Biomedical and Biomolecular Sciences

TEF Gold Teaching Excellence Framework

UNDERGRADUATE | 2019 ENTRY
Why choose Newcastle University?

We offer an outstanding student experience and world-class education for life. We aim to engage, challenge, support and inspire you to fulfil your potential during your time at University.

95% of our 2016 UK and EU graduates progressed to employment or further study within six months of graduating. Destinations of Leavers from Higher Education survey 2015–16

JOIN 24,000 STUDENTS FROM 138 COUNTRIES

GLOBAL TOP 200 UNIVERSITY

175th in the Times Higher Education World University Rankings 2017–18 and joint 161st in the QS World University Rankings 2018
IN THE UK FOR STUDENT EXPERIENCE

Times Higher Education Student Experience Survey 2018

LIVE IN ONE OF THE
UK’S FAVOURITE STUDENT CITIES

2nd in the UK for city life,
Whatuni Student Choice Awards 2018

GOLD AWARD
FOR TEACHING EXCELLENCE
IN THE TEACHING EXCELLENCE FRAMEWORK (TEF)
## Biomedical and Biomolecular Sciences

<table>
<thead>
<tr>
<th>Degree</th>
<th>UCAS</th>
<th>Entrance requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biochemistry BSc Honours</td>
<td>C700</td>
<td>A Level: AAA-AAB</td>
</tr>
<tr>
<td>Biochemistry Integrated Master’s MSci Honours</td>
<td>C701</td>
<td>Including Biology or Chemistry, plus at least one from: Mathematics or Further Mathematics; Physics; Psychology; Biology; or Chemistry, General Studies, Use of Mathematics, World Development, Communication and Culture and Critical Thinking not accepted. GCSE Chemistry and Biology (minimum grade A or 7) and GCSE Mathematics and English Language (minimum grade B or 6) required if not offered at A or AS Level. GCSE Combined Science (minimum grade A or 7) may be accepted.</td>
</tr>
<tr>
<td>Biomedical Genetics BSc Honours</td>
<td>B901</td>
<td></td>
</tr>
<tr>
<td>Biomedical Genetics Integrated Master’s MSci Honours</td>
<td>B903</td>
<td></td>
</tr>
<tr>
<td>Biomedical Sciences BSc Honours</td>
<td>B940</td>
<td></td>
</tr>
<tr>
<td>Biomedical Sciences Integrated Master’s MSci Honours</td>
<td>B900</td>
<td></td>
</tr>
<tr>
<td>Medical Science (Deferred Choice) BSc Honours</td>
<td>B902</td>
<td></td>
</tr>
<tr>
<td>Pharmacology BSc Honours</td>
<td>B210</td>
<td></td>
</tr>
<tr>
<td>Physiological Sciences BSc Honours</td>
<td>B100</td>
<td></td>
</tr>
</tbody>
</table>

Please check the full range of entrance requirements at: [www.ncl.ac.uk/undergraduate/degrees](http://www.ncl.ac.uk/undergraduate/degrees)

International Foundation Programmes: if you are an international student and do not meet the academic and English language requirements, see [www.ncl.ac.uk/ipc/courses](http://www.ncl.ac.uk/ipc/courses)

YOU MAY ALSO BE INTERESTED IN: Biology and Zoology; Chemistry; Dentistry; Medicine; Nutrition and Food; Pharmacy; Psychology

---

### Your Future Career

Industries employing bioscientists for research and development include: health services; hospital and public health laboratories; pharmaceuticals; biotechnology; chemical; cosmetics and toiletries; food and drink; medical, veterinary and agricultural research in universities and research institutes.

Many of our graduates take an MSc or PhD before embarking on permanent employment. Some use their degree as a route for graduate entry into medicine, dentistry and teaching, while others use their scientific knowledge to advise on patenting or scientific journalism.

Our 2016 Biomedical and Biomolecular Sciences BSc and MSci Honours graduates are working in roles such as: clinical specialist; laboratory analyst; research technician; clinical data associate; trainee clinical scientist; and international business development consultant.

