DEPARTMENT OF MECHANICAL ENGINEERING & MATHEMATICAL SCIENCES

Undergraduate Mechanical Engineering and Mathematical Sciences Degrees
Mechanical Engineering and Mathematical Sciences

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Welcome from the Head of Department

Mechanical Engineering and Mathematical Sciences at Brookes

The Department of Mechanical Engineering and Mathematical Sciences provides professionally accredited mechanical, automotive and motorsport programmes of study and recognised mathematical and statistical programmes of study. We focus on providing world-class teaching and applied research whilst giving our students an excellent experience.

We are situated on the Wheatley campus in a purpose-built £9m facility, equipped to the highest standards. This creates an environment in which technical expertise is enhanced by creativity and imagination. We have a friendly, close-knit community, with around 700 students supported by experienced and well qualified academic and technical staff. Our staff also spend a significant proportion of their time working with outside organisations, many of which are global, as practitioners in their discipline. We also have excellent student support staff.

On our programmes you will develop practical skills, giving you an advantage in securing your desired career path. For example, in addition to essential theory and techniques in mathematics and statistics, we teach modern and interesting applications in specific subject areas. This enables our students to see the relevance and importance of the material in their degree programmes. You will be equipped to identify and implement solutions to real-world problems in a professional manner.

We support student activity such as the Formula Student Team: students design, build and then race their car at Silverstone.

All of our courses equip you with specialist knowledge and skills in the latest technology and specialist software packages. This is recognised by many employers, especially in Formula 1, who recruit a significant number of our graduates. Many of our students also receive sponsorship. We are also working in close partnership with a range of colleges in the region to support foundation degrees.

In our teaching, research and knowledge transfer we strive to help students, staff and our partners reach their full potential.

Gareth Neighbour
Head of the Department of Mechanical Engineering and Mathematical Sciences

The department is a major international centre for research. To transfer our research and knowledge to the real world we combine fundamental science and market intelligence, creating sustainable technologies and solutions. These seek to minimise environmental impact and deliver economic performance. They also feed back into our research-led teaching and our excellent track record in working with research councils and organisations such as BMW. Our partnerships with business and industry are invaluable.

Our Oxfordshire location puts us at the centre of the ‘hub’ for clean automotive and related industries, enhancing the work we do and providing student placement opportunities.
WHY CHOOSE OXFORD BROOKES?

Oxford Brookes University has a long history of providing high quality, accredited courses and is noted for running motorsport courses for nearly twenty years. Whether your passion is road cars, race cars, great engineering design, probabilistic concepts or algorithms, one of our courses in engineering and mathematical sciences will help you realise your ambitions. Our graduates enjoy excellent employment opportunities. Many go on to pursue successful careers with leading engineering and technology companies including major automotive and motorsport companies, including Formula 1 teams and suppliers. If you want to work at the forefront of your industry you need to invest in the skills and knowledge that only the best undergraduate study can provide.

In the area of motorsport we have lecturers who have designed and worked on winning Formula 1 race cars. We were chosen by Fernando Alonso and the Cajastur bank to host their motorsport MSc scholarships, which have been running since 2007 for Spanish students.

We have a purpose-built teaching and research facility with the very best equipment, including a four-post test rig and state-of-the-art engine test cells. Our dedicated computer suites provide access to the latest industry standard design software.

Our links with industry go back to when we first started our engineering courses and remain central to our activities. Courses are developed in conjunction with industry and are designed to ensure that students graduate with the skills and knowledge they need to excel in their chosen careers.

Research in mathematical sciences also supports our ethos of providing real world solutions such as the application of engineering in medical tomography or the application of flow networks for optimising production systems, transportation, communications and energy supply.

Oxfordshire is home of many high technology companies with Harwell Oxford nearby, a home for world leading science, technology and business. Oxford is right in the heart of the UK’s motorsport industry, often called ‘Motorsport Valley’. In total, the area has over 4,000 high-performance engineering businesses which make us one of the best locations to pursue your passion in engineering, technology and mathematical sciences.
INDUSTRY STANDARD ENGINEERING FACILITIES

We have excellent experimental and computational facilities to conduct advanced research supporting our teaching. Our students have access to laboratories for their coursework and projects, which include the following areas:

**Engines**
Advanced research and teaching is carried out on emissions, alternative fuels and engine component development for efficiency and durability. Academics and students are designing and developing engines to be the backbone of our Formula Student activities for years to come. We have four engine test cells with state-of-the-art instrumentation used in the development of engines. The facilities are comparable to those available at major vehicle manufacturers.

**Fluids**
The equipment located in this area enables students to gain deeper understanding of internal and external flows through the use of equipment such as the small-scale wind tunnel, centrifugal pump performance test rig, 2 x flow benches, laminar and turbulent flow rig and forced convection equipment.

**Automotive**
These are dedicated areas for Formula Student and the four-post rig for analysing the vehicle dynamics. We have a number of vehicles (for example BAR Formula 1 race car, Formula Renault, BMW MINI and 1 Series) used both for research and teaching. In addition, we are working on a multi-disciplinary project looking at developing an autonomous vehicle. This project draws on expertise from across the faculty but in particular on expertise in the area of computer vision. There are very few universities in the world which have this line up.

**Dynamics**
A dedicated area for dynamic characterisation of vibrating structures and noise reduction. The facilities are used for teaching engineering dynamics and postgraduate research. There are several pieces of high-performance equipment which include uniaxial and triaxial accelerometers, source control, spectral acquisition analysis, a series of small shakers, two large shakers, structural excitation and a damper dynamometer.

**Mechanical testing & stress**
This area houses multi-functional equipment used in teaching, research, contract testing and consultancy. We have experimental facilities to conduct fatigue and impact tests and an in-house heat treatment facility.

**Joining technology**
For over forty years, Oxford Brookes has been involved in the research and development of various joining technologies. More recently, with the increasing demand for lighter and more efficient structures, we have been engaged with the science and engineering of adhesives, sealants and bonding technology. Specialist equipment includes Fourier Transform Infrared Spectroscopy (FTIR), Scanning Electron Microscopy (SEM), Differential Mechanical Thermal Analysis (DMTA), Video Contact Analysis (VCA), mechanical test machines, video imaging non-contacting extensometry and environmental cabinets.

The department employs a range of advanced engineering software for undergraduates to use, including:
- A collection of industry level CAD packages.
- Stress and dynamics analysis packages
- Computational Fluid Dynamics and Engine simulation software.
- Specialised vehicle performance simulation software.
- Students have the chance to develop the skills needed to apply these packages creatively to produce designs customers want.
This is a one-year course for students who want to take a degree or higher diploma in engineering, science or technology but do not hold A-levels (or the equivalent) in mathematics and a science, or have not achieved the necessary standards.

