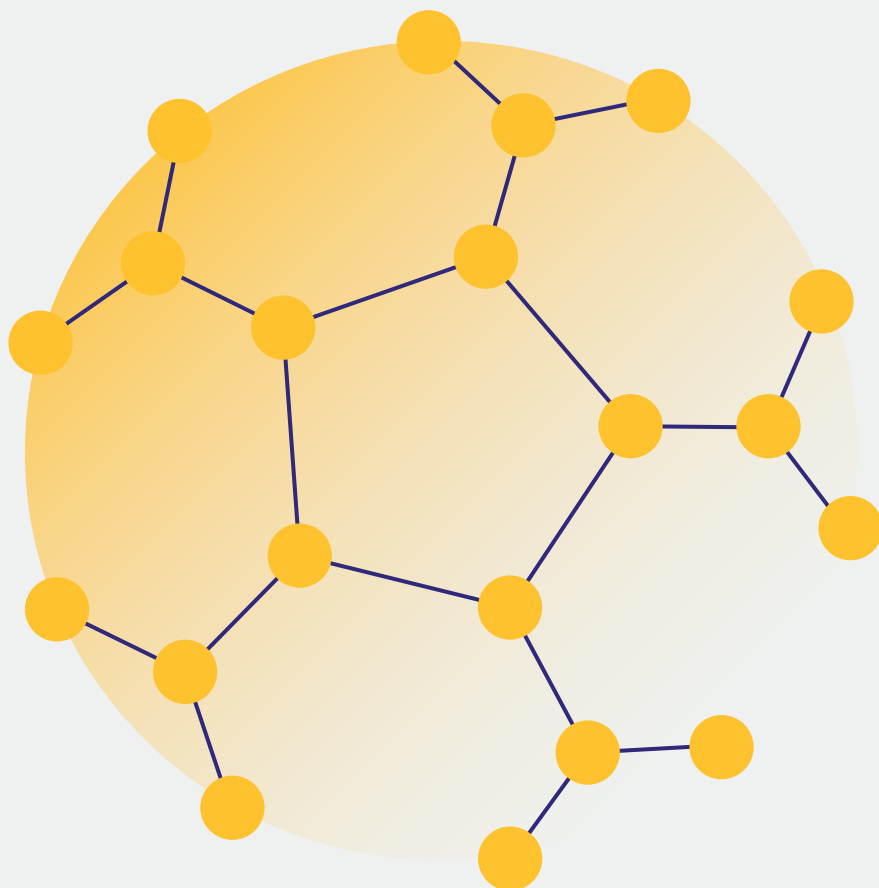


MANCHESTER
1824

The University of Manchester



Materials Science and Engineering

2020
Undergraduate brochure

Materials Science and Engineering at Manchester

// I chose Materials Science as I was keen on furthering the skills I had learned in my A-levels without having to sacrifice one or more of my subject areas. **//**

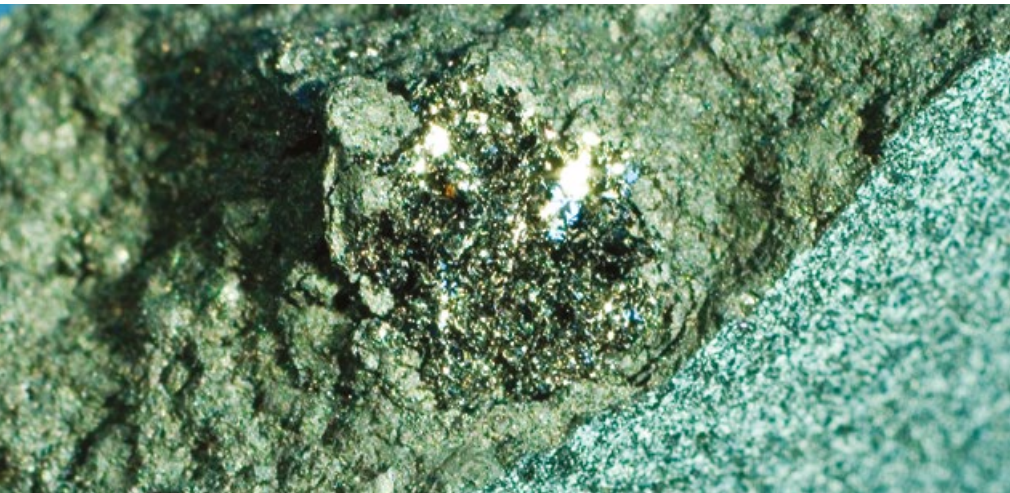
David Routledge
MEng Materials Science and Engineering



