Welcome to the first newsletter of the School of Engineering and Design. The School was created in August 2004 and comprises three subject areas: Design, Electronic and Computer Engineering and Mechanical Engineering. It is one of the largest and most successful engineering and design Schools in the UK, providing a wide range of exciting, forward-looking undergraduate and postgraduate courses. The School has an international reputation in research, underpinned by a truly global postgraduate community, and prides itself on high quality teaching. We are proud to present in this first newsletter a flavour of the many events, awards and achievements of our students and staff.

Student wins Institute of Electrical Engineers’ award.

Khaled, who graduated in Internet Engineering in 2004, won a round-the-world trip in an international competition, for his essay on internet music piracy. The Institute of Electrical Engineers’ Write Around the World contest was won by his piece entitled “Ripping Off Robbie Williams”.

“Many people don’t realise that when they share music files, or movies, with friends, they are stealing,” he explained. “The subject is topical. It affects a lot of people and it’s going to have a profound effect on how we use the internet from now on. I enjoy travelling, that’s why I entered, although I was genuinely stunned at winning!”

Khaled intends to stop off at Canada, Pakistan and Australia or Japan on his trip.

Brunel Racing team annually design, build, then race a car to the specifications set out in the Formula Student guidelines. The current team is made up of five final year Masters of Engineering (MEng) students from Mechanical Engineering, all of whom spent last year on the team, working on various aspects of the previous year’s car, BR-5. The new design for BR-6 sees these Masters students redesigning the chassis and suspension, as well as establishing a brand new engine, the Yamaha WR450f. The masters students are complemented by fourteen level three students, the majority of whom bring key skills learnt from industrial placements. Each level three student has a unique aspect of the car they are working on as their final year project. Examples of the level three projects are design of the brake system, anechoic chamber work to tune the silencer, research into supercharging the engine and aerodynamics to name but a few.

The objective for Brunel Racing and BR-6 is to be outright winners of Formula Student 2005, a feat never achieved by a UK team in the six years of Formula Student. Awards that have been won by Brunel Racing include the Cosworth Racing prize for best engine technology, the BAR Honda prize for the most desirable engineering product, UK Champions, and most recently the team were awarded the Sir Henry Royce Memorial Foundation Award, given for the highest standards of craftsmanship and awarded to the Best Quality Engineereed Car at Formula Student 2004.

We wish them luck in their quest for success this year!
PROTOTYPE
NEW MP521
ENGINEERING
FLIGHT SIMULATOR

Merlin Products Ltd. is currently manufacturing one of their MP521 Engineering Flight Simulators for delivery to the School of Engineering and Design at the end of May 2005. The Simulators are designed specifically for use by aeronautical university students to demonstrate the subjective aspects of flight, and provide a valuable understanding of the importance of appropriate handling characteristics in the teaching of aircraft design. Merlin’s Simulators are used to teach a wide range of subjects including aeronautical, aerospace, and systems engineering, avionics, computer science and psychology. The MP521 Simulator is a single seat capsule on a six-axis hydraulic motion system - the world’s most advanced engineering flight simulator. The Simulator is fitted with Merlin’s unique fully non-linear six degree-of freedom flight software (Excalibur), and their new visual display (Mirror). The Simulator will be used for both teaching and research, and is the first of Merlin’s Simulators to be delivered with the new V/STOL flight software.

Footnote on the simulator: Aftab Ahmed, a PhD student in Mechanical Engineering, is currently working on the development of robust flight control laws for V/STOL aircraft. The delivery of the simulator will be an enormous help in this project.

Dr Peter Hobson leads Brunel’s participation in a €4 million EU Sixth Framework project, GRIDCC, which aims to create a distributed system that can manage distributed energy resources by tapping into the power of PCs. The project, which is led by INFN Italy, with seven other academic institutions and IBM Israel, is researching the networked control and monitoring of geographically distributed scientific and engineering apparatus. One of the applications, in which Brunel University has a special interest, is using computational resources to co-ordinate inexpensive, reliable, and sustainable energy supplies. Brunel University and Imperial College are the only UK-based participants in the project.

