



## Undergraduate degree course/programme Biomedical Materials Science BMedSc BJ95

**Typical Offer:** ABB (**More detailed entry requirements and the international qualifications accepted can be found in the course details (<http://www.birmingham.ac.uk/undergraduate/courses/med/biomedical-materials-sci.aspx?OpenSection=EntryRequirements>)**)

*"As long as humans cannot replace lost tissue like a salamander, the development of biomaterials and biomaterials based tissue engineering scaffolds will be crucial for the wellbeing of an ageing population. Characterisation and development of novel biomaterials is what the Biomedical Materials Science course is about."*  
Dr Mike Hofmann, Biomaterials Researcher

Artificial hip and knee joints, replacement blood vessels and heart valves, artificial teeth and fillings, contact lenses and modern drug delivery systems are just a few of the growing number of applications of biomedical materials.

This degree offers you the opportunity to gain a comprehensive background in the medical science and engineering of materials for repairing or replacing damaged, diseased or missing tissues in the human body. You can make a genuine contribution to improving medical and dental care.

**Study here and find out why the University of Birmingham was awarded The Times and The Sunday Times University of the Year 2013-14 (<http://www.birmingham.ac.uk/news/latest/2013/09/20-sep-Birmingham-announced-as-University-of-the-Year.aspx>)**

### Course fact file

**UCAS code:** BJ95

**Duration:** 3 years

**Places Available:** 21

**Applications in 2012:** 155

**Typical Offer:** ABB (**More detailed entry requirements and the international qualifications accepted can be found in the course details ([?OpenSection=EntryRequirements](http://www.birmingham.ac.uk/undergraduate/courses/med/biomedical-materials-sci.aspx?OpenSection=EntryRequirements))**)

**Start date:** September

### Contact

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**Secretary:** Carole Liston +44 (0) 121 466 554

### Links

**[Download the latest Biomedical Materials Science BMedSc brochure \(/Documents/college-mds/course-flyers/Biomedical-Materials-Science-Programme-Brochure.pdf\)](#)**

**[Follow us on Twitter \(http://twitter.com/unibirm\\_MDS\)](http://twitter.com/unibirm_MDS)**

**[Contact us on Facebook \(http://facebook.com/collegemds\)](http://facebook.com/collegemds)**

### Details

Also referred to as 'The Biomaterials Course', the programme is multidisciplinary and taught in several departments, including Dentistry, Medicine, and Metallurgy and Materials. It is administered by the Biomaterials Unit within the School of Dentistry which links clinical work with both clinical and scientific research. Most of the state of the art laboratories used have been recently refurbished.

### First year

You will study the structure and properties of materials – including polymers, ceramics and metals – anatomy, physiology, introduction to cell and molecular biology and bacteriology, alongside biomechanics and a general introduction to the development and clinical use of biomaterials. The first year also includes a study skills course providing you with a basic working knowledge of the use of search engines, IT and statistics. Wherever possible, lecture material is reinforced with practical classes. After the examination period in the summer you will visit local hospitals where you will observe, for example, a hip or knee replacement operation being performed.

## Second year

In this year you focus on the reactions of the body to biomaterials, how these materials are designed and made into components to be used in medical treatments, and the factors that affect performance of materials in service. Modules include cell and molecular biology, orthopaedic and dental biomaterials, microscopy, infection and immunology and materials design. Practical sessions will give you further experience of handling and testing biomaterials.

## Third year

Your final year gives you the opportunity to undertake an original piece of laboratory research as part of your two-semester project, learn more about tissue engineering and biomaterial design, develop your clinical background and deepen your scientific knowledge. You will ultimately present your research project as a dissertation accompanied by a poster, both of which draw on your scientific writing and presentation skills acquired in the first and second year. Your work may ultimately be published in a scientific journal.

## Why study this course

**Hospital location:** You will be based in the [new Birmingham Dental Hospital and School of Dentistry \(/university/building/dental.aspx\)](http://www.birmingham.ac.uk/university/building/dental.aspx) meaning the direct input by clinicians into the course content ensures the clinical relevance of our learning outcomes.

**Equal emphasis on materials and biological sciences:** Taught across several departments including dentistry, medicine and metallurgy and materials, this multidisciplinary course is one of the few remaining courses in the UK that covers both materials and biological science equally, meaning you will develop a broad knowledge base in both areas. This will allow you to choose from a wider variety of career options in the field of biomaterials once you graduate.

**Orthopaedic Biomaterials teaching:** As an area of medicine relevant to an increasingly aging population, orthopaedic biomaterials is an important focus of your study at Birmingham. From hip replacements to pacemakers, you will learn about how artificial materials are enabling us to live healthier lives for longer through a growing number of biomaterial applications.

**Small year groups:** You will enjoy the close-knit community atmosphere created by our small year group who, as a result, quickly settle into University life, easily make friends with their course mates and build strong working relationships with teaching and support staff.

**Final year research project opportunities:** In the third year of the course you will undertake a research project of your choice. This will take place in our active research laboratories working alongside postgraduate PhD students and staff.