Facilities & resources

Our facilities are second to none and provide students with the very best opportunities:

- State-of-the-art electron microscopy
- A dedicated centre for X-ray tomography
- Processing equipment for metals, polymers, ceramics and composites
- Electrochemical imaging
- Surface and bulk analytical facilities.





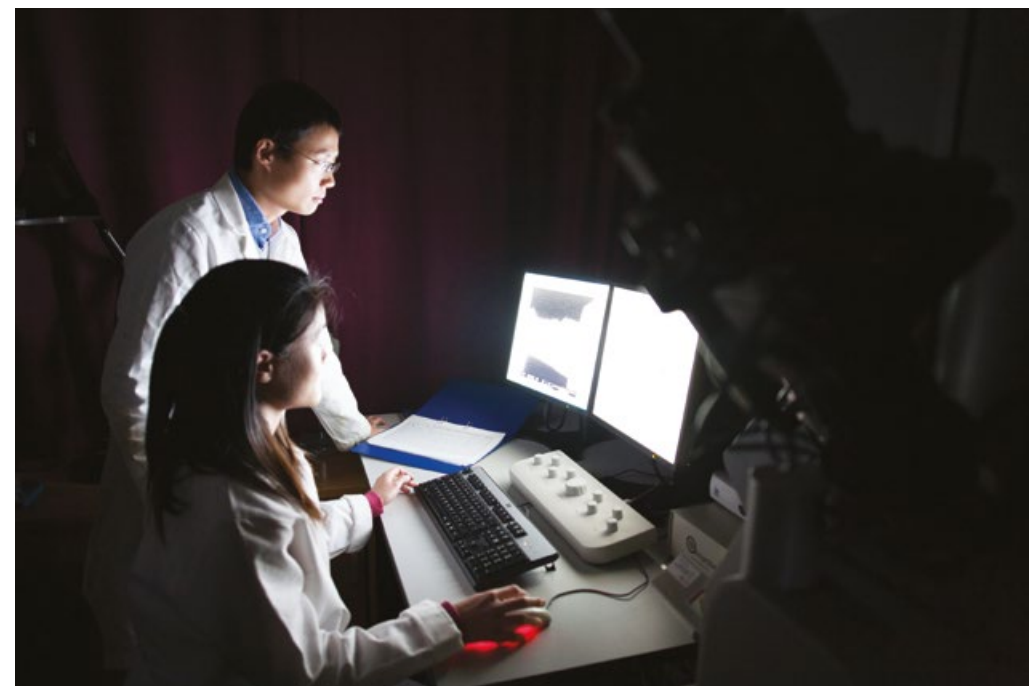
Learning support

Peer support scheme

Our peer support scheme is one of the largest in Europe. Peer mentors are higher-year students on the same degree programme as you, who will help you find your feet when you arrive here and adjust to student life. As they'll have already been a student at Manchester for at least a year, they should be able to help you with anything you might be worried or unsure about.

PASS (*Peer Assisted Study Sessions*)

Led by volunteer students, PASS sessions will often be based around a specific area of study. You'll have the opportunity to consolidate and build on your existing knowledge through discussion with other students in an informal and supportive environment, where you can compare notes, analyse, ask questions and talk through ideas.



Academic advisers

Study with us and you'll be assigned an academic adviser who is there to give advice about any academic issues throughout the duration of your course. Your adviser will be able to help you with the transition from school or college to university – and can help you get to grips with studying and learning more independently. They'll also be able to help you develop your skills in academic writing or research, making presentations, or any other skills that are specific to your degree programme.

