- **Supporting the Benchmark Statement:** See www.ltsneng.ac.uk/hec/qaa/benchmark/benchmarking for 3 papers that describe how departments have interpreted and use the Benchmark Statement. A 4th paper should be available soon and we also plan to arrange an event on this topic.
- **Assessment:** The LTSN Generic Centre Assessment Series is now available, featuring 12 guides on topics such as "Assessment of Large Groups" and "Self, Peer and Group Assessment". The guides are generic in nature with subject specific case studies, including some engineering ones. We have been given a limited supply of the series - if you would like to receive a complimentary copy, normally priced at £85, then please email enquiries@ltsneng.ac.uk. We hope to complement this series by commissioning a series of engineering case studies.

Other highlights

- Our Stakeholders' Report 2001 accounts for our activities in the year 2000/2001. All are invited to comment and reflect on our progress made. If you would like your own copy, with the accompanying annual survey, please email enquiries@ltsneng.ac.uk.

Engineering Mini-Projects

Bidding for the 1st Phase of LTSN Engineering's Mini-Project funding stream closed on 2 November 2001. 16 proposals were received and we would like to take this opportunity to thank each proposer for their effort in putting together their submission. Each proposal was subjected to vigorous assessment procedures and the panel found it difficult to make a decision from the large number of high quality bids.

The following seven Mini-Projects were successful, each funded at £3,000. We look forward to making available the resources from these Mini-projects which will begin to come online as early as this summer. Further information about the developments of the Mini-Projects and resulting activities can be found at:

www.ltsneng.ac.uk/hec/mini_projects

Development of an On-line Physics Diagnostic

Norrie Edward, School of Engineering, The Robert Gordon University

The project will define the physical science concepts subsumed by first year engineering Bachelor of Engineering (Honours) courses in a Scottish University. These will form the basis of the construction of an on-line interactive diagnostic test. To avoid ambiguity the questions will be non-computative. The test will be constructed using Question Mark Perception and will be administered via the University Intranet. The project will include piloting and analysis. Output will provide the means to implement remedial programmes and curricular development. It will also permit the formation of a national database on standards in physics.

To Enhance Final Year Students' Group Working Skills

Dr Alison Halstead, School of Engineering, Coventry University

This project will evaluate the thinking preferences of thirty final year undergraduate students who are about to embark on a group activity. A newly developed psychometric tool known as 'thinking styles' will be used to provide each student with a personal profile. The students will receive individual feedback on their thinking preferences as well as the insight into how others think and how to interact with people with different thinking preferences. This support is to be offered prior to them participating in a group exercise. The expectation for the project is that the students will appreciate the benefits of group work and will gain more from the exercise in terms of their personal and professional development. The project will be evaluated by a pre and post activity questionnaire and focus groups. The results will be disseminated within two other University departments who see the potential of this thinking styles approach.

A Prototype Robot Design Project to Promote Electronics in Schools

Sherri Johnstone, School of Engineering, University of Durham

At present, students work in teams of 5 to carry out paper design projects. The same set of students then work in different teams to carry out a two week practical project. It is proposed to combine these sessions such that the students can design and build a product. The product we have chosen is an analogue robot kit to teach students in schools and colleges about analogue electronic design. The idea behind this project is to enthuse students about electronic engineering by asking them to produce a product, which is of practical use, but requires in-depth electronic skills and knowledge. With this particular product the University has the opportunity to enhance its links with local educational establishments to encourage a wider participation in Engineering Higher education. The results of the project will be shared with other Universities, colleges etc using web pages. The output from this project is a demonstration of how this type of initiative can benefit University students and promote engineering within the community.



Systematic Learning Guidance for Engineering Students

Dr Warren Houghton, School of Engineering and Computer Science, University of Exeter

This project is concerned with the development of a systematic and responsive means to help engineering students adapt quickly to the university learning environment, develop effective study habits and engage fully in PDP. All first year engineering students at Exeter are asked, throughout their first semester, to complete a weekly formal review of their learning, at the end of each week. These learning reviews are then passed to a study-skills counsellor who provides written feedback before they are returned to the students in a weekly group meeting with a personal tutor. This process is supported by regular short lectures on study skills and learning processes. The student learning reviews, gathered over the semester, offer an enormous amount of data and a unique insight into the students' study habits. Analysis of this data will make it possible to target and time guidance much more effectively than in the past.

