Course Information Document: Undergraduate

Academic Year 2021/22

1. Course Summary

Names of programme and award title(s)	BSc (Hons) Pharmaceutical Science, Technology & Business
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
Maximum period of registration	The normal length as specified above plus 3 years
Location of study	Keele Campus
Accreditation (if applicable)	Accreditation is currently being sought from appropriate professional bodies; this process is on-going.
Regulator	Office for Students (OfS)
Tuition Fees	**UK students:** Fee for 2021/22 is £9,250* **International/EU students:** Fee for 2021/22 is £23,000**

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/*

*** 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 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.

The BSc in Pharmaceutical Science, Technology & Business currently has one optional module: at Year 1 of study (FHEQ Level 4) students can take a 15-credit language module offered by the Keele Language Centre. This emphasises the international nature of the programme and also offers the opportunity for support, as appropriate, in English language.

3. Overview of the Programme

The global pharmaceutical industry has experienced substantial change in recent years. Industry leaders must now understand how discoveries in science and technology translate to business opportunities within the pharmaceutical industry, whether in discovery, manufacturing, marketing and medicines supply and control. The employment market is becoming more challenging and this programme meets the need of the industry by producing graduates who are well-qualified in all aspects of the relevant applied sciences, who have well-developed key employability skills, and who also have significant knowledge and understanding of and insight into business and management - so you get more than just training in the core pharmaceutical sciences.

This course covers the main aspects of pharmaceutical discovery and development, product formulation, manufacture and quality assurance assessment, and explains how such pure and applied sciences fit into global business, legal and regulatory frameworks. This includes elements of clinical development and the role of the pharmaceutical scientist within the industry team that take a drug from research to the clinic.

As part of the preparation to enter the global pharmaceutical industry, there will be an opportunity to pursue a language pathway throughout the programme. In the first year you will take a language module in English (depending on fluency levels) or a modern foreign language for those fluent in English. This will ensure you have both a language and cultural understanding of nations outside your home country. For modern languages (not English language modules) you may wish to pursue a pathway through the programme that will provide you with recognition of this on your degree certificate. There will be opportunities at years two and three of the programme, depending on entry level to your chosen language and availability, to take up to 60 credits of language learning on this programme. If you achieve 60 credits of language learning as part of your programme you will have added to your degree certificate the additional recognition of having achieved "with competency in [Chosen Language]" or "with advanced competency in [Chosen Language]", depending on the level which you achieve. You can also take language modules as non-credit extracurricular study throughout your programme - further details can be obtained from the Language Centre.

The principal aim of the programme is to develop knowledge and skills in a wide variety of disciplines by demonstrating the linkages between seemingly disparate topics in science and technology that underpin all subsequent learning, and which are central to the successful delivery of new medicines to global markets.

4. Aims of the programme

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

- Develop the key scientific skill that, in an integrated context, underpin the clinically relevant development of pharmaceutical products
- Understand the structures and frameworks in which the pharmaceutical industry operates, both nationally and globally

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:

- Understand the core principles of the pharmaceutical sciences as they are applied to the development, licencing and marketing of pharmaceutical products

Subject specific skills

Successful students will be able to:

- Understand the nature of pharmaceutical development, both in the laboratory and in the business environments, and to use this knowledge in the development of new strategies to develop clinically relevant approaches to disease management and treatment

Key or transferable skills (including employability skills)

Successful students will be able to:

- Appreciate and understand how the core chemical and biological sciences integrate to underpin the successful development of pharmaceutical products, a core skills base which is directly applicable to a number of other industries (e.g. cosmetics, foods)

Keele Graduate attributes

Engagement with this programme will enable you to develop your intellectual, personal and professional capabilities. At Keele, we call these our ten Graduate Attributes and they include independent thinking, synthesizing information, creative problem solving, communicating clearly, and appreciating the social, environmental and global implications of your studies and activities. Our educational programme and learning environment is designed to help you to become a well-rounded graduate who is capable of making a positive and valued contribution in a complex and rapidly changing world, whichever spheres of life you engage in after your studies are completed.