You will have access to state-of-the-art workshops, laboratories and computers, and you will study in an environment which combines technical expertise with creativity and imagination. This one-year course is designed to improve your skills in physical science and engineering and, if you complete it successfully, you can progress onto a BSc, BEng or MEng degree course at Oxford Brookes.

The foundation course covers core subjects in electronic and mechanical engineering principles, and also helps to develop your mathematical skills. In addition, modules are available in media technology and computing. The material is of A-level standard and provides opportunities to improve your technological knowledge before entering industry. The material also provides solid preparation for higher degrees in technological subjects such as mechanical and automotive engineering.

We will introduce you to the mathematical and scientific principles underpinning first-year undergraduate studies in engineering and technology.

Semester 1 covers basic principles in post-GCSE mathematics and engineering. In Semester 2 you will develop understanding of more advanced mathematics, mechanical and electrical engineering principles. You will also take two modules in engineering applications. In addition, you will develop an appreciation of the role of new technology in society and you will gain hands-on experience of technological equipment.

Study modules

This is normally a one-year course and you will need to take 8 modules over two semesters. The modules on offer may vary from year to year and some will be compulsory.

Module list

- Fundamentals and Applications of Technology (double)
- Basic Mechanical Engineering Principles
- Basic Electronic Engineering Principles
- Basic Mathematical Methods I
- Basic Mathematical Methods II
- Introductory Mathematics
- Foundations of Computer Programming
- Engineering Applications
- Basic Survey Methods
- Basic Data Analysis
- Word-Processing and Spreadsheet
- IT Skills
Typical offers

A-level: grades CD or equivalent
IB Diploma: 24 points
BTEC National Diploma: 3 passes

Mature students with relevant experience, including a substantial period of suitable employment, are welcome to apply.

Specific entry requirements

A-level: grades CD or equivalent
GCSE: Maths at grade B and English Language at grade C minimum

This course is intended for students who are at least 18 years old and hold either:

- recognised non-science qualifications to A-level standard.
- recognised science qualifications to A-level standards, but with grades insufficient to qualify for an engineering degree or diploma course.

Student profile

Tamba Konteh

Service leaver Tamba Konteh was accepted on to a Foundation course at Oxford Brookes University and has since successfully progressed to studying for a BEng degree in Mechanical Engineering.

“I enlisted in the army in 2004 and I joined 17 Port and Maritime Regiment and went into the Railway Squadron. In 2007, during military duties overseas, I was injured and because of these injuries I was unable to continue active service and was discharged. I still had my passion for engineering and I started look at where I could pursue this ambition. After attending two open days I was impressed by the facilities and the information about the course was just what I needed to know. My foundation year was a success and this was down to the fantastic support of the lecturers such as Dr Claudia Carrillo, Mr Douglas Higgison and Dr Simon Farley, they are very friendly and are always there if I had any queries or issues. After the success of my foundation year I have decided to continue to complete a BEng Mechanical Engineering. So far I am enjoying my degree, doing the foundation year has given me a good grounding to build on.

Once I graduate I would like to be a freelance engineer in the future with the ultimate goal of having my own engineering firm. My goal is to go on and complete the MEng at Brookes. I want to take advantage of all of the opportunities that are available for Brookes students. What motivates me to go on and complete the degree is the success of graduates who are now doing well in industry.

English language requirements

IELTS 6.0 (with 6.0 in reading and writing, 5.5 in listening and speaking)

English requirements for visas

If you need a student visa to enter the UK you will need to meet the UK Border Agency’s minimum language requirements as well as the university’s requirements.
AUTOMOTIVE ENGINEERING BEng/MEng

Accredited by the Institution of Mechanical Engineers (IMechE)

To succeed on this course, you should want to become a designer of cars. You should have an aptitude for practical engineering, perhaps with some experience of building, driving, maintaining or designing automotive-related products.

As well as studying mathematics, engineering principles, design and management during your first year, you will work in small groups to strip a car and rebuild it, to gain familiarity with automotive systems. In the second year you will develop your analytical skills through a study of dynamics, thermodynamics and stress analysis and then apply them in design.

In your final year you will study specialised automotive engineering subjects. For example, you will learn to use software to analyse the dynamic behaviour of a car when it undertakes manoeuvres. As well as studying automotive aerodynamics and automotive engines, you will be able to choose from a range of optional modules. You will also select a project of personal interest from our research and industrial activities.

Many students undertake a work placement between the second and final years.

If you wish to extend your degree you may seek selection for the four-year MEng course. The first three years of the MEng run parallel with the BEng course, while the final year of the MEng allows you to broaden and deepen your studies. You may enrol on either course when joining the university but progression onto the MEng is only possible for the most able students. You can also apply from elsewhere to join our MEng in the third year.

Study modules

As courses are reviewed regularly the module list you choose from may vary from that shown here. Some modules will be compulsory.

Year 1
- Introduction to Mathematics for Engineers (double)
- Introduction to Engineering Thermo Fluid Dynamics
- Introduction to Engineering Mechanics
- Graphics and Design
- Automotive Materials and Manufacturing Techniques
- Basic Electrical Engineering
- Introduction to Engineering Management Programming the Virtual World

Year 2
- Materials Engineering
- Stress Analysis I
- Engineering Dynamics I
- Engineering Mathematics
- Engineering Thermo Fluids

Year 3
- Automotive Engineering Design and Computer Aided Engineering (double)
- Automotive Electronics
- New Product Development
- Stress Analysis II
- Chassis Engineering
- Automotive Engines
- Vehicle Aerodynamics
- Advanced CAD/CAM
- Automotive Group Design Study Project (double)

Year 4 (MEng)
- Automobile Design, Test and Modelling Project
- Noise, Vibration and Harshness
- CAD/CAM
- Sustainable Vehicle Engineering
- Engineering Reliability and Risk Management
- Advanced Engineering Management
- Vehicle Crash Engineering
- Advanced Vehicle Aerodynamics
- Advanced Chassis Engineering
- Computation and Modelling
- Advanced Materials Engineering and Joining Technology
- Advanced Strength of Components
- Advanced Powertrain Engineering
Typical offers

A-level: grades BBB (for BEng) or ABB (for MEng)
IB Diploma: 30 points (BEng) / 33 points (MEng) to include minimum grade 6 (7 for MEng) in HL Maths and Physics
BTEC National Diploma: an engineering subject, with a DDM profile plus A-level Maths at grade B (BEng) / DDD profile plus A-level Maths at grade A (MEng)
A-level: for BEng, grades BBB should include Maths and Physics; for MEng, grades ABB should include Maths grade A and Physics.

