Department
Of
Materials Science
& Engineering.

Undergraduate courses
What is Materials Science & Engineering?

To make any engineered device, structure or product you need the right material. Materials Science and Engineering has a huge impact on societal challenges including:

- healthcare
- advanced manufacturing
- the environment
- sustainable energy
- biotechnology
- aerospace and transport
- communications
- information technology

We study all materials, from the everyday to the cutting edge. In all cases we seek a thorough understanding of how materials work, which helps us control their structure, from an atomic level up, to tailor their properties to suit a particular application.
Some examples of our Materials research and development are:

**Glass:**
Researchers are looking at solutions to the decommissioning of nuclear waste by containing it within the structure of glasses; these may be able to provide the very long term stability needed.

**Biomaterials:**
Academics have designed scaffold implants that can bridge an injury site to stimulate regrowth, improving the chances of restoring sensation and movement in injured limbs.

**Key:**
1. Glass: Copper oxide containing glass
2. Biomaterials: Electrospun polymer bio scaffolds
3. Biomaterials: Corneal ring
4. Metals and alloys: 3D printed titanium lattices
5. Polymers: Silkworm cocoons
6. Ceramics: Low CO\textsubscript{2} cement
7. Pink glass: Erbium oxide containing glass

**Metals and alloys:**
Research in additive manufacturing has led to the Department 3D printing titanium handlebars and stems for the British Cycling team at the Rio 2016 Olympics.

**Polymers:**
Our natural materials group have discovered that spider silk transmits vibrations across a wide range of frequencies so that, when plucked like a guitar string, its sound carries information about prey, mates, and even the structural integrity of a web.

**Ceramics:**
Developments of new cements based on different chemistry have the potential to reduce the amount of CO\textsubscript{2} emitted in construction worldwide.
Why study with us?

Our courses
We design our courses to inspire and challenge, so that students can develop into professional practitioners. They are based on the latest developments in research and industry, and prepare you for the professional world.

Facilities
Materials Science & Engineering students benefit from being taught in the new engineering building, The Diamond; the best equipped engineering facility in the UK.

Innovative teaching
We continually look for new developments for our courses, which has led to there being many unique possibilities with the Sheffield Materials degree. For example, third and fourth year MEng students have the option to get unprecedented industrial contact and experience by taking part in four Industrial Training Programmes, each defined by an industry partner, or to follow a brand new stream designed to prepare them for a research career (for example a PhD).

Industrial contact
Our courses benefit from our close relationships with industry, both in ensuring they prepare students for working in industrial environments should they choose to follow this route, and also with many opportunities to interact with industry, through visits, placements and projects, during the degree.

Community
Students will join a welcoming community with students and staff from over 50 countries. You’ll work alongside those not just from the UK but the world including Kenya, China, Portugal, Iran and America.

Our dedicated staff are on hand to help you capitalise on your strengths and make the best choices for the future; we encourage our students to get involved in a range of activities both at home and abroad to develop their international experience.
Our courses

All courses are accredited, or seeking accreditation, by the Institute of Materials, Minerals and Mining (IoM®), and provide the basis to progress to Chartered Engineer status after graduating.

You can choose to study a three year BEng or four year MEng degree. With the option to specialise through module choices or one of our more focused courses.

Undergraduate degrees in Materials Science and Engineering

Our core degree is Materials Science and Engineering; discover the underlying principles of Materials Science, and how this is applied across Materials Engineering situations.

Materials Science and Engineering (BEng/MEng)

You can tailor your degree with optional materials modules, language or industrial management.

If you find you’re enjoying a specific area of Materials Science, you can choose to switch to a more specialised course, as shown below, before the end of the second year.

Materials Science and Engineering (Biomaterials) (BEng/MEng)
Materials Science and Engineering (Year in Industry) (BEng/MEng)
Materials Science and Engineering (Research) (MEng)
Materials Science with Nuclear Engineering (MEng)
Metallurgy (MEng)

You can also apply for entry directly onto these more specialised courses.

