

Course Information Document: Undergraduate

For Academic Year 2025/26

1. Course Summary

Names of programme and award title(s)	MSci Pharmacology MSci Pharmacology with International Year (see Annex for details) MSci Pharmacology with Work Placement Year (see Annex for details)
Award type	Single Honours (Masters)
Mode of study	Full-time
Framework of Higher Education Qualification (FHEQ) level of final award	Level 7
Normal length of the programme	4 years; 5 years with either a Work 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)	All routes, excluding the 'Studies in' routes, are accredited by the Royal Society of Biology. For further details see the section on Accreditation.
Regulator	Office for Students (OfS)
Tuition Fees	<p>UK students:</p> <p>Fee for 2025/26 is £9,535*</p> <p>International students:</p> <p>Fee for 2025/26 is £17,700**</p> <p>The fee for the international year abroad is calculated at 15% of the standard year fee</p> <p>The fee for either the work 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/>

** These fees are for new students. We reserve the right to increase fees in subsequent years of study by an inflationary amount. Please refer to the accompanying Student Terms & Conditions for full details. Further information on fees can be found at <http://www.keele.ac.uk/studentfunding/tuitionfees/>

2. What is an Integrated Master's programme?

The Master's level programme described in this document allows you to focus exclusively on the study of Pharmacology to an advanced level. Integrated master's awards are delivered through a programme that combines study at a bachelor's degree with honours with study at master's level. As such, a student graduates with an integrated master's degree after a single four-year programme of study. The Integrated Masters programme described in this document allows graduates to gain enhanced skills and knowledge to master's level.

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, cancer 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 MSci fourth year of study is designed to enable you to enhance your employability and subject-specific knowledge through development of advanced problem solving and communication skills. You will develop enhanced research skills in the critical evaluation of scientific literature and in the design and conduct of an authentic research study.

The programme will also provide you with in-depth study into approaches to modern drug discovery 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 model of action and potential impact on human health.

A comprehensive laboratory programme runs throughout the course utilising our state-of-the-art David Attenborough laboratories, where you will develop key skills in diverse biochemical and molecular biology techniques. Here you will directly apply theoretical knowledge from across the programme and develop skills in experimental study design and optimisation through experiential, enquiry-based learning, culminating in your final year research project. You will also develop key transferable and employability skills related to the critical evaluation of scientific literature, data analysis and interpretation, including computational and bioinformatics tools, effective communication in a variety of formats, and teamwork. An experiential period of professional practice immersed in research culture during the final year extended research project of the MSci will support you in developing higher-level independent technical and analytical skills through hypothesis-driven enquiry, supported by your academic supervisor and wider research team. The skills and attributes developed here will be of particular value for those looking to continue in a research career, such as further study to PhD level, working in industry or wider bioscience sector.

Options to include a work placement year, study abroad for a semester or an international year of study provide further experiential learning opportunities developing additional employability skills. Shorter optional placement modules provide added flexibility for experiential learning alongside your studies in a range of industries and employer settings, including an education-focused optional module for those interested in a career in teaching. A range of final year optional modules in areas of cutting-edge bioscience research gives 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 effective contribution to case-based learning discussions;
- A core laboratory programme delivered in our state-of-the-art David Attenborough and Central Science Laboratories where you develop hands-on practical skills in the design and conduct of authentic research studies, with a wide range of final year research project choices supporting your final year extended MSci project;
- A comprehensive programme of academic and professional development workshops supporting you in acquiring and reflecting on key employability skills aligned with your career goals;
- Our Undergraduate Student Research Conference and MSci conference, where you will present the outcomes of your research projects in the context of a realistic research conference experience;

- The option to engage in deeper experiential learning opportunities through undertaking a Work Placement year between level 5 and level 6, or as shorter placement options alongside your studies, or 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;
- Enable you to specialise in Pharmacology to a masters level through a four year integrated Masters programme, developing key skills and programme outcomes to an advanced level.

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
- Subject Intellectual skills
- Key or transferable skills (including employability skills)

Subject knowledge and understanding

Successful students will be able to demonstrate knowledge and understanding of:

- 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.