Disability support

If you have additional needs arising from a medical condition, physical or sensory disability, a specific learning disability such as dyslexia, or a mental health difficulty that affects your study, we can provide support. Contact or visit our Disability Advisory and Support Office before you apply, to discuss your needs and the support available.

www.manchester.ac.uk/dass

Find out more about the personal and academic support available to you throughout your studies:
www.manchester.ac.uk/study/experience/student-life/university/student-support

Apply

How to apply

www.manchester.ac.uk/study/undergraduate/applications

Please note that the course units listed in this brochure only represent a sample of the full breadth of available units for each course. Units are reviewed on an annual basis and as such may vary slightly to those advertised.

For up-to-date course information, including unit detail and entry requirements in full, visit our course finder: www.manchester.ac.uk/undergraduate

Typical offer

A-level: AAA-AAB including two from Maths, Physics and Chemistry.

IB: 36-35 points overall, including 6,6,6-6,6,5 from three subjects at Higher Level. Must include two from Mathematics, Physics or Chemistry.

For full details of our entry requirements: www.manchester.ac.uk/ugcourses

Our courses

Materials Science and Engineering	BSc	3 years
	MEng	4 years
Materials Science and Engineering with Biomaterials	MEng	4 years
Materials Science and Engineering with Polymers	MEng	4 years
Materials Science and Engineering with Metallurgy	MEng	4 years
Materials Science and Engineering with Corrosion	MEng	4 years
Materials Science and Engineering with Textile Technology	MEng	4 years
Materials Science and Engineering with Nanomaterials	MEng	4 years

Which course?

Choosing your course

Our Materials Science courses provide broad coverage of the principles, techniques and applications of materials and, after the first year, offer considerable choice, enabling you to focus on areas of particular interest. Our four-year undergraduate MEng degrees give you the opportunity to take your studies further and specialise. A key feature is the major (six-month) research project, which can be carried out in industry, giving you the opportunity to develop your understanding by applying your theoretical and technical knowledge to a substantial research project. Through this project you will gain in-depth experience of using cutting-edge research facilities and develop the interpersonal, communication and presentation skills required by industry.

Overview

What is Materials Science?

From the car you drive to the bridge you cross, the clothes you wear to the medicines you may take, materials shape our world. If you want to know what makes some materials strong, others stretchy, and how they can be manipulated and designed to have special, smart and commercially viable properties, then a Materials Science degree could be for you. Materials science and engineering involves an understanding of the fundamental behaviour of materials and aims to improve the performance of existing materials and develop new materials, such as graphene, for novel applications. Materials science is a practical subject at the heart of all major industrial sectors which combines theory with practical application to meet engineering challenges - from jet engines to nano-robots, artificial tendons to bullet-proof vests, and much more. Materials science and engineering graduates are amongst the most highly sought after by employers in a wide range of industrial sectors, and fulfil a vital role in the ongoing development of existing and new materials that deliver economic and environmental benefits and enhance all our lives.

Flexible options

Our courses have a common first year and mainly common second year, giving students flexibility to transfer to their chosen course up to the end of year 2, when they are better informed about the pathways and have a deeper understanding of each specialisation.

Industrial experience


Competition in the graduate job market has risen dramatically over the last ten years, and students are increasingly looking for ways to differentiate themselves. All our MEng courses provide the opportunity to carry out a six-month project with industry as part of the final year, allowing you to put your knowledge and skills into practice and demonstrate your capabilities to potential employers.

Materials Science and Engineering

These courses provide the fundamentals of Materials Science and Engineering, as well as giving you the opportunity for specialisation in the later years. Following common first and second years, you will then have the flexibility to choose specialist options aligned to your own particular interests in topics such as biomaterials, polymers, metallurgy, corrosion, nano and functional materials and textile technology. The final-year research project gives you the opportunity to further develop your practical and analytical skills working with state-of-the-art facilities at Manchester. If you choose the MEng course, the final-year research project gives you in-depth experience of using cutting-edge facilities, along with the option to carry out your six-month project in an industrial setting.