Further information about the Keele Graduate Attributes can be found here: http://www.keele.ac.uk/journey/

6. How is the programme taught?

Learning and teaching methods used on the programme vary according to the subject matter and level of the module. They include the following:

- Lectures, tutorials, workshops, problem-solving sessions, interactive and immersive 3D teaching in the Health Cinema, laboratory work (individual and group exercises) and integrated 'synoptic' assessments which integrate the differing science subjects with the business aspects of the programme to develop clinically relevant products for patients.

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 Personal Tutors or module lecturers on a one-to-one basis.

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

- The use of a wide range of assessment skills allow us to focus on different aspects of the challenges faced in pharmaceutical development; for example, this might include the use of individual or group-based activities, oral presentation sessions or student-led workshops where decision making is both collective and led by students; research projects may also give students the ability to work on a major piece of novel research not only by themselves but in collaboration with students taking similar projects and within the setting of research groups with the School of Pharmacy and Bioengineering.

7. Teaching Staff

The staff who deliver this course are based predominately within the School of Pharmacy and Bioengineering and Bioengineering and have expertise in the core aspects of the pharmaceutical sciences: pharmacology, physiology, medicinal and organic chemistry and formulation and drug delivery. In addition, several members of the School's academic staff have previously worked in the pharmaceutical (and related) industry and who can frame their academic work within the context of their previous roles.

The BSc programme also makes significant use of expert external speakers who are, or have worked, in the pharmaceutical industry or related industries. This includes a range of business-focused roles and addresses with real world examples subjects as diverse as clinical development, marketing and branding of pharmaceutical products, the role of healthcare systems in the context of pharmaceutical sales and regulatory affairs.

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;

A summary of the credit requirements per year is as follows, with a minimum of 90 subject credits (compulsory plus optional) required for each year.

For further information on the content of modules currently offered, including the list of elective modules, please visit: https://www.keele.ac.uk/recordsandexams/modulecatalogue/

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

Module Lists

Level 4

Compulsory modules	Module Code	Credits	Period
Human Anatomy and Physiology	PHA-10028	30	Semester 1-2
Biochemistry & Cell Biology	PHA-10030	30	Semester 1-2
Introduction to Pharmaceutical Science	PHA-10032	30	Semester 1-2

Level 4 Module Rules

A maximum of 30 credits of optional modules must be taken; this must include one language module and one business module.

Available language modules (modern foreign languages) are listed subject to availability and compatibility with the School of Pharmacy and Bioengineering timetable for compulsory modules. The choice of English language modules provided is available only to those students for whom English is a second language. For information the full list of currently available language modules is:

- British Sign Language 1 - 2 (MLX-90001/2)
- Chinese 1 - 6 (CHI-90001/2/3/4/5/6)
- French 1 - 10 (FRE-90001/2/3/4/5/6/7/8/9 and FRE-90010)
- German 1 - 10 (GER-90001/2/3/4/5/6/7/8/9 and GER-90010)
- Italian 1 - 2 (ITA-90001/2)
- Japanese 1 - 6 (JAP-90001/2/3/4/5/6)
- Russian 1 - 6 (RUS-90001/2/3/4/5/6)
- Spanish 1 - 6 (SPN-90001/2/3/4/5/6/7/8/9 and SPN-90010)
- ENL-10032 English for Academic Purposes 2 (EAP2)
- ENL-10033 English for Academic Purposes 3 (EAP3)
- ENL-90013 Academic English for Science Students

Note: odd-numbered Language Centre modules run in Semester 1, even-numbered modules in Semester 2.

Available business modules are listed subject to availability and compatibility with the School of Pharmacy and Bioengineering timetable for compulsory modules.

- MAN-10007 - Foundations of Human Resource Management
- MAN-10018 - Management In Context
- MAN-10019 - Marketing Principles
- MAN-10022 - Global Business Environment
- MAN-10023 - Introduction to International Business
- MAN-10026 - Multinational Enterprise Business Perspectives

PHA-10028 and PHA-10030 are shared with the BSc in Cell and Tissue Engineering; PHA-10032 is a bespoke module which focuses on introducing the core pharmaceutical sciences to students.