In addition to those outcomes listed above, which are developed through to level 7, as appropriate, to an advanced level, MSci Pharmacology students will also be able to demonstrate advanced knowledge and understanding of:

- the principles and applications of cutting-edge research methodologies and techniques in the study of Pharmacology, Drug Development and the wider Biosciences to an advanced level;
- the context of their extended research project in relation to on-going research activity in their field of study and the wider biosciences.

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.

In addition to those outcomes listed above, which are developed through to level 7, as appropriate, to an advanced level, MSci Pharmacology students will also:

- develop an advanced understanding of the processes involved in research dissemination and the acquisition of research funding;
- critically evaluate current literature and complex methodologies to an advanced level in relevant areas of contemporary Pharmacology and Drug Discovery.

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.

In addition to those outcomes listed above, which are developed through to level 7, as appropriate, to an advanced level, MSci Pharmacology students will also:

- develop a greater awareness of research impact and the processes involved in research dissemination and the acquisition of research funding.

Key or transferable skills (including employability skills)

Successful students will be able to:

- 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 yourself and sustain that motivation over an extended period of time.

In addition to those outcomes listed above, which are developed through to level 7, as appropriate, to an advanced level, MSci Pharmacology students will also:

- develop greater autonomy in the planning and implementation of tasks associated with their research project and taking responsibility for their workload.

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 responsibility**. 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.

The delivery of our programme will include the following types of activities:

- **Digital resources:** These include provision of short videos and directed reading, aligned with key learning outcomes and supporting campus-based lectures, tutorials and workshops focused on active learning through application of content as part of a 'flipped classroom' approach to delivery. This also gives you more flexibility to decide how, when and where to study, with the opportunity to submit questions based on the material anonymously in advance of taught sessions.
- **Campus-based tutorials and workshops.** Designed to promote active learning through application and discussion of core knowledge, building on pre-session 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, developing wider academic skills including IT literacy and cutting-edge skills in computational and bioinformatic analysis.
- **Laboratory practicals.** A comprehensive laboratory programme covering a wide range of modern biochemical and molecular biology techniques, applying theoretical knowledge from across the course, training you in the skills needed for a career in biochemistry. You will develop skills in experimental design through enquiry-based learning, ensuring 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. You will also develop key employability skills such as leadership, communication and evidence-based problem solving.
- **Live, online tutorials, workshops and drop-in sessions.** These additional sessions to the core academic programme cover topics common to all students in the Life Sciences such as developing skills in effective note taking, literature analysis and science communication, and support development of employability skills through reflection on guest sessions delivered by alumni and invited speakers from industry and wider careers.
- **Independent study.** Based on directed reading from text books, research papers and other media to support your learning of the core material and deepen your understanding of the subject.
- Your third year **Research Project** gives you the opportunity to undertake a piece of independent experimental research supervised and supported by a member of staff in a selected area of contemporary Biochemistry aligned with your interests and supporting your progression to the MSci final year.
- **MSci study at level 7 (fourth year):** This will further develop your research skills in the critical evaluation of scientific literature and an extended research project will give you the opportunity to design and conduct an in-depth research project in an area of Pharmacology, including formulating a complete research strategy and producing a grant proposal. Research skills in these areas will also be developed in a series of research seminars and journal club-style presentations/discussion in an Advanced Research Techniques module.

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 Allied Health Professions and Pharmacy, School of Medicine and the University Hospitals of North Midlands 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 for Academic Mentoring.

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.

Global Challenge Pathways

This programme includes the option for you to take a Global Challenge Pathway. These modules offer you an exciting opportunity to work with students and staff from different disciplines to explore topical global issues such as power and conflict, health inequalities, climate change, generative AI, social justice, global citizenship, and enterprise from different perspectives.

Global Challenge Pathways can be taken as one 15-credit module at Levels 5 and 6. For more information about our Global Challenge Pathways please visit:

<https://www.keele.ac.uk/study/undergraduate/globalchallengepathways/>

Modern Languages or Certificate in TESOL

Alternatively, you could choose to study modules with the University Language Centre. The Language Centre offers three pathways; The Language Specialist, The Language Taster, and The Trinity Certificate in Teaching English to Speakers of Other Language (TESOL). Language Centre modules are available separately for students at Level 4. At Levels 5 and 6 they are included within the Global Challenge Pathways.