Course overview

- Provides the fundamentals of Materials Science and Engineering, whilst still giving an opportunity for specialisation in your later years.
- Undertake a final-year research project (MEng only) and gain in-depth experience of using cutting-edge research facilities or valuable experience in business.


UCAS code	BSc	3y	J500	
	MEng	4y	J501	

Materials Science and Engineering with Biomaterials

Course units such as Stem Cell and Tissue Engineering, Drug Delivery and Biosensors, and Lab to Clinic give you an in-depth understanding of biomaterials and their interactions with the body from a cellular level upward.

Course overview

- A six-month project, which can be carried out in industry, will give you experience of working at the cutting-edge of biomaterials research.
- Choose from a broad range of options in years 3 and 4 tailored to meet the needs of the biomaterials sector.


UCAS code	MEng	4y	F201	
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Materials Science and Engineering with Polymers

Polymeric materials are applied widely, from traditional commodity plastics to specialist polymers used increasingly in the pharmaceutical, electronic, and nanotechnology sectors. In addition to gaining a solid grounding in the science of materials, you will learn about the production, processing, and applications of polymeric materials.

Course overview

- Focus your studies on the physical and chemical properties and application of polymeric materials.
- Choose a six-month project to gain experience of work at the cutting-edge of polymers research.

UCAS code	MEng	4y	F204	
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Year	Sample course units
1	<ul style="list-style-type: none"> > Physics of Materials > Microstructures of Materials > Materials - Shaping the World
2	<ul style="list-style-type: none"> > Mechanics of Materials > Materials Synthesis and Sustainability > Materials Processing
3	<ul style="list-style-type: none"> > Polymer Synthesis & Characterisation > Multiphase Polymers & Nanocomposites > Composite & Advanced Materials
4	<ul style="list-style-type: none"> > Control & Design of Polymerisation Reactions > Polymer Physics & Physical Properties

“It’s very noticeable that at Manchester you are in an environment at the very cutting edge of research, and that makes it all the more interesting.”

James Woods
BSc Materials Science and Engineering

“Our strong links to industry, both nationally and internationally, allow us to offer unprecedented opportunities for placements and vacation work that enable you to gain real-world experience with your degree.”


Joe Robson
Professor of Metallurgy

Materials Science and Engineering with Corrosion

Taught by experts in this field, this degree course can be tailored to your interests and develops the specialist skills in corrosion control sought by a wide range of industry sectors including oil and gas, aerospace and energy generation. The Corrosion and Protection Centre at Manchester has long been recognised as a world-leading centre of excellence in this field with unique facilities to study the corrosion and protection of a wide range of materials.

Course overview

- Focus on the corrosion and protection of materials for use in industries driven by the need to improve the capital productivity, operational reliability, efficiency, performance and health and safety of their physical assets.
- A six-month project, which can be carried out in industry, gives you experience of working at the cutting-edge of corrosion research.


UCAS code	MEng	4y	F203	
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Materials Science and Engineering with Textile Technology

This unique course combines traditional science and technology aspects of textiles with exciting and innovative applications in smart textiles, sportswear, aerospace and automotive materials, and biomedical implants. Manchester has a long history of leading developments in textile technology and unique research facilities in this field. Through specialist options in advanced textiles manufacturing, performance enhancement and technical textiles, you will gain the specialist skills to become an expert textiles technology professional.

Course overview

- Focus your studies on textile technology, manufacturing, performance enhancement, and technical textiles.
- A six-month project gives you experience of working at the cutting-edge of textiles research.


UCAS code	MEng	4y	F205	
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Materials Science and Engineering with Nanomaterials

Nanomaterials are expected to advance a range of technologies such as communication, health, transport, energy and environment, with a direct impact on all aspects of life. Graduates with training, knowledge and skills in nanosciences are in high demand to enable and support corresponding scientific and technological advances. This course gives you a solid understanding of materials science and the opportunity to specialise in the field of nanomaterials.

