

Programme Specification		
1	Awarding Institution/Body	Luminate Education Group
2	Delivery Location(s)	University Centre Leeds
3	Programme Externally Accredited by (e.g., PSRB)	None
4	Award Title(s)	BSc (Hons) Biomedical & Pharmaceutical Sciences BSc (Hons) Biomedical & Pharmaceutical Sciences with Foundation Year Contained awards: Certificate of Higher Education Biomedical & Pharmaceutical Sciences (120 credits at level 4) Diploma of Higher Education Biomedical & Pharmaceutical Sciences (120 credits at level 4 plus 120 credits at level 5) Ordinary degree, i.e.: BSc Biomedical & Pharmaceutical Sciences with Foundation Year (120 credits at levels 3, 4 and 5 plus 60 credits at level 6) BSc Biomedical & Pharmaceutical Sciences (120 credits at levels 4 and 5 plus 60 credits at level 6)
5	UCAS Code	CF17 for BSc (Hons) Biomedical & Pharmaceutical Sciences CF18 for BSc (Hons) Biomedical & Pharmaceutical Sciences with Foundation Year
6	Apprenticeship	1. Laboratory Technician (level 3) 2. Technician Scientist (level 5) 3. Laboratory Scientist (level 6) Link to the mapping document - Appendix 5
7	HECoS Code and Description	(100392) Applied science
8	Mode of Attendance	Full-time (3 years, 4 with FY) and part-time (5 years, 7 with FY) (both face to face taught) for all awards.
9	Relevant QAA Subject Benchmarking Group(s)	Biomedical Science and Biomedical Sciences (March 2023); Biosciences (March 2023); Chemistry (March 2022)
10	Relevant Additional External Reference Points	QAA document 'Characteristics Statement: Higher Education in Apprenticeships' (June 2022)
11	Date of Approval/ Revision	June 2025

12 Criteria for Admission to the Programme
Entry Criteria for BSc with Foundation Year

	Typical Offer	Minimum Offer
UCAS tariff points:	32 UCAS tariff points from at least one A-level or equivalent qualification	Evidence that level 3 study has been completed, even if no qualifications have been passed (e.g. a U grade at A-level or completion of some credits in a BTEC level 3 courses)
IELTS:	IELTS 6.0 with no less than 5.5 in any component.	
International qualifications:	International qualifications will be assessed against these criteria	
Mature applicants:	University Centre Leeds welcomes applications from mature* applicants who may not have met the academic criteria, but who can demonstrate the ability to cope with university-level study. Candidates in this category are likely to be interviewed to assess their suitability for the course and may be asked to provide a portfolio of evidence to support their application. *21 years and over at the start of the course	
RPL claims:	The course structure actively supports claims for Recognition of Prior Certified Learning (RPCL) or Recognition of Prior Experiential Learning (RPEL)	

Entry Criteria for BSc (direct entry to Year 1)

	Typical Offer	Minimum Offer
UCAS tariff points:	80 UCAS tariff points from A levels or equivalent qualifications, at least 32 points of which must be from a level 3 qualification in a relevant science subject	40 UCAS tariff points from A levels or equivalent qualifications, at least 32 points of which must be from a level 3 qualification in a relevant science subject
IELTS:	IELTS 6.0 with no less than 5.5 in any component.	
International qualifications:	International qualifications will be assessed against these criteria	
Mature applicants:	University Centre Leeds welcomes applications from mature* applicants who may not have met the academic criteria, but who can demonstrate a wealth of experience in their chosen field. Candidates in this category and otherwise are likely to be interviewed to assess their suitability for the course and may be asked to provide a portfolio of evidence to support their application. *21 years and over at the start of the course	
RPL claims:	The course structure actively supports claims for Recognition of Prior Certified Learning (RPCL) or Recognition of Prior Experiential Learning (RPEL)	

Additional entry criteria - BSc only, does not apply to BSc with Foundation Year

	Criteria
GCSE English: Desirable but not essential	English Language Grade 4 or above. Key Skills Level 2, Functional Skills Level 2 and the Certificate in Adult Literacy are accepted in place of GCSEs.
GCSE Maths: Essential	Maths Grade 4 or above. Key Skills Level 2, Functional Skills Level 2 and the Certificate in Adult Numeracy are accepted in place of GCSEs
GCSEs Science: Desirable but not essential	GCSE Science at Grade 4 or above.

The apprentices over the age of 19 will no longer be required to have or achieve an English and Maths Level 2 qualification.