Level 5

Compulsory modules	Module Code	Credits	Period
Applied Pharmaceutical Science I	PHA-20016	30	Semester 1
Pharmaceutical Analysis And Quality Control	PHA-20014	30	Semester 1-2
Applied Pharmaceutical Science II	PHA-20018	30	Semester 2

Level 5 Module Rules

A maximum of 30 credits of optional modules must be taken.

Available language modules (modern foreign languages) are listed subject to availability and compatibility with the School of Pharmacy and Bioengineering timetable for compulsory modules. The choice of English language modules provided is available only to those students for whom English is a second language. For information the full list of currently available language modules is listed above in the Level 4 Module Rules Section; students would be expected to take a follow-on language module at the next level, i.e. if a student took SPN-90001 or SPN-90002 at Level 4 then they would be expected to continue by taking SPN-90003 or SPN-90004.

Available business modules are listed subject to availability and compatibility with the School of Pharmacy and Bioengineering timetable for compulsory modules.

- MAN-20053 - Operations and Quality Management
- MAN-20055 - Organisational Behaviour

Level 6

Compulsory modules	Module Code	Credits	Period
The Pharmaceutical Industry at the Cutting Edge	PHA-30021	30	Semester 1-2
Advanced Topics in Pharmaceutical Science	PHA-30023	30	Semester 1-2
Pharmaceutical Science Research Project	PHA-30025	30	Semester 1-2

Optional modules	Module Code	Credits	Period
Current Developments in Pharmaceutical Science II	PHA-30017	15	Semester 1-2
Current Developments in Pharmaceutical Science	PHA-30019	30	Semester 1-2

Level 6 Module Rules

A maximum of 30 credits of optional modules must be taken.

Available language modules (modern foreign languages) are listed subject to availability and compatibility with the School of Pharmacy and Bioengineering timetable for compulsory modules. The choice of English language modules provided is available only to those students for whom English is a second language. For information the full list of currently available language modules is listed above in the Level 4 Module Rules Section; students would be expected to take a follow-on language module at the next level, i.e. if a student took SPN-90003 or SPN-90004 at Level 5 then they would be expected to continue by taking SPN-90005 or SPN-90006.

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. In addition, students whose credits include 60 credits for modules provided by the language centre can, depending on the CEFR-level of those modules, be additionally awarded the notation on their degree certificate of "with competency" or "with advanced competency" in their chosen language.
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

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:

- The assessments used in this programme reflect a wide range of academic practice and are also designed to be relevant to the needs of the industry. For example, the synoptic assessment collates and integrates learning across science and business at Level Five of the programme, whilst the use of batch record sheets in laboratory sessions reflect practice in industry (pharmaceutical and otherwise). The main modes of assessment are examinations (essay-based, short-answer questions and multiple choice questions), laboratory practical exercises (with associated report-writing and documentation completion, as well as physical sample preparation and analysis), workshops (including pharmaceutical calculations), group and individual presentations and synoptic exercises.

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.

At all levels (4-6), Low Stakes Assessments (LSAs) have been introduced to aid student engagement on the course. These contribute to a range of assessments at all levels.

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)	33%	67%	0%
Year 2 (Level 5)	29%	71%	0%
Year 3 (Level 6)	29%	71%	0%

12. Accreditation

This programme is not currently accredited by an external body. However, discussions have begun with the Academy of Pharmaceutical Sciences and The Royal Society of Chemistry to begin the process of accreditation by both those bodies. Students will be updated as appropriate to any changes in the status of these processes.

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/

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.

15. Additional Costs

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 undergraduate programme.

Version History

This document

Date Approved: 10 February 2021

Previous documents

Version No	Year	Owner	Date Approved	Summary of and rationale for changes
1	2020/21	GARY MOSS	20 December 2019	
1	2019/20	GARY MOSS	20 December 2019	