“Today, the National Grid uses a few large scale computing centres to monitor energy resource use. As the UK moves to renewable sources of energy to reduce carbon emissions a larger number of small generators will be connected into the power system, which will require more active and dynamic operation,” said co-investigator Professor Malcolm Irving of Brunel University’s School of Engineering and Design. “Grid-enabled systems can interact autonomously with these small generators, where manned operation is unlikely to be viable, providing an inexpensive way of monitoring and controlling their output.”

Future electrical energy markets will provide open access to both small and large organisations, and planning and operation will require a collective effort. Grid computing will enable all market participants to receive and transmit financial information or notify the market of technical constraints efficiently and effectively.

“Grid computing already enables inexpensive, scalable, reliable and secure distributed computing across corporate boundaries,” said Dr Peter Hobson. “We believe it offers new solutions for the generation, transmission, distribution and power utilisation of the future. The computing grid is the most efficient method to allow peer-to-peer communication and direct access to facilities to enable organisations to share accurate, detailed information in the planning and management of future power networks.”

Several Brunel academics are working with Dr Peter Hobson on the GRIDCC project (Professor Kenneth Darby-Dowman and 4 other lecturers from the School of Engineering and Design: Dr Paul Kyberd, Professor Malcolm Irving, Dr Maozhen Li, and Dr Tatiana Kalganova). The team, chosen for their experience in Grid computing, knowledge-based systems, and the simulation of the electrical Power Grid provide key contributions to the project.

School rated highly in league tables

We are pleased to note that the School scored highly in the recent Guardian Higher Education League Tables published on 19th April 2005. We were ranked 3rd out of 122 Universities and Higher Education Institutions in General Engineering and were placed in the top 10 for both Mechanical Engineering and Design.

Sustainable energy research wins EU funding

Hayriye Hussein - Year 1, BA Industrial Design and Technology

“I chose Brunel because I love design and Brunel has a good link with employers. I love the atmosphere at the university, meeting other people with the same interests as me has been great. The teaching quality is good, and I find that lecturers tend to push you to achieve your maximum ability. I aim to become a graphic designer after graduation.”
Each year, for the past fifteen years, Brunel Design has embarked on singularly spectacular design programmes to promote the word ‘Brunel’ as a centre of design and engineering excellence. The unique blend of creative product and graphic design solutions has become recognised and respected, worldwide, by other academic institutions, manufacturing companies, service sector organisations and consultancies.

The ‘Brunel Design Team’ believes passionately in design and we share the desire to create new solutions to fundamental problems. What makes this team so remarkable is that we find solutions, prove the functions and turn ideas into credible products. Brunel Design has often been described as the new Bauhaus and we are very comfortable with the label.

Brunel Design is regarded, nationally, as the finest set of practically based product design courses in the UK. There are now over 1500 Design graduates and this year another team of talented, practical, creative design thinkers will graduate from Brunel. The student generated project, known as *sharper, is founded on the clever use of a pencil as the symbol of designers at Brunel. Once they have progressed through the Brunel Design process, they leave sharper.

James Dyson is fiercely critical of what he regards as a damaging shift towards “an overly theoretical, navel-gazing” approach to the teaching of design. Dyson, who gave a lecture on design education at the Royal Society of Arts, thinks many departments “cram in as many art students as possible and treat design as an entirely cerebral activity, never getting projects to prototype”. Mr Dyson tempered his attack with fulsome praise for a small number of institutions that have swung away from theory to a more engineering-oriented practical-based approach to design. He stated that they have adopted an enlightened holistic approach to industrial design, from conception and development through to prototyping and manufacturing. “There is an ocean of difference between the work of the students from Brunel and Glasgow, and the rest” he said. “The key is to find a balance between the cerebral and practical, and the likes of Brunel do that extremely well.”