Regarding the Level 6 Laboratory Scientist apprenticeship provision, iFATE states that typically, candidates will have 5 GCSE's at grade C or above, including English, Maths and a Science subject and hold relevant level 3 qualifications providing the appropriate number of UCAS points for entry to a level 6 Higher Education programme. Other relevant or prior experience may also be considered as an alternative.

13 Educational Aims of the Programme

The programme aims to:

- Develop a multidisciplinary understanding of the science of life, health and disease at the molecular, cellular, system, organismal and environmental level.
- Provide detailed knowledge of microbial processes and applications, including the opportunities to exploit and benefit from these.
- Foster an understanding and appreciation of the chemistry and biochemistry of drug molecules: their design, synthesis and behaviour in the body
- Provide students with an understanding of the theory of typical analytical techniques
- Develop analytical and practical skills involving the use of a wide range of laboratory equipment and techniques as well as methods of scientific data collection, storage and processing.
- Produce graduates who are technically competent in common laboratory procedures, able to work independently as well as in teams with professionalism, and who can learn from experiences through reflective practice.
- Produce graduates who can relate practical laboratory experience to theory, knowledge and standards of good practice

14	Learning Outcomes The programme will enable students to develop the knowledge and skills listed below. On successful completion of the programme, the student will be able to:
	Knowledge and Understanding
K1	Apply a deep, comprehensive and detailed knowledge of areas of science to solve problems of relevance to Biomedical, Bioscience, Chemical or Pharmaceutical industries
K2	Evaluate standard scientific procedures in order to justify the choice of technique for a range of applications, considering ethical aspects where appropriate.
K3	Formulate a hypothesis and evaluate procedures in terms of their effectiveness at testing a hypothesis
K4	Critically appraise theories and concepts relevant to the current body of scientific understanding within the Biomedical, Bioscience, Chemical or Pharmaceutical industries
	Cognitive/Intellectual Skills
C1	Plan, undertake and evaluate a self-managed project in which evidence is synthesised and appraised
C2	Synthesise information from different sources in order to solve problems
C3	Analyse and solve complex problems in a scientific context, justifying the methods employed, with reference to ethical and safety considerations where appropriate
C4	Critically evaluate, analyse and interpret information from literature sources or laboratory measurements
	Professional Skills
P1	Respond to changing situations within the industrial environment of a relevant sector, showing detailed, up to date knowledge of good practice and current regulations
P2	Plan and execute laboratory work with minimal supervision, meeting expected safety and ethical standards
	Key Transferable Skills
T1	Independently plan, manage and evaluate the acquisition of new knowledge and skills (as part of a strategy for employment and future professional development)
T2	Communicate complex information clearly, fluently and effectively in a range of styles using technical and specialist language in a professional manner.
T3	Select appropriate examples of computer software to generate, store, process and display data
T4	Critically evaluate their own performance in individual tasks or as part of a team

15 **Key Learning & Teaching Strategy and Methods**

The overall aim of the teaching and learning strategy is to enable students to develop the knowledge as well as the intellectual, personal and practical laboratory skills that constitute the programme through learning activities that:

- are varied, requiring learners to engage with a number of different styles of learning (for example through short verbal expositions, practical demonstrations, visual materials, interactive computer simulations, peer teaching, Socratic debate, practical discovery through laboratory experiments)
- promote both peer interaction and interaction between students and staff
- are closely related to activities that may be undertaken in the workplace
- encourage students to take control of, and responsibility for, their own learning.
- are accessible by all students (with adjustments if necessary) whilst challenging them to sometimes work outside of their comfort zone

The degree has been written with the intention of providing an excellent preparation for students to gain employment in a number of scientific fields. The learning and teaching strategy reflects this in several ways:

- Most of our teaching is conducted in laboratories
- We incorporate the use of a wide range of scientific instruments in our teaching and assessment activities and students will be given plenty of hands-on experience in operating these
- Employers have been consulted about the content of modules to ensure we are developing the right knowledge and skills to help graduates compete for jobs

A range of teaching and learning methods are employed as appropriate to the level and topic to develop the required knowledge base and skills base. The variety of methods will provide an interesting and enjoyable experience of studying throughout the programme.

Students will be encouraged to keep reflective learning journals, both as an assessment tool and as a way of monitoring and managing their own progress towards individual academic and career goals.

All students receive a talk early in the course to explain to them what the University Centre's academic regulations are and what the consequences of failing to adhere to these will be. There will be content in one of the skills modules that are designed to explore the meaning of and emphasise the importance of academic integrity and ethical practice (both in general and the specialist ethical considerations that are relevant to the life sciences). Students starting the course at Year 1 will be asked to discuss issues of integrity in the STEM Toolkit module. Those joining the course via the Foundation Year will be engaged in this material in the Academic Skills module.