(Destinations of Leavers from Higher Education survey 2015–16, based on responses of UK, EU and international undergraduate Biomedical and Biomolecular Sciences BSc and MSci Honours leavers, within six months of graduating)
Why Study With Us?

Newcastle is a designated National Centre of Excellence in biomedical research, giving you the chance to study the very latest ideas in human health and disease.

League table ranking:

▶ 1st in the UK for student satisfaction for Biochemistry (100% overall satisfaction score) – National Student Survey 2017
▶ top 10 in the UK for Biomedical Sciences – The Times/Sunday Times Good University Guide 2018 (Subjects Allied to Medicine category)
▶ top 20 in the UK for student satisfaction (93% overall satisfaction score) – National Student Survey 2017 (Subjects Allied to Medicine category)
▶ top 125 – Clinical, Pre-clinical and Health category – Times Higher Education World University Rankings by Subject 2018

As a National Centre of Excellence, our biomedical research fields include: ageing; cell and molecular biosciences; cellular medicine; health and society; genetic medicine; cancer research; neurosciences; stem cells; and regenerative medicine.

✓ Professional accreditation*: all of our BSc courses (excluding Medical Science (Deferred Choice)) are accredited by the Royal Society of Biology (RSB). Our Biochemistry, Biomedical Genetics and Biomedical Sciences Integrated Masters’ degrees have advanced accreditation by the Royal Society of Biology (RSB). Accreditation by RSB recognises academic excellence in the biosciences that educates the research and development leaders and innovators of the future.

*All professional accreditations are reviewed regularly by their professional body. Check online for the most up-to-date information by course: www.ncl.ac.uk/undergraduate/degrees

Boost your CV with a work placement: apply to spend nine to 12 months on an optional professional placement or work placement (subject to availability). www.ncl.ac.uk/undergraduate/careers/skills

Study abroad: you can gain an international perspective on your subject by taking part in a study abroad exchange, either in Europe through Erasmus+, or in Singapore, North America or Australia via our non-EU exchange scheme. www.ncl.ac.uk/mobility/go-abroad

Flexible study: we’ve designed our degrees so that all of our students, regardless of which degree they apply for, study the same core modules at the start of their degree. This gives you time to explore the subject areas and see where your interests lie before you specialise in the later Stages of your course. This means you are able to transfer to a different degree within the biomedical and biomolecular sciences programmes at the end of Year 1 if you find your interests change during this time.

Transfer to Medicine or Dentistry: any student registered on a biomedical or biomolecular sciences degree at Newcastle can apply to transfer to the first year of our Medicine and Surgery (A100) or Dental Surgery (A206) degrees at the end of their first year. Both schemes are:

▶ competitive, with a limited number of places available
▶ open to UK, EU and international students

Students will be selected on the basis of academic performance in the first year, a UKCAT score, a personal statement and, if shortlisted, an interview. Full details of the transfer process are available at www.ncl.ac.uk/sme/study/undergraduate/admissions/biomed-transfer

There is also a graduate entry route into Medicine available at Newcastle University.

Make a direct contribution to world-leading research: through opportunities with our research institutes. We encourage you to spend at least four weeks of your summer vacation after your second year on work experience. Opportunities include:

▶ vacation studentships/placements in one of the University’s research laboratories
▶ paid part-time laboratory assistant scheme for second-year students (available on a competitive basis)

Learn from international experts: as well as conducting world-leading research, our staff provide students with the highest level of research-informed teaching. This means you’ll graduate with cutting-edge knowledge in human health and disease.

Learn in specialist teaching and research facilities: including four specialist practical laboratories, an extensive medical sciences library and dedicated computer clusters.
What You Will Study

Our degrees are divided into two Phases and you can transfer between any of our degrees at the end of Year 1 if you wish.

Phase 1 (all of your first year, and the first half of your second year): This Phase introduces you to biomolecular sciences through modules covering: cell biology; biochemistry; microbiology and immunology; genetics; pharmacology; physiology; practical skills in biomedical and biomolecular sciences; and a foundation in cell and molecular medicine.