## Modules

### Year 1

- Introduction to Biomaterials
- Biological Sciences I
- Biological Sciences II
- Principles of Biomechanics
- Properties and Application of Biomaterials
- Anatomy for Biomaterials
- Fundamentals of Materials
- Polymers, Composites and Ceramics

### Year 2

- Molecular Biology
- Dental Biomaterials I
- Dental Biomaterials II
- Orthopaedic Biomaterials I
- Orthopaedic Biomaterials II
- Materials Engineering Design
- Microscopy and Analysis of Biomaterials
- Immunology and Infection

### Year 3

- Design for Manufacture
- Advanced Biomaterials
- Laboratory Assessment of Biomaterials
- Biomaterial Applications
- Interactions of Biomaterials with the Body
- Emerging Technologies
- Research Project

This is the module list for 2012, but the programme continues to evolve and you should check the website regularly for any changes for next year.

## Fees and funding

**Standard fees** (<http://www.birmingham.ac.uk/students/ug/courses/fees/standard>) apply

Learn more about **fees and funding** (<http://www.birmingham.ac.uk/students/ug/feesandfinance/loans.aspx>)

### Scholarships

Learn more about our **scholarships and awards** (<http://www.birmingham.ac.uk/students/ug/feesandfinance/funding/index.aspx>)

## Entry requirements

**Number of A levels required:** 3

**Typical offer:** ABB

**Required subjects and grades:** two sciences at A level (including Biology and/or Chemistry); GCSE Mathematics at grade C or equivalent

**General Studies:** not accepted, but a good performance may be taken into account if you fail to meet the conditions of the offer

**Additional information:**

Students will be required to complete a successful Disclosure and Barring Service (DBS) check before admission to the programme

Other qualifications are considered – Please contact Admissions Tutors or Admissions for further information.

**International students:**

International Baccalaureate Diploma: 34 points to include Chemistry and Biology at HL.

Standard English language requirements apply

Learn more about **international entry requirements** (<http://www.birmingham.ac.uk/students/ug/requirements/international>).

Depending on your chosen course of study, you may also be interested in the Birmingham Foundation Academy, a specially structured programme for international students whose qualifications are not accepted for direct entry to UK universities. Further details can be found on the **foundation academy web pages** (<http://www.birmingham.ac.uk/students/foundation-academy/Pathways/index.aspx>).

## How to apply

Apply through UCAS at [www.ucas.com](http://www.ucas.com) (<http://www.ucas.com/>)

Learn more about **applying** (<http://www.birmingham.ac.uk/students/ug/courses/apply>)

## Key Information Set (KIS)

Key Information Sets (KIS) are comparable sets of information about full- or part-time undergraduate courses and are designed to meet the information needs of prospective students.

All KIS information has been published on the Unistats website and can also be accessed via the small advert, or 'widget', below. On the **Unistats website** (<http://unistats.direct.gov.uk>) you are able to compare all the KIS data for each course with data for other courses.

The development of Key Information Sets (KIS) formed part of HEFCE's work to enhance the information that is available about higher education. They give you access to reliable and comparable information in order to help you make informed decisions about what and where to study.

The KIS contains information which prospective students have identified as useful, such as student satisfaction, graduate outcomes, learning and teaching activities, assessment methods, tuition fees and student finance, accommodation and professional accreditation.

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## Learning and teaching

As a Birmingham student you are part of an academic elite and will learn from world-leading experts. At Birmingham we advocate an enquiry based learning approach, from the outset you will be encouraged to become an independent and self-motivated learner, qualities that are highly sought after by employers. We want you to be challenged and will encourage you to think for yourself.

Your learning will take place in a range of different settings, from scheduled teaching in lectures and small group tutorials, to self-study and peer group learning (for example preparing and delivering presentations with your classmates).

To begin with you may find this way of working challenging, but rest assured that we'll enable you to make this transition. You will have access to a comprehensive support system that will assist and encourage you, including personal tutors and welfare tutors who can help with both academic and welfare issues, and a **formal transition review** (<https://intranet.birmingham.ac.uk/student/transitionreview/index.aspx>) during your first year to check on your progress and offer you help for any particular areas where you need support.

Our Academic Skills Centre also offers you support with your learning. The centre is a place where you can develop your mathematical, academic writing and general academic skills. It is the centre's aim to help you to become a more effective and independent learner through the use of a range of high-quality and appropriate learning support services. These range from drop-in sessions with support with mathematics and statistics based problems provided by experienced mathematicians, to workshops on a range of topics including note taking, reading, writing and presentation skills.

This programme enjoys access to excellent facilities, including a dedicated computer cluster within the Biomaterials Unit and a range of state-of-the-art research equipment and instrumentation. Teaching strategies include a combination of lectures, small group teaching and laboratory sessions. Throughout your programme you will gain considerable experience in oral presentation but emphasis is also placed on acquiring skills in scientific writing. Study support material is available online.

## Our facilities

The College of Medical and Dental Sciences houses state-of-the art facilities to support a range of teaching, learning and research activity.