As the course progresses, students will be increasingly required to conduct independent research - both as paper exercises and by conducting their laboratory experiments - which by the end of the course they will be expected to be able to design and execute with very minimal supervision.

The use of guest speakers from industry in some modules may provide an industrial perspective on some topics and may raise awareness of the range of activities undertaken in local scientific organisations - inspiring students and placing the theory that is being learned firmly in a real-world context. It should be noted, however, that guest speakers will not be delivering or assessing any curriculum content. Where used, their role will be to provide context to material that will be delivered by members of the teaching team. We may also use guest lectures from members of other teaching teams for short sessions to deliver highly-specialised material. For example, staff from the Digital team may deliver single-session masterclasses on topics such as advanced methods of data analysis.

The programme will mainly be delivered in new purpose-built joint teaching-laboratory spaces in order to incorporate a mix of practical and theoretical-based delivery. Some sessions will involve a blend of short, traditional expositions and lecture-style presentations interspersed with practical activities designed to reinforce or extend the material that has been presented. Other sessions will involve longer, investigative practical activities. Students will be directed to particular chapters of textbooks or high-quality online resources to read prior to teaching sessions, and there may also be videos, interactive quizzes, lecture notes and simulations available for study before and after taught sessions.

In this way, students will have the opportunity to learn and discover for themselves new information using a wide variety of methods. They will also be regularly performing laboratory activities commonly employed in industry to increase their competence and confidence in working safely and effectively in a laboratory environment.

As well as providing access to written materials, videos, interactive quizzes and simulations, the Virtual Learning Environment (VLE) will provide a central place in which all work will be submitted (through integration with Turnitin, which will be used to check written work for both plagiarism and the use of AI tools). Students may be directed to use the VLE also as a means of communication through the embedded forums, wikis, blogs and instant messaging facilities.

Students will be taught to use common IT tools such as word processing and spreadsheet programs in order to produce documents to meet the standards of scientific writing. They may also regularly make use of more specialist pieces of software to retrieve chemical data and produce molecular diagrams. Software may be used for virtual dissection or as a 3D Atlas of human anatomy or to simulate events in the body such as drugs binding to their targets. Cheminformatics software may be used for predicting physicochemical properties. Use of all of these may be incorporated into theory and practical teaching and students may be expected to use them in producing assessed work.

The main IT systems will be introduced during induction and students' skills will be developed continuously throughout the course.

Students are encouraged to undertake work experience in a relevant science-based role. We may offer short placements with the laboratory technicians in our labs or the labs at other Luminate Group campuses for those students who wish to take up this opportunity.

As part of the Work Related Learning module students produce a record of laboratory skills and competencies that they have acquired.

	At the end of each year, students are assigned summer projects, which may involve directed reading, completing quizzes, individual research on a set topic or writing a short article on a set topic. This will assist students in preparing themselves for the next level of study. Students will be expected to complete the project by the first week of teaching in the next year. Some teaching time in the first week will be used to check progress in the summer project and direct students to further work or remedial work if they are struggling to meet the increased demands of the new level. Academic support via Workshops and support with study skills and habits via the departmental Progress Coach will be available to those who need help rising to the increased challenges. A part-time route is an option over two, three or five years (seven years if starting at Foundation Year) studying 6 hours per week on one day, in addition to completing work-based learning in the workplace of a relevant industry. This is aimed at those individuals who have full-time employment in the sector. Each module will be delivered over one semester. Work Related Learning and Scientific Investigation modules will be completed at the place of work. Students will be supported through the VLE in addition to tutorial activities. In this way, the qualification can be used to offer either a level 3, Laboratory technician, level 5 Technician scientist, or a level 6 Laboratory scientist apprenticeship delivered in a day-release model. Apprentices would complete 3 modules per year in the University Centre, plus work-based modules with their employer. For part-time students, learning materials and online activities will be available through our VLE, and a robust support system will be in place. Students will be expected to have regular tutorials (which may be remotely online) with academic staff and will have full access to support from the University Centre Student Support staff, who can be contacted via the VLE. Full-time students will also be able to access these resources.
16	Key Assessment Strategy and Methods The overall strategy is to provide a range of types of assessment that are: • Varied and challenging in order to engage students • Authentic to the activities that graduates will be undertaking in the workplace or in further study • Accessible by all students (with adjustments if necessary) • Thorough assessments of the full range of stage or programme learning outcomes • Designed to allow students to demonstrate the skills and knowledge that they have developed throughout the course. The assessments are also designed to be increasingly challenging from level to level to promote and measure students' progress as they face the greater academic demand of each new level. Assessments have been created with the intention of providing an excellent preparation for students to gain employment in a number of scientific fields. Many assessments have been devised to be as similar as possible to activities that would be undertaken in the workplace. In this way we are developing and assessing skills that are relevant to industry and enhance students' employability