Phase 2 (the second half of your second year and the remainder of your degree): This Phase is specific to the individual degree that you choose.

For BSc students, the degree culminates in a final-year research semester where you undertake an individual research project in an area linked to your degree that interests you. This may be:

- a laboratory project in one of our internationally rated research institutes, or in a research laboratory abroad
- a clinical study under the supervision of one of the medically qualified staff working within the Faculty
- a project with a local school or college
- an IT-based project

We also have a tailor-made range of optional modules for you to enhance your employability skills further in the final year of the programme. All students can select one from the following modules:

- business for the bioscientist
- healthcare organisation and practice
- science communication
- research in your chosen degree specialism
- bioethics
- bioinformatics

Integrated Masters’ (MSci) degrees: Our Integrated Masters’ (MSci) degrees are designed to give students who are interested in a career in research more in-depth training and experience within the laboratory environment. All of these degrees extend your programme to four years. You will undertake an extended individual research project which begins in the final semester of Year 3 and continues throughout your final (fourth) year.

All of our degrees emphasise the development of core practical skills which are in demand by employers. Practical sessions provide you with hands-on experience of key experimental techniques, ensuring that you graduate with the scientific, problem-solving and critical skills valued in many graduate careers. We also place particular significance on introducing you to the most recent and important advances in the fields of our research-active teaching staff.

Go to www.ncl.ac.uk/biomed/study and click on any of our degrees to find out more about what you will study, including the modules for each Stage.

Biochemistry

BSc Honours | C700 | 3 years | 🌟🌟🌟
Integrated Master’s
MSci Honours | C701 | 4 years | 🌟🌟🌟

Biochemistry is the study of life at the molecular level – how genes and proteins regulate cells, tissues and ultimately whole organisms like you. You study a wide range of organisms from bacteria right up to humans. You’ll learn about the molecular basis of the structure and processes of life. Biochemistry is at the core of many areas of biology and is responsible for a large number of scientific breakthroughs in medicine and biotechnology.

You explore recent advances in the field of biochemistry through topics such as: DNA replication, recombination and repair; gene expression; chronic disease; cancer; and the importance of the application of biochemistry in real-world problems such as biofuels, nano-circuitry and bio-sensing.

In the final year of study, Biochemistry students complete novel research projects. Previous titles include: DNA repair and PI3K inhibitors in cancer therapy; and characterising a novel regulator of macronutrient digestion as a potential obesity treatment.
Biomedical Genetics

BSc Honours | B901 | 3 years
Integrated Master’s
MSci Honours | B903 | 4 years

Genetics is the study of how DNA is transmitted between generations and decoded to determine our individual characteristics. The University’s Institute of Genetic Medicine plays a major role in this degree, which covers: how hereditary material is passed on from one generation to the next; how genes are controlled and how they, in turn, control development; and how mutations can lead to a wide range of diseases.

Biomedical genetics examines themes such as: gene expression; evolution; cytogenetics; bioinformatics; human molecular genetics; genetic control of the cell cycle and development; and cancer biology.

Some examples of the final-year research projects completed by Biomedical Genetics students include: defining the molecular genetic basis of human mitochondrial disease; and screening for genes that cause the heart defects in Turner syndrome.

Biomedical Sciences

BSc Honours | B940 | 3 years
Integrated Master’s
MSci Honours | B900 | 4 years

Modern medicine depends on the advances made by scientists working in the biomedical sciences. These degrees combine key core subjects such as anatomy, biochemistry, genetics, immunology, microbiology, neuroscience, pharmacology and physiology.

You learn about: human anatomy; the nervous system and respiratory diseases; and clinical immunology and viral pathogens. You will be able to choose modules offered by our research institutes, including: chronic and nutrition-related disease; the genetics of common diseases; cancer biology and therapy; diseases of the human nervous system; the biology of ageing; the immunology of health and disease; and medical biotechnology. This multidisciplinary approach helps our understanding of diseases such as cancer, Alzheimer’s disease and AIDS for example, which is essential for the development of new and improved treatments, as well as for preventative approaches.

