“You will struggle to find a university in Britain more keenly attuned to the needs of business and industry.”

The Sunday Times University Guide 2012
Welcome to the School of Engineering and Applied Science

High Quality skills in engineering and the application of science are increasingly critical for our future. We face enormous global challenges, and we need our engineers and scientists to be well trained and intensely focused on finding solutions.

Here at the School of Engineering & Applied Science our focus is on the interdisciplinary nature of engineering and applied sciences, the key technologies and their interactions. The school’s tradition of quality and innovative teaching, and its reputation for cutting edge research, offers our students excellent opportunities to join in the process of discovery and creativity, and prepare for an increasingly diverse and technological world.

Teaching innovation and quality are a vitally important focus, we are inspired by the challenges of providing a vibrant, fulfilling and effective student experience, and this is reflected in our attention to teaching innovation. We are particularly proud of our innovation in introducing “active engineering” across our curriculum. We encourage our students to learn by doing.

Explore Active Engineering with Aston University

Upon joining The School of Engineering and Applied Science, you will benefit from a wide range of teaching methods and learning styles which enable our Graduates to be extremely attractive to Graduate Employers.

With an increasingly competitive graduate employment environment, you will be competing with other qualified candidates from all over the world. Ensuring that your chosen degree programme will mark you out as a serious contender, our students benefit from a very hands on learning environment, in which we call Active Engineering.

What is Active Engineering?
The principles of Active Engineering derive from a wide range of teaching methods and styles, including problem based learning, project management and balancing practical skills with industry needs. It involves the right mix of theory with practice.

It focuses on building and growing student engagement through challenging project work, along with creating and then exploiting opportunities for multidisciplinary interaction and collaboration. In Active Engineering, solutions are not all prescribed; learning is adaptive, and in some cases, experimental. Learning is grounded in theory, but is enhanced and internalised through action and experimentation.

Active Engineering is project based, multidisciplinary and experimental, it requires students to work in teams and evidentially learn important skills of communication, collaboration, compromise, challenge, and commitment.

Who benefits from this approach?
We have looked at other engineering programmes, and we believe Active Engineering captures and builds on many good qualities of the best and that this programme will be of most interest and most benefit to:

> students who don’t want to spend all of their time sitting in a classroom and listening to traditional lectures.
> students who want to be challenged by their chosen degree programmes.
> students who want to solve problems now, and want to work in an open environment that encourages informed risk taking
> and students focused on enhancing their employability skills

Accreditation
All of our programmes are accredited by an appropriate Engineering or Computing professional body. The approach we are taking with Active Engineering is fully endorsed.

Aston achieved the Athena Swan Bronze Award in recognition of our commitment to the advancement and promotion of the careers of women in Science, Engineering and Technology.

Not even Oxbridge can boast a higher proportion of students gaining graduate level jobs than Aston.”

The Sunday Times University Guide 2012

Discover more at www.aston.ac.uk/eas
The CDIO Initiative

The Active Engineering philosophy derives from those of CDIO, an initiative that holds project based learning at the heart of its credentials. The framework provides students with an education, stressing engineering fundamentals set in the context of Conceiving, Designing, Implementing and Operating real-world systems and products.

Aston University has always prided itself on being a university able to provide practically relevant courses at all levels. Here at Aston, we want to make sure we can continue to do this, and are evolving our programmes to allow you to develop our students learning by engaging in practical, cross-disciplinary project-based work.

We strongly believe, and research backs this up, that the essence of our students becoming an engineer or designer is not only dependent on developing technical knowledge but also being able to combine this with practical engineering skills, social awareness, team and project management abilities, and competences in many other fields to solve engineering problems.

Most traditional courses struggle to achieve this and so to address these deficiencies we work with our students using a much more practical, project-based approach to teaching and learning. We want to move away from intense and assessment-heavy teaching and move to a culture where students have space and encouragement, learning to learn for themselves.

This philosophy is supported by around 50 of the world’s top technical institutions, including Aston, who have gathered to share best teaching practice in what is known as the CDIO (Conceive, Design, Implement & Operate) initiative. Universities we work with on this initiative include Liverpool and Queens (Belfast) in the UK, MIT and Purdue in the United States, Chalmers and the Danish Technical University in Scandinavia and Tsinghua in China.