Taught sessions will incorporate regular short formative assessment activities with feedback (and feedforward) to guide students' progress and development. Pair and small group activities will be regularly used in most modules, allowing students to improve their communication and teamwork skills. Short presentations by students will form part of the body of formative and summative assessment activities, increasing students' confidence in speaking and presenting.

Formative assessment will begin very early in the course, with short basic tests increasing in demand over the weeks. This is in order to provide a smooth transition from previous education and to identify any students who may need extra support. Online diagnostic testing in maths skills will be used at the very beginning of the course to provide information about specific support in this area that may be required.

Some formative assessment tasks will be used to prompt discussions in subsequent taught sessions; others will be delivered via the VLE and will provide instant feedback. Preparation for practical activities will be available in the form of virtual experiments in which online feedback is instantly available. Real and simulated practical activities will also provide data and the processing of this provides another opportunity for formative assessment with feedback on both the quality of the data collected, and how this may be improved, and how it is displayed and manipulated to form conclusions.

The programme will be assessed summatively through a range of methods, including examinations, laboratory activities with reports written to follow a standard GLP format, problem-based group projects (assessed on the outcome of the project and the performance of the group), oral and poster presentations, case studies, portfolios of evidence collected over a period of several weeks and research projects with written reports (including a mini-dissertation style report).

There will also be 'open book' and 'take home' tests. These consist of a set of questions that are longer and more open than in a traditional 'closed book' test, requiring students to demonstrate a deeper understanding than is the case with simple questions that often require little more than recall of facts. Some tests may require students to search online, in textbooks or through their own notes for information that they will use to construct answers.

'Take home' tests will be hosted on the VLE and will become available at a fixed time. Students will have to complete the questions in either 48 hours (at level 3) or 24 hours (at other levels) - submitting answers via the VLE. There are a number of advantages of this style of assessment over traditional exams or tests (usually taken over a period of 60 to 180 minutes without access to sources of information). They have been shown to reduce student anxiety, promote higher order thinking skills, allow more sophisticated questions to be asked and are considered more authentic.

This range of activities provides the opportunity for all students to demonstrate the knowledge and skills that they have acquired throughout their studies. The mix of practical and written assessments, including formal examinations, will provide evidence to employers of the level of laboratory skills and other abilities (such as teamwork, communication skills, ethical integrity, etc.) that a student has developed, whilst also enabling those students who wish to go on to further study to demonstrate the theoretical knowledge and academic skills that they have learned.

A small number of traditional examinations are included as part of the varied set of assessment methods as they are still widely used across the sector and some of our students perform well in

	this type of assessment. Our students will be expected by employers to have experience in demonstrating their ability to apply knowledge under exam conditions and some professional bodies will require members to sit examinations as part of the registration process. Also, students who wish to progress to certain postgraduate courses may be disadvantaged by not having experience of assessment via examinations. At both levels 5 and 6, students will be required to design and conduct their own research project. Academic and technical advice will be available to assist them in this, but it is expected that they will have become independent learners by level 6 and will be capable of managing their own laboratory time to complete the project with minimal intervention from staff. For apprentices, there will be continuous assessment of competencies that begins almost immediately. There will also be an end point assessment involving standard specific tasks and a vocational discussion based on a portfolio of work. There will be additional tutorial time with an assessor at the end of each academic year to support preparation for the end-point assessment. All apprentices will study our programme in a part-time mode, as separate groups if the numbers allow (or they will infill into the degree students' groups, if the numbers are too small to have a group of their own). The L3 Laboratory technician apprentices will spend two years on the programme, finishing with a CertHE and RSciTech. The L5 Technician scientist apprentices will spend three years on the programme, finishing with a DipHE. In the third year, the Technician Scientist apprentices will study three modules in the University Centre: one core module and two options. Two further core modules (Work Related Learning and Scientific Investigation) will be delivered remotely in the form of project work conducted at the student's place of work with close monitoring and support from University Centre tutors. Work Related Learning and Scientific Investigation have tasks that can be tailored to the apprentices' workplace characteristics and ensure no duplication of work. They are both closely mapped to the Technician scientist standard and there is minimal duplication of the KSBs assessed in these modules. The methods of assessment were chosen to develop and support apprentices for their End Point assessment. The Occupational standards for both L3 Laboratory technician and L5 Technician scientist standards are mapped to the Programme Outcomes and learning Outcomes for each module taught in the programme and the tables are in the Appendix 5, pp 30-31. The Laboratory scientist standard will be delivered over five years, on a day release basis. The knowledge, skills and behaviour statements of this standard are mapped to our Programme learning outcomes. The apprentices will be given the choice of doing the Undergraduate Research Project in their workplace or in the University centre's laboratories. Where possible the Undergraduate Research project will support the end point assessment of Laboratory scientist apprentices.
17	Industry Specific Skills Development Students are not required to undertake formal work experience or placements. In almost all modules, students are given the opportunity to learn industrially relevant skills. We have invested in a number of scientific instruments that are currently used in industry and students are trained to use these and interpret the data generated by them in the same way as they would in the workplace.