Establishing a Web Resource for 'Back-of-the-Envelope' Calculations

Andrew King, Department of Mechanical Engineering, University of Bristol

When graduates reach industry they soon realise that problems are rarely clear, don't come with all the information needed and almost never lead to textbook answers. This project aims to equip students with the ability to make quick 'back-of-the-envelope' calculations to let them scope or critique a project proposal. The project will establish ways of facilitating students in their own research of key engineering concepts together with order-of-magnitude data for various quantities. With this mechanism in place, the project will populate a website with a wide variety of examples and case studies to be publicly accessible by other engineering students.



Minimal-Mathematics Introduction to Engineering

Dr Ifiok Otung, Department of Electronics, University of Glamorgan

This project will seek to collate, develop and disseminate new ways of teaching engineering topics to mathematically-deficient new students. It aims to equip engineering lecturers with new material that enables them to approach some of the introductory engineering topics and principles in a way that puts engineering first and mathematics second without lowering standards. This will be an effective response to the declining mathematics skills and growing mathophobia amongst new intakes to engineering departments in the UK. The traditional teaching approach developed prior to 1986 during the 'golden age of mathematics' and followed in most undergraduate engineering textbooks leaves lecturers with a dilemma: to present a mathematically rigorous derivation of a concept or to simply quote the final formula, prefaced with, "can be shown that...". The former is certain to boost attrition figures amongst mathematically-deficient new intakes, whereas the latter is a black-box treatment that fosters incompetence.

Student Study Approaches, Learning Conceptions and Links to Assessment

John Rowe, School of Engineering, Sheffield Hallam University

Since at least 1990 it has been accepted by the engineering academic community that deep approaches to studying are to be encouraged within programmes because of the disastrous result of surface approaches on the quality of understanding as a learning outcome. However, there is limited evidence in the literature that suggests how this is being achieved in courses that are probably overfilled with subject knowledge. If engineering educators remain convinced that deep approaches to studying are to be encouraged to promote understanding rather than memorisation, assessment should explicitly and appropriately reward that preferred study approach. This mini-project seeks to link evidence of study approaches, quality of learning outcomes and conceptions of learning in a range of UK universities to provide strategies that will inform assessment practice.

The call for proposals for the 2nd Phase of Mini-Project funding will go out in March with a closing date of the 3 May 2002. For further details please see:

www.ltsneng.ac.uk/ale/fundopps



Project Page

The following projects are based in a range of engineering disciplines and are funded under various national initiatives, such as JISC (Joint Information Systems Committee), FDTL (Fund for the Development of Teaching and Learning) and the HE Innovations Fund. Each project is producing resources that will be available nationally, either free or at heavily subsidised rates. A full listing of funded engineering education projects can be found at:

www.ltsneng.ac.uk/er/fund_projects

FAILTE

FAILTE (Facilitating Access to Information on Learning Technology for Engineers) aims to help engineering lecturers find electronic teaching and learning resources which are suitable for their students. EEVL (the Internet Guide to Engineering, Mathematics and Computing) currently provides a catalogue and search engine for locating quality web-based information resources for engineering. FAILTE will complement this with more in-depth descriptions of resources that are specifically intended for teaching and learning. FAILTE will also include information about electronic resources which are not web based (e.g. CD-ROMs). Further information on the quality of the resource and how it has been used will be provided by embedding information from reviews and evaluation case studies provided by the EASEIT-Eng project. The service will be launched at LTSN Engineering's *Finding and Using Learning Technologies* event at Heriot-Watt University on March 20th, after which it will be available through the EEVL and LTSN Engineering websites.

To date, the project has created a resource description scheme and implemented a pilot database which allows these descriptions to be stored and searched via the web. Current work is concentrating on populating this database with descriptions of as many resources as possible. The project would be interested in hearing from anyone willing to help evaluate whether this database currently meets the needs of engineering academics looking for computer based learning resources.

FAILTE is a collaboration between EEVL, EASEIT-Eng and LTSN Engineering, and is funded through JISC. To contact FAILTE email PhilB@icbl.hw.ac.uk, for more information look at <http://failte.ac.uk>.



The **Maths for Engineers WebDisk**, an Innovations project comprising 13 hours of maths modelling video and maths video seminars together with text and interactive CBL material, is complete. This whole 'course' of essential engineering maths is on one DVD Rom, a technology likely to be widely available by the launch date in June 2002.