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 as a faculty funded 'additional' module. 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.

For more information about Language Centre option modules available to you please visit the following webpages.

For new (Level 4) students please visit: <https://www.keele.ac.uk/study/languagecentre/>

For current (Level 5 and Level 6) students please visit: <https://www.keele.ac.uk/students/academiclife/global-challenge-pathways/>

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 focus on those areas of the programme that interest you most. At Level 7 all modules are compulsory, with the focus of this year of study being the extended research project and its wider context.

Year	Compulsory	Optional	
		Min	Max
Level 4	120	0	0
Level 5	105	15	15
Level 6	90	30	30
Level 7	120	0	0

Module Lists

Level 4

Compulsory modules	Module Code	Credits	Period
Molecules for Life	LSC-10097	30	Semester 1
Introduction to Pharmacology	LSC-10093	30	Semester 1-2
Human Physiology and Anatomy	LSC-10101	30	Semester 1-2
Practical and Academic Skills in Bioscience	LSC-10103	0	Semester 1-2
Molecular Cell Biology	LSC-10066	30	Semester 2

Level 4 Module Rules

LSC-10103: Practical and Academic Skills in Bioscience is a compulsory zero-credit module. All laboratory 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 will also develop wider academic skills and includes additional academic support and development material to enhance your overall student experience and develop key employability skills. The module will be passed via attendance to a minimum threshold of taught laboratory sessions and successful completion of a competency skills audit.

Level 5

Compulsory modules	Module Code	Credits	Period
Molecular Pharmacology	LSC-20113	30	Semester 1
Applications of Molecular Biology	LSC-20131	15	Semester 1
Practical and Professional Skills in Bioscience	LSC-20127	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
Toxicology	LSC-20115	15	Semester 2

Optional modules	Module Code	Credits	Period
Molecular, Cellular and Structural Immunology	LSC-20015	15	Semester 1
Microbes, Viruses and Parasites	LSC-20073	15	Semester 1
Flexible Work Placement (Level 5)	NAT-20011	15	Semester 1-2

Level 5 Module Rules

LSC-20107: Practical and Professional Skills in Bioscience is a compulsory zero-credit module. All laboratory 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 will also develop advanced academic skills in literature searching and analysis and includes additional career development workshops, enhancing your overall student experience and developing key employability skills.

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

Please note: You cannot take both Flexible Work Placement (Level 5) and Flexible Work Placement (Level 6)

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
Professional Development in Bioscience	LSC-30090	0	Semester 1-2
Research Project	LSC-30102	30	Semester 1-2
Employability and Communication Skills in Bioscience	LSC-30106	15	Semester 1-2
Research Topics in Pharmacology	LSC-30082	15	Semester 2

Optional modules	Module Code	Credits	Period
Human Parasitology	LSC-30036	15	Semester 1
Tropical Biology Field Course	LSC-30066	15	Semester 1
Omics Technologies	LSC-30092	15	Semester 1-2
Flexible Work Placement (Level 6)	NAT-30008	15	Semester 1-2
Professional Experience in Education	NAT-30012	15	Semester 1-2
Cancer Biology	LSC-30061	15	Semester 2
Medical Glycobiology (Level 6)	LSC-30065	15	Semester 2

Level 6 Module Rules

Please note: You cannot take both Flexible Work Placement (Level 5) and Flexible Work Placement (Level 6). You also cannot take both Flexible Work Placement (Level 6) and Professional Experience in Education.

Level 7

Compulsory modules	Module Code	Credits	Period
Literature Review and Grant Proposal	LSC-40065	30	Semester 1
Advanced Research Topics in Pharmacology	LSC-40087	30	Semester 1
MSci Extended Research Project	LSC-40063	60	Semester 1-2

9. Final and intermediate awards

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

Master's Degree MSci Pharmacology	480 credits	You will require at least 120 credits at levels 4, 5, 6 and 7 You must accumulate at least 360 credits in your main subject (out of 480 credits overall) to graduate with a named single honours degree in this subject.
Honours Degree BSc (Hons) Pharmacology	360 credits	You will require at least 120 credits at levels 4, 5 and 6 You must accumulate a minimum of 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.