Specific entry requirements

A-level: Mathematics (grade B for BEng, grade A for MEng), Physics and a third subject, preferably Chemistry or Design Technology
GCSE: English Language grade C minimum
BTEC National Diploma: to include a distinction grade in Further Maths for Technicians unit, for BEng and MEng, plus A-level Maths grade B (BEng) or grade A (MEng)
IB: to include Higher Level Maths and Physics minimum grade 6 (grade 7 for MEng)

English language requirements

IELTS 6.0 (with 6.0 in reading and writing, 5.5 in listening and speaking)

English requirements for visas
If you need a student visa to enter the UK you will need to meet the UK Border Agency’s minimum language requirements as well as the university’s requirements.

After graduation

Graduates from Automotive Engineering typically obtain engineering roles within the sector and our degree in Automotive Engineering provides the right balance of education and practical experience to equip you for this exciting profession. There are also postgraduate learning opportunities open through the department at an MSc or PhD level.

Graduates from Automotive Engineering have gone on to secure roles with companies including:

- Aston Martin
- Bentley
- BMW
- Cummins
- Ford
- Jaguar Land Rover
- Nissan
This course will develop your logical, analytical and problem-solving abilities. It focuses on increasing your awareness of the use of the mathematical sciences as problem-solving tools in a wide range of applied areas.

During Year 1 you will build essential knowledge and skills in pure mathematics, mathematical methods, mathematical modelling and statistics. Your computing abilities will develop through a specialist module in mathematical software and the integrated use of up-to-date computer packages throughout the course.

In Year 2 and the final year, you will have the opportunity to shape your course of study as your knowledge and interests develop. You may choose to specialise in mathematics or statistics, or follow a broader programme in mathematical sciences. Your choice will be guided by tutors and by literature showing recommended pathways.

In the final year, you can choose from specialised modules, covering topics such as coding and cryptography, medical statistics and geometry. You will also have the opportunity to work on an individual project, or to take a specialist module from a range of topics. These are particularly valuable as they further develop your analytical and problem-solving skills, and provide experience in the use of a range of communication skills.

Study modules

As courses are reviewed regularly the module list you choose from may vary from that shown here. Some modules will be compulsory.

Year 1
- Applied Probability
- Statistical Inference
- Algebra and Calculus (double)
- Introductory Mathematics
- Basic Survey Methods
- Modelling and Computation
- Word-Processing and Spreadsheet
- IT Skills

Year 2 and final year
- Time Series Analysis
- Quantitative Research Methods
- Sampling and Surveys
- Communicating Statistics
- Simulation and Modelling
- Linear Regression Models
- Honours Topics in Statistics
- Medical Statistics
- Graph Theory
- Further Discrete Mathematics
- Numerical Analysis I
- Geometry
- Ordinary Differential Equations
- Numerical Analysis II
- Partial Differential Equations
- Applied Algebra
- Mathematics for Decision Making
- Linear Algebra and Analysis I
- Linear Algebra and Analysis II
- Honours Topics in Mathematics
- Statistics Project (double)
- Mathematical Sciences Project (double)
- Independent Study in Statistics
- Independent Study in Mathematics
**Typical offers**

**A-level:** grades BBC or equivalent  
**IB Diploma:** 31 points, to include at least 6 in Standard Mathematics  
**BTEC National Diploma:** one distinction and two merits, PLUS grade B minimum in A-level Mathematics  

**Specific entry requirements**

**A-level:** grade B minimum in Mathematics  
**GCSE:** grade C minimum in English Language

**English language requirements**

**IELTS 6.0** (with 6.0 in reading and writing, 5.5 in listening and speaking)

**English requirements for visas**

If you need a student visa to enter the UK you will need to meet the UK Border Agency’s minimum language requirements as well as the university’s requirements.

**After graduation**

Recent research has shown that graduates in mathematical disciplines enjoy one of the highest earning potentials of all graduates. Employers recognise that mathematical knowledge and skills are essential to the solution of many problems in science, technology, business and commerce.

Graduates in Mathematical Sciences may use their subject knowledge directly in scientific research and teaching, or develop careers in accountancy, computing, actuarial, market research or management work where they can use their skills in problem-solving and mathematical modelling. Many of our graduates also progress to postgraduate study, both MSc and PhD.
MATHEMATICS BSc (Hons)

Recognised by the Institute of Mathematics and its Applications (IMA)

Studying Mathematics at Brookes, you will focus on the subject’s modern applications. Mathematics is an elegant and exciting subject encompassing theory and techniques which underpin science and technology.

During Year 1 you will develop essential knowledge and skills in pure mathematics, mathematical methods and mathematical modelling (and statistics in the single honours course). In Year 2 and the final year on the single honours course, you will spend most of your time on mathematics but you will also have the opportunity to study some statistics. On the combined honours course, modules in mathematics are complemented by those in your other field of study. Throughout the course we will encourage you to acquire and develop your computing abilities through the extensive use of up-to-date mathematical (and, for single honours, statistical) software.

Study modules

As courses are reviewed regularly the module list you choose from may vary from that shown here. Some modules will be compulsory.

Year 1
- Algebra and Calculus (double)
- Introductory Mathematics
- Applied Probability
- Modelling and Computation
- Word-Processing and Spreadsheet

If you are studying single honours you will also be able to choose from:
- Statistical Inference
- Basic Survey Methods

Year 2 and final year
- Graph Theory
- Further Discrete Mathematics
- Numerical Analysis I
- Geometry
- Ordinary Differential Equations
- Numerical Analysis II
- Partial Differential Equations
- Applied Algebra
- Independent Study in Mathematics
- Mathematics Project (double)
- Mathematics for Decision Making
- Linear Algebra and Analysis I
- Linear Algebra and Analysis II
- Simulation and Modelling

If you are studying single honours you will also be able to choose from:
- Quantitative Research Methods
- Honours Topics in Mathematics (double)
- Time Series Analysis
- Sampling and Surveys
- Communicating Statistics
- Linear Regression Models
- Honours Topics in Statistics
- Medical Statistics

If you are studying combined honours you will also be able to choose from:
- Honours Topics in Mathematics
- Mathematics Interdisciplinary Project
**Typical offers**

**A-level:** grades ABC or equivalent

**IB Diploma:** 30 points, to include at least a 5 in Higher Level Mathematics

**BTEC National Diploma:** one distinction and two merits PLUS grade A minimum in A-level Mathematics. For combined honours, normally the offer will lie between the offer quoted for each subject. For combined honours, normally the offer will lie between the offer quoted for each subject.