Brunel Design 2005* will be an exhibition of this year’s graduate designers and engineers from Brunel Design, Masters Motorsports and the Brunel Racing team. This is the first year when this professional operation has been based at Uxbridge and it is an important landmark for all Brunel staff and students. The Design Show will open at midday on Sunday 22nd May for Industry guests. Monday 23rd May will be a Press and Publicity day with Private View for specially invited guests on the Monday evening. The Design Show will be open to Brunel and visitors on Tuesday 24th, Wednesday 25th and Thursday 26th May 2005.
Paul Turnock, Director of Industrial Design & Product Design, and Jody Chapman, Trustee of the Audi Design Foundation, gathered a group of influential design specialists and Brazilian advisors to work with Brunel Design to develop new products for people living in a context far removed from UK life.

The “Designs of Substance” project was unveiled to 140 level 2 Brunel Design students. Every year a major company is brought into the university to work with students and to give them valuable experience of working to very tight deadlines, working within extremely constraining criteria and to gain a deeper understanding of design within a real world context. Marcelo Arantes and Tiana De Souza were flown from their homes in Rio to Brunel and worked with the students in the first stage; helping them understand the lifestyle, problems, opportunities and real needs of people living on the steep slopes of the city. To help the students capture the reality of life in Brazil’s shanty towns, a specially commissioned documentary was produced highlighting the hardships endured by these people. This was a real culture shock to all the students and was a test to see how they would cope with designing for a culture totally different to their own.

Eight students were selected to continue the project. Their inspired designs were based identifying a real need, user empathy, sustainability and pride of ownership. The students had to build an exhibition of their work inside Audi’s prestigious Piccadilly showrooms and then present their work with a business plan to the judges.

Nathan Murphy won the competition and a trip to Rio de Janeiro to meet the people for whom he had designed a new life affirming concept. He went to run trials and focus discussions on his winning concept “Rio Wall Gardens”. The product is a design that allows favelas residents to grow plants and vegetables from a simple structure designed to hang outside the bleak and precarious buildings. This simple concept would transform the steep brick and concrete shanty towns into Brazilian hanging gardens, helping cool the interiors, helping reduce sound pollution and being made out of ready-mades and discarded scrap materials.

Michael Farmer, Director, Audi Design Foundation, said: “Brunel University is one of the best design institutions in the UK and this was reflected in the students' concepts. The quality of the designs, which were presented, was highly impressive.”

Paul Turnock, Director of Industrial Design, said: “The ‘Designs of Substance’ competition produced some real challenges for our students. It’s a great example of how an academic institution can play a real part in shaping, and hopefully improving, society.”

The final 8 finalists – The Rio Team – Brunel Design

- Jennifer Cox – ‘Saco da Bala’: Back pack to help people carry heavy goods along the uneven roads and up and down the steps of the favelas.
- Ryan Fenton – ‘FVTV’: A system to provide a daily slot on an existing TV channel, so that residents of the favelas can have virtual and anonymous discussions on local issues.
- Michael Lam – ‘Tread Safely’ a rigid walkway using tread of used car tyres to make walking the muddy slopes of the favelas safer and more hygienic.
- Matt Longbottom – ‘Illuminate’: An ambient non-directional light without the need for mains connection.
- Katie Reeves – ‘Ceiling Sleeper’: Portable foldable bed, which attaches to the ceiling, to maximize the limited interior space in the favelas.
- Marie De Ryck – ‘Leque’: Collapsible screen, made from local materials, to add privacy to the favela dwellings.
- Peter Legg – ‘Arte de Favelas’: Home-made souvenirs, sold in recycled and decorated cigarette packets, to help generate income from tourists.
- Nathan Murphy – ‘Hanging Wall Garden’: Self-irrigating planters for growing herbs and plants – making the area greener!
Royal Academy of Engineering Fellowship

We offer congratulations to Professor Yong-Hua Song who has recently assumed a new role as Pro-Vice-Chancellor, Graduate Studies. Professor Song was made a Fellow of the Royal Academy of Engineering. He received the Fellowship for his leading research into advanced computational techniques for operating and controlling restructured power systems. His internationally recognised accomplishments lie not only in introducing new concepts and novel methods into power systems, but also in practical implementation of his ideas.