For specific course information visit:
www.sheffield.ac.uk/materials/undergraduates
Facilities

As well as lectures and tutorials, students learn through laboratory work which is varied and hands on. The Department boasts state-of-the-art equipment and is home to numerous successful research centres with outstanding facilities at its disposal.

You’ll also use The Diamond, with 24/7 access to the library, workspaces, student bookable meeting rooms and media recording facilities. It also houses specialist materials and biomaterials laboratories, a clean room, electronic and mechanical testing labs, and a student access workshop.

www.sheffield.ac.uk/faculty/engineering/study/thediamond

What you’ll do

We use real situations to give you a good understanding of practical applications and how you may one day use your knowledge and skills in work.

You’ll learn through case studies, design projects, group industrial projects, lab work, and manufacturing and plant visits. Alongside technical expertise, you’ll develop invaluable skills in teamwork, logical reasoning, project management and problem solving.

You will have between 15 – 24 hours of staff contact time per week in various forms, which includes practicals and tutorials with an academic member of staff in a group of 5-6.

We’ll also challenge you to think about engineering issues from a global perspective. So wherever your future lies, you’ll be in demand.

www.sheffield.ac.uk/materials/undergraduates/do
Innovative teaching

We help students to realise their ambitions as a scientist and engineer, encouraging creativity and initiative to learn about the science of materials, and how to develop new materials and technologies for industry and manufacturing.

Industrial Training Programme

As well as our access to unique practical laboratory and workshop facilities in The Diamond, the Department has introduced unique ways of bringing Industry into our courses. In the third and fourth year of the MEng degrees, students take part in three Industrial Training Programmes, each defined by an industry partner, focusing on areas such as:

- Nuclear
- Aerospace
- Glass
- Advanced manufacturing

For each there are small group seminars with industry experts and engineers, academic lectures and visits to industry sites and technology centres, and students apply their materials science and engineering knowledge to analyse and solve a real current industrial problem.

“\textit{I am extremely grateful for the opportunity to take part in a high-value hands-on project. I feel that it has presented me with a large breadth of learning opportunities that would not have been possible in a typical lecture-based learning environment.}”

Luke McCarthy, MEng Materials Science and Engineering

5 month placement

With most of our MEng courses, as part of the course structure and alongside industrial projects and interaction, students take up a 5 month industrial placement to develop their knowledge, skills and understanding within an employment context as well as build relationships with contacts for future career opportunities.

Some placements have been taken up as far as Mexico and New Zealand, with many employers using this time as an extended interview for offering a permanent job.

www.sheffield.ac.uk/materials/undergraduates/placements
Materials: undergraduate courses

Extra-curricular

Besides attending seminars, lectures and exams, there is a wealth of different opportunities available to make your university experience unforgettable. It is about developing as a person and gaining experience and skills to help you succeed in your studies, and with whatever you choose to do after graduating.

* * *

“As a Science and Engineering Champion I work with a team of students to promote STEM subjects to young people. This gives me opportunities to convey my enthusiasm for my course while developing invaluable communication skills. It is both rewarding and great fun!”

Max Bloomfield, MEng Materials Science and Engineering (Research) and Science and Engineering Champion

* * *

“By taking part in Formula Student I have gained valuable skills including teamwork, networking and financial planning, which will help to make me more attractive to graduate employers.”

Gabby Coe, MEng Materials Science with Nuclear Engineering and Sheffield Formula Student team member

You could also apply for Summer internships and placements to gain valuable insight into the engineering sector and experience to enhance your employability skills upon graduating.

Study Abroad

The Study Abroad Programme is an exchange programme between The University of Sheffield and our partner universities. It gives students the chance to study at a university in Australia, Hong Kong, New Zealand, Singapore, Canada or the USA, without extending the length of their course.