	The programme allows students to learn and improve skills such as weighing, pipetting, using a dissection kit, using the light microscope, preparing and analysing microbiology specimens, using the autoclave, preparing plates, using Ultraviolet-Visible spectrophotometers, Fourier-transform Infrared Spectrometers, Nuclear magnetic resonance spectrometers, and the High-Pressure Liquid Chromatography – Mass spectrometers, to name just a few. The skills mentioned above are used on a daily basis in laboratories that test the effect of various drugs, laboratories preparing various drugs, ecology-based environmental surveillance, research and educational laboratories.
18	Transferable Skills Development Teaching throughout the programme is designed with an awareness of the need to develop STEM 7 transferable skills. For example: • Peer learning and group activities are routinely used to meet the collaboration skill • Many modules involve students generating and analysing data. Forming conclusions based on this process addresses the development of both data-driven decisions and problem solving • In some modules, especially in the higher levels, creative thinking and intellectual curiosity are required to succeed. For example, individual research projects would simply not be possible without these attributes. • A number of learning activities require students to work in groups and communicate with one another and with lecturers - verbally and in a variety of electronic forms. In year 0 (level 3) and year 1 (level 4) both formative and summative assessments will be used to gauge students' levels of ability in academic skills such as information retrieval, academic writing, evaluation of sources and correct referencing style. The development of these skills will be supported by the Library+ service with librarians providing short whole-group sessions and a drop-in service. Feedback on these skills will be developmental, intending to lead to increased independence by year 2 (level 5) when students will be expected to use these skills to produce written work with reduced assistance. By the time a student progresses to level 6, students should be capable of retrieving and evaluating information and using it to produce fully referenced written work independently. Throughout the course, students will develop their written, oral and visual communication skills through tasks that require them to produce posters (e.g. Genetics module), give oral presentations (Academic Skills, Biomolecules and Cells, Integrated Practical Skills, Undergraduate Research Project) or produce written work in a style that is comparable to published academic work (Scientific Investigation, Undergraduate Research Project, Genetic Mechanisms of Disease). The two research project based modules (Scientific Investigation and Undergraduate Research Project) will enable students to develop a number of transferable skills that are attractive to employers such as project management including resource management and some consideration of working within budgetary restrictions and collaboration skills as students will be sharing facilities and may wish to assist one another in closely related projects.

	Numeracy skills will be developed and formatively assessed in almost all modules; these are summatively assessed in Foundation Mathematics, HE Toolkit and Data Analysis. By the end of the course, students will have had extensive experience of, and developed their skills in, collecting, evaluating, processing and displaying data. As the course progresses, students will be expected to take control of their own learning and be responsible for their own performance. Students will also have gained a vast amount of experience of considering safety and formally risk-assessing activities. The ability to work independently and safely without constant supervision is prized by employers in the science sector.
19	Sustainability Sustainability is addressed in the following modules: - Physical and Inorganic Chemistry - studying theoretical and practical aspects of efficiency of reactions (e.g. influence of temperature or pressure on equilibria and effect on yields); study of movement of energy in chemical reactions; study of electrochemistry (e.g. electrochemical production of hydrogen as an alternative to fossil fuels or in relation to battery technology and electricity storage) - Drug Synthesis - e.g. through teaching examples of how chemicals can be produced in reactions that use no solvents or replace traditional organic solvents with ones such as water, ionic liquids or deep eutectic solvents (i.e. liquids that do not have a petrochemical origin). Also, through examining reactions that can be performed at room temperature or via microwave heating instead of through reflux - which reduces the energy needed for heating, and the water consumed in traditional cooling of condensers used in reflux) - Natural Product Preparation - comparing the impact (energy consumption, resource demand, production of hazardous waste, etc.) of synthesising compounds versus extracting them from plants. - Anatomy and Physiology - use of virtual anatomy platforms - the free version of Visible Body - to reduce the use of animal body parts for dissection. - Advanced Concepts in Cellular Biology - use of pre-prepared microscopy slides to reduce the use of formaldehyde - this is toxic for the environment and the specialists preparing the microscopy specimens. Because of this toxicity, most steps are carried out in the fume cupboards. The electricity used when the fume cupboards are working is greatly reduced by using prepared specimens. Also, these specimens can be reused for several years. - Biology formative assessment activities are done electronically, reducing the use of paper for printing.