Our facilities ensure that students receive the best possible learning experience by working in a modern environment. Among our most recent developments include a refurbishment of the Medical School foyer, Barnes library and Wolfson Centre for Medical Education.

Explore our facilities and take a tour by moving around our 360-degree panoramas:

ERROR:

Adobe Flashplayer 10.1 (or higher) or a  
HTML5 Browser with CSS 3D Transforms or WebGL support are required!

## Assessment methods

Studying at degree-level is likely to be very different from your previous experience of learning and teaching. You will be expected to think, discuss and engage critically with the subject and find things out for yourself. We will enable you to make this [transition \(https://intranet.birmingham.ac.uk/student/transitionreview/index.aspx\)](https://intranet.birmingham.ac.uk/student/transitionreview/index.aspx) to a new style of learning, and the way that you are assessed during your studies will help you develop the essential skills you need to make a success of your time at Birmingham.


You'll be assessed in a variety of ways, and these may be different with each module that you take. You will be assessed through coursework which may take the form of essays, group and individual presentations, laboratory-based work (depending on your chosen degree) and formal exams.

During your first year you will undergo a [formal 'transition' review \(https://intranet.birmingham.ac.uk/student/transitionreview/index.aspx\)](https://intranet.birmingham.ac.uk/student/transitionreview/index.aspx) to see how you are getting on and if there are particular areas where you need support. This is in addition to the personal tutor who is based in your school or department and can help with any academic issues you encounter.

At the beginning of each module, you'll be given information on how and when you'll be assessed for that particular programme of study. You'll receive feedback on each assessment within four weeks, so that you can learn from and build on what you have done. You'll be given feedback on any exams that you take; if you should fail an exam we will ensure that particularly detailed feedback is made available to enable you to learn for the future.

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## Employability

 There are many career options which you can explore upon graduation. The degree gives you an edge over many other degree course holders because of the wide range of modules, skill-sets which you acquire during the course."  
Michelle Ngiam, Biomedical Materials Science, 2005

To find out more about our graduate employability, view our [Career Profiles \(/university/colleges/mds/alumni/our-alumni/undergrad-profiles.aspx\)](/university/colleges/mds/alumni/our-alumni/undergrad-profiles.aspx).

Preparation for your career should be one of the first things you think about as you start university. Whether you have a clear idea of where your future aspirations lie or want to consider the broad range of opportunities available once you have a Birmingham degree, our [Careers Network \(/undergraduate/careers/careers-network.aspx\)](/undergraduate/careers/careers-network.aspx) can help you achieve your goal.

Our Biomedical Materials Science graduates have little problem in securing employment or further training. Many go on to do medical and biological research, while others have followed a variety of career options in health care and related areas, such as blood perfusion, optometry, audiology and work in medical device regulatory authorities. Some graduates continue their studies in pursuit of degrees in Medicine or Dentistry. A significant proportion have also entered traditional graduate career areas such as finance, publishing, accounting and IT.

Have a look at our [alumni profile page \(/university/colleges/mds/alumni/our-alumni/undergrad-profiles.aspx\)](/university/colleges/mds/alumni/our-alumni/undergrad-profiles.aspx) to see what some of our students have gone on to do after completing their programme.

Your Birmingham degree is evidence of your ability to succeed in a demanding academic environment. Employers target Birmingham students for their drive, diversity, communication and problem-solving skills, their team-working abilities and cultural awareness, and our graduate employment statistics have continued to climb at a rate well above national trends. If you make the most of the wide range of services you will be able to develop your career from the moment you arrive.

Our unique careers guidance service is tailored to your academic subject area, offering a specialised team (in each of the five academic colleges) who can give you expert advice. Our team source exclusive [work experience opportunities \(/undergraduate/careers/work-experience.aspx\)](/undergraduate/careers/work-experience.aspx) to help you stand out amongst the competition, with [mentoring \(/generic/internships/mentoring/index.aspx\)](/generic/internships/mentoring/index.aspx), global [internships \(/generic/internships/index.aspx\)](/generic/internships/index.aspx) and placements available to you. Once you have a career in your sights, one-to-one support with CV's and job applications will help give you the edge. In addition, our employer-endorsed award-winning [Personal Skills Award \(PSA\) \(/undergraduate/careers/psa.aspx\)](/undergraduate/careers/psa.aspx) recognises your extra-curricular activities, and provides an accredited employability programme designed to improve your career prospects.

We also offer voluntary work which complements your studies by helping you gain practical experiences in occupational settings while contributing back to society. This

can bring new skills that will be useful throughout your future and can make a positive impact on your learning whilst at university. Volunteering enables you to develop skills such as communication, interpersonal skills, teamwork, self-confidence and self-discipline all of which can be transferred into your studies.

Find out more about [Careers Network \(http://www.as.bham.ac.uk/careers\)](http://www.as.bham.ac.uk/careers).

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<b>85%</b> Students in work / study six months after finishing	To see more details and compare with other courses
BMedSc (Hons) Biomedical Materials Science Full time	Visit <b>UNISTATS</b> ▶ Official data collected by HEFCE

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