

# Engineering Update

## Winter 2008/2009

The Diploma is here! As Bromley's lead school for the pilot of the Engineering Diploma, and after over a year of planning, teaching of this brand new qualification began in September.

This is a major development for Newstead as an Engineering Specialist School and has been enthusiastically received by the students studying at both the Higher and Advanced levels. Covering a broad range of engineering disciplines, the emphasis is upon hands-on learning coupled with an underlying academic understanding.

Our Summer School has similarly seen significant development. The introduction of the theme of Flight creates a strong Engineering emphasis, and students from Newstead Wood and elsewhere enjoyed a broad range of activities, exploring this fascinating area.

This year's Arkwright Awards ceremony was a major success for our young Engineers. Between them, three prestigious awards were gained in addition to the scholarships already won. Our congratulations go to them all.

### NEWSTEAD STUDENTS RECEIVE SIR HENRY ROYCE MEDAL

Normally awarded to an individual young engineer who has shown excellence in the previous year in their work with industry, the prestigious Sir Henry Royce Medal was, this year, awarded jointly to a group of three high achieving Newstead students.

The winners were invited to attend the award ceremony which took place at the Institution of Engineering and Technology (IET) headquarters at Savoy Place, London, on the on 31<sup>st</sup> October 2008. The winners were jointly presented with a medal, an inscribed certificate and £250 cash by the Chief Executive of the Sir Henry Royce Memorial Foundation.



(l-r) Hannah Southan, Sorrella Smith and Katharine Redhead show off their shared award

This award was set up by the Sir Henry Royce Memorial Foundation and the Institution of Engineering and Technology in 1990 and is highly valued by the Engineering and IT industry.

### IN THIS EDITION



**SIR HENRY ROYCE  
MEDAL SUCCESS**



**THE ENGINEERING  
DIPLOMA IN ACTION**



**SHELL ECO-MARATHON  
BID LAUNCHED**



**NEW SUMMER SCHOOL  
TAKES OFF**



**MORE AWARD  
SUCCESSSES**

**AND MORE...**

**THE DIPLOMA - HOW IT WORKS**

Newstead are delivering the Engineering Diploma as part of the 14-19 Bromley Consortium, which also includes Bromley College and Langley Park School For Boys. Newstead is the only school in the borough delivering both the Higher and Advanced Levels of Engineering Diploma.

**Higher Level Engineering Diploma**

The Higher Level Diploma is a two year course comprising Principal Learning delivered in eight units (four of which are being studied in this first year), a project, two weeks work experience, functional skills and Additional / Specialist learning in the form of two GCSEs.

Overall, the Higher Level Diploma is considered to be equivalent to 7 A\*-C grades at GCSE level. At Newstead this learning is augmented by studying a minimum of 8½ further GCSEs.

The Principal Learning element of the course is currently delivered in a total of four hours, two hours each at Newstead Wood and Bromley College. Students are enjoying the diploma, especially their experience at Bromley College which focuses on mechanical engineering in an environment that differs greatly from that at Newstead.



**Higher Diploma - Level 2 Principal Learning Units**

- Unit 1 - The Engineered World
- Unit 2 – Engineering Design
- Unit 3 – Engineering Applications of Computers
- Unit 4 – Producing Engineering Solutions
- Unit 5 – Construct Electrical and Electronic Systems
- Unit 6 – Manufacturing Engineering
- Unit 7 - Maintenance
- Unit 8 – Innovation, Enterprise and Technological Advance

*"You are given a wider range of opportunities because Engineering is so diverse"*

**Sorcha Stokvis**  
Higher Diploma Student



***The Diploma Is Here!***

*"You have to do a lot more practical work, which is better than sitting doing paperwork"*

**Victoria Luck**  
Higher Diploma Student



**Advanced Level Engineering Diploma**

The Advanced Level Diploma is also a two year course comprising Principal Learning delivered in nine units (five of which are being studied in this first year), a major project, two weeks work experience, functional skills and Additional / Specialist learning in the form of one GCE A-Level (Maths is strongly recommended). Overall, the Advanced Level Diploma is considered to be equivalent to 3.5 GCE A-Levels. At Newstead, students can augment this learning through the study of one additional A-Level of their own choice should they so wish.