Course overview

- Focus your studies in the field of nanomaterials and gain an in-depth understanding of their properties, synthesis, 3D assembly and characterisation
- Undertake a six-month research project, which can be carried out in industry, and deepen your knowledge in one of the many areas of application, such as energy, photovoltaics and functional nanocomposites.

UCAS code	MEng	4y	F206	
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Materials Science and Engineering with Metallurgy


Metallurgy is a part of materials science which focuses on metals. It involves exploring the chemical and physical properties of metallic elements, compounds and alloys.

Studying this degree will prepare you to become a specialist metallurgist. In addition to gaining a solid grounding in the science of materials, you will learn about new developments in advanced alloys for applications such as fuel-efficient jet engines, next generation nuclear reactors and environmentally friendly transportation.

Strong industry links allow us to offer an optional industrial placement with a wide range of national and international organisations in the metals field.

Course overview

- Focus your studies on the physical and chemical properties of metallic elements, compounds and alloys.
- A six-month project, which can be carried out as an industrial placement, will give you experience of working at the cutting-edge of metals research.

UCAS code	MEng	4y	F200	
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Career opportunities

Material Science graduates from The University of Manchester :



Salaries



Further study options

PhD – 45%
MSc – 32%

PhD Materials



Most popular qualifications

Most popular course title

Most popular institution

What our graduates do:

Materials Scientist

Materials Engineer

Research and Development

Where our graduates work:

Rolls Royce

Jaguar Land Rover

BP

3M

Airbus

Smith and Nephew

DePuy

Source: HESA, Destinations of Leavers from Higher Education (DLHE)





Women in engineering

In 2017, the Department of Materials was awarded the Athena SWAN Silver award recognising the enormous contribution and commitment of our staff - academic and non-academic, male and female - across the Department, to equality, diversity and inclusion.

Read about our Women of Wonder:

www.se.manchester.ac.uk/people/women-of-wonder

Watch the stories of some of the women in our Faculty:

www.mub.eps.manchester.ac.uk/science-engineering/2017/03/06/women-of-wonder



Sarah Cartmell

Professor of Bioengineering

Sarah is Deputy Head of the Department of Materials. Her research focuses on creating a paradigm shift in healthcare treatments. It involves growing bone, cartilage, tendon and ligament tissue in the laboratory with a view to potentially implanting these tissues into a patient. This means that a patient could receive a newly grown hip joint that will last the rest of the patient's life, rather than needing a metal hip joint prosthesis, which fails after a few years and will need to be replaced.

Make your mark with Stellify

// I wanted to try something completely new. Transforming unused and overgrown land into areas where fruit and vegetables can be grown gave my volunteering an environmental focus.

Volunteering is a different experience from study. For me, as a chemical engineering student, it's enabled me to think outside my discipline, which by its nature is very technical.

Here at Manchester, volunteering is embedded in the very heart of the University's culture – there are so many opportunities to try something new, which in turn can have such a positive impact on our communities.

//
Alessia Xu
MEng Chemical Engineering
with Industrial Experience

Read Alessia's story at:
www.manchester.ac.uk/make-your-mark

At Manchester you'll find a whole host of transformational academic and extracurricular activities to help you stand out and make your mark on the world. You could even prove your abilities to potential employers by gaining a prestigious award.

We call this process **Stellify**: to change, or be changed, into a star.

Stellify offers you opportunities to develop and grow at a university leading the way in social responsibility. Here's how.



Learn without boundaries

Enjoy interdisciplinary, international and entrepreneurial study options outside your course.



Understand the issues that matter

Become ethically, socially and politically informed on some of humanity's most pressing global issues.



Make a difference

Contribute to and learn from local and global communities through volunteering.



Step up and lead

Gain confidence and experience by assisting and inspiring your peers.



Create your future

Explore countless opportunities for professional career development.

STELLIFY

www.manchester.ac.uk/stellify

Manchester engineering campus development

A world-leading campus for teaching, learning and research, providing a brand new home for the next generation of engineers and material scientists.