The Royal Academy of Engineering promotes the engineering and technological welfare of the country and comprises the UK’s most eminent engineers. It provides independent and impartial advice to Government; works to secure the next generation of engineers, and provides a voice for Britain’s engineering community. For more information on the Royal Academy see their website: www.raeng.org.uk/

Senior Membership of IEE

We offer congratulations to Dr Anil Fernando, a lecturer in the ECE subject area, who has recently received Senior Membership of IEE (SMIEEE) in recognition of his outstanding research contribution to the area of image/video coding and wireless communications.

Brunel University designs the new British Academy Television Audience Award 2005

It is the Award season and the glittering prizes for television stars, production teams and writers will be complemented by a new BAFTA Prize – and Brunel University has designed it and managed its manufacture.

The secrecy that surrounded this project was almost too much to bear. Behind the scenes, DML Marketing, the creative team behind the logistical management of the BAFTA Awards, commissioned Brunel Design to create concepts for a brand new award, to be unveiled and presented, in front of millions of viewers throughout the world. The new Pioneer sponsored Television Audience Award 2005 embodies Pioneer’s values of Sound, Vision and Soul. The Audience Award was to reward those programmes first screened in 2004 that have demonstrated innovation in the TV marketplace, creatively & technically.

Only a few of us knew the nominations and we converted the concept model and 2D presentation into the object that was presented to the lucky winner in front of the television cameras on the 17th April 2005.

Students of Brunel Design were asked, exclusively, to take the brief and build a new award based on Pioneer’s own core brand values. Pioneer is one of the leading manufacturers of consumer and business electronics products on a global scale. The incentive for students to enter the design competition was to win a pair of tickets to the BAFTA Television Awards on the 17th April 2005. The judging panel comprised decision makers from Pioneer, BAFTA and DML Marketing. The design has been selected and Natalie Vanns, a level 2 BA Industrial Design & Technology student of Brunel Design is over the moon to win the competition. The design is being developed and manufactured with the expert guidance of Paul Josse, Brunel Design. Two prestigious trophies are being made – to see the design, everyone will have to wait until the night of the Awards. The clients were genuinely impressed with the quality of the work submitted by all the students and the final decision was reached after considerable discussion. Natalie’s design married Pioneer’s core values with a strikingly powerful form which will sparkle in front of the television cameras when it is presented at the glittering ceremony. Brunel Design has designed awards before – creating the Stones Rugby League “Man of Steel” Award and the Commission for Racial Equality (Race In The Media) Award trophy.

Press Release – 28 February 2005

Anna Anderson - Final year, BEng Computer Systems Engineering

“As an overseas, mature student choosing the right university was an important task for me. Having attended an Open Day 4 years ago I became excited and motivated at the prospect of becoming a Brunel student and chose Brunel rather than take up a place at another leading university. I decided upon Computer Systems Engineering (BEng) because I love computers and the course provides a comprehensive and in-depth study of all the component areas of computer systems. Student life has been very fulfilling. Amongst my more interesting student experiences were trying to learn Spanish. I have never regretted choosing Brunel. I am still enjoying being a student, even a mature one, and if I decide to continue studying I may even be here for a few more years following a postgraduate course...”
Professor Andrew Holland is the Director of the Centre for Electronic Imaging. The e2v centre for electronic imaging (CEI) (http://www.brunel.ac.uk/cei) is a new collaboration between Brunel and e2v technologies Ltd of Chelmsford. e2v technologies is a leading international player in specialised, high-end imaging sensors for a wide range of applications, including recognised, world leading space & astronomy systems such as NASA’s Hubble Space Telescope, ESA’s XMM & Envisat, and the Canada-France-Hawaii Telescope (CFHT). The image sensor capability spans almost the full electromagnetic spectrum of light, from gamma radiation to microwave and beyond. Sales in e2v’s imaging business have grown strongly from £16m to more than £20m p.a. over the last 2 years. The company has identified a shortfall in trained scientists and engineers to support its business and is financially supporting the CEI to the level of £500k over the next 5 years to support PhD CASE studentship training and providing lab support for research. Additional in-kind contributions are also made in the form of imaging detectors for test and research purposes, add to this, for example, a recent batch of CCD sensors for proton irradiation studies having a market value in excess of £150k.