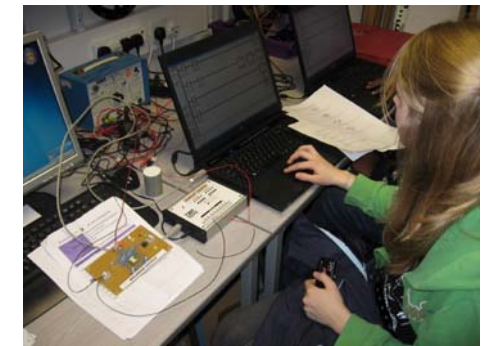
*"It's like nothing we've ever done before. With so many different areas to work on you will always find something that will interest you"*

**Laura Selby**  
Advanced Diploma Student



*"It's good for people that like hands on learning"*

**Charlene Brown-Marke**  
Advanced Diploma Student



**Advanced Diploma - Level 3 Principal Learning Units**

- Unit 1 – Engineering Business and the Environment
- Unit 2 – Applications of Computer Aided Design
- Unit 3 – Selection and Application of Engineering Materials
- Unit 4 – Instrumentation and Control Engineering
- Unit 5 – Maintaining Engineering Systems and Products
- Unit 6 – Production and Manufacturing
- Unit 7 – Innovative Design and Enterprise
- Unit 8 – Mathematical Techniques and Applications for Engineers
- Unit 9 – Scientific Principles and Applications for Engineers

**HELP WANTED FOR SHELL ECO-MARATHON BID**

The Shell Eco-Marathon is an international competition familiar to most of us due to appearances on TV and in the press of the streamlined, science fiction like vehicles that make up the challenge entries.

The Shell Eco-Marathon requires students to build a vehicle that uses the least amount of fuel to travel the farthest distance. A team of Newstead's year 10 Engineering Diploma students are currently launching a project to develop a full sized road vehicle suitable for entry.

To commence this project, the team first need to acquire the numerous components needed to assemble such a vehicle, e.g. engine, gearbox, etc.



**The Shell Eco-Marathon Team need you!**

This is without doubt the most technically advanced and challenging engineering project ever considered by Newstead students, which will only succeed given the necessary support and sponsorship.

If you think you could help, or simply want more information, please contact the team at [newstead\\_engineering\\_team@live.co.uk](mailto:newstead_engineering_team@live.co.uk).

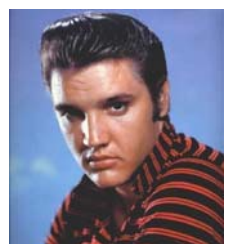
To this end the team are looking for local individuals or companies that would be willing to support the project – either through technical expertise or financial sponsorship.

**ELVIS IS COMING TO NEWSTEAD**

Not the Elvis that may initially spring to mind, but something much more useful as a teaching resource for the diploma. The National Instruments ELVIS (Educational Laboratory Virtual Instrumentation Suite) is a hardware interface/computer software combination that together provides all of the electronic test and measurement facilities usually found only in a well equipped electronics workshop.

Thanks to the generous support of National Instruments, Newstead is shortly to receive two ELVIS platforms along with their associated design and prototyping software. A favourite of higher educational establishments, acquisition of these units will massively improve our capability to design, simulate, build and test electronic projects.

**ELVIS is coming to the building**  
This one... ...not this one



Our thanks go to David Baker, Academic Program Manager for National Instruments and to Dr Mehmet Karamanoglu, a member of our Specialist School Management Group, for facilitating this exciting development.

## NEWSTEAD SUMMER SCHOOL TAKES FLIGHT

Ever wanted to balance a Malteser on a column of air? How about investigate rocket propulsion using Mentos and Coke? If so, Newstead's flight themed summer school is the event for you.