But the interest in the M4 Engineers product lies not only in its educational strategy for repairing students' maths but in the innovatory combination of media and the wealth of content on just one disk. The full screen moving images are crystal clear. Navigation is seamless and the disk offers a rich hierarchy of immediately accessible resources for first year engineering students.

We seek comments about the prototype we have built and lecturers prepared to provide feedback should contact Jim Stevenson of the EBS Trust at jim@ebstrust.u-net.com or call 020 7765 5023.

RAPID 2000

The **RAPID 2000** Project (FDTL Project 34/99) is having a major impact in helping students bridge the divide between academia and professional training beyond graduation.

Currently 5 versions of the Web-based RAPID Progress File, including one in Civil Engineering, are being used extensively by 2000 students on Built Environment and Civil Engineering degree programmes in 9 Higher Education Institutions. The RAPID Progress File helps those students to build a record of their achievements, and to audit and develop both generic and discipline specific skills. In addition, the RAPID Progress File enables the student to create a portfolio of evidence that may be used to demonstrate competence in line with future professional development needs. Each version of the RAPID Progress File has been developed with the active assistance and encouragement of the relevant Professional Institution.

The project team hold regular seminars/workshops to share and transfer good practice in the implementation of the RAPID Progress File.

For further information on these and other aspects of the RAPID 2000 Project visit the project website at <http://rapid2k.lboro.ac.uk/> or contact the Project Manager, Alan Maddocks (A.P.Maddocks@lboro.ac.uk).



Graduate Learning on the Web (**GLOW**) is developing tools and processes to enable academics to use the web to support postgraduate science and engineering courses. The aim of the project is to use easily accessible software to help academics reduce the time it

takes to prepare high-quality web-based teaching materials. A central focus is the development of straightforward tools to deliver self-assessment questions online.

GLOW is a consortium project led by Paul Thomas from the Department of Instrumentation and Analytical Science at UMIST and run in conjunction with the Universities of Luton, Manchester, Plymouth and Salford. Further information is available at www.glow.ac.uk or by contacting Alison Foulkes (alison.foulkes@umist.ac.uk).



Balance is working to encourage, attract and retain a more balanced number of women and men into engineering in Higher Education Institutions across the country.

Currently in the second year, we have begun our implementations with partner institutions bringing WES groups and schools liaison to some engineering departments. The implementations are proceeding well and we are now looking for our second set of partners, if you would like to participate, please drop us a line.

The project has also been involved in interviewing prominent female engineers about their studies, careers and lives. What can clearly be seen is that these women have had amazing careers and the extracts provide a very useful insight into the engineering industry (these can be found on the balance web pages). If you would like to be interviewed about your career (male or female) in engineering please visit www.balance.ac.uk or e-mail Kerry at K.Baker@lboro.ac.uk.

The **SITECAM** Project

The Use of the Construction Site as a Learning Experience project aims to produce learning packages from video images gathered from live construction sites, where student access to real site operations is limited by distance, timing, and health and safety concerns. A high specification, weatherproof, remotely controlled webcam has been purchased, mounted in a specially designed frame, and following extensive testing is now operational.

It was realised early on that the scope and clarity of a single fixed camera is limited by range and shielding, so a hand-held digital camcorder has been purchased to augment the webcam images. A project office has been equipped with a "Media 100" non-linear editing suite. This will enable the images from various sites to be combined into themed learning packages.

The next challenge is to identify a client and contractor who are willing to have video

surveillance of their site. If anyone can make any suggestions of likely site I would be delighted to hear from them. E-mail: martyn.baker@luton.ac.uk Tel: 01582 734111.



The Professional Pathway is a new degree scheme allowing City University software engineering and computing undergraduates to combine study and relevant work experience.

Students who do well in the first year of their course are invited to join the Pathway and must then find suitable IT-related employment. Once they have done so, they spend one day on campus and four days at work each week over three extended 15-week semesters. They take the same modules and exams as full-time students and graduate in four calendar years, the same period in which traditional thick-sandwich students complete their degrees.

The first Pathway cohort have completed their first year of the scheme and are mid-way through their second. They have performed well academically to-date, holding their own (and in some cases improving!) in relation to their full-time peers.

Further details are available at: <http://spica.soi.city.ac.uk/Pathway/>

PROGRESS

PROGRESS is a FDTL3 consortium-based project led from the Department of Engineering at Hull, aimed at improving the progression and achievement of electronic engineering students. Project activities include researching retention strategies and developing case studies on selected strategies at the HE sites of project collaborators. A network of practitioner/consultants will assist implementation through documentation, advice and workshops.