The concept for this industrial collaboration was initially developed by Prof. Andrew Holland who heads the Imaging for Space and Terrestrial Applications Group. This group which was recently formed and performs R&D into imaging sensors and instruments for a broad range of space and other applications. The group is currently active in the European Space Agency’s Gaia project which is one of their flagship “cornerstone” missions due for launch in 2011, as well as developing smaller instruments such as a combined diffractometer/spectrometer which may be part of an ESA Mars Rover instrument package for a 2011 launch. The group is involved in a number of other non-space applications in Science and Engineering.

Jon Meyer, current MEng Mechanical Engineering with Aeronautics and member of the Great Britain Glider flying team

I am British/Australian by parentage, but I lived in Brazil and then South Africa, only moving back to the UK permanently at the age of 10. This was due to my father’s job as an Engineer. I am currently in my final year, studying for a Masters in Mechanical Engineering with Aeronautics. Before starting the course I had taken a year out after my A-levels, during which time I was working for the Defence Evaluation Research Agency (now QinetiQ). I chose Brunel because of its excellent reputation in Engineering, and because the lecturers and students who I met on my UCAS tour were enthusiastic about the course. During my time at Brunel I have found the teaching staff to be very open and helpful, as well as happy to discuss their research. I have a real interest in the research aspects of engineering, and being able to mix with such knowledgeable and friendly people has really enriched the course. I feel that the course has put me in a good position to enter industry, and possibly to start my own engineering company in the not too distant future. The contacts made, both with fellow students as well as staff, will doubtless be of use during my career. I hope to get a job in the aerospace industry after finishing my course, but after that...who knows? Starting my own company has always been an ambition, but I think that industrial experience will be essential if I am ever to succeed in a private venture.
Jonathan Gray, current MEng Mechanical Engineering

“I am a Mechanical Engineering student from the UK. I studied for my A levels at Stockport Grammar School, and my grades got me into Brunel, which was my first choice for Mechanical Engineering. During my undergraduate course, I did a thick sandwich placement at Visteon UK, where working as a manufacturing engineer I developed a process improvement which saved the company in excess of $1,000,000 per annum. I achieved the equivalent of a 2:1 at the end of my BEng year, and therefore carried on to obtain my MEng. The engineering course is obviously considered very highly in industry and therefore I felt I would be more employable as a result of obtaining my degree at Brunel. The lecturers also seemed welcoming at the UCAS open day I attended, and the facilities also seemed good, with lots of practical assignments being undertaken.

One of the best experiences I’ve had at Brunel is the opportunity of the Formula Student project, which I’ve been involved with for nearly 2 years now. I am currently running the team, and this experience has allowed me to see the full range of excellent facilities on offer. My engine team are mapping our new race engine on the team’s dyno in the engines lab, the chassis team have various components in the stress labs, and the majority of the components are made on site by the students. Best of all we get to race our finished piece of coursework against other Universities at the end of the year!

The group project management skills from the masters engineering coursework has given me a real appreciation of real life workplace problem solving. I am thinking of doing a PhD rather than starting with a professional career. I enjoy the University life to want to stay with it for a few more years, and I feel that a PhD will help my long term career options.”

Award Winning Multimedia Student!

Saman Rahanian’s final year project ‘9 Qualities’ has been awarded the prestigious Winner of the British Interactive Media Association Award 2004 - Best student work 2005. His project impressed the judges by the interactive nature of this typographic project. Saman’s success has continued. He now has a position as a junior manager in the leading advertising agency Ogilvy Interactive. You can access a full description of this project on Saman’s web site http://saman.rahanian.at, this also includes a number of other excellent projects he undertook during his time at Brunel.

Saman graduated in BSc Multimedia Technology and Design in 2004

Recognition for student work on Digital Holograms

Paul Fryer, a 2004 graduate in BEng Electronic and Electrical Engineering, worked on the development of an existing computer program for reconstructing digital holograms for his final year project which was presented at an international conference. His work made an important contribution to a paper presented by Dr Henry Nebrensky at the Photonics Applications in Astronomy, Communications, Industry, and High-Energy Physics Experiments III conference which was held in Poland in 2004. This paper, with Dr Henry Nebrensky, Dr Peter Hobson and Paul Fryer as authors, is believed to be the first to discuss the application of large scale “Grid” computing to the challenge of reconstructing digital hologram images. The paper has just been printed in the Proceedings of the SPIE (volume 5775) which was published last month.