20	Programme Modules				
	Level 3 (Foundation Year)				
	Code	Title	Credits	Core/Option	Compensatable / Non-Compensatable
	SCI3C001R	Fundamentals of Biology	20	Core	Compensatable
	SCI3C002R	Further Biology	20	Core	Compensatable
	SCI3C003R	Fundamentals of Chemistry	20	Core	Compensatable
	SCI3C004R	Further Chemistry	20	Core	Compensatable
	SCI3C005R	Foundation Mathematics	20	Core	Compensatable
	SCI3C006R	Academic Skills	20	Core	Compensatable
	Level 4				
	Code	Title	Credits	Core/Option	Compensatable / Non-Compensatable
	SCI4C057R	STEM Toolkit	20	Core	Compensatable
	SCI4C052R	Biomolecules and cells	20	Core	Compensatable
	SCI4E050R	Anatomy and Physiology (option)*	20	Option	Compensatable
	SCI4E056R	Physical and Inorganic Chemistry (option)*	20	Option	Compensatable
	SCI4C054R	Integrated Practical Skills	20	Core	Compensatable
	SCI4C053R	Data Analysis	20	Core	Compensatable
	SCI4E051R	Biochemistry (option)*	20	Option	Compensatable
	SCI4E055R	Organic Chemistry (option)*	20	Option	Compensatable

Level 5				
Code	Title	Credits	Core/Option	Compensatable / Non-Compensatable
SCI5C019R	Pharmacology and Therapeutics	20	Core	Compensatable
SCI5E020R	Microbiology and Biotechnology (option)*	20	Option	Compensatable
SCI5E027R	Analytical Chemistry (option)*	20	Option	Compensatable
SCI5C021R	Work Related Learning	20	Core	Compensatable
SCI5C022R	Scientific Investigation	20	Core	Compensatable
SCI5E023R	Immunology (option)*	20	Option	Compensatable
SCI5E024R	Genetics	20	Core	Compensatable
SCI5E025R	Medicinal Chemistry (option)*	20	Option	Compensatable
Level 6				
Code	Title	Credits	Core/Option	Compensatable / Non-Compensatable
SCI6C036R	Undergraduate Research Project	40	Core	Non-compensatable
SCI6C030R	Research Skills	20	Core	Compensatable
SCI6E031R	Genetic Mechanisms of Disease (option)*	20	Option	Compensatable
SCI6E032R	Drug Synthesis (option)*	20	Option	Compensatable
SCI6C033R	Recombinant Technology (option)*	20	Option	Compensatable
SCI6C037R	Natural Product Preparation (option)*	20	Option	Compensatable
SCI6E034R	Microbial Pathology (option)*	20	Option	Compensatable
SCI6E035R	Pharmaceutical Analysis (option)*	20	Option	Compensatable

*Optional modules will only be offered if there is enough interest in them to justify delivering the module. Students will be asked to make choices well in advance of the start of the modules and numbers will be monitored closely. In the event of a module being chosen by very small numbers of students, those who have elected to study that module will be contacted and the alternative module available will be discussed. Any impact on the options available later in the course will be discussed.

Example scenario 1: too few students opt to study Physical and Inorganic Chemistry. Those students would be informed that the module was not running. They would be offered the alternative module Anatomy and Physiology. It would also be explained to them that if they study the module Organic Chemistry in semester 2, then they would have met the requirements to study any level 5 module - and so there has been no negative impact on their options later in the course.

Example scenario 2: the entire cohort at level 4 is small and there are not enough students to justify options at all. Those students would be informed that the module Physical and Inorganic Chemistry was not running. They would be offered the alternative module Anatomy and Physiology. All students would be informed that the module Biochemistry would not run in semester 2 and they would all have to study the module Organic Chemistry in semester 2. It would be explained to them that this combination ensures that there can be no negative impact on their options in later years of the course.

21 Programme Structure

Full time - September start

This is the normal route to achieving the BSc (Hons) qualification and we expect the majority of students to follow this.

This mode of delivery will require students to attend face to face classes on 2 days of the week. All 20-credit modules will be delivered over 39 hours with an extra 6 hours dedicated to assessment only (either 13 weeks of 3-hour regular sessions plus 2 weeks of 3-hour assessment-only sessions or, for 'long and thin' delivery, 26 weeks of 1.5-hour regular sessions plus 4 weeks of 1.5-hour assessment-only sessions). The Undergraduate Research Project module, which is a 40-credit module, will be delivered over 90 hours: 26 weeks of 3-hour flexible laboratory sessions (in which students will have access to lab facilities as needed, but may spend some of this time researching and planning their project) plus 4 weeks of 3-hour assessment-only sessions (which can be used for analysing data and writing up)

All students will be offered a pastoral tutorial lasting no more than 1 hour each week

Level 3 (year 0):

The modules in semester 1 introduce the most basic topics in Biology and Chemistry, ensuring the essential concepts that underpin more advanced topics are thoroughly covered. The semester 2 modules build on this, progressing through some more demanding level 3 material to adequately prepare students for the level 4 modules in the following year. In both Biology and both Chemistry modules, the topics will be delivered in a context that is relevant to the Biomedical and Pharmaceutical Sciences programme.

There are two long and thin modules. The Mathematics module will cover key skills to support the topics in the Biology and Chemistry modules. It will provide practice of mathematical techniques throughout the year and so will be able to support learning in both semester 1 and semester 2 modules. The topics in this module will be sequenced so as to be broadly in line with topics that are delivered in the Biology and Chemistry modules.

Similarly, the Academic Skills module will provide essential support throughout the year, covering skills that are necessary for producing a range of forms of coursework and in preparation for sitting examinations. Running long and thin allows tailored support to be offered, broadly synchronised with the assessment in the Biology and Chemistry modules as they are delivered. For example, since exams are only used at the end of semester 2 the topics that specifically deal with exam preparation can be left until later in the planned delivery.

Level 4 (year 1):

The first semester aims to provide students with strong foundations in scientific knowledge with options relevant to either bioscience- or chemical-focussed industries. In semester 1, students are encouraged to reflect on their learning and identify common academic skills that they need to develop to succeed on the course, as well as specific skills that they wish to gain to aid them in progressing towards a chosen career. There is a focus on the need for the practical application of these skills in the specific occupational sector. Skills development will be covered in the STEM Toolkit module, which will also cover some basic mathematical skills to ensure students are well prepared to deal with the calculations required in modules. In the first

semester, the students can choose to study between Anatomy and Physiology and Physical and Inorganic Chemistry. The Anatomy and Physiology module provides students with knowledge regarding the structure and functions of the organ systems in the human body and is better suited to students who would like to follow the Biology Pathway. The Physical and Inorganic Chemistry will introduce key ideas and theories and will also give students the opportunity to develop important practical skills. This module will provide a basis for students wanting to progress in pharmaceutical or chemical sciences for further study or employment.

In semester 2 there is a module based on laboratory skills, and students will also take one option module: studying either Organic Chemistry (the branch of chemistry that is most important to pharmaceutical and other life sciences), or the Biochemistry principles important in the healthcare and biotechnology sectors. There are no restrictions on the choice of modules, but students who wish to progress into pharmaceutical-based industries or further study would benefit from Organic Chemistry. Likewise, Biochemistry would be useful for students interested in a career or further study in the Biotech sector.

The continual contextualisation and application of scientific theory to sector-specific practice ensures students are fully engaged on a practical level which supports high levels of retention.

The contained qualification, Certificate of Higher Education requires the achievement of 120 credits at Level 4.

Level 5 (year 2):

At this level, students are challenged to become more independent, taking greater control of their learning and further applying theoretical aspects to their chosen sector.

In semester 1 they will be able to study topics of relevance to many bioscience or pharmaceutical industrial sectors as well as to further develop their knowledge of the potential career choices available to them and how to maximise their potential for progressing into such careers. Students will be encouraged to arrange work experience that is most beneficial to their chosen career, but those students who are not able to find suitable work outside the University Centre will be offered internal opportunities and projects.