PROGRESS ran its first major dissemination event 18th-20th October 2001. Professor Chisholm of Glasgow Caledonian University presented the keynote address "Issues relating to the sustainability of engineering education and engineering as a discipline" to 60 delegates from 26 Higher Education Institutions. Thereafter, 37 papers on progression strategies and other generic issues in engineering education were presented, followed by discussion forums on topics such as the Role of Mathematics in HE Engineering, Student Motivation, and the Impact of Assessment strategies.

The Proceedings are now available and will be disseminated by LTSN Engineering to all HE Engineering Departments. For further information about PROGRESS visit www.hull.ac.uk/engprogress or contact Gavin Cutler (PROGRESS Project Manager, g.l.cutler@eng.hull.ac.uk).

Cole's Lore



Dear Colleagues,

My name is Doctor Pete Cole. I work in the School of Engineering at the University of Central Isation. This is obviously not its real name, nor any comment on the prevalent management style. At my institution the central administration is superb, the managers are marvellous and the Vice Chancellor is completely without vice. Indeed, where I work is so marvellous that to write about it would be completely without amusement. That's why I write about where you work.

You will find my meagre jottings on one of those newfangled websites. Someone clever will tell you where. I do not guarantee to make you laugh out loud, but a quick glance may provide you with something to think about when you are short of work.

Don't let things get to you. I did, and look at me now.

Pete Cole

P.S. I am a real doctor, not one of those medical practitioners who are just pretending.

If you would like to read Pete Cole's bimonthly observations on where you work please see:

www.ltsneng.ac.uk/tcr/coles_lore

Changes to the Engineering Council

The Engineering and Technology Board has been established to support and champion the wider engineering and technology community in the UK. It is taking over the promotional and lobbying role of the Engineering Council, but will have a wider focus than the engineering profession. It will champion engineering and technology wherever they are found and particularly new and developing technologies which may not until now have been seen as part of engineering. A number of influential organisations will be represented in the ETB, whose first Chairman is Sir Peter Williams, Master of St Catherine's College, Oxford, President of the Institute of Physics, and former Chairman of Oxford Instruments.

The Engineering Council will continue to regulate the engineering profession and to set standards of education, training and competence. It will in future be governed by a Board whose members will be two-thirds nominated by the professional Institutions, and one third by the ETB. The two bodies will work closely together, especially in the area of education and lifelong learning.

Further details can be found at:
www.etechb.org.uk

Supporting Mathematics Education in UK Engineering Departments



The LTSN MathsTEAM project, established October 2001, is conducting an in-depth survey of current resources and teaching methods, to identify suitable material to assist academics with the serious decline in students' basic mathematical skills on entry into higher education in the United Kingdom.

In June 2000, the UK's Engineering Council recommended to all universities that those students embarking on mathematics-based degree courses should have a diagnostic test on entry and that prompt and effective support should be available to students whose mathematical background is found wanting by the tests.

In September 1999, the Institute of Mathematics and its Application (IMA), made the recommendation that in both the Incorporated Engineers (IEng) and the Chartered Engineers (CEng) programmes, the mathematics topics should be taught within an engineering context.

Implementing these recommendations requires knowledge of the methods which are currently being used in the science and engineering communities. LTSN Engineering, LTSN Maths, Stats & OR Network and the UK Centre for Materials Education have therefore established a team to bring together this knowledge for inclusion in three information packs.

Are you involved in teaching maths to engineering students?

Would you like to submit a case study?

- Are you performing diagnostic tests on your first years?
- Do you provide support to students specifically for their maths skills?
- Do you teach maths to your students within an engineering context?

If the answer to any of these questions is "Yes" then MathsTEAM would like to hear from you!

MathsTEAM is interested in talking to academics that could contribute to the information packs. If you would like to write a case study, MathsTEAM will provide guidelines and will be able to offer a small payment to thank you for your contribution.

MathsTEAM would also like to hear from those who are interested in the concept of the project and would like to be kept informed of the project's development.

We would very much value your experiences!

For further details please contact Christine Hirst, MathsTEAM Co-ordinator, Tel: 0121 414 3945, Email: christine@ltsneng.ac.uk

References:

- Engineering Council, 2000, Measuring the Mathematics Problem, www.engc.org.uk/gateway/3/mathsreport.pdf
- The Institute of Mathematics and its Application, 1999, Engineering Mathematics Matters, www.ima.org.uk/news

The LTSN MathsTEAM Project website can be found at:
www.mathstore.ac.uk/mathsteam

translate translate

issue four january 2002

transferring learning & teaching throughout engineering

about

LTSN Engineering is one of the 24 subject centres of the Learning and Teaching Support Network. The Centre provides subject-based support to promote high quality learning and teaching in engineering education.