**Specific entry requirements**

**A-level:** grade A minimum in Mathematics  
**GCSE:** grade C minimum in English Language

**English language requirements**

**IELTS 6.0** (with 6.0 in reading and writing, 5.5 in listening and speaking)

**English requirements for visas**
If you need a student visa to enter the UK you will need to meet the UK Border Agency’s minimum language requirements as well as the university’s requirements.

**Work placements**

It is possible to study Mathematics as a four-year sandwich course, the third year being spent in supervised work experience. Our work placement programme has been commended by professional bodies as a model of excellence.

A placement year enables you to work in industry or commerce for one year between the second and final years of your course. Students taking this option recognise the benefits of obtaining professional experience, consolidating their understanding of mathematics, and having the opportunity to apply their knowledge in a professional setting.

**After graduation**

Recent research has shown that graduates in mathematical disciplines enjoy one of the highest earning potentials of all graduates. Employers recognise that mathematical knowledge and skills are essential to the solution of many current problems, not only in science and technology but also in business and commerce.

As well as using their knowledge directly in scientific research and teaching, graduates in Mathematics go on to develop careers in accountancy, computing, actuarial, market research or management work where they can use their skills in problem-solving and mathematical modelling. Many of our graduates also progress to postgraduate study, both MSc and PhD.

Graduates in Mathematics are particularly well equipped for a career in information technology and related areas. For example, there is a strong demand for graduates capable of developing error-free software that is mathematically based and also for those who can exploit sophisticated mathematical software and technology effectively.

As mathematics is a National Curriculum subject, a combined or single honours mathematics degree will equip you to proceed directly to a teaching qualification. There is high demand for mathematics graduates in the teaching profession.
MECHANICAL ENGINEERING BEng/MEng

Accredited by the Institution of Mechanical Engineers (IMechE)

This course will prepare you for a career in any area of mechanical engineering, either as a specialist in a particular field or as an engineer with a broad range of responsibilities. The course is enhanced by the involvement of several local companies offering training and industrial placement opportunities to students.

The course is taught in modern, purpose-built premises with impressive facilities. The modules you take in Year 1 cover fundamental work in engineering science, applied mathematics, manufacturing techniques and ancillary subjects such as electronics, graphics and design.

In Year 2 you will build on these subjects to gain an understanding of how basic principles can be applied to more complex problems, and to develop analytical techniques.

In the final year you will select a project of personal interest from the varied research and industrial activities available. The final year also allows you to select modules to extend your specialist knowledge in core fields of interest and to broaden your engineering experience.

If you wish to extend your degree you may seek selection for the four-year MEng course. The first three years of the MEng run parallel with the BEng course, while the final year of the MEng allows you to broaden and deepen your studies. You may enrol on either course when joining the university but progression onto the MEng is only possible for the most able students. You can also apply from elsewhere to join our MEng in the third year.

Successful students on this course are imaginative and keen to use technology for creating products and solutions that don’t merely ‘do the job’ but which become market leaders in their field. You should be creative and have a desire to see your ideas become a reality.

Study modules

As courses are reviewed regularly, the module list you choose from may vary from that shown here. Some modules will be compulsory.

Year 1
- Introduction to Mathematics for Engineers (double)
- Introduction to Engineering Thermo Fluid Dynamics
- Introduction to Engineering Mechanics Graphics and Design
- Materials and Manufacturing Techniques
- Basic Electrical Engineering
- Introduction to Engineering Management Programming the Virtual World

Year 2
- Materials Engineering
- Stress Analysis I
- Engineering Dynamics I
- Engineering Mathematics
- Engineering Thermo-Fluids
- Mechanical Engineering Design and Computer Aided Engineering (double)
- Control Technology

Year 3
- New Product Development
- Stress Analysis II
- Advanced Dynamics
- Strength of Components
- Engineering Dynamics II
- Automotive Engines
- Advanced CAD/CAM
- Group Design Study
- Project (double)

Year 4 (MEng)
- Mechanical Engineering Project
- Advanced Mechanical Engineering Design
- CAD/CAM
- Advanced Strength of Components
- Noise, Vibration and Harshness
- Computation and Modelling
- Advanced Engineering Management
- Advanced Vehicle Aerodynamics
- Sustainable Vehicle Engineering
- Engineering Reliability and Risk Management
- Advanced Materials Engineering and Joining Technology
Undergraduate degrees

After graduation

Our students are well prepared for the world of work, as the Mechanical Engineering degree is tailored to the current needs of industry. Our graduates work in all areas of mechanical engineering, such as design, aerospace, manufacturing, pharmaceuticals, and automotive and motorsport engineering, as well as in more general managerial and commercial roles. Our graduates have secured roles at companies such as Mercedes High Performance Engines, Rolls-Royce, Pfizer, SS Analysis, Siemens Magnet Technology and VCT Design.

Typical offers

A-level: grades BBB (for BEng) / ABB (for MEng)
IB Diploma: 30 points (BEng) / 33 points (MEng) to include minimum grade 6 (7 for MEng) in HL Maths and Physics
BTEC National Diploma: an engineering subject, with a DDM profile plus A-level Maths at grade B (BEng) / DDD profile plus A-level Maths at grade A (MEng)
A-level: for BEng, grades BBB should include Maths and Physics; for MEng, grades ABB should include Maths grade A and Physics

Specific entry requirements

A-level: Mathematics and Physics plus a third subject, preferably Chemistry or Design Technology
GCSE: English Language grade C minimum
BTEC National Diploma: to include a distinction grade in Further Maths for Technicians unit, for BEng and MEng, plus A-level Maths grade B (BEng) or grade A (MEng)
IB: to include Higher Level Maths and Physics minimum grade 6 (grade 7 for MEng)

English language requirements

IELTS 6.0 (with 6.0 in reading and writing, 5.5 in listening and speaking)

English requirements for visas

If you need a student visa to enter the UK you will need to meet the UK Border Agency’s minimum language requirements as well as the university’s requirements.

Student profiles

Ross Jackson and Richard Smith

Richard is completing a final year dissertation about understanding how various geometry changes on a model will actually affect the aerodynamics of a car. He is using the wind tunnel to validate his computer generated model that he has already tested.

‘Oxford Brookes has a number of great facilities, including a wind tunnel, which gives you a number of extra transferable skills. Having access to this sort of equipment has enabled us to do a final year dissertation project in aerodynamics. We have a rapid prototype machine that can print out a model profile of a car that we have drawn in CAD, we then mount this model in the wind tunnel, using the load cells; we can then measure the aerodynamic drag, load and down force.’