A successful collaboration between teaching, research and industry

Brunel Information Technology Laboratory (BiTlab) is a Virtual reality, 3D visualisation and Grid Computing facility here in Brunel. The laboratory is a centre for research in a number of areas including immersive environments, interfaces for 3D command and control, digital holography and the GRID. Rachel Dreyer, an MPhil student pictured above, is currently using the BiTlab in her research on the documentation of improvised performance art. The motion Capture facilities in BiTlab are also offering new possibilities in 3D animation for our third year students. Amiere Fakori is developing a series of very accurate models of athletes in action using the motion capture facilities to help in physical education in schools, while Lucy Luong (current level 3 Multimedia Technology and Design student) is using the facilities to develop an animation for an advertising campaign inspired by her work placement at Saatchi and Saatchi.

These exciting Multimedia Technology and Design projects are set to continue with an increasingly close relationship with Pinewood Film studios and the Indestructible Film Company, makers of the new Captain Scarlet animated television series. This is one example of many instances where the BiTlab is a bridge point between the world of research, industry and the Multimedia Technology and Design course at Brunel.
Calendar of Events

5th May 2005 – Practical Human Systems Integration
Presented by W. I. Hamilton, Human Engineering Limited

22nd-26th May 2005 – Design and Motorsport Show

23rd June – Bridges Conference

11th July – Insight Week

In addition to these weekly seminars the School hosts:

Evening Seminars
The evening seminars are Industry/academia seminars held in conjunction with the LTN business partners, every 3 months to encourage research collaboration between the School and industrial partners.

Future events

Other Research Events
- Maintenance & Management of Bridges Conference in conjunction with external consultants on 23 June 2005

New Courses

The following new Undergraduate courses start September 2006:
- Aviation Engineering (BEng / MEng) (Subject to Approval)
- Aviation Engineering with Pilot Studies (BEng/ MEng) (Subject to Approval)

The following new Undergraduate course is planned for September 2006:
- Design for Sport BSc

The following new Postgraduate courses start September 2005:
- Engineering Design MSc
- Wireless Communication Systems MSc (Subject to Approval)

The following new Postgraduate course is planned for September 2005:
- MRes in Mechanical Engineering, MRes ECE, MRes Design

The following new Postgraduate course is planned for September 2006:
- MSc Aerospace Engineering

Gordon Wheeler, final year BSc Mobile Computing

“"I'm UK born, and studying for a BSc Mobile Computing. I'm on my 3rd year now and return to Uxbridge in September to complete the final year. I completed an HNC in electronics and telecoms when I left school and have spent the time since then in a variety of technical roles in Telecoms, data comms and management software companies. The reason I chose Brunel was its location close to my home, family and friends and Brunel University had a good reputation. One of my first memories of science on the television was watching Heinz Wolff (a Professor at Brunel), so I’ve known about Brunel University from early childhood. As a mature student I was concerned about returning to an educational environment, but the support I got from my tutor and other members of staff as well as others on the course has made the transition easy. The placement has made a big difference; I’ve been offered sponsorship for my final year and a job when I complete the degree. The company is also working with the University on a research project to help develop its business, and I’m going to be involved with that as well. I’ll be returning to the company that I did my work placement with, then possibly continuing my education by studying for an MSc or MBA part time.”

Why Choose the School and Brunel University

- Teaching, support and facilities rated “excellent”
- Flexible modes of study
- Brunel graduates are highly valued by UK and international companies
- Close links with industry
- All full-time freshers receive on-campus accommodation
- “Best University in London for Sport” – The Sunday Times
- Indoor athletics centre opened 20 April 2005
- Excellent transport links to London Heathrow and the Capital

Further information:
For information on all our courses please see:
http://www.brunel.ac.uk/about/acad/sed/sedcourse/

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