If you would like to express your own opinions on this edition of **translate**, then please write to us at:

enquiries@ltsneng.ac.uk

and we will publish a summary on our website and in future editions of **translate**.

contacts

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Talking Point

What has happened to AS level mathematics?

▶ **Leslie Mustoe** *Senior Lecturer, Department of Mathematical Sciences, Loughborough University.*

29% of candidates failed this year's AS level mathematics. This failure rate is in contrast to an overall failure rate of 13% in all AS subjects. The numbers taking A level mathematics in 2002 will be reduced significantly. The image of mathematics as a difficult subject will be reinforced, acting as a deterrent to students in the future.

The overall content of the A level curriculum was made slightly more demanding in response to requests from HE, among others. Curriculum 2000 expected students to complete at least four AS levels in Year 12 and, for many, then proceed with three subjects to the full A level standard in Year 13.

The opportunity existed for more students to continue their mathematics education post GCSE – this was welcomed.

The problem with AS mathematics results from a combination of having to study half the A level syllabus in the first year, the increased pressure of studying more subjects and a somewhat more demanding syllabus – these changes all coming together. The Government must react quickly. Even so, the current Year 12 is in the same boat as its predecessor.

We must hope that the implementation problems of Curriculum 2000 can be resolved before any long-term damage is done.

▶ *A spokesman for the Department for Education and Skills said:*

"The Government was very concerned by the high failure rate in AS mathematics in summer 2001, and commissioned the Qualifications and Curriculum Authority (QCA) to investigate as part of the Review of Curriculum 2000. The QCA's advice (published in the Report on Phase 2 on 18 December: see www.qca.org.uk) was that there was no one clear cause of the difficulties some students encountered with AS maths.

However, there is some evidence that the content of AS specifications is too great to be taught to and mastered by students in the time available before the May/June of their first year of post-16 study. There will therefore be an extra opportunity to take AS mathematics exams in 2002 and 2003 only. Candidates will be able to take two units in June and a third in autumn. In the meantime, the specifications will be revised for first examination in summer 2004. A review panel has been set up, consisting of teachers, examiners, and representatives from Higher Education.

A copy of this correspondence has been sent to QCA, who are taking the interests of engineering into account."

▶ **STOP PRESS:** LTSN Engineering has recently commissioned two new Working Groups to complement our three existing Working Groups.

■ Alan Robinson and Mark Udall from Southampton Institute will be looking at how assessment should not only grade students but also be diagnostic and formative.

■ David Lilley from the University of Newcastle upon Tyne will be looking into creating a national exam for the principals and application of structural theory.

If you would like to get involved with either of these Working Groups, or find out more about our existing ones please see:

www.ltsneng.ac.uk/hec/working_group

future events

A more comprehensive listing of events can be found on our website:

www.ltsneng.ac.uk/nef/events/

13 February 2002

LTSN Engineering's Welsh Regional Event - Mathematics and Student Retention Issues in Engineering
University of Glamorgan, Pontypridd

7 March 2002

LTSN Engineering's Northwest Regional Event - Problem Based Learning
University of Manchester

13 March 2002

LTSN Engineering's Northern Irish Regional Event
Queen's University, Belfast

20 March 2002

LTSN Engineering's Scottish Regional Event - Finding and Using Learning Technology
Heriot-Watt University, Edinburgh

21 March, 6-8 Aug & 13 Nov 2002

EPC Output Standards and Assessment Workshop
Loughborough University/University of Leicester

8 April 2002

New Legislation, New Opportunities - Implementing the new disability legislation
Loughborough University

8-10 April 2002

EAEIE 13th Annual International Conference on Engineering Education
The Moat House Hotel, York

8 May 2002

LTSN Engineering's Southwest Regional Event - Student-Centred Learning
University of Plymouth

23 May 2002

LTSN Engineering's Southeast Regional Event - Meeting the Needs of Industry
City University, London

30 June-5 July 2002

3rd Global Congress on Engineering Education
Glasgow Caledonian University

18-22 August 2002

ICEE 2002: International Conference on Engineering Education
UMIST