During Ross’s placement year at Cummins, looking at diesel engines, their manufacture and client problem solving, within his role of supporting clients he used knowledge on failure analysis and materials which he had gained through his degree.

‘When I graduate I am looking at going into either engineering consultancy; working on new building projects or as I have a passion for cars I am also looking at going into the automotive industry’ – Ross Jackson

‘After completing my placement year as a Design Engineer with McLaren they have expressed an interest in offering me a position within their team.’ – Richard Smith

Richard Smith

After completing my placement year as a Design Engineer with McLaren they have expressed an interest in offering me a position within their team.” – Richard Smith

‘After completing my placement year as a Design Engineer with McLaren they have expressed an interest in offering me a position within their team.’ – Richard Smith
This course will enable you to take project-design ideas and express them as computer models. This may range from simple to complex three-dimensional parametric models, or models which simulate the motion of parts, allowing the user to study in detail an engineering system before it is manufactured.

You will study the basic principles that engineers use to turn design possibilities into real solutions. You will learn how to use computer-based packages to produce design solutions of your own, enabling you to build up a portfolio of designs.

By the time you reach the final year you will have the skills to tackle a typical industry-based problem and produce a complete design solution, including computer models of how the solution will look, and how it will function and be manufactured.

Study modules
As courses are reviewed regularly the module list you choose from may vary from that shown here. Some modules will be compulsory.

Year 1
- Graphics and Design
- Automotive Materials and Manufacturing Techniques
- Basic Mechanical Engineering Technology (double)
- Basic Electrical Engineering
- Basic Mathematical Methods I
- Basic Mathematical Methods II
- Introduction to Engineering Management
- Basic Data Analysis
- Word Processing and Spreadsheet
- IT Skills

Year 2
- Introductory Mathematics
- Introduction to Engineering Mechanics
- Introduction to Engineering Thermo-Fluids
- New Product Development
- Sensors and Data Logging
- Mechanical Engineering Design and Computer Aided Engineering
- Automotive Electronics
- Microprocessors
- Control Technology
- Materials Engineering

Final year
- Engineering Dynamics I
- Stress Analysis I
- Engineering Thermo-Fluids
- Advanced CAD/CAM
- Motorsport Engine Technology
- Advanced Automotive Electronics
- Sustainable Engineering
- Project (double)
- Group Design Study
- Entrepreneurial Business Management (double)
Typical offers

A-level: grades BBC, preferably in Science and/or Design/Technology, or Mathematics
IB Diploma: 30 points, preferably including Science or Technology related subjects
BTEC Extended National Diploma: a relevant subject with a DDM profile and GCSE mathematics.

Other equivalent qualifications will be assessed on an individual basis.

Specific entry requirements

A-level: BBC, preferably in Science and/or Design/Technology, or Mathematics
GCSE: Maths grade B minimum and English Language grade C minimum

Undergraduate degrees

Nabeela Rehman

We get lots of experience working with specialist programs like MATLAB and CATIA, which are used in industry. For my dissertation, I’m designing some improved joints for a bamboo bike which has been developed by Brookes engineers. I’m using the software program Abaqus to test the stresses and ensure that the joints will stay strong and not fail. Last year, I was involved in a project called Formula Student, where we design and build a racing car. Everything that you learn in class you apply to Formula Student. Unlike other universities, most of the parts are actually made by our students, which is great experience.

After graduation

Our graduates have an excellent preparation for the world of work. The Mechanical Engineering BSc is tailored to the current needs of industry, and our graduates work in all areas of engineering: design, manufacturing, service industries, consulting, and in the automotive and aerospace industries.

English language requirements

IELTS 6.0 (with 6.0 in reading and writing, 5.5 in listening and speaking)

English requirements for visas

If you need a student visa to enter the UK you will need to meet the UK Border Agency’s minimum language requirements as well as the university’s requirements.

Graduate Profile

Nabeela Rehman

We get lots of experience working with specialist programs like MATLAB and CATIA, which are used in industry. For my dissertation, I’m designing some improved joints for a bamboo bike which has been developed by Brookes engineers. I’m using the software program Abaqus to test the stresses and ensure that the joints will stay strong and not fail. Last year, I was involved in a project called Formula Student, where we design and build a racing car. Everything that you learn in class you apply to Formula Student. Unlike other universities, most of the parts are actually made by our students, which is great experience.
MOTORSPORT ENGINEERING BEng/MEng

Accredited by the Institution of Mechanical Engineers (IMechE)

To succeed on this course, you should be keen on motorsport and to have a taste for practical engineering. You will benefit from the strong links we have forged with the local motorsports industry, which supports the course in many ways and is actively involved in shaping its content and style.

We have active research interests in racing vehicle design, aerodynamics, chassis, powertrain, suspension, tyre dynamics, lap time simulation and racing engine design. Our specialist facilities include a four-post rig, damper dyno and high-revolution engine test cells. We use a range of industry-standard software in teaching and give our students the skills to contribute to innovation and growth in the industry.

During Year 1, as well as studying mathematics, engineering principles, design and management, you will also undertake relevant practical work to gain familiarity with motorsports systems and engineering manufacture.

In Year 2 you will develop your analytical skills studying dynamics, thermo-fluids, and stress analysis and design.

In the final year you will study specialised automotive engineering and motorsport subjects, including aerodynamics, automotive engines and technology, motorsport vehicle performance and chassis engineering. You will also choose optional modules and select a project of personal interest.

If you wish to extend your degree, you may select the four-year MEng course. The first three years of the MEng run parallel with the BEng course, while the final year of the MEng allows you to broaden and deepen your studies. You may enrol on either course when joining the university but progression onto the MEng is only possible for the most able students. You can also apply from elsewhere to join our MEng in the third year.

Study modules

As courses are reviewed regularly the module list you choose from may vary from that shown here. Some modules will be compulsory.