The module Analytical Chemistry will be offered for students who have an interest in progressing to careers related to fields such as forensics, quality control, pharmaceutical testing, environmental monitoring, cosmetics testing, or food testing. Students who wish to take Analytical Chemistry must have passed at least one of the chemistry modules at level 4 as well as the Data Analysis module. Alternatively, Microbiology and Biotechnology is available as an option for students who are interested in the industrial use of microorganisms in the Pharmaceutical and Biotechnology sectors.

In semester 2 students are offered a choice of modules to suit their progression choices. Those interested in pharmaceutical-related industries may study Medicinal Chemistry as long as they have studied one of the two chemistry-based modules at level 4. Alternatively, students may choose to study Immunology and learn about disease states and how the human immune system works.

In the Genetics module, students will learn about inheritance and how genetic information affects biological processes.

The research, design and analysis module (“Scientific Investigation”) runs throughout the second year. As students can choose their own topic, it allows them to gain valuable background knowledge and laboratory skills of relevance to whatever area of science they are most interested in. This module will challenge students to organise and manage their own time effectively, leading to highly self-motivated and independent learners.

Level 6 (year 3):

The Undergraduate Research Project module is run throughout the year, allowing students the time to develop and fully interrogate a scientific brief. This is supported by the first semester delivery of Research Skills, which will help students to form appropriate research questions and to develop a realistic and achievable research project.

The laboratory-based optional modules in semester 1 give students a choice between exploring the genetic changes associated with human disease, their diagnoses and treatment using modern technologies in Genetic Mechanisms of Disease or how to extract, purify and exploit chemicals found in living organisms in Natural Product Preparation.

In semester 2, students can choose between studying the mechanisms by which pathogens cause infectious disease in Microbial Pathology or gaining hands-on experience in using a number of specific instruments to determine the identity, purity and quantity of substances present in medicines in Pharmaceutical Analysis.

They can also choose between advancing their modern biological knowledge relating to informatics, gene therapy and knowledge of rare disorders in Recombinant Technology or learning to design and carry out syntheses of new molecules that may be used as new medicines in Drug Synthesis.

All options provide a range of industrially relevant topics as well as enabling students to develop key practical skills and allow students to tailor their studies to fit their particular interests or progression ambitions.

Full-time structure diagram - September start

Level 3 (Foundation Year 0)	
Semester 1	Semester 2
Fundamentals of Chemistry (20 credits)	Further Chemistry (20 credits)
Fundamentals of Biology (20 credits)	Further Biology (20 credits)
Academic Skills (20 credits)	
Foundation Mathematics (20 credits)	

Level 4 (Year 1)	
Semester 1	Semester 2
STEM Toolkit (20 credits)	Integrated Practical Skills (20 credits)
Biomolecules and Cells (20 credits)	Biochemistry (option) OR Organic Chemistry (option) (20 credits)
Anatomy and Physiology (option) OR Physical and Inorganic Chemistry (option) (20 credits)	Data Analysis (20 credits)
Level 5 (Year 2)	
Semester 1	Semester 2
Pharmacology and Therapeutics (20 credits)	Immunology (option) OR Medicinal Chemistry (option) (20 credits)
Microbiology and Biotechnology (option) OR Analytical Chemistry (option) (20 credits)	Genetics (20 credits)
Work Related Learning (20 credits)	
Scientific Investigation (20 credits)	
Level 6 (Year 3)	
Semester 1	Semester 2
Research Skills (20 credits)	Recombinant Technology (option) OR Drug Synthesis (option) (20 credits)
Genetic Mechanisms of Disease (option) OR Natural Product Preparations (option) (20 credits)	Microbial Pathology (option) OR Pharmaceutical Analysis (option) (20 credits)
Undergraduate Research Project (40 credits)	

Part-time - September start

The part-time structure is designed to allow for low numbers of students who may wish to follow this route. It would typically be offered on an infill basis with part-time students joining classes with full-time students in order to keep viable groups.

This structure will be the main route used for apprentices who would attend the University Centre one day per week.

All 20-credit modules will be delivered over 39 hours with an extra 6 hours dedicated to assessment only (either 13 weeks of 3-hour regular sessions plus 2 weeks of 3-hour assessment-only sessions or, for 'long and thin' delivery, 26 weeks of 1.5-hour regular sessions plus 4 weeks of 1.5-hour assessment-only sessions). The level 5 modules that are completed remotely will require the same number of hours, but with a larger proportion of the time as independent study. The Undergraduate Research Project module, which is a 