The introduction of a new and exciting theme for our summer school: 'Flight: A Leonardo Question Answered' opened up a whole new realm of engineering related possibilities for its students.

The first week of the two-week programme was launched by Jeremy King of SETPOINT, who explained the basics of good aerodynamic structures. Then, in smaller groups, the students were able to design, build and test their own rockets, using both bottle-pumped and chemically reacted launch systems.

An action-packed visit to Duxford Imperial War Museum provided a fantastic opportunity for the students to see first hand the history of aviation from the first bird-like gliders to the modern day fighter plane.

Imperial College London hosted a two day Aeronautics Course where students learned the principles of flight and movement through air.

The highlight, for many, was flying an aircraft (albeit in the aeronautical engineering department's simulator!), which would have been most of the students' first experience of such equipment.

The second week of the summer school was spent responding creatively to the key concepts arising from the previous week's study of flight.



The second week culminated in a final presentation of the students work on the last day to friends and family.

**Amazing what can be done with a hairdryer!**

## AWARD SUCCESSES FOR NEWSTEAD'S ARKWRIGHT SCHOLARS

The end of October marked the formal award ceremony for those successful in their application for Arkwright Scholarships. In attendance from Newstead were Laura Gardiner, Rachael Williams and former Newstead student Alex Rogers.

Winning an Arkwright scholarship is a great achievement in itself, but two girls were delighted to receive national awards in addition to their scholarships.

Alex Rogers received a Year In Industry award, one of only two awarded nationally, which was presented by Mr Alan Gibbons, Client Relations Manager, EDT (Engineering Development Trust).

Laura Gardiner received a Women Into Science and Engineering (WISE) award, again one of only two awarded nationally. This award was presented by Tanvi Jotwani from WISE.

Our congratulations go to both girls for this fantastic achievement.



**WISE award winner, Laura Gardiner, is presented with her Arkwright Scholarship**

## IN BRIEF

### Mission Virgin Galactic National Schools Competition

This competition requires teams to design a commercially marketable product which reflects the technologies utilised by the SpaceShip Two space tourism vehicle, and which could be used by passengers on a space flight.

'Girl Power' a team of six Year 9 students are currently working on this challenge, which will be judged in March. The winning team will be flown to the US as guests of Virgin Galactic where they will tour the Mojave spaceport and witness the launch of SpaceShip Two.

### Engineering Society

The student led Engineering Society has been very busy running a fortnightly club at Tubbenden Junior School. Some of the fun and inspiring projects carried out recently have been making geodesic domes, spaghetti structures and the very imaginative tomato zip wire.

### Community Lecture

In November it was a privilege to welcome Stephen M. Payne OBE RDI, Vice President, Chief Naval Architect of Carnival Corporate Shipbuilding to Newstead. In an inspirational session Stephen shared with us his exciting experience of leading the team that designed and built Queen Elizabeth 2's Atlantic successor, Queen Mary 2.

### Ironbridge

Our now regular Year 9 trip to the Ironbridge at Coalbrookdale took place in November, giving students the opportunity to visit a number of sites evoking the era of the industrial revolution including Blists Hill Victorian Town, Coalport China Museum, Jackfield Tile Museum and the interactive museum Enginuity.

As part of their Design & Technology lessons, students have now embarked on a project working in teams to design a product suitable for mass production and sale in an Ironbridge souvenir shop.

### Family Scrap Heap Challenge

Since September, Newstead has been running a family engineering challenge club. Taking place each Saturday morning, the club gives parents the opportunity to work together with their child on a practical engineering task. The two challenges to date have been to build, firstly, an air-powered buggy and, secondly, a dune buggy capable of climbing a small sand dune.

Each team make use of a Newstead designed, laser cut card kit, then augment this with a selection of 'scrap heap' items to produce their buggy. Trophies are awarded to teams for fastest and best designed buggies. Great fun has been had by all, and our thanks go to Mr Harris for running this club.