Year 1
Introduction to Mathematics for Engineers (double)
Introduction to Engineering Thermo Fluid Dynamics
Introduction to Engineering Mechanics Graphics and Design
Automotive Materials and Manufacturing Techniques
Basic Electrical Engineering
Introduction to Engineering Management Programming the Virtual World

Year 2
Materials Engineering
Stress Analysis I
Engineering Dynamics I
Engineering Mathematics
Engineering Thermo-Fluids
Automotive Engineering Design and Computer Aided Engineering (double)
Automotive Electronics

Year 3
New Product Development
Stress Analysis II
Chassis Engineering
Motorsport Vehicle Performance
Automotive Engines
Vehicle Aerodynamics
Advanced CAD/CAM
Motorsport Group Design Study

Year 4 (MEng)
Formula Student Design and Build Project
Laptime Simulation and Race Engineering
CAD/CAM
Engineering Reliability and Risk Management
Advanced Engineering Management
Vehicle Crash Engineering
Advanced Vehicle Aerodynamics
Advanced Materials Engineering and Joining Technology
Advanced Strength of Components
Data Acquisition Systems
Racing Engine Design
Motorsport Engine Technology
Project (double)
Engineering Dynamics II
**Typical offers**

**A-level:** grades BBB (for BEng) or ABB (for MEng)
IB Diploma: 30 points (BEng) / 33 points (MEng) to include minimum grade 6 (7 for MEng) in HL Maths and Physics
BTEC National Diploma: an engineering subject, with a DDM profile plus A-level Maths at grade B (BEng) / DDD profile plus A-level Maths at grade A (MEng)
**A-level:** for BEng, grades BBB should include A-level Maths and Physics; for MEng, grades ABB should include Maths grade A and Physics.

**Specific entry requirements**

**A-level:** Mathematics (grade B for BEng, grade A for MEng), Physics and a third subject, preferably Chemistry or Design Technology
**GCSE:** English Language grade C minimum
**BTEC National Diploma:** to include a distinction grade in Further Maths for Technicians unit, for BEng and MEng, plus A-level Maths grade B (BEng) or grade A (MEng)
**IB:** to include Higher Level Maths and Physics minimum grade 6 (grade 7 for MEng)

**English language requirements**

IELTS 6.0 (with 6.0 in reading and writing, 5.5 in listening and speaking)

**English requirements for visas**

If you need a student visa to enter the UK you will need to meet the UK Border Agency’s minimum language requirements as well as the university’s requirements.

**Student profile**

**Gavin Ward**

I chose Brookes because I knew about it as a good course back when Arrows was an F1 team. I saw an advert on the website saying ‘If you want to work in F1 go to Brookes’, so I knew it was the place to be. As the course content is relevant to industry it enabled me to not only get my industrial placement job but also my current job with Red Bull.

Formula Student was a big highlight of Oxford Brookes for me and all the work I did for them. The lecturing at Oxford Brookes is exceptional, as you are being taught by lecturers who actually have experience of the industry.

The industrial placement year was an important part of my degree. My placement with Red Bull Racing gave me the foot in the door to Formula 1, as well as the sponsorship for my final year and when I graduated I was offered a position with the team.

The project I started during my placement year was quite detailed and vast and became my final dissertation. The project was in Formula 1 clutches in Red Bull Racing cars, and in return for this Red Bull paid the tuition for my final year at Brookes.

The main experience I took away from the year in industry was the knowledge of the technology and software used in Formula 1, which was essential for me getting my current job.

Brookes is a great place to study and the course is excellent; you get out what you put in and it’s all very practical which is important when looking for jobs in industry.

After graduating I have gone on to work for Red Bull Racing as a performance engineer. I would like to stay in motorsport but I am also toying with the idea of going into design or aerodynamics.

**After graduation**

The United Kingdom is the home of the motorsport industry and it employs many graduates each year. Several generations of our students are in F1 companies as race engineers, designers, aerodynamicists, and chassis and powertrain engineers.
MECHANICAL ENGINEERING AND MATHEMATICAL SCIENCES

MOTORSPORT TECHNOLOGY BSc (Hons)

Accredited by the Institution of Mechanical Engineers (IMechE)

At Brookes you can get involved in racing vehicle design, powertrain design, lap time simulation and racing engine design. We have specialist facilities such as four-post rig, damper dyno and high-revolution engine test cells. Industry-standard software will enable you to contribute to innovation and growth in the industry.

This course gives you practical technical involvement in motorsports and computer-aided design for racing cars. Many leading motorsports companies are based within 20 miles of Oxford and we work closely with them, actively involving them in shaping the course’s content and style.

The Motorsport Technology degree course covers the fundamentals of motorsport technologies and lasts three years (or four if you include the optional placement year). The disciplines covered range from CAD/CAM, stress and dynamic analysis, thermo-fluids to business and management. You will be exposed to all aspects of racing and road car design, gaining an understanding of the entire design process and learning how to turn your ideas into well-prepared design proposals.

Study modules

As courses are reviewed regularly the module list you choose may vary from that shown here. Some modules will be compulsory.

Year 1
- Graphics and Design
- Automotive Materials and Manufacturing Techniques
- Basic Mechanical Engineering Technology (double)
- Basic Electrical Engineering
- Basic Mathematical Methods I
- Basic Mathematical Methods II
- Introduction to Engineering Management
- Basic Data Analysis
- Word-Processing and Spreadsheet IT Skills
- Programming the Virtual World

Year 2
- Introductory Mathematics
- Introduction to Engineering Mechanics
- Introduction to Engineering Thermo-Fluids
- New Product Development
- Sensors and Data Logging
- Automotive Engineering Design and Computer Aided Engineering (double)
- Automotive Electronics
- Micro-Processors
- Control Technology
- Materials Engineering

Final year
- Engineering Dynamics I
- Stress Analysis I
- Engineering Thermo-Fluids
- Advanced CAD/CAM
- Motorsport Engine Technology
- Advanced Automotive Electronics
- Motorsport Vehicle Performance
- Sustainable Engineering
- Project (double)
- Motorsport Group Design Study
- Entrepreneurial Business Management (double)
After graduation

The UK motor industry employs thousands of graduates each year and has a highly successful autosports sector. Whether it’s a rallying, F1, Indycar or touring car race, the chances are that a British car will be the winner. On the other hand, your aspirations may lead you to design the next new Mini or the latest executive saloon with an international pedigree.

These are the career paths to which our undergraduates aspire, and Motorsport Technology provides the right balance of education and practical experience to equip you for this exciting profession.

Typical offers

A-level: grades BBC, preferably in Science and/or Design/Technology, or Mathematics.
IB Diploma: 30 points, preferably including Science or Technology related subjects
BTEC Extended National Diploma: a relevant subject with a DDM profile and GCSE mathematics.

Other equivalent qualifications will be assessed on an individual basis.

Specific entry requirements

A-level: BBC, preferably in Science and/or Design/Technology, or Mathematics
GCSE: Maths grade B minimum and English Language grade C minimum

English language requirements

IELTS 6.0 (with 6.0 in reading and writing, 5.5 in listening and speaking)

English requirements for visas

If you need a student visa to enter the UK you will need to meet the UK Border Agency’s minimum language requirements as well as the university’s requirements.
Our work placement programme has been commended by professional bodies as a model of excellence. We have placement opportunities with local automotive and product manufacturing companies.