The big advantage is that the study abroad year is fully integrated into the course and you will receive full academic recognition for the time spent studying abroad. In addition you won’t be asked to pay any tuition fees to the host institution – you will simply pay applicable tuition fees to Sheffield.

* * *

“Study abroad is an incredible experience. Apart from getting to travel the world, you also get to see your subject from a different angle, which helps you think outside of the box and improve your job prospects.”

Lauren Browning, MEng Materials Science & Engineering
Run by students for students, the Materials Science & Engineering Society (MatSoc) is fun, friendly and ideal for meeting students from other years as well as joining socials, trips and sporting events.

Events can range from visits to the Peak District to bowling to bar socials – there is something for everyone. Plus if you’re into competitive sport, the Society has two 6-a-side football teams and two netball matches a week, with plenty of other sporting opportunities available throughout the year.

For more information contact:

Twitter: @mat_soc
Facebook: matsoctuos
E: mat.soc@sheffield.ac.uk

### Admissions

#### Entry requirements

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<tr>
<th>Qualification</th>
<th>Typical Entry Requirement</th>
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<tbody>
<tr>
<td><strong>MEng courses</strong></td>
<td><strong>BEng courses</strong></td>
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<tr>
<td>A Levels</td>
<td>AAA</td>
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<td></td>
<td>AAB</td>
</tr>
<tr>
<td>International Baccalaureate</td>
<td>37 points with 6 points from two of Maths, Physics or Chemistry</td>
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<tr>
<td></td>
<td>35 points with 6 points from two of Maths, Physics or Chemistry</td>
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<tr>
<td>Welsh Baccalaureate + 2 A Levels</td>
<td>A + AA</td>
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<td></td>
<td>B + AA</td>
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<tr>
<td>Scottish Highers</td>
<td>AAAAB + AA</td>
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<td></td>
<td>AAABB + AB</td>
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<tr>
<td>Irish Leaving Certificate</td>
<td>A1 A1 A1 B1</td>
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<td></td>
<td>A1 A1 B1 B1</td>
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<tr>
<td>BTEC Level 3 Extended Diploma</td>
<td>D*DD in Engineering + grade A in A Level Maths, Physics or Chemistry</td>
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<tr>
<td></td>
<td>DDD in Engineering + grade B in A Level Maths, Physics or Chemistry</td>
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Required A Level (or equivalent) subjects

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<tr>
<th>Course Title</th>
<th>Typical Entry Requirement</th>
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<tr>
<td>Materials Science &amp; Engineering (including Research, Nuclear Engineering and Metallurgy)</td>
<td>At least two of Maths, Physics, Chemistry</td>
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<tr>
<td>Materials Science &amp; Engineering (Biomaterials)</td>
<td>At least two of Maths, Physics, Chemistry, Biology</td>
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<tr>
<td>Materials Science &amp; Engineering with a Foundation Year</td>
<td>No more than one of Maths, Physics or Chemistry</td>
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All our applicants need to achieve a minimum grade C English GCSE and minimum grade B Mathematics GCSE, or equivalent qualifications. Courses with a language component require a minimum of a modern language GCSE at A grade (studying German requires a minimum grade B in A-level German).

Your application

We invite all UK-based applicants to interview on a Departmental Open Day. These days also give applicants the opportunity of getting to know the department. We read your personal statement and the reference to assess your motivation and to learn more about you. We take these into account with your predicted grades when deciding your offer. We also consider direct second year entry if you have good overseas qualifications and your previous course overlaps sufficiently with our first year. If you have any queries or require further information, we are always happy to hear from you.

Keeping in touch

Contact our Admissions Tutor:
Dr Russell Goodall
Email: r.goodall@sheffield.ac.uk
Tel: +44 (0) 114 222 5977
www.sheffield.ac.uk/materials
“The Department is a friendly inclusive environment where you are challenged to reach your potential. The best part about University are the people you get to meet, wherever they come from they bring their culture and influences.”

Ross McGregor,
MEng Materials Science and Engineering