There are a wide range of topics available for you to explore during your third-year research project. Biomedical Sciences students have investigated areas such as: analysis of the cellular infiltrate of graft-versus-host disease; targeting DNA repair as a therapeutic strategy in acute myeloid leukaemia; and modelling liver disease using precision-cut slices.

‘The teaching quality on my course is exceptional. We’re taught by relevant and recognised people in specific fields, so we learn about ongoing and ground-breaking research. All of the material we study covers areas at the forefront of research.’

Nikita, Biomedical Genetics BSc Honours
Medical Science (Deferred Choice)
BSc Honours | B902 | 3 years

We encourage you to apply for this degree if you want to study biomedical and biomolecular sciences at Newcastle but are not yet sure which area you want to specialise in.

The first year is the same for all of our Biomedical and Biomolecular Sciences students. Choosing our Deferred Choice degree lets you delay your choice of specialism until the end of this shared year.

At this point you choose which degree you wish to study for your remaining two years for our BSc degrees, or three years if you choose one of our Integrated Masters’ degrees.

Pharmacology
BSc Honours | B210 | 3 years

Pharmacology explores how biologically active components (drugs) act on the body and how the body, in turn, can act on drugs. It is thanks to the knowledge that a pharmacologist provides that you can take an aspirin when you get a headache or have an anaesthetic when the dentist gives you a filling.

Pharmacology at Newcastle focuses mainly on the way drugs exert their therapeutic effect in humans by modifying disease processes. We introduce you to the drugs that affect major systems of the body, including the central nervous, cardiovascular, respiratory and endocrine systems. You will also develop an understanding of drug disposition and metabolism to expand your knowledge of both the therapeutic effect and mechanism of toxicity of drugs.

Specialist modules in your third year concentrate on the most recent advances in pharmacology and include topics such as: clinical pharmacology and drug development; carcinogenesis and anti-cancer drugs; pharmacogenetics; neuropharmacology; toxicology; and pharmacological techniques.

Novel research projects undertaken by Pharmacology students have included: drug screening using hepatocytes derived from pancreatic tissue; hepatic toxicity following self-administered constituents of e-cigarettes in rats; and immune-related genotypes and risk of drug-induced liver injury.

Physiological Sciences
BSc Honours | B100 | 3 years

Physiology is the study of the organ systems of the human body and how they control and maintain body function in both normal (health) and pathophysiological (disease) states.

The Physiological Sciences degree provides a thorough understanding of how the human body functions in health and disease, from individual molecules and cells right up to the whole organism. Physiology underpins many of the biomedical, clinical and healthcare sciences.

The degree focuses on organs such as the heart, lungs, kidneys, brain and gastrointestinal tract to provide a broad and integrated understanding of human body function. Topics covered include neuroscience, cardiovascular, respiratory, renal, reproductive, developmental and gastrointestinal physiology.

In your final year, you will undertake a novel research project in one of our world-leading medical faculty research institutes, on topics such as: cardiovascular, respiratory, renal and gastrointestinal physiology; neuroscience; obesity; diabetes; cancer; and ageing.

‘There are lots of contact hours with the teaching staff on our course which give us the chance to ask lots of questions to improve our understanding.’

Robin, Biomedical Genetics BSc Honours
An outstanding learning experience

We challenge, empower and work with you to help you reach your full potential. We ensure that you actively influence your own learning and we also provide opportunities for you to shape your educational experience through feedback. While teaching methods can vary depending on the subject that you’re studying, we’ve provided an overview below of what you can expect.

Teaching methods

Studying at university is different to school and we support you to make that transition and grow in confidence. Our teaching methods are designed to engage and challenge you, to help you develop into an informed and critical thinker. They can include:

► lectures: listen to an academic introduce a topic and share their expert knowledge; leave with great ideas for further study to follow up in your own time
► seminars: engage with a tutor and fellow students in lively discussions about lecture material and your personal research; challenge your preconceptions and develop ideas
► practical sessions: get hands-on experience using industry-standard equipment or techniques, to prepare you for your professional future; for example, laboratory work or artefact handling
► small group learning: tackle a challenging project with other students and deliver findings to your class; test and reinforce your understanding, and develop skills for the workplace
► self-study: immerse yourself in our fantastic self-study facilities and explore your own path through the subject, developing unique expertise according to your interests
► research: conduct original research into a topic you’re passionate about and build advanced knowledge that could open the door to your future career
► practical application of your studies: from observing and learning from professionals to industry-relevant visits

Assessment and feedback

We provide you with timely feedback in a variety of ways:

► written on your work
► in lectures, seminars, tutorials and practical sessions
► via our real-time online systems

Feedback may come from lecturers or from your student peers. We also support you to learn through reflection, by reviewing your work and the assessment criteria and by thinking about how you can improve in future assessments.

We also take your feedback seriously and build opportunities for both students and employers to shape our teaching, through student representation roles and employer panels.

90% OF STUDENTS AGREE OUR STAFF ARE GOOD AT EXPLAINING THINGS

National Student Survey 2017
Teaching excellence

We’ve been awarded the TEF Gold Award in recognition of our exceptional teaching and learning provision. Our students report outstanding levels of satisfaction with academic support and consistently high levels of satisfaction with teaching, assessment and feedback. We educate you for life and ensure an excellent educational experience.

Why is TEF Gold important?
Introduced by the government to recognise teaching excellence in UK higher education, we’re one of only eight research-intensive Russell Group universities to achieve Gold. This recognises that we deliver consistently outstanding teaching, learning and outcomes for our students.

Research-led teaching
Our degrees have been designed to ensure that you’re constantly challenged and empowered. Our commitment to research-led teaching means that you’ll learn from leading academics working on the latest discoveries at the forefront of research and scholarship.

Outstanding resources
We offer outstanding digital and physical resources to enhance your learning experience. From top-rated virtual learning to state-of-the-art buildings and teaching spaces, we invest in resources that support you.

Exceptional support
Our exceptional support services help you to achieve outstanding educational outcomes. A personal tutor and student peer mentor will help you settle into academic life, and inspire and care for you. If you need extra help developing the numeracy and writing skills you need to excel at Newcastle, we offer two study support services: Maths-Aid and the Writing Development Centre.

Collaborative and diverse learning community
Our inspirational academics work together with you to create engaging learning experiences. They’ll help make you feel part of our inclusive and international learning community as soon as you begin your studies with us. Our staff includes a number of National Teaching Fellows, recognised by the UK Higher Education Academy (HEA) for excellent practice and outstanding achievement in teaching and learning. Each year our students celebrate their teachers through the Students’ Union-run Teaching Excellence Awards.

Graduate skills
We encourage all of our students to be creative, innovative and entrepreneurial. Our Graduate Skills Framework ensures your degree equips you with the skills you need to succeed during and after University. Covering everything from intellectual skills to personal enterprise, you’ll develop essential attributes for the graduate job market, such as teamwork, problem solving, IT literacy and critical analysis. Most of our degrees offer the opportunity for you to build work experience into your studies and study abroad options provide opportunities to enhance your global outlook.
Contact us to find out more. We’re always happy to help.

Student Services
Newcastle University, King’s Gate
Newcastle upon Tyne NE1 7RU
United Kingdom
0191 208 3333 (+44 191 208 3333)
www.ncl.ac.uk/enquiries

Facebook /newcastleuniversity  Twitter @StudentsNCL
Instagram @newcastleuni  NewcastleUniOfficial

newcastleuni  search ‘Newcastle University’

This publication is intended as advance publicity for information and guidance purposes only. Details included are correct at the time of going to press in May 2018. The most up-to-date and detailed source of information at any time is our undergraduate website www.ncl.ac.uk/undergraduate

Full details of the University’s terms and conditions, including reference to all relevant policies, procedures, regulations and information provision, are available at www.ncl.ac.uk/pre-arrival/regulations

Photography credits: John Donoghue, Graeme Peacock, Alan Wallace.
Designed by GDA, Northumberland.
Printed by Statex, Newcastle upon Tyne.
© Newcastle University, 2018.
The University of Newcastle upon Tyne trading as Newcastle University.