You will be encouraged to undertake a work placement for one year between the second and final years of your course. More and more students are taking up this option, as they recognise the benefits of obtaining industrial experience, consolidating their understanding of mechanical engineering in general and having the opportunity to apply their knowledge in an industrial environment. On returning to the university for their final year, the experience they have gained invariably improves their academic performance.

We have an excellent record of students gaining full-time employment on graduation with their industrial-placement-year company. Sponsored students spend the year with their sponsoring company. Students who are not sponsored will be assisted in finding a suitable placement.

**Work placement profile**

**Haseena Mangera**

The course at Brookes has some of the best prospects to work in the automotive and Formula 1 industry after graduating. Brookes also provided me with the opportunity to have an accredited degree course, and for an international student, this is very beneficial. I have found lecturers to be very helpful and involved – something I did not expect and was told would not happen at university! The course is always improving and students are involved in this process by giving feedback to staff.

I have just completed my placement year. I have met many different industry people with vast experience, which has helped to extend my network and build connections. Importantly, I have been able to apply what I have learnt at university to a specific industry and decide what I have enjoyed and would like to pursue. I strongly recommend a placement year, something Brookes has a supportive network of staff specifically aimed to help you apply for positions and assist you as needed once you’re in industry.

During my placement year I have been responsible for a variety of projects which include:

- Working on a research portfolio on issues with the highest customer dissatisfaction, this will be submitted to BMW engineers for the design and improvement of the next generation cars, due for release later this year. This will carry over for my final year dissertation project.
- Responsible for operating the daily running of the 3D printer at BMW Plant Oxford
- Providing design solutions through problem solving and root cause analysis of parts and vehicles, including CAD design of jigs and prototype parts. Analysis into parts and issues, whilst also being knowledgeable of industry legislation when designing and/or revising current production parts. This often, if not always, involves liaising with various departments within the BMW Group and suppliers.

I thought the placement year was invaluable to my university experience. The first few months were very difficult, as you are starting afresh. You are in a position where anything you do can have an effect on the real world, in my case it was mass production, where a car came off the track every 68 seconds.

At first you are not given much responsibility as they need to understand your capabilities and how to challenge you in your role. This is difficult, but you need to keep asking for work to do and with time you will be working on more difficult tasks that will increase your knowledge and make you well rounded accredited engineer.

I have gained a large quantity of experience and training in a number of different areas; however I have gained knowledge of 3D Printing and CAD training, working within a team, as well as working with various departments throughout BMW (including engineers in Munich) and suppliers and an understanding of the systems used throughout the BMW Group.

Having completed a year in industry I have met many individuals with vast experience and diverse backgrounds. I hope that the experience I have gained will stand me in good stead to pursue my ideal job.
THE PLACEMENT YEAR IN INDUSTRY

The placement year is an option for students studying engineering and mathematics degrees and constitutes the third year of a four-year degree programme. A placement will normally last 12 months, or a minimum of 40 weeks, you will be employed within one company and you will have a suitable level of responsibility to make the job challenging (or ‘real’). The experience will add value to you, your degree and your future career.

A great range of companies offers placements to our students, from large multi-nationals to local employers who may recruit just one student. Some of the companies where students have undertaken placements are BMW, Bosch, Caterpillar, GlaxoSmithKline, Cummins, JCB, McLaren, Mercedes F1, Merck Sharp & Dohme Ltd, Nissan, Stanley Black & Decker, Triumph Motorcycles Ltd, Red Bull Technology, Rolls-Royce and Williams F1.

Placements take place between the second and final years of a degree programme. Second year students are given training in preparation for placements through guided lectures, seminars and 1:1 tutorials. The University Careers Office provides help with CVs, applications and interview techniques to help you gain your preferred placement. Once you are out on placement, you will be supported by a member of the academic staff who will arrange to visit you whilst you are there.

Towards the end of the first calendar year of your placement, or in the following January, we arrange a Recall Conference within the department, for a mutual catch-up. You will find it very useful to re-connect with both the department and your fellow students at this point.

Placements can be anywhere in the world and there may be funding available through the Erasmus scheme to support a work placement in Europe. Provided your programme of study overseas is agreed by the department, it will count towards your degree. We may not be able to arrange an academic visit if you choose to complete your placement overseas, but you will still be supported by us while you are there.

Remember, a placement year is not a compulsory part of degree programmes in the department of Mechanical Engineering and Mathematical Sciences, but students who include this year invariably find that it enhances their final year of study and their final year project.

For more information about placements, contact the Partnerships and Placements Office:
tdeplacements-enquiry@brookes.ac.uk

For information about the Erasmus scheme, see www.brookes.ac.uk/international/study-abroad-and-exchanges-going-from-brookes/european-work-placements
**Formal Student (FS) is a breeding ground for world-class engineers. It challenges university students from around the world to design and build a single-seat racing car, which is then put to the test at race circuits around the globe.**

Oxford Brookes Racing (OBR) was one of the first teams to compete in the Formula Student UK in 1999. The aim is to achieve results through clever engineering utilising the resources provided by the university and the team’s sponsors. The team is a regular competitor at FSUK (at Silverstone) and FSG (Germany), in 2012 and again in 2014 the team was the best in the UK beating stiff competition from other UK universities.

Oxford Brookes Racing team aim is to introduce students to the real-life business applications and to apply theoretical knowledge gained from university modules into practical problems. The goal is to design, build, develop, market and compete with a superior race car product. These skills allow Brookes students to work for leading companies after graduation.

The competition places limits on the overall cost of the race car, as well as the performance of the engine and chassis to ensure safety. This forces the team to creatively implement both cost and technically effective solutions.

The Formula Student competitions are recognised as major events within the engineering industry and are sponsored by various companies such as Audi, Airbus, Bosch, Continental and Dassault Systèmes.

The competition embodies not only the performance aspects of the completed vehicle, but also aspects of a simulated production of the race car as a prototype. The vehicles are judged in static presentation-style events and dynamic trials. In addition the rules specify that a car cannot compete for more than one competition year, obligating teams to evaluate and improve their designs each year.

The Formula Student competition is based on a 1,000 points score scheme:

<table>
<thead>
<tr>
<th>Category</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endurance</td>
<td>300</td>
</tr>
<tr>
<td>Autocross</td>
<td>150</td>
</tr>
<tr>
<td>Acceleration</td>
<td>75</td>
</tr>
<tr>
<td>Skid pad</td>
<td>50</td>
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<tr>
<td>Business presentation</td>
<td>75</td>
</tr>
<tr>
<td>Cost analysis</td>
<td>100</td>
</tr>
<tr>
<td>Engineering design</td>
<td>150</td>
</tr>
<tr>
<td>Economy / efficiency</td>
<td>100</td>
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</tbody>
</table>

The team is built with around 110 students from both undergraduate and postgraduate study from across the department’s engineering courses. There is an opportunity for a student to complete their work placement year as team leader. In 2014, George Simmons completed his placement year as OBR team leader.