It's a playground for engineers! It's got facilities and spaces - some social, some very technical - to let you work with other people to do some really amazing things.

Its workshops and lab spaces will become amplified centres of creativity, innovation and identity, allowing students to solve problems collaboratively to reflect the way industry works.

Learning will not be confined to the classroom - it will deliver a variety of adaptable and innovative learning spaces, recognising that there is no one right teaching and learning style.

Engineering is about creativity and the first thing you will see when you come into the building is students 'making' and 'doing'.

Our new campus reflects our pride in Manchester's rich academic and civic heritage, while showcasing our ongoing evolution of education and research.



Student experiences

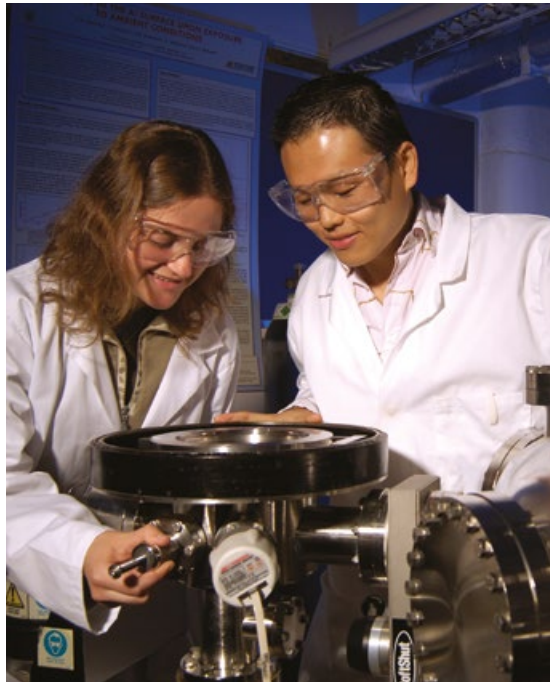
The Materials Society (MATSOC), run by our students, is the hub of our flourishing social and sporting activities. The society organises many events throughout the year, including the annual ball, sporting events and days out to places of interest. Your future is important to us and the employability of our graduates drives much of what we do. Our annual 'Made in Manchester' event, aimed at promoting graduate opportunities in the field of Materials Science and Engineering, is very popular with our students, and there are many other events held throughout the year in collaboration with the University's award-winning Careers Service, including CV workshops, careers advice and recruitment fairs. The Manchester Leadership Programme enables you to explore current leadership issues with experts from a wide variety of fields and spend time volunteering in the community to enhance your employability.

You can find us on

 MATSOCMCR

Scholarships

Our generous scholarships scheme provides automatic awards of up to £5k for students achieving a high level of performance at A-level or equivalent. This is in addition to the Manchester Bursary scheme and other university awards for excellent students.



“ Looking back at my four years here, I wouldn't want to do any other degree and definitely not anywhere else in the country. ”

Margaret Wegrzyn
MEng Materials Science and Engineering


“ Our graduates stand out in the job market because of the multidisciplinary nature of their knowledge and the reputation of The University of Manchester. ”

Julie Gough
Professor of Biomaterials and Tissue Engineering

The University of Manchester

Department of Materials
Student Recruitment and Admissions
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 [@UoMMaterials](https://twitter.com/UoMMaterials)

 www.mub.eps.manchester.ac.uk/uommaterialsblog

This brochure was printed in 2019 for the purposes of the 2020 intake. It has therefore been printed in advance of course starting dates and for this reason, course information may be amended prior to you applying for a place. There are a number of reasons why changes to course information and/or published term dates may need to be made prior to you applying for a place – more details can be found on our website. Prospective students are therefore reminded that they are responsible for ensuring, prior to applying to study, that they review up-to-date course information by searching for the relevant course at:

www.manchester.ac.uk/undergraduate/courses

Further information describing the teaching, examination, assessment and other educational services offered by The University of Manchester is available at:

www.manchester.ac.uk/undergraduate

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