For more information on CDIO visit www1.aston.ac.uk/eas/undergraduate/cdio

Aston team wins Eco-Design award at the 2012 Shell Eco-marathon Europe

A hydrogen powered car designed by Aston University Mechanical Engineering and Design students has won a major award in the 2012 Shell Eco Marathon Europe challenge.

The team of engineering students, competing against 200 student teams from across 24 countries, won Shell’s Eco-Design Award for pushing the boundaries of sustainable driving and car design.

Aston student’s success at world championship robotics competition

A group of six Aston Engineering School students who took part in an international robotics competition have finished the best team in Europe.

Over 55 universities were involved in the VEX 2013 World Championship, held in California, USA. The teams were asked to build two robots, and then judged on the speed, strength and the design of their robots – made of a combination of plastic, aluminium and steel.

“The CDIO Initiative (Conceive, Design, Implement and Operate) is an innovative educational framework for producing the next generation of engineers.”

The Sunday Times University Guide 2012
Active Engineering brought to life: Aston Active Software Engineering

Aston Active Software Engineering (AASE) is a student-run software development company that focuses on providing a notable service for companies seeking unique, creative and tailor-made programs. This company aims to provide reliable, effective and innovative software to any company or organisation that wishes to use its services.

The students utilise the skills developed within their degrees in computer science, enterprise computing and software engineering to provide affordable software for our customers whilst they gain practical enterprise experience. Alongside the opportunity to work on real projects, students undertake business and technical training provided by AASE and industrial mentors. Their work can form part of their degree programmes within the Computer Science group.

AASE specialises in the implementation of web applications, and its services are particularly suitable for the development of small information systems and software prototypes. AASE has worked with a number of small businesses and charities, and several groups within the university. Projects are run using an agile software development methodology, in which regular client meetings allow both the developer and the client the chance to talk more freely about their desired product specification. The development generates frequent working prototypes, thus delivering value to the client early in the project.

We believe this ultimately results in a more satisfied client and a well-refined, bespoke end-product. This Agile development style enables AASE to respond quickly to changing needs, allowing functionality to be added and altered as needed with minimal impact on overall system design. Students are typically trained in the AASE way through internships in their first year. The best students will then be selected in their second year to take responsibility for paid work and training a new group of first-year students.

Successful projects include:

> A teaching information system for SEAS
> A pharmacy training system for the School of Life and Health Sciences
> An online CV preparation system
> A project information system for the Birmingham and Solihull Local Enterprise Partnership.

“We are now in our third year of running our student placement program – which has been of great benefit to our business.

I believe the exposure to “real life” software engineering projects gave Aston University Student Company students a level of understanding which we would typically expect of a graduate programmer with two or three years of commercial experience. They confidentially described their experience of version control, working in a team and refactoring software.

For the first time, we offered the candidate the position before they left the interview – to risk losing such a candidate to a different company was not a business risk we were prepared to take.”

Steve Pitchford, Development Manager, Majestic-12 Ltd.
“Apart from academic knowledge of engineering and design, Aston also provided me with a structured way of working to achieve quality outcomes in limited time. Modules such as ‘Design for Manufacture’ have been crucial in adapting to the real world environment.”

Andrew Turner
Industrial Product Design

“Of all the institutions I had visited Aston had the warmest, friendliest atmosphere and it was very well situated within the city. I did my industrial placement with BP Oil Ltd, which not only improved the skills I was learning, but also enhanced my CV a great deal. I am now part of the Aston European Bioenergy Research Institute (EBRI), evaluating the potential of marine biomass as a source of energy, as well as how ammonia can be made from biomass instead of fossil fuels.”

Sarah Alexander
MEng Chemical Engineering

“Aston provided a course that not only included core modules of chemistry but also aspects of chemical engineering, biochemistry and business. The lecturers have all had previous experience working in the “real world” – together with their approachable nature and outgoing personalities, they have made my time as an undergraduate student a memorable and enjoyable experience.”

Tarnvir Bhamra
Applied Chemistry