“I used to watch Formula Student (FS) while I was still at school – now I have completed my work placement year with OBR as team leader. Formula Student is not just about building a race car, it’s also about developing a business plan, pitching the idea to show that it is profitable, liaising with sponsors and manufacturers and so on. Where else would I get that kind of experience?

Being team leader I am running the team, looking after the 110 students, building the car and taking it to competition in Silverstone, Germany and Europe. Everything hinges on me; all the deadlines and objectives are directed by me. It doesn’t matter what type of experience you have, everyone is able to join and get involved.

This placement year has strengthened my studies, as it is not technically based. I am interested in having a well-rounded package and experience by the time I graduate. Apart from experience of the theoretical side of the maths and physics, I also have experience of managing a team and working with people, motivating the team and making sure that deadlines are met which are all really important.

One big plus is the networks I’m building with the motorsport industry. Lots of people have good degrees; Formula Student gives me something on top – I’m demonstrating that I can apply my learning to a complex, real-life project.”
Formula Student challenges students to design, build and actually race a car. It is a very interesting competition, lots of teams around the world have enormous budgets. At Brookes we have a modest budget and despite this, our students perform extremely well. Of course this is the key thing. In an automotive or motorsport company, how many times will your boss say to you that you have a large budget. Probably it is never going to happen, designing to a budget and still achieving high performance is the key. It is in this area that we excel above almost all universities.

James Balkwill
Principal Lecturer in Mechanical Engineering

Formula Student gives you hands-on experiences that are not possible from coursework and lectures alone. The technical experience as well as working in a dynamic team environment are extremely valuable to future employers.

Blake Hinsey
Performance Engineer at Force India Formula 1 team, studied an MSc in Motorsport Engineering

V-twin engine

The V-twin is the world's first entirely bespoke engine and transmission package for Formula Student. It was started in 2006 when members of OBR team began to lay out a concept for a purpose-built engine and transmission package for the Formula Student car class 1 entry. In 2007 the engine layout was completed for manufacture. In 2009 the manufacturing process started and in 2011 engine and gearbox were unveiled by Racecar Engineering Magazine at Autosport International Show at the NEC Birmingham.

Specification

The engine is a 75° V-twin unit of 600cc capable of running up to 12,500rpm, with dry sump lubrication on both engine and gearbox. Five-axis machined ports and combustion chambers enable the engine to develop an unrestricted power output of 200hp / litre. The gearbox is a 4-speed sequential unit with automated pneumatic shifting which transmits the torque to an innovative torque-steer active differential.

The future of the project

The manufacturing of the engine is approaching completion with the remaining parts to be machined in-house and through external companies. There are also some minor design adjustments to be done. The V-twin is certainly the pride of the OBR team as it is unique and has huge potential not only in performance, but also in the knowledge and experience this project has given to team members.
There is an excellent research environment in the Department of Mechanical Engineering and Mathematical Sciences, underpinned by very well-established links with industry. The research is focused on issues of global concern and is organised into three cross-cutting, inter-disciplinary themes: Sustainable Engineering and Innovation (SEI); Advanced Engines, Propulsion and Vehicles (AEPV); and Simulation, Modelling and Systems Integration (SMSI). Research in the department is supported by the UK Research Councils, the European Commission, industry and charitable foundations.

### Sustainable Engineering and Innovation

The Sustainable Engineering and Innovation (SEI) theme of research at Oxford Brookes University draws together a collective of many different technological disciplines, highly successful research groups and individuals.

A strong multi-disciplinary team is able to deliver innovative and sustainable engineering solutions to both national and international issues concerning current and future environmental, social and economic needs.

The key focus areas of SEI include:

- Intelligent and integrated solutions for sustainable mobility.
- Closed-loop manufacturing through the development of smart materials, efficient processes and innovative design.
- Advanced sustainable materials and joining processes.
- Whole life energy analysis and low carbon solutions.
- Expertise in the use, manufacture and performance of carbon materials.

### Advanced Engines, Propulsions and Vehicles

The Advanced Engines, Propulsions and Vehicles research group (AEPV) brings together scientific and industrial expertise for providing solutions for fuel efficient and low emission engines and vehicles. The group has six main research areas: combustion and fuels, particulate matter emissions, emissions assessment, powertrain simulation and performance evaluation, computational fluid dynamic simulation of engine processes and the design and development of high performance engines.

### Simulation, Modelling and Systems Integration

The research carried out in the Simulation, Modelling and Systems Integration research theme enables complex systems to be analysed, designed and predicted. The work is outwardly focused and looks to develop solutions, which provide economic and social benefits, to real problems. The work is underpinned by high-quality fundamental research in mathematics and engineering.

### Collaboration

The department has excellent connections with industry and it is these connections that enables staff and students to be involved in ground-breaking research. The department collaborates with industry leaders such as BMW, YASA Motors, McLaren, Kawasaki British Superbike, BSI Speedway and Dallara.

The department announced a dynamic and ground-breaking collaboration between the university and Dallara, a world-leading race car manufacturer, at Autosport International Race Car Show 2014. Sustainable Engineering and Innovation staff and students on the Motorsports Engineering MSc programme will develop the first prototype of the electrically driven car. They will also play a major role in specifying the regulations for the formula and how the race itself will be competed.
In September 2014 the Oxford Bus Company launched a redesigned and new look BROOKESbus, which uses Gyrodrive technology to help the buses reduce fuel consumption by around 20%. These new buses were designed with input from one of our alumni, Glen Pascoe – Glen studied motorsport engineering and graduated in 2006. He remembers regularly travelling with his now wife on the BROOKESbus and said: “As a Brookes alumnus I feel honoured that Gyrodrive will be making a positive impact on the current students and the university in general by helping to achieve its sustainable travel plans. I hope that my story will inspire all students to realise their potential and make a difference.”

Glen Pascoe
Motorsport Engineering alumnus
Oxford Brookes promotes equality of opportunity for all who study, work and visit here. For more details please visit www.brookes.ac.uk/services/hr/eod or phone +44 (0) 1865 485929.

To obtain a large-print copy of (or sections of) this publication or to enquire about other formats please contact +44 (0) 1865 484848 or email query@brookes.ac.uk

All information is correct at the time of going to print. Please refer to the Department’s website for the most up-to-date details.

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