Our assessment strategy will help you to develop and evidence your ability to:

Provide evidence-based solutions to current scientific problems. Most often this is assessed through a range of case report, 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 an assessment where you will work in a group on the optimisation and production of commercial laboratory assay kit for metabolite quantification.

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. 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)	36.4%	63.6%	0%
Year 2 (Level 5)	39.1%	60.9%	0%
Year 3 (Level 6)	29.2%	70.8%	0%
Year 4 (Level 7)	30.3%	69.8%	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. Other Learning Opportunities

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.

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 studying in Erasmus+ destinations 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.

Work Placement Year

Students have the opportunity to apply directly for the 4-year 'with Work Placement Year' degree programme or to transfer onto the 4-year degree 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 their year-long placement. Eligibility rules are included in the Annex.

Students wishing to take the work placement year should meet with the Programme Director to obtain their signature to confirm agreement before they will be allowed to commence their placement.

International students who require a Tier 4 visa must check with the Immigration Compliance Team prior to commencing any form of placement.

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

Secondments. These are shorter work-based 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 conservational in nature, but again provide fantastic international experience and of course, will complement and broaden your programme of study in Biochemistry.

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. 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 Biochemistry 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, but are widely advertised and undergraduate students are always welcome to attend.

15. Additional Costs

Activity	Estimated Cost
Field course- optional hosted at USM, Malaysia	£1,200
Replacement lab coat (if allocated one is lost)	£10
Total estimated additional costs	£1,210

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%.

As to be expected there will be additional costs for inter-library loans and potential overdue library fines, print and graduation. We do not anticipate any further costs for this programme.

16. Annex - International Year

Pharmacology with International Year

<p>International Year Programme</p> <p>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.</p> <p>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.</p> <p>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.</p>
<p>International Year Programme Aims</p> <p>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:</p> <ol style="list-style-type: none"> 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
<p>Entry Requirements for the International Year</p>

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. Use independent research skills to identify relevant information resources on a range of subjects related, or complementary, to Pharmacology.

Demonstrate the use of critical thinking skills, augmented by creativity and curiosity, in discussing the application of their International Year studies to Pharmacology.

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 International Year must complete 120 credits, which must comprise *at least* 40% in the student's discipline area.

This may impact on your choice of modules to study, for example you will have to choose certain modules to ensure you have the discipline specific credits required.

Students are barred from studying any module with significant overlap to the Level 6 modules they will study on their return. Significant overlap with Level 5 modules previously studied should also be avoided.

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.

17. 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 5 weeks after the 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 (NAT-30010).

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 zero-credit rated 'Work Placement Year' module (NAT-30010).
- 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.

18. Annex - Programme-specific regulations

Programme Regulations: Pharmacology

Final Award and Award Titles	MSci Pharmacology MSci Pharmacology with International Year MSci Pharmacology with Work Placement Year
Intermediate Award(s)	BSc (Hons) Pharmacology BSc (Hons) Pharmacology with International Year BSc (Hons) Pharmacology with Work Placement Year 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: Study Abroad and Field Course

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

2.2 Students taking the final year module LSC-30066: Tropical Biology Field Course will undertake field work in Malaysia between level 5 and 6. Students must achieve the following criteria to be eligible to attend:

- **Academic Performance:** an average of 55% across all modules in Semester 1 at Level 5 is normally required. Places on the course are then conditional on achieving an average mark of 55% across all Level 5 modules. You will still be eligible to apply if you have up to 15 credits of re-assessment, but still meet the 55% requirement. Where no Semester 1 marks have been awarded, performance at Level 4 and ongoing Level 5 assessments are considered.
- **General Aptitude:** demonstrated through interview during Level 5, semester 2 and by recommendation of your academic mentor, year tutors and/or programme director.

At least one male and one female academic member of staff from the School of Life Sciences will accompany you on the field course to offer support.

There are additional costs associated with the tropical field course that change each year. These will be discussed at Level 5 before you need to decide to apply.

[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: 17 March 2025

Previous documents

Version No	Year	Owner	Date Approved	Summary of and rationale for changes
1	2024/25	DAVID WATSON	14 June 2024	