

Programme Specification: Undergraduate

For students starting in Academic Year 2024/25

1. Course Summary

Names of programme and award title(s)	BSc (Hons) Pharmacology BSc (Hons) Pharmacology with International Year (see Annex for details) BSc (Hons) Pharmacology with Work Placement Year (see Annex for details)
Award type	Single Honours
Mode of study	Full-time
Framework of Higher Education Qualification (FHEQ) level of final award	Level 6
Normal length of the programme	3 years; 4 years with either an Applied Life Sciences Placement or International Year between years 2 and 3
Maximum period of registration	The normal length as specified above plus 3 years
Location of study	Keele Campus
Accreditation (if applicable)	n/a
Regulator	Office for Students (OfS)
Tuition Fees	<p>UK students:</p> <p>Fee for 2024/25 is £9,250*</p> <p>International students:</p> <p>Fee for 2024/25 is £20,700**</p> <p>The fee for the international year abroad is calculated at 15% of the standard year fee</p> <p>The fee for the industrial placement year is calculated at 20% of the standard year fee</p>

How this information might change: Please read the important information at <http://www.keele.ac.uk/student-agreement/>. This explains how and why we may need to make changes to the information provided in this document and to help you understand how we will communicate with you if this happens.

* These fees are regulated by Government. We reserve the right to increase fees in subsequent years of study in response to changes in government policy and/or changes to the law. If permitted by such change in policy or law, we may increase your fees by an inflationary amount or such other measure as required by government policy or the law. Please refer to the accompanying Student Terms & Conditions. Further information on fees can be found at <http://www.keele.ac.uk/studentfunding/tuitionfees/>

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2. What is a Single Honours programme?

The Single Honours programme described in this document allows you to focus more or less exclusively on this subject. In keeping with Keele's commitment to breadth in the curriculum, the programme also gives you the opportunity to take some modules in other disciplines and in modern foreign languages as part of a 360-credit Honours degree. Thus it enables you to gain, and be able to demonstrate, a distinctive range of graduate attributes.

3. Overview of the Programme

The Keele Pharmacology programme provides broad and varied coverage of modern biological sciences where you will

investigate some of the most exciting areas of current life sciences research, with a focus on molecular pharmacology and drug discovery. Building on a deeper understanding of biochemistry, physiology and molecular cell biology, you will explore the mode of action drugs used in the treatment of a wide range of conditions, including cardio-metabolic health and disorders of the central nervous system. You will also explore the concept of selective toxicity, for example in context to microbial infections and therapeutic approaches to cancer treatment, as well as drugs of abuse and poisons. The programme will also provide you with in-depth study into approaches to modern drug discovery in these areas and emerging technologies in drug development. You will evaluate important physical and chemical properties of drug molecules applied to their pharmacokinetic properties and mode of action through their interaction with receptors, cells and tissues, as well as relevant practical, analytical and computational approaches in their study. You will study the drug development pipeline from candidate selection through to clinical trials, including developing a greater awareness and application of various experimental approaches and ethical frameworks. The translation from pre-clinical models through to clinical adoption will also be explored, as well as relevant regulatory guidelines applied to the use of medicines. Wider societal impact of pharmacology will also be explored including medicines management and agricultural applications in areas such as pesticides, their mode of action and potential impact on human health.

As well as developing core knowledge in the subject, supported with a comprehensive laboratory programme, you will also develop a range of key transferable and employability skills related to the critical evaluation of scientific literature, effective communication in a variety of formats, and teamwork. Additional opportunities, such as the applied life sciences placement, semester or year abroad, and a range of optional modules give you greater flexibility to tailor the structure and content of your programme to your own interests and career goals.

Distinctive features of the course include:

- A contemporary curriculum, with a focus on the applications of biochemistry, physiology and molecular cell biology to pharmacology and modern drug discovery, which has been designed to meet requirements for Royal Society of Biology accreditation;
- Innovative and relevant assessments, designed to foster creativity and qualities of leadership and self-reflection including: group presentations (research posters, oral presentations, symposia), communicating to different audiences and contribution to case-based learning discussions;
- A core laboratory programme delivered in well-equipped modern laboratories and a wide range of final year research projects;
- The Undergraduate Student Research Conference, giving you the opportunity to present the outcomes of your final year research project in the context of a realistic research conference experience;
- The option to take an Applied Life Sciences Placement between level 5 and level 6;
- The option to include study abroad either as a semester abroad at level 5 or an International Year between level 5 and level 6;
- The opportunity to study a language alongside your programme.

4. Aims of the programme

The broad aims of the programme are to enable you to:

- Provide you with core knowledge, understanding and skills relevant to the study of Pharmacology and modern drug discovery;
- Produce skilled and motivated graduates who are suitably prepared for further employment within or outside of their field;
- Cultivate interest in the biosciences, with a particular emphasis on research and development in pharmacology, within a caring and intellectually stimulating environment;
- Promote the development of a range of employability skills, for use in all areas where numeracy and an objective, scientific approach to problem-solving are valued;
- Promote the development of independent research skills in the acquisition and analysis of scientific data and the critical evaluation of scientific literature, to show originality in the application of knowledge.

5. What you will learn

The intended learning outcomes of the programme (what students should know, understand and be able to do at the end of the programme), can be described under the following headings:

- Subject knowledge and understanding
- Subject specific skills
- Key or transferable skills (including employability skills)

Subject knowledge and understanding

Successful students will be able to:

- the chemistry that underlies biological processes and their study, including chemical and thermodynamic principles applied to biochemical catalysis, the function of enzymes and other proteins, and the physicochemical properties of drug molecules in context to pharmacokinetics and pharmacodynamics;
- core biological topics that underpin the study of pharmacology including: biochemistry, molecular biology, genetics, cell biology, physiology and anatomy, and their application to the development and pharmacology of acquired and inherited disease;
- the principles that determine the three-dimensional structure of biological macromolecules (nucleic acids, proteins and carbohydrates) and the application of this knowledge to rational drug design and ligand-target binding;
- the structure, function and organisation of a wide range of cell types (both prokaryotic and eukaryotic) and tissues, including subcellular organelles and transport processes;

- the signal transduction mechanisms of extra- and intra-cellular receptors in cell signalling pathways controlling cellular activities, with a focus on how these can be investigated experimentally and modified through relevant pharmacological approaches;
- mechanisms of drug action in relevant tissues and organ systems, including the central nervous system, as well as drug toxicity and selective toxicity in the treatment of microbial infections and cancer;
- experimental methods for the investigation of relevant areas of pharmacology, including *in vitro* and *in vivo* models applied in drug development and the quantitative analysis of drug-receptor interactions, with consideration of the scientific method, hypothesis-driven investigation and the critical nature of evidence and scientific debate;
- current developments in pharmacology and modern drug discovery, including areas of ethical or public concern and how advances in personalised medicine and different patient demographics inform the design of clinical trials and medicines management.

Subject specific skills

Successful students will be able to:

- evaluate scientific literature with a full and critical understanding, while addressing such questions as content, context, aims, objectives, quality of information, and its interpretation and application;
- attain competence in a range of laboratory techniques and employ a variety of methods (including *in vitro* studies and computational approaches related to use of bioinformatic and macromolecular databases) in investigating, acquiring, recording and analysing information relevant to pharmacology and drug design/action;
- design, conduct, analyse, report and evaluate biological experiments, acknowledging an awareness of the validity, accuracy, calibration, precision and reproducibility of results;
- work safely and responsibly in the laboratory with awareness of standard procedures such as risk assessment, COSHH and good laboratory practice (GLP);
- recognise philosophical and ethical issues relevant to the subject;
- apply scientific method, planning, and analytical skills to carry out a research project;
- apply pharmacological knowledge and understanding to familiar and unfamiliar problems.

Intellectual skills:

Successful students will be able to:

- assess the merits of contrasting theories, paradigms, concepts or principles and develop reasoned arguments;
- identify, analyse and solve problems by a variety of methods, either individually and/or cooperatively;
- make critical interpretations, evaluations and judgements of data;
- obtain, analyse and summarise several lines of subject-specific evidence to formulate and test hypotheses, with critical interpretation of quantitative and qualitative research findings;
- take responsibility for their own learning and reflect upon that learning;
- construct grammatically correct documents in an appropriate academic style using and referencing relevant ideas and evidence;
- understand the importance of academic and research integrity.

Key or transferable skills (including employability skills)

- develop and sustain effective approaches to learning and study, including time management, flexibility, creativity and intellectual integrity;
- acquire, analyse, synthesise, summarise and present information from a range of sources;
- prepare, process, interpret and present data, using appropriate qualitative and quantitative techniques, statistical programmes, spreadsheets and programs for presenting data visually;
- use the internet and other electronic sources effectively and critically as a means of communication and a source of information;
- cite and reference work in an appropriate manner, ensuring academic integrity;
- communicate effectively to a variety of audiences by written, spoken and graphical means using appropriate techniques and scientific language;
- develop skills necessary for self-managed and lifelong learning, including working independently, organisational, enterprise and knowledge transfer skills;
- work with others to identify and achieve collaborative goals and responsibilities and perform in a respectful manner that is accepting of the viewpoints and opinions of others;
- motivate themselves and sustain that motivation over an extended period of time.

The Keele Graduate Attributes

The Keele Graduate Attributes are the qualities (skills, values and mindsets) which you will have the opportunity to develop during your time at Keele through both the formal curriculum and also through co- and extra-curricular activities (e.g., work experience, and engagement with the wider University community such as acting as ambassadors, volunteering, peer mentoring, student representation, membership and leadership of clubs and societies). Our Graduate Attributes consist of four themes: **academic expertise, professional skills, personal effectiveness, and social and ethical awareness**. You will have opportunities to engage actively with the range of attributes throughout your time at Keele: through your academic studies, through self-assessing your own strengths, weaknesses, and development needs, and by setting personal development goals. You will have opportunities to discuss your progress in developing graduate attributes with, for example, Academic Mentors, to prepare for your future career and lives beyond Keele.

6. How is the programme taught?

Diversity, flexibility and inclusivity is at the heart of our Education Strategy. Your Student Voice helps us to shape what we do and we include students, local employers and professional bodies in our decision-making process.

These learning and teaching methods enable students to achieve the learning outcomes of the programme in a variety of ways. For example:

- **Digital material:** Traditional 'lectures' are often redesigned for online consumption, giving you more flexibility to decide how, when and where to study. This can include provision of short videos, directed reading, key learning outcomes and Forms that allow you to ask questions anonymously.
- **Campus-based tutorials and workshops:** Often designed to support and expand on the digital resources. Tutorials and workshops help promote social learning, develop a sense of community and give you an opportunity to deepen your understanding of core issues, ask questions, reflect on your own learning, and discuss content with other students and your tutors. Other workshops will also support data analysis and report writing, including IT literacy, as well as supporting you in developing skills in computational and bioinformatic analysis, including in context to drug-target binding.
- **Laboratory practicals:** A comprehensive laboratory programme covering a diverse range of modern biochemical, molecular and pharmacological techniques designed to train you in the skills needed for a career in pharmacology. The programme will also develop skills in experimental design through enquiry-based learning and will ensure you develop both independent and team-based skills.
- **Case-based learning (CBL) tutorials:** Students are expected to play a full part and, often, to lead these discussions. In particular, case-based learning (CBL) is a student-centred style, based on case studies that help you contextualise content taught across other modules. These sessions will also develop skills such as leadership, communication and evidence-based problem solving.
- **Live, online tutorials, workshops and drop-in sessions:** Often used to host plenary sessions. These plenary sessions are optional, added value and may cover topics common to all students such as: note taking and meeting your alumni at Level 4; IT and data analysis at Level 5 and writing retreats and careers support at Level 6.
- **Independent study:** Based on directed reading from text books, research papers and research reviews to support your learning of the core material and deepen your understanding of the subject.
- **Life Sciences Double Experimental Project:** (with research skills assessment) gives you the opportunity to undertake a piece of independent experimental research supervised and supported by a member of staff.

Apart from these formal activities, students are also provided with regular opportunities to talk through particular areas of difficulty, and any special learning needs they may have, with their Academic Mentors or module lecturers on a one-to-one basis.

7. Teaching Staff

University life is not just about the content of your degree. It is also an opportunity to network, to speak to people working in fields that excite you. Here in Life Sciences, you will meet a diverse range of staff that you can see by using the following link: <https://www.keele.ac.uk/lifesci/people/>.

We also invite speakers from the School of Chemical and Physical Sciences, School of Pharmacy and Bioengineering, School of Medicine and the NHS to enrich your learning.

Our staff include world-leading researchers, clinical practitioners and experts in learning and teaching. As part of their training, all staff complete post-graduate courses on learning and teaching. Some take this to Masters level and beyond, choosing to specialise in pedagogic research to ensure that our programmes are taught to the very highest standards. Members of the School of Life Sciences hold recognised or accredited teaching qualifications and the majority are Fellows or Associates of the Higher Education Academy (HEA), whilst a number are Senior Fellows of the HEA. Several Life Sciences' staff members have been awarded Keele's prestigious Excellence in Teaching and Learning awards and several were awarded a KeeleSU Education Award.

The University will attempt to minimise changes to our core teaching teams, however, delivery of the programme depends on having a sufficient number of staff with the relevant expertise to ensure that the programme is taught to the appropriate academic standard.

Staff turnover, for example where key members of staff leave, fall ill or go on research leave, may result in changes to the programme's content. The University will endeavour to ensure that any impact on students is limited if such changes occur.

8. What is the structure of the Programme?

The academic year runs from September to June and is divided into two semesters. The number of weeks of teaching will vary from programme to programme, but you can generally expect to attend scheduled teaching sessions between the end of September and mid-December, and from mid-January to the end of April. Our degree courses are organised into modules. Each module is usually a self-contained unit of study and each is usually assessed separately with the award of credits on the basis of 1 credit = 10 hours of student effort. An outline of the structure of the programme is provided in the tables below.

There are two types of module delivered as part of your programme. They are:

- Compulsory modules - a module that you are required to study on this course;
- Optional modules - these allow you some limited choice of what to study from a list of modules.

At Levels 5 and 6, optional modules include Global Challenge Pathways - a choice of modules from different subject areas that count towards the overall credit requirement but not the number of subject-related credits. Global Challenge Pathways can only be taken as one 15-credit module at Levels 5 and 6 (except for the TESOL pathway). **Information about Global**

Challenge Pathways can be found after the module lists for Level 6.

Language modules

Students on this programme will also be able to study language modules offered by the Language Centre, as part of a Global Challenge Pathway. You can enrol on either a Modern Language module [more information available at this [link](#)] (Semester 1 only) Teaching English to Speakers of Other Languages (TESOL) (Semesters 1 and 2) module (ENL-10053), or the Intercultural Explorer pathway (ENL-10057). See the Global Challenges Pathway information under the module lists for more details.

If you choose the Language Specialist pathway, you will automatically be enrolled on a Semester 2 Modern Language module as a continuation of your language of choice. Undertaking a Modern Languages module in Semester 2 is compulsory if you wish to continue to the Language Specialist Global Challenge Pathway the following academic year. (at Level 4, Language modules are faculty funded additional modules)

For further information on the content of modules currently offered, please visit:

<https://www.keele.ac.uk/recordsandexams/modulecatalogue/>

A summary of the credit requirements per year is as follows. At Level 4, all of our modules are compulsory to ensure that you are given a solid foundation to your degree programme regardless of your academic background to prepare you for Level 5 and 6.

At Level 5, 25% of the modules are optional. At Level 6, 50% of your modules are optional. This allows you to increasingly specialise in those areas of the programme that interest you most.

Year	Compulsory	Optional	
		Min	Max
Level 4	120	0	0
Level 5	90	30	30
Level 6	60	60	60

Module Lists

Level 4

Compulsory modules	Module Code	Credits	Period
Biochemistry	LSC-10064	30	Semester 1
Physiology and Anatomy	LSC-10074	30	Semester 1-2
Core Practical Skills	LSC-10087	0	Semester 1-2
Introduction to Pharmacology	LSC-10093	30	Semester 1-2
Molecular Cell Biology	LSC-10066	30	Semester 2

Level 4 Module Rules

LSC-10087 is a compulsory, zero-credit module. All lab-work across this Level of study will be coordinated through this module and assessed within other credit-bearing modules across the year where appropriate. This module also provides helpful academic support and development material that provide added value to enhance your overall student experience.

Level 5

Compulsory modules	Module Code	Credits	Period
Molecular Pharmacology I	LSC-20113	30	Semester 1
Practical Skills in Bioscience	LSC-20107	0	Semester 1-2
Research and Analytical Skills	LSC-20056	15	Semester 2
Neuropharmacology	LSC-20061	15	Semester 2
Cell Signalling	LSC-20085	15	Semester 2
Molecular Pharmacology II	LSC-20115	15	Semester 2

Optional modules	Module Code	Credits	Period
Gene and Protein Engineering	LSC-20003	15	Semester 1
Molecular, Cellular and Structural Immunology	LSC-20015	15	Semester 1
Human Genetics	LSC-20050	15	Semester 1
Neuroanatomy	LSC-20079	15	Semester 1

Level 5 Module Rules

LSC-20107 is a compulsory, zero-credit module. All lab-work across this level of study will be coordinated through this module and assessed within other credit-bearing modules across the year where appropriate. This module also provides helpful academic support and development material that provide added value to enhance your overall student experience.

LSC-20015: Molecular, Cellular and Structural Immunology is a prerequisite for the optional module LSC-30036: Human Parasitology at Level 6

NB: Global Challenge Pathways (GCPs) - students have the option of taking a Global Challenge Pathway, which can only be taken as one 15-credit module at Levels 5 and 6 (except for the TESOL pathway). Information on GCPs is shown under the Level 6 modules below.

Level 6

Compulsory modules	Module Code	Credits	Period
Mechanisms of Drug Action	CHE-30058	15	Semester 1
Clinical Pharmacology and Toxicology	LSC-30080	15	Semester 1
Medical Glycobiology (Level 6)	LSC-30065	15	Semester 2
Research Topics in Pharmacology	LSC-30082	15	Semester 2

Optional modules	Module Code	Credits	Period
Advances in Medicine	LSC-30028	15	Semester 1
Human Parasitology	LSC-30036	15	Semester 1
Biomedical Engineering	LSC-30055	15	Semester 1
Tropical Biology Field Course	LSC-30066	15	Semester 1
Double Applied Life Sciences Placement - ISP	LSC-30038	30	Semester 1-2
Life Sciences Double Experimental Project (with research skills assessment)	LSC-30045	30	Semester 1-2
Current Research Topics in Neuroscience	LSC-30042	15	Semester 2
Cancer Biology	LSC-30061	15	Semester 2

Level 6 Module Rules

Students must select either LSC-30038 or LSC-30045 (30-credits). The remaining 30 credits of options should then be selected from the other optional modules available, including a Global Challenge Pathway.

LSC-30036: Human Parasitology: Students must have studied LSC-20015: Molecular, Cellular and Structural Immunology at level 5.

Global Challenge Pathways (GCPs)

Students have the option of taking a Global Challenge Pathway, with one 15-credit module at Levels 5 and 6. Students joining Global Challenge Pathways at Level 5 can join any pathway (except TESOL). Students at Level 6 will continue with the same Global Challenge Pathway they studied at Level 5.

Global Challenge Pathways offer students the chance to fulfil an exciting, engaging route of interdisciplinary study. Choosing a pathway, students will be presented with a global issue or 'challenge' which directly relates to societal issues, needs and debates. They will be invited to take part in academic and external facing projects which address these issues, within an interdisciplinary community of students and staff. Students completing a Global Challenge Pathway will receive recognition on their degree certificate.

<p>Digital Futures</p>	<p>The Digital Futures pathway offers you the opportunity to take an active role in current debates, cutting-edge research, and projects with external partners, addressing both the exciting potential and the challenges of disruptive digital transformation across all spheres of life.</p> <p>Part of a diverse and interdisciplinary pathway community, you will engage in exciting, impactful collaborative project work in innovative formats on areas that matter most to you. Engaged in real-world scenarios as digital citizens, you will expand, deepen, and mobilise knowledge and skills to drive inclusive, empowering, and sustainable change at local and global levels.</p> <p>Level 5 Module: Digital World - People, Spaces, and Data (GCP-20005)</p> <p>Level 6 Module: Digital Citizenship and Sustainable Futures (GCP-30005)</p>
<p>Climate Change & Sustainability</p>	<p>Through the Climate Change & Sustainability pathway you will develop the skills, understanding and drive to become agents of change to tackle climate change and wider sustainability challenges.</p> <p>You will hear from international partners to learn about climate change and sustainability in different international contexts; lead your own projects to drive real change in your communities; and be part of educating and supporting others to help achieve a more sustainable future.</p> <p>Level 5 Module: Climate Change and Sustainability: Action and Activism (GCP-20009)</p> <p>Level 6 Module: Skills for Sustainability (GCP-30009)</p>
<p>Social Justice</p>	<p>The Social Justice pathway is based upon a transformative methodology which centres the student's role as 'agents of change' to reflect upon decolonising and feminist, perspectives on social justice, to forge critical outputs to transform the Sustainable Development Goals.</p> <p>You will develop research and engagement skills with local, national, and international partners from Universities, NGOs, International Human Rights frameworks. You will engage with key societal challenges focused upon the Sustainable Development Goals, to develop an intersectional response from identity-based perspectives on race, gender, sexualities and disabilities. The pathway will allow you to monitor and critically evaluate policies and human rights treaties, and produce and disseminate digitally fluent, international and sustainable project findings.</p> <p>Level 5 Module: Strategic Interventions for Social Justice (GCP-20003)</p> <p>Level 6 Module: Transforming Social Justice; Global Perspectives (GCP-30003)</p>
<p>Enterprise & the Future of Work</p>	<p>In order to meet the challenges set out in the UN's Sustainable Development Goals we need to understand the power of enterprise and prepare for the future contexts of work, creativity and disruption. By providing you with the skills, knowledge and understanding of global challenges this pathway will prepare you to be part of future-facing solutions. This module will support you in developing creative, original thinking, allowing you to collaborate on projects that persuade and effect change, setting you up to thrive in future environments of work and innovation.</p> <p>Level 5 Module: Enterprise and the Future of Work: Collaborate to Innovate (GCP-20007)</p> <p>Level 6 Module: Enterprise and the Future of Work: Designing Change (GCP-30007)</p>

<p>Global Health Challenges</p>	<p>By taking the global health challenge pathway you will develop solutions to improve the health and quality of life for particular people and communities, engaging with these groups to co-design interventions.</p> <p>This pathway will provide you with skills that go beyond a focus on health and will allow you to develop your ability to work in a team and lead change in society. The knowledge, skills and work experience will complement your core degree and enhance your career opportunities and graduate aspirations.</p> <p>Level 5 Module: Using Evidence to Improve Global Health (GCP-20001)</p> <p>Level 6 Module: Working to Improve Global Health (GCP-30001)</p>
<p>Languages & Intercultural Awareness</p>	<p>Communication within and across cultures is inseparable from language, and development of intercultural awareness can enable you to actively contribute to the shaping of an international future. The Language and Intercultural Awareness pathway allows you to engage in genuine interdisciplinary and international exchange and to understand and explore the link between language, culture and communication. Each of the strands we offer provides you with skills and direct experience for active engagement in working to face global challenges.</p> <p>The Language Specialist: Become a specialist in one of our languages and graduate with a degree title that includes '... with competency in (Language)' or '... with advanced competency in (Language)'.</p> <p>The Language Taster: Explore a new language every year.</p> <p>The Intercultural Explorer: Through an interdisciplinary understanding of intercultural communication - as both an academic discipline and as a tool to promote and engage in global activity, you will explore the concept of culture. Module content and assessments allow you to examine in-depth the role of both culture and language in, for example, the UN sustainability goals.</p> <p>Modules available:</p> <p>The Language Specialist:</p> <p>Any Semester 1 Language Module (the level at which you enter will be determined by your previous language learning experiences).</p> <p>The Language Taster:</p> <p>Any Semester 1 Language Module (the level at which you enter will be determined by your previous language learning experiences)</p> <p>The Intercultural Explorer:</p> <p>ENL-10057 The stories we live by</p> <p>ENL-20009 Who do you think you are?</p> <p>NB: the Certificate in TESOL is not available on this programme</p>

Information on Global Challenge Pathways can be found here:
<https://www.keele.ac.uk/study/undergraduate/globalchallengepathways/>

Learning Outcomes

The table below sets out what students learn in the programme and the modules in which that learning takes place. Details of how learning outcomes are assessed through these modules can be found in module specifications.

Level 4

Subject Knowledge and Understanding	
Learning Outcome	Module in which this is delivered
The chemistry that underlies biological processes and their study, including chemical and thermodynamic principles applied to biochemical catalysis, the function of enzymes and other proteins, and the physicochemical properties of drug molecules including in context to pharmacokinetics and pharmacodynamics	Biochemistry - LSC-10064 Introduction to Pharmacology - LSC-10093
Core biological topics that underpin the study of pharmacology including: biochemistry, molecular biology, genetics, cell biology, physiology and anatomy, and their application to the development and pharmacology of acquired and inherited disease	All modules, in particular this is contextualised in Introduction to Pharmacology- LSC-10093
The principles that determine the three-dimensional structure of biological macromolecules (including nucleic acids, proteins and carbohydrates) and the application of this knowledge to rational drug design and ligand-target binding	Biochemistry - LSC-10064 Introduction to Pharmacology - LSC-10093
The structure, function and organisation of a wide range of cell types (both prokaryotic and eukaryotic) and tissues, including subcellular organelles and transport processes	Molecular Cell Biology - LSC-10066 Physiology and Anatomy - LSC-10074
The signal transduction mechanisms of extra- and intra-cellular receptors in cell signalling pathways controlling cellular activities, with a focus on how these can be investigated experimentally and modified through relevant pharmacological approaches	Molecular Cell Biology - LSC-10066 Introduction to Pharmacology - LSC-10093
Mechanisms of drug action in relevant tissues and organ systems, including the central nervous system, as well as drug toxicity and selective toxicity in the treatment of microbial infections and cancer	Introduction to Pharmacology - LSC-10093
Experimental methods for the investigation of relevant areas of pharmacology, including in vitro and in vivo models applied in drug development and the quantitative analysis of drug-receptor interactions, with consideration of the scientific method, hypothesis-driven investigation and the critical nature of evidence and scientific debate	Introduction to Pharmacology - LSC-10093 Core Practical Skills - LSC-10087
Current developments in pharmacology and modern drug discovery, including areas of ethical or public concern and how advances in personalised medicine and patient demographics are important in the design of clinical trials and medicines management	Introduction to Pharmacology - LSC-10093
Work with others to identify and achieve collaborative goals and responsibilities and perform in a respectful manner that is accepting of the viewpoints and opinions of others	All modules, particularly the practical component of Core Practical Skills- LSC-10087 and case-based learning sessions in Introduction to Pharmacology- LSC-10093
Motivate themselves and sustain that motivation over an extended period of time	All modules

Subject Specific Skills	
Learning Outcome	Module in which this is delivered
Evaluate scientific literature with a full and critical understanding, while addressing such questions as content, context, aims, objectives, quality of information, and its interpretation and application	All modules
Attain competence in a range of laboratory techniques and employ a variety of methods (including in vitro studies and computational approaches related to use of bioinformatic and macromolecular databases) in investigating, acquiring, recording and analysing information relevant to pharmacology and drug design/action	Most modules, but particularly the practical component in LSC-10087: Core Practical Skills and contextualized in LSC-10093: Introduction to Pharmacology
Design, conduct, analyse, report and evaluate biological experiments, acknowledging an awareness of the validity, accuracy, calibration, precision and reproducibility of results	Biochemistry - LSC-10064 Core Practical Skills - LSC-10087 Physiology and Anatomy - LSC-10074 Molecular Cell Biology - LSC-10066
Work safely and responsibly in the laboratory with awareness of standard procedures such as risk assessment, COSHH and good laboratory practice (GLP)	Core Practical Skills - LSC-10087
Recognise philosophical and ethical issues relevant to the subject	Core Practical Skills - LSC-10087 Molecular Cell Biology - LSC-10066 Introduction to Pharmacology - LSC-10093
Apply scientific method, planning, and analytical skills to carry out a research project	Core Practical Skills - LSC-10087
Apply pharmacological knowledge and understanding to familiar and unfamiliar problems	All modules, but particularly Introduction to Pharmacology- LSC-10093

Intellectual skills	
Learning Outcome	Module in which this is delivered
Assess the merits of contrasting theories, paradigms, concepts or principles and develop reasoned arguments	All modules
Identify, analyse and solve problems by a variety of methods, either individually and/or cooperatively	All modules, particularly Core Practical Skills-LSC-10087 and Introduction to Pharmacology- LSC-10093
Make critical interpretations, evaluations and judgements of data	All modules, particularly the practical component of Core Practical Skills- LSC-10087
Obtain, analyse and summarise several lines of subject-specific evidence to formulate and test hypotheses, with critical interpretation of quantitative and qualitative research findings	Introduction to Pharmacology - LSC-10093 Biochemistry - LSC-10064 Core Practical Skills - LSC-10087 Molecular Cell Biology - LSC-10066
Take responsibility for their own learning and reflect upon that learning	All modules
Construct grammatically correct documents in an appropriate academic style using and referencing relevant ideas and evidence	All modules
Understand the importance of academic and research integrity	All modules

Key or Transferable Skills (graduate attributes)	
Learning Outcome	Module in which this is delivered
Develop and sustain effective approaches to learning and study, including time management, flexibility, creativity and intellectual integrity	All modules
Acquire, analyse, synthesise, summarise and present information from a range of sources	All modules
Prepare, process, interpret and present data, using appropriate qualitative and quantitative techniques, statistical programmes, spreadsheets and programs for presenting data visually	Core Practical Skills - LSC-10087 Biochemistry - LSC-10064 Introduction to Pharmacology - LSC-10093 Molecular Cell Biology - LSC-10066
Use the internet and other electronic sources effectively and critically as a means of communication and a source of information	All modules
Cite and reference work in an appropriate manner, ensuring academic integrity	All modules
Communicate effectively to a variety of audiences by written, spoken and graphical means using appropriate techniques and scientific language	All modules
Develop skills necessary for self-managed and lifelong learning, including working independently, organisational, enterprise and knowledge transfer skills	All modules

Level 5

Subject Knowledge and Understanding	
Learning Outcome	Module in which this is delivered
The chemistry that underlies biological processes and their study, including chemical and thermodynamic principles applied to biochemical catalysis, the function of enzymes and other proteins, and the physicochemical properties of drug molecules including in context to pharmacokinetics and pharmacodynamics	Molecular Pharmacology I - LSC-20113 Molecular Pharmacology II - LSC-20115
Core biological topics that underpin the study of pharmacology including: biochemistry, molecular biology, genetics, cell biology, physiology and anatomy, and their application to the development and pharmacology of acquired and inherited disease	All modules, contextualized in Molecular Pharmacology I- LSC-20113 , Molecular Pharmacology II- LSC-21150 , Neuropharmacology- LSC-20061
The principles that determine the three-dimensional structure of biological macromolecules (including nucleic acids, proteins and carbohydrates) and the application of this knowledge to rational drug design and ligand-target binding	Gene and Protein Engineering - LSC-20003 Molecular Pharmacology I - LSC-20113 Molecular, Cellular and Structural Immunology - LSC-20015 Molecular Pharmacology II - LSC-20115
The structure, function and organisation of a wide range of cell types (both prokaryotic and eukaryotic) and tissues, including subcellular organelles and transport processes	Cell Signalling - LSC-20085 Molecular Pharmacology I - LSC-20113 Neuroanatomy - LSC-20079 Molecular Pharmacology II - LSC-20115
The signal transduction mechanisms of extra- and intra-cellular receptors in cell signalling pathways controlling cellular activities, with a focus on how these can be investigated experimentally and modified through relevant pharmacological approaches	Neuropharmacology - LSC-20061 Molecular Pharmacology I - LSC-20113 Cell Signalling - LSC-20085 Molecular Pharmacology II - LSC-20115
Mechanisms of drug action in relevant tissues and organ systems, including the central nervous system, as well as drug toxicity and selective toxicity in the treatment of microbial infections and cancer	Molecular Pharmacology II - LSC-20115 Molecular Pharmacology I - LSC-20113 Neuropharmacology - LSC-20061
Experimental methods for the investigation of relevant areas of pharmacology, including in vitro and in vivo models applied in drug development and the quantitative analysis of drug-receptor interactions, with consideration of the scientific method, hypothesis-driven investigation and the critical nature of evidence and scientific debate	Molecular Pharmacology II - LSC-20115 Practical Skills in Bioscience - LSC-20107 Research and Analytical Skills - LSC-20056 Molecular Pharmacology I - LSC-20113
Current developments in pharmacology and modern drug discovery, including areas of ethical or public concern and how advances in personalised medicine and different patient demographics inform the design of clinical trials and medicines management	Molecular Pharmacology I - LSC-20113 Molecular Pharmacology II - LSC-20115

Subject Specific Skills	
Learning Outcome	Module in which this is delivered
Evaluate scientific literature with a full and critical understanding, while addressing such questions as content, context, aims, objectives, quality of information, and its interpretation and application	All modules
Attain competence in a range of laboratory techniques and employ a variety of methods (including in vitro studies and computational approaches related to use of bioinformatic and macromolecular databases) in investigating, acquiring, recording and analysing information relevant to pharmacology and drug design/action	Molecular Pharmacology I - LSC-20113 Research and Analytical Skills - LSC-20056 Molecular Pharmacology II - LSC-20115 Practical Skills in Bioscience - LSC-20107
Design, conduct, analyse, report and evaluate biological experiments, acknowledging an awareness of the validity, accuracy, calibration, precision and reproducibility of results	Research and Analytical Skills - LSC-20056 Molecular Pharmacology II - LSC-20115 Practical Skills in Bioscience - LSC-20107 Molecular, Cellular and Structural Immunology - LSC-20015
Work safely and responsibly in the laboratory with awareness of standard procedures such as risk assessment, COSHH and good laboratory practice (GLP)	Practical Skills in Bioscience - LSC-20107
Recognise philosophical and ethical issues relevant to the subject	All modules
Apply scientific method, planning, and analytical skills to carry out a research project	Research and Analytical Skills - LSC-20056 Practical Skills in Bioscience - LSC-20107 Molecular Pharmacology II - LSC-20115
Apply pharmacological knowledge and understanding to familiar and unfamiliar problems	All modules

Intellectual skills	
Learning Outcome	Module in which this is delivered
Assess the merits of contrasting theories, paradigms, concepts or principles and develop reasoned arguments	All modules
Identify, analyse and solve problems by a variety of methods, either individually and/or cooperatively	All modules
Make critical interpretations, evaluations and judgements of data	All modules
Obtain, analyse and summarise several lines of subject-specific evidence to formulate and test hypotheses, with critical interpretation of quantitative and qualitative research findings	All modules, particularly Practical Skills in Bioscience- LSC-20107, Research and Analytical Skills- LSC-20056, Molecular Pharmacology I- LSC-20113 , Molecular Pharmacology II- LSC-20115
Take responsibility for their own learning and reflect upon that learning	All modules
Construct grammatically correct documents in an appropriate academic style using and referencing relevant ideas and evidence	All modules
Understand the importance of academic and research integrity	All modules

Key or Transferable Skills (graduate attributes)	
Learning Outcome	Module in which this is delivered
Develop and sustain effective approaches to learning and study, including time management, flexibility, creativity and intellectual integrity	All modules
Acquire, analyse, synthesise, summarise and present information from a range of sources	All modules
Prepare, process, interpret and present data, using appropriate qualitative and quantitative techniques, statistical programmes, spreadsheets and programs for presenting data visually	Practical Skills in Bioscience - LSC-20107 Molecular Pharmacology I - LSC-20113 Molecular, Cellular and Structural Immunology - LSC-20015 Research and Analytical Skills - LSC-20056 Molecular Pharmacology II - LSC-20115
Use the internet and other electronic sources effectively and critically as a means of communication and a source of information	All modules
Cite and reference work in an appropriate manner, ensuring academic integrity	All modules
Communicate effectively to a variety of audiences by written, spoken and graphical means using appropriate techniques and scientific language	All modules
Develop skills necessary for self-managed and lifelong learning, including working independently, organisational, enterprise and knowledge transfer skills	All modules
Work with others to identify and achieve collaborative goals and responsibilities and perform in a respectful manner that is accepting of the viewpoints and opinions of others	All modules, particularly practical classes in Practical Skills in Bioscience- LSC-20107
Motivate themselves and sustain that motivation over an extended period of time	All modules

Level 6

Subject Knowledge and Understanding	
Learning Outcome	Module in which this is delivered
The chemistry that underlies biological processes and their study, including chemical and thermodynamic principles applied to biochemical catalysis, the function of enzymes and other proteins, and the physicochemical properties of drug molecules including in context to pharmacokinetics and pharmacodynamics	Clinical Pharmacology and Toxicology - LSC-30080 Research Topics in Pharmacology - LSC-30082 Mechanisms of Drug Action - CHE-30058
Core biological topics that underpin the study of pharmacology including: biochemistry, molecular biology, genetics, cell biology, physiology and anatomy, and their application to the development and pharmacology of acquired and inherited disease	Cancer Biology - LSC-30061 Research Topics in Pharmacology - LSC-30082 Clinical Pharmacology and Toxicology - LSC-30080 Human Parasitology - LSC-30036 Medical Glycobiology (Level 6) - LSC-30065 Advances in Medicine - LSC-30028
The principles that determine the three-dimensional structure of biological macromolecules (including nucleic acids, proteins and carbohydrates) and the application of this knowledge to rational drug design and ligand-target binding	Medical Glycobiology (Level 6) - LSC-30065 Research Topics in Pharmacology - LSC-30082 Mechanisms of Drug Action - CHE-30058
The structure, function and organisation of a wide range of cell types (both prokaryotic and eukaryotic) and tissues, including subcellular organelles and transport processes	Human Parasitology - LSC-30036 Research Topics in Pharmacology - LSC-30082 Current Research Topics in Neuroscience - LSC-30042 Advances in Medicine - LSC-30028 Cancer Biology - LSC-30061
The signal transduction mechanisms of extra- and intra-cellular receptors in cell signalling pathways controlling cellular activities, with a focus on how these can be investigated experimentally and modified through relevant pharmacological approaches	Clinical Pharmacology and Toxicology - LSC-30080 Research Topics in Pharmacology - LSC-30082 Cancer Biology - LSC-30061
Mechanisms of drug action in relevant tissues and organ systems, including the central nervous system, as well as drug toxicity and selective toxicity in the treatment of microbial infections and cancer	Cancer Biology - LSC-30061 Clinical Pharmacology and Toxicology - LSC-30080 Mechanisms of Drug Action - CHE-30058 Current Research Topics in Neuroscience - LSC-30042 Research Topics in Pharmacology - LSC-30082
Experimental methods for the investigation of relevant areas of pharmacology, including in vitro and in vivo models applied in drug development and the quantitative analysis of drug-receptor interactions, with consideration of the scientific method, hypothesis-driven investigation and the critical nature of evidence and scientific debate	Double Applied Life Sciences Placement - ISP - LSC-30038 Research Topics in Pharmacology - LSC-30082 Clinical Pharmacology and Toxicology - LSC-30080 Mechanisms of Drug Action - CHE-30058 Life Sciences Double Experimental Project (with research skills assessment) - LSC-30045
Current developments in pharmacology and modern drug discovery, including areas of ethical or public concern and how advances in personalised medicine and different patient demographics inform the design of clinical trials and medicines management	Mechanisms of Drug Action - CHE-30058 Research Topics in Pharmacology - LSC-30082 Clinical Pharmacology and Toxicology - LSC-30080

Subject Specific Skills	
Learning Outcome	Module in which this is delivered
Evaluate scientific literature with a full and critical understanding, while addressing such questions as content, context, aims, objectives, quality of information, and its interpretation and application	All modules
Attain competence in a range of laboratory techniques and employ a variety of methods (including in vitro studies and computational approaches related to use of bioinformatic and macromolecular databases) in investigating, acquiring, recording and analysing information relevant to pharmacology and drug design/action	Research Topics in Pharmacology - LSC-30082 Double Applied Life Sciences Placement - ISP - LSC-30038 Clinical Pharmacology and Toxicology - LSC-30080 Mechanisms of Drug Action - CHE-30058 Life Sciences Double Experimental Project (with research skills assessment) - LSC-30045
Design, conduct, analyse, report and evaluate biological experiments, acknowledging an awareness of the validity, accuracy, calibration, precision and reproducibility of results	Double Applied Life Sciences Placement - ISP - LSC-30038 Life Sciences Double Experimental Project (with research skills assessment) - LSC-30045
Work safely and responsibly in the laboratory with awareness of standard procedures such as risk assessment, COSHH and good laboratory practice (GLP)	Life Sciences Double Experimental Project (with research skills assessment) - LSC-30045 Double Applied Life Sciences Placement - ISP - LSC-30038
Recognise philosophical and ethical issues relevant to the subject	All modules, particularly Double Applied Life Sciences Placement-ISP- LSC-30038, Life Sciences Double Experimental Project (with research skills assessment)- LSC-30045, Clinical Pharmacology and Toxicology- LSC-30080
Apply scientific method, planning, and analytical skills to carry out a research project	Life Sciences Double Experimental Project (with research skills assessment) - LSC-30045 Double Applied Life Sciences Placement - ISP - LSC-30038
Apply pharmacological knowledge and understanding to familiar and unfamiliar problems	All modules

Intellectual skills	
Learning Outcome	Module in which this is delivered
Assess the merits of contrasting theories, paradigms, concepts or principles and develop reasoned arguments	All modules
Identify, analyse and solve problems by a variety of methods, either individually and/or cooperatively	All modules, particularly: Double Applied Life Sciences Placement-ISP- LSC-30038 Life Sciences Double Experimental Project (with research skills assessment)- LSC-30045 Clinical Pharmacology and Toxicology- LSC-30080 Mechanisms of Drug Action- CHE-300
Make critical interpretations, evaluations and judgements of data	All modules, particularly: Double Applied Life Sciences Placement-ISP- LSC-30038 Life Sciences Double Experimental Project (with research skills assessment)- LSC-30045
Obtain, analyse and summarise several lines of subject-specific evidence to formulate and test hypotheses, with critical interpretation of quantitative and qualitative research findings	All modules, particularly: Double Applied Life Sciences Placement-ISP- LSC-30038 Life Sciences Double Experimental Project (with research skills assessment)- LSC-30045
Take responsibility for their own learning and reflect upon that learning	All modules
Construct grammatically correct documents in an appropriate academic style using and referencing relevant ideas and evidence	All modules
Understand the importance of academic and research integrity	All modules, particularly: Double Applied Life Sciences Placement-ISP- LSC-30038 Life Sciences Double Experimental Project (with research skills assessment)- LSC-30045

Key or Transferable Skills (graduate attributes)	
Learning Outcome	Module in which this is delivered
Develop and sustain effective approaches to learning and study, including time management, flexibility, creativity and intellectual integrity	All modules
Acquire, analyse, synthesise, summarise and present information from a range of sources	All modules
Prepare, process, interpret and present data, using appropriate qualitative and quantitative techniques, statistical programmes, spreadsheets and programs for presenting data visually	All modules, particularly: Double Applied Life Sciences Placement-ISP- LSC-30038 Life Sciences Double Experimental Project (with research skills assessment)- LSC-30045 Mechanisms of Drug Action- CHE-30058 Research Topics in Pharmacology- LSC-30082
Use the internet and other electronic sources effectively and critically as a means of communication and a source of information	All modules
Cite and reference work in an appropriate manner, ensuring academic integrity	All modules
Communicate effectively to a variety of audiences by written, spoken and graphical means using appropriate techniques and scientific language	All modules
Develop skills necessary for self-managed and lifelong learning, including working independently, organisational, enterprise and knowledge transfer skills	All modules
Work with others to identify and achieve collaborative goals and responsibilities and perform in a respectful manner that is accepting of the viewpoints and opinions of others	All modules, particularly: Double Applied Life Sciences Placement-ISP- LSC-30038 Life Sciences Double Experimental Project (with research skills assessment)- LSC-30045 Mechanisms of Drug Action- CHE-30058 Clinical Pharmacology and Toxicology- LSC-30080
Motivate themselves and sustain that motivation over an extended period of time	All modules

9. Final and intermediate awards

Credits required for each level of academic award are as follows:

Honours Degree	360 credits	You will require at least 120 credits at levels 4, 5 and 6 You must accumulate at least 270 credits in your main subject (out of 360 credits overall), with at least 90 credits in each of the three years of study, to graduate with a named single honours degree in this subject.
Diploma in Higher Education	240 credits	You will require at least 120 credits at level 4 or higher and at least 120 credits at level 5 or higher
Certificate in Higher Education	120 credits	You will require at least 120 credits at level 4 or higher

International Year option: in addition to the above students must pass a module covering the international year in order to graduate with a named degree including the 'international year' wording. Students who do not complete, or fail the international year, will be transferred to the three-year version of the programme.

Work Placement Year option: in addition to the above students must pass a non-credit bearing module covering the

work placement year in order to graduate with a named degree including the 'with Work Placement Year' wording. Students who do not complete, or fail the work placement year, will be transferred to the three-year version of the programme.

10. How is the Programme Assessed?

The wide variety of assessment methods used on this programme at Keele reflects the broad range of knowledge and skills that are developed as you progress through the degree programme. Teaching staff pay particular attention to specifying clear assessment criteria and providing timely, regular and constructive feedback that helps to clarify things you did not understand and helps you to improve your performance. The following list is representative of the variety of assessment methods used on your programme:

- **Provide evidence-based solutions to current scientific problems.** Most often this is assessed through a range of essays, portfolios and literature reviews.
- **Present scientific findings.** Often these are lab reports or experimental projects that test your ability to pose scientific hypotheses, design experiments, understand methodologies, present findings, analyse data and situate your work in the current literature. Other assessments will also develop your skills in accessing, manipulating and presenting the outcomes of computational investigations, including in bioinformatics and the use of small molecule and macromolecular databases.
- **Communicate effectively with a range of audiences.** These can include scientific posters, patient information leaflets, wikis, blogs or oral presentations, as well as more standard laboratory reports, proformas and literature reviews.
- **Work professionally.** Your final year, independent research project will give you an opportunity to demonstrate a range of professional skills such as leadership, innovation, time keeping, communication and the ability to work safely and ethically.
- **Work effectively in a team.** Most often this is assessed through group presentations but can also include competencies such as working together in the lab or other group assignments, such as in case-based learning sessions or delivering a group seminar.
- **Solve problems in a time-limited fashion.** Often in the work environment we are asked to solve problems in a relatively short amount of time. Our online tests and end-of-semester, online, open-book examinations will help you to evidence these skills.

Marks are awarded for summative assessments designed to assess your achievement of learning outcomes. You will also be assessed formatively to enable you to monitor your own progress and to assist staff in identifying and addressing any specific learning needs. Feedback, including guidance on how you can improve the quality of your work, is also provided on all summative assessments within three working weeks of submission, unless there are compelling circumstances that make this impossible, and more informally in the course of tutorial and seminar discussions.

11. Contact Time and Expected Workload

This contact time measure is intended to provide you with an indication of the type of activity you are likely to undertake during this programme. The data is compiled based on module choices and learning patterns of students on similar programmes in previous years. Every effort is made to ensure this data is a realistic representation of what you are likely to experience, but changes to programmes, teaching methods and assessment methods mean this data is representative and not specific.

Undergraduate courses at Keele contain an element of module choice; therefore, individual students will experience a different mix of contact time and assessment types dependent upon their own individual choice of modules. The figures below are an example of activities that a student may expect on your chosen course by year stage of study. Contact time includes scheduled activities such as: lecture, seminar, tutorial, project supervision, demonstration, practical classes and labs, supervised time in labs/workshop, fieldwork and external visits. The figures are based on 1,200 hours of student effort each year for full-time students.

Activity

	Scheduled learning and teaching activities	Guided independent Study	Placements
Year 1 (Level 4)	38%	62%	0%
Year 2 (Level 5)	39.1%	60.9%	0%
Year 3 (Level 6)	29.2%	70.8%	0%

12. Accreditation

This programme does not have accreditation from an external body.

13. University Regulations

The University Regulations form the framework for learning, teaching and assessment and other aspects of the student experience. Further information about the University Regulations can be found at: <http://www.keele.ac.uk/student-agreement/>

If this programme has any exemptions, variations or additions to the University Regulations these will be detailed in an Annex at the end of this document titled 'Programme-specific regulations'.

14. What are the typical admission requirements for the Programme?

See the relevant course page on the website for the admission requirements relevant to this programme:
<https://www.keele.ac.uk/study/>

Applicants who are not currently undertaking any formal study or who have been out of formal education for more than 3 years and are not qualified to A-level or BTEC standard may be offered entry to the University's Foundation Year Programme.

Applicants for whom English is not a first language must provide evidence of a recognised qualification in English language. The minimum score for entry to the Programme is Academic IELTS 6.0 or equivalent.

English for Academic Purposes

Please note: All new international students entering the university will provide a sample of Academic English during their registration. Using this sample, the Language Centre may allocate you to an English language module which will become compulsory. This will replace any GCP modules. *NB:* students can take an EAP module only with the approval of the English Language Programme Director and are not able to take any other Language modules in the same academic year.

English Language Modules at Level 4:

- Business - ENL-90003 Academic English for Business Students (Part 1); ENL-90004 Academic English for Business Students (2)
- Science - ENL-90013 Academic English for Science Students
- General - ENL-90006 English for Academic Purposes 2; ENL-90001 English for Academic Purposes 3; ENL-90002 English for Academic Purposes 4

English Language Modules at Level 5:

- Business - ENL-90003 Academic English for Business Students (Part 1); ENL-90004 Academic English for Business Students (2)
- Science - ENL-90013 Academic English for Science Students
- General - ENL-90006 English for Academic Purposes 2; ENL-90001 English for Academic Purposes 3; ENL-90002 English for Academic Purposes 4

English Language Modules at Level 6:

- Business - ENL-90003 Academic English for Business Students (Part 1); ENL-90004 Academic English for Business Students (2); ENL-90005 Advanced Business English Communication
- Science - ENL-90013 Academic English for Science Students
- General - ENL-90006 English for Academic Purposes 2; ENL-90001 English for Academic Purposes 3; ENL-90002 English for Academic Purposes 4

Recognition of Prior Learning (RPL) is considered on a case-by-case basis and those interested should contact the Programme Director. The University's guidelines on this can be found here:

<https://www.keele.ac.uk/qa/programmesandmodules/recognitionofpriorlearning/>

15. How are students supported on the programme?

The School of Life Sciences operates an open door policy. This means that you can contact any of our staff via email to request a meeting or discuss any problem that you may be experiencing.

In addition to the open door policy, you can also contact the following people across Life Sciences for help and support:

- Programme Director or Director of Education for programme-, discipline- or School-related issues
- Module Manager for module-related issues
- Demonstrators for help during labs
- Academic Mentor for academic help and guidance
- Student Experience and Support Officers for more personal or pastoral help
- Early Resolution Officer to help advocate for you, for example, if you would like to raise a complaint
- Student Voice are a group of students from your programme that can advocate for you to the School

Student Services also offer a comprehensive range of specialist services that help you at any time from enrolment to graduation. The following link will provide more information: <https://www.keele.ac.uk/students/studentservices/>

16. Learning Resources

Workshops and tutorials are delivered in modern teaching rooms across the University, including up-to-date PC suites for data analysis and bioinformatics workshops.

Practical sessions are held in dedicated teaching laboratories within the School of Life Sciences, over recent years these have been completely refitted, providing modern and well-equipped facilities supporting delivery of a diverse practical programmes (including the David Attenborough laboratories, opened in person by Sir David in 2019). Some sessions are also delivered in our new state-of-the-art Central Science Laboratories, which also provides extensive PC suite capacity for supporting workshops and student self-study.

Further learning resources available to you on the Programme include:

- An extensive collection of books and journals held in the University Library on campus, or the health library situated at

the University Hospital of North Staffordshire.

- Access to a comprehensive range of ebooks, journals and published papers all available online.
- The Keele Learning Environment (KLE) which provides easy access to a wide range of learning resources including core learning materials and other guidance/supporting resources, and Microsoft Teams for further content development and to facilitate live and interactive discussions.
- Additional academic skills resources, workshops and drop-in sessions available through the Keele Institute for Innovation and Teaching Excellence (KIITE).

17. Other Learning Opportunities

We are committed to offering a rich and diverse student experience that goes far beyond your degree. Most years, we are able to offer range of different opportunities to enrich your student experience. These can include:

Study abroad (semester)

Students on the programme have the potential opportunity to spend a semester abroad in their second year studying at one of Keele's international partner universities. Please note that students cannot take both a Global Challenge Pathway (GCP) and the semester abroad option.

Exactly which countries are available depends on the student's choice of degree subjects. An indicative list of countries is on the website (<http://www.keele.ac.uk/studyabroad/partneruniversities/>); however this does not guarantee the availability of study in a specific country as this is subject to the University's application process for studying abroad.

No additional tuition fees are payable for a single semester studying abroad but students do have to bear the costs of travelling to and from their destination university, accommodation, food and personal costs. Depending on the destination they are studying at additional costs may include visas, study permits, residence permits, and compulsory health checks. Students should expect the total costs of studying abroad to be greater than if they study in the UK, information is made available from the Global Education Team throughout the process, as costs will vary depending on destination.

Whilst students are studying abroad any Student Finance eligibility will continue, where applicable students may be eligible for specific travel or disability grants. Students who meet external eligibility criteria may be eligible for grants as part of this programme. Students studying outside of this programme may be eligible for income dependent bursaries at Keele. Students travel on a comprehensive Keele University insurance plan, for which there are currently no additional charges. Some governments and/or universities require additional compulsory health coverage plans; costs for this will be advised during the application process.

Study Abroad (International Year)

A summary of the International Year, which is a potential option for students after completion of year 2 (Level 5), is provided in the Annex for the International Year.

Industrial placements. You could apply to a range of national and international employers for an industrial placement. These take place in between Level 5 and 6 and usually last 6-9 months. They provide excellent work experience and an opportunity to collect data for your Level 6 independent research student project.

Secondments. These are shorter industrial placements that usually take place over the summer in between Level 5 and 6 and usually last between 2-8 weeks. They can be based locally in one of our research labs here at Keele, nationally or internationally. For example, often some of our students will travel to Malaysia to work with our partner *Universiti Sains Malaysia*.

Tropical field trip: You could apply for our School tropical field course that takes place in Malaysia. These are often more ecology and conservation in nature, and again provide fantastic international experience.

Operation Wallacea. This is a private company that supports a wide range of student projects with a particular focus on biodiversity and climate research. More information can be found at: <https://www.opwall.com>

Note: the opportunities described above are limited and dependent on external providers. We may not be able to offer them every year and there will be additional costs if you do successfully secure a place (see Annex). We discuss all of these options in more detail across Level 4 and Level 5 so you can make an informed decision.

Other opportunities

There are a number of schemes available from e.g. the Wellcome Trust that provide bursaries for students to gain laboratory experience in the summer vacation between level 5 and 6. Staff in Life Sciences have hosted these bursaries in the past and students who are interested can approach staff, who will have to submit an application on the students' behalf to the funding bodies (usually in January or February). Staff may also be willing to host students in their laboratories during the summer vacation on a voluntary basis.

Other learning opportunities for Pharmacology students vary from year to year but include the opportunity to hear from, and talk to, a range of guest speakers and presenters including researchers from around the world. Some of these activities are timetabled as part of taught modules, others are organised separately as part of a school-wide seminar programme either in the School of Life Sciences, School of Chemical and Physical Sciences, or the School of Pharmacy and Bioengineering, but are widely advertised and undergraduate students are always welcome to attend.

The University also offer a range of wider opportunities to develop your academic skills, in addition to content delivered in

your core programme, including careers support, peer mentoring and a variety of active citizenship opportunities to enhance your CV. For more detail see: <https://www.keele.ac.uk/study/undergraduate/additionalopportunities/>

18. Additional Costs

Additional costs will be associated with some of the additional opportunities described in section 16 of this document. We discuss all of these options in more detail across Level 4 and Level 5 so you can make an informed decision.

As to be expected there will be additional costs for inter-library loans and potential overdue library fines, print and graduation. All students will be provided with a lab coat at the start of their course, replacement for lost coats will be charged at £10. We do not anticipate any further costs for this programme.

These costs have been forecast by the University as accurately as possible but may be subject to change as a result of factors outside of our control (for example, increase in costs for external services). Forecast costs are reviewed on an annual basis to ensure they remain representative. Where additional costs are in direct control of the University we will ensure increases do not exceed 5%.

19. Quality management and enhancement

The quality and standards of learning in this programme are subject to a continuous process of monitoring, review and enhancement.

- The School Education Committee is responsible for reviewing and monitoring quality management and enhancement procedures and activities across the School.
- Individual modules and the programme as a whole are reviewed and enhanced every year in the annual programme review which takes place at the end of the academic year.
- The programmes are run in accordance with the University's Quality Assurance procedures and are subject to periodic reviews under the Revalidation process.

Student evaluation of, and feedback on, the quality of learning on every module takes place every year using a variety of different methods:

- The results of student evaluations of all modules are reported to module leaders and reviewed by the Programme Committee as part of annual programme review.
- Findings related to the programme from the annual National Student Survey (NSS), and from regular surveys of the student experience conducted by the University, are subjected to careful analysis and a planned response at programme and School level.
- Feedback received from representatives of students in all three years of the programme is considered and acted on at regular meetings of the Student Staff Voice Committee.

The University appoints senior members of academic staff from other universities to act as external examiners on all programmes. They are responsible for:

- Approving examination questions
- Confirming all marks which contribute to a student's degree
- Reviewing and giving advice on the structure and content of the programme and assessment procedures

Information about current external examiner(s) can be found here:

<http://www.keele.ac.uk/qa/externalexaminers/currentexternalexaminers/>

20. The principles of programme design

The programme described in this document has been drawn up with reference to, and in accordance with the guidance set out in, the following documents:

- a. UK Quality Code for Higher Education, Quality Assurance Agency for Higher Education: <http://www.qaa.ac.uk/quality-code>
- b. QAA Subject Benchmark Statement: Biomedical Sciences- includes Pharmacology (2023): <https://www.qaa.ac.uk/the-quality-code/subject-benchmark-statements/subject-benchmark-statement-biomedical-science-and-biomedical-sciences>
- c. Keele University Regulations and Guidance for Students and Staff: <http://www.keele.ac.uk/regulations>
- d. British Pharmacological Society- Education- Undergraduate Curriculum: <https://www.bps.ac.uk/education-engagement/teaching-pharmacology/core-curricula/undergraduate-pharmacology-core-curriculum>
- e. Royal Society of Biology Degree Accreditation Handbook (2019)- subject specific requirements; Pharmacology: https://www.rsb.org.uk/images/accreditation_home/RSB_Overall_Handbook_Sept_2019_September_2020_Implementation.pdf

21. Annex - International Year

Pharmacology with Work Placement Year

International Year Programme

Students registered for this Single Honours programme may either be admitted for or apply to transfer during their period of study at Level 5 to the International Year option. Students accepted onto this option will have an extra year of study (the International Year) at an international partner institution after they have completed Year 2 (Level 5) at Keele.

Students who successfully complete both the second year (Level 5) and the International Year will be permitted to progress to Level 6. Students who fail to satisfy the examiners in respect of the International Year will normally revert to the standard programme and progress to Level 6 on that basis. The failure will be recorded on the student's final transcript.

Study at Level 4, Level 5 and Level 6 will be as per the main body of this document. The additional detail contained in this annex will pertain solely to students registered for the International Year option.

International Year Programme Aims

In addition to the programme aims specified in the main body of this document, the international year programme of study aims to provide students with:

1. Personal development as a student and a researcher with an appreciation of the international dimension of their subject
2. Experience of a different culture, academically, professionally and socially

Entry Requirements for the International Year

Students may apply to the 4-year programme during Level 5. Admission to the International Year is subject to successful application, interview and references from appropriate staff.

The criteria to be applied are:

- Academic Performance (an average of 55% across all modules in Semester 1 at Level 5 is normally required. Places on the International Year are then conditional on achieving an average mark of 55% across all Level 5 modules. Students with up to 15 credits of re-assessment who meet the 55% requirement may progress to the International Year. Where no Semester 1 marks have been awarded performance in 1st year marks and ongoing 2nd year assessments are taken into account)
- General Aptitude (to be demonstrated by application for study abroad, interview during the 2nd semester of year 2 (Level 5), and by recommendation of the student's Academic Mentor, 1st and 2nd year tutors and programme director)

Students may not register for both an International Year and a Placement Year.

Student Support

Students will be supported whilst on the International Year via the following methods:

- Phone or Skype conversations with Study Abroad tutor, in line with recommended Academic Mentoring meeting points.
- Support from the University's Global Education Team

Learning Outcomes

In addition to the learning outcomes specified in the main text of the Programme Specification, students who complete a Keele undergraduate programme with International Year will be able to:

1. Describe, discuss and reflect upon the cultural and international differences and similarities of different learning environments
2. Discuss the benefits and challenges of global citizenship and internationalisation
3. Explain how their perspective on their academic discipline has been influenced by locating it within an international setting.
4. Demonstrate an ability to successfully work within their placement institution, to learn practical skills and develop their science base within the scope of their work project.

These learning outcomes will be assessed through the 30-credit bearing Work Placement Year module (LSC-30038).

In addition, students who complete the International Year will be able to:

These learning outcomes will all be assessed by the submission of a satisfactory individual learning agreement, the successful completion of assessments at the partner institution and the submission of the reflective portfolio element of the international year module.

Regulations

Students registered for the International Year are subject to the programme-specific regulations (if any) and the University regulations. In addition, during the International Year, the following regulations will apply:

- Students undertaking the Work Placement Year must successfully complete the 30-credit rated 'Double Applied Life Sciences Placement module (LSC-30038).
- In order to ensure a high quality placement experience, each placement agency will sign up to a placement contract (analogous to a service level agreement).
- Once a student has been accepted by a placement organisation, the student will make a preplacement visit and a member of staff identified within the placement contract will be assigned as the placement supervisor. The placement supervisor will be responsible for ensuring that the placement experience meets the agreed contract agreed with the University.
- The placement student will also sign up an agreement outlining his/her responsibilities in relation to the requirements of each organisation.

Students will be expected to behave professionally in terms of:

(i). conforming to the work practices of the organisation; and

(ii). remembering that they are representatives of the University and their actions will reflect on the School and have an impact on that organisation's willingness (or otherwise) to remain engaged with the placement.

Additional costs for the International Year

Tuition fees for students on the International Year will be charged at 15% of the annual tuition fees for that year of study, as set out in Section 1. The International Year can be included in your Student Finance allocation, to find out more about your personal eligibility see: www.gov.uk

Students will have to bear the costs of travelling to and from their destination university, accommodation, food and personal costs. Depending on the destination they are studying at additional costs may include visas, study permits, residence permits, and compulsory health checks. Students should expect the total costs of studying abroad be greater than if they study in the UK, information is made available from the Global Education Team throughout the process, as costs will vary depending on destination.

Students who meet external eligibility criteria may be eligible for grants as part of this programme. Students studying outside of this programme may be eligible income dependent bursaries at Keele.

Students travel on a comprehensive Keele University insurance plan, for which there are currently no additional charges. Some Governments and/or universities require additional compulsory health coverage plans; costs for this will be advised during the application process.

22. Annex - Work Placement Year

Pharmacology with Work Placement Year

Work Placement Year summary

Students registered for this programme may either be admitted for or apply to transfer during their studies to the 'with Work Placement Year' option (NB: for Combined Honours students the rules relating to the work placement year in the subject where the placement is organised are to be followed). Students accepted onto this programme will have an extra year of study (the Work Placement Year) with a relevant placement provider after they have completed Year 2 (Level 5) at Keele.

Students who successfully complete both the second year (Level 5) and the Work Placement Year will be permitted to progress to Level 6. Students who fail to satisfactorily complete the Work Placement Year will normally revert to the 3-year programme and progress to Level 6 on that basis. The failure will be recorded on the student's final transcript.

Study at Level 4, Level 5 and Level 6 will be as per the main body of this document. The additional detail contained in this annex will pertain solely to students registered for the Work Placement Year option.

Work Placement Year Programme Aims

In addition to the programme aims specified in the main body of this document, the Work Placement Year aims to provide students with:

1. Provide experience of working in a subject-related laboratory or work place within an industrial, academic or public institution either in the UK or abroad.

Entry Requirements for the Work Placement Year

Admission to the Work Placement Year is subject to successful application, interview and references from appropriate staff. Students have the opportunity to apply directly for the 4-year 'with work placement year' degree programme, or to transfer onto the 4-year programme at the end of Year-1 and in Year-2 at the end of Semester 1. Students who are initially registered for the 4-year degree programme may transfer onto the 3-year degree programme at any point in time, prior to undertaking the year-long work placement. Students who fail to pass the work placement year, and those who fail to meet the minimum requirements of the work placement year module, (* or equivalent, work placement), will be automatically transferred onto the 3-year degree programme.

* We recommend where possible students undertake a placement of between 9 - 12 months on a full-time basis to maximize academic and personal growth. However, the Faculty of Natural Sciences Work / Professional Placement Year mandates a minimum of 24 weeks in duration, ideally on a full-time basis, but no less than 21 hours per week. This enables those undertaking an unpaid placement to work on a part-time basis alongside their placement.

The criteria to be applied are:

- A good University attendance record and be in 'good academic standing'.
- Academic Performance (an average of 50% across all modules in Semester 1 at Level 5 is normally required. Places on the Work Placement Year are then conditional on achieving an average mark of 50% across all Level 5 modules. Students with up to 15 credits of re-assessment who meet the 50% requirement may progress to the Work Placement Year. Where no Semester 1 marks have been awarded performance in 1st year marks and ongoing 2nd year assessments are taken into account)
- Students undertaking work placements will be expected to complete a Health and Safety checklist prior to commencing their work experience and will be required to satisfy the Health and Safety regulations of the company or organisation at which they are based.
- (*International students only*) Due to visa requirements, it is not possible for international students who require a Tier 4 Visa to apply for direct entry onto the 4-year with Work Placement Year degree programme. Students wishing to transfer onto this programme should discuss this with student support, the academic tutor for the work placement year, and the Programme Lead. Students should be aware that there are visa implications for this transfer, and it is the student's responsibility to complete any and all necessary processes to be eligible for this programme. There may be additional costs, including applying for a new Visa from outside of the UK for international students associated with a transfer to the work placement programme.

Students may not register for both an International Year and a Work Placement Year.

Student Support

Students will be supported whilst on the Work Placement Year via the following methods:

- Regular contact between the student and a named member of staff who will be assigned to the student as their University supervisor. The University supervisor will be in regular contact with the student throughout the year, and be on hand to provide advice (pastoral or academic) and liaise with the Placement supervisor on the student's behalf if required.
- Two formal contacts with the student during the placement year: the University supervisor will visit the student in their placement organization at around the 5 weeks after placement has commenced, and then visit again (or conduct a telephone/video call tutorial) at around 15 weeks into the placement.
- Weekly supervision sessions will take place with the placement supervisor (or his/her nominee) throughout the duration of the placement.

Learning Outcomes

In addition to the learning outcomes specified in the main text of the Programme Specification, students who complete the 'with Work Placement Year' option will be able to:

1. Demonstrate an ability to successfully work within their placement institution, to learn practical skills and develop their science base within the scope of their work project.

These learning outcomes will be assessed through the 30-credit bearing Work Placement Year module (LSC-30038).

Regulations

Students registered for the 'with Work Placement Year' option are subject to programme-specific regulations (if any) and the University regulations. In addition, during the Work Placement Year, the following regulations will apply:

- Students undertaking the Work Placement Year must successfully complete the 30-credit rated 'Double Applied Life Sciences Placement module (LSC-30038).
- In order to ensure a high quality placement experience, each placement agency will sign up to a placement contract (analogous to a service level agreement).
- Once a student has been accepted by a placement organisation, the student will make a pre-placement visit and a member of staff identified within the placement contract will be assigned as the placement supervisor. The placement supervisor will be responsible for ensuring that the placement experience meets the agreed contract agreed with the University.
- The placement student will also sign up an agreement outlining his/her responsibilities in relation to the requirements of each organisation.

Students will be expected to behave professionally in terms of:

(i) conforming to the work practices of the organisation; and

(ii) remembering that they are representatives of the University and their actions will reflect on the School and have an impact on that organisation's willingness (or otherwise) to remain engaged with the placement.

Additional costs for the Work Placement Year

Tuition fees for students on the Work Placement Year will be charged at 20% of the annual tuition fees for that year of study, as set out in Section 1. The Work Placement Year can be included in your Student Finance allocation; to find out more about your personal eligibility see: www.gov.uk

Students will have to bear the costs of travelling to and from their placement provider, accommodation, food and personal costs. Depending on the placement provider additional costs may include parking permits, travel and transport, suitable clothing, DBS checks, and compulsory health checks.

A small stipend may be available to students from the placement provider during the placement but this will need to be explored on a placement-by-placement basis as some organisations, such as charities, may not have any extra money available. Students should budget with the assumption that their placement will be unpaid.

Eligibility for student finance will depend on the type of placement and whether it is paid or not. If it is paid, this is likely to affect student finance eligibility, however if it is voluntary and therefore unpaid, should not affect student finance eligibility. Students are required to confirm eligibility with their student finance provider.

International students who require a Tier 4 visa should check with the Immigration Compliance team prior to commencing any type of paid placement to ensure that they are not contravening their visa requirements.

23. Annex - Programme-specific regulations

Programme Regulations: Pharmacology

Final Award and Award Titles	BSc (Hons) Pharmacology BSc (Hons) Pharmacology with International Year BSc (Hons) Pharmacology with Work Placement Year
Intermediate Award(s)	Diploma in Higher Education Certificate in Higher Education
Last modified	n/a
Programme Specification	https://www.keele.ac.uk/qa/programmespecifications

The University's Academic Regulations which can be found on the Keele University website (<https://www.keele.ac.uk/regulations/>)^[1] apply to and regulate the programme, other than in instances where the specific programme regulations listed below over-ride them. These programme regulations list:

- *Exemptions* which are characterised by the omission of the relevant regulation.
- *Variations* which are characterised by the replacement of part of the regulation with alternative wording.
- *Additional Requirements* which set out what additional rules that apply to students in relation to this programme.

The following **exemptions, variations** and **additional requirements** to the University regulations have been checked by Academic Services and have been approved by the Faculty Education Committee.

A) EXEMPTIONS

The clause(s) listed below describe where an exemption from the University's Academic Regulations exists:

For the whole duration of their studies, students on this Programme are exempt from the following regulations:

- **No exemptions apply.**

B) VARIATIONS

The clause(s) listed below describe where a variation from the University's Academic Regulations exists:

Variation 1: No variations apply

C. Additional Requirements

The programme requirements listed below are in addition to the University's Academic Regulations:

Additional requirement 1: Laboratory, lecture and tutorial classes

1.1 Wearing a laboratory coat is compulsory in all classes held in laboratories. Students will not be allowed to attend the laboratory class without a laboratory coat.

1.2 Students must wear appropriate clothing in the laboratories, including sensible footwear. Closed shoes and low heels should be worn. This is to avoid tripping and to protect the feet in the case of spillages. Long hair must be tied back. Students who are inappropriately dressed may, at the discretion of the member of staff in charge, be excluded from the class and recorded as being absent without good cause.

1.3 Students who arrive late to laboratory classes may, at the discretion of the member of staff in charge, be excluded from the class and recorded as being absent without good cause.

1.4 Students who display serious misconduct in any class may, at the discretion of the member of staff in charge, be excluded from the class and recorded as being absent without good cause. Serious misconduct involves wilful damage to property, injury or threat to persons, or persistent disruption of teaching.

1.5 The unauthorised use of mobile phones or headphones is not permitted in any class.

1.6 Students are not permitted to record, video or photograph taught sessions or meetings with staff, except with the permission in advance of the staff concerned. Permission will be given where this is part of an approved disability adjustment. Any permission to record, video or photograph is for personal use only and all recordings, videos or photographs remain the property of the presenter and Keele University.

1.7 Students are required to read and follow the procedures in the School of Life Sciences Safety Handbook, which is available from the Life Science Noticeboard on the KLE.

Additional requirement 2: Work Placements, Exchange Periods and Study Abroad

2.1 A student who has completed a semester abroad will not normally be eligible to transfer onto the International Year option.

[1] References to University Regulations in this document apply to the content of the University's Regulatory Framework as set out on the University website here <https://www.keele.ac.uk/regulations/>.

Version History

This document

Date Approved: 14 June 2024

Previous documents

Version No	Year	Owner	Date Approved	Summary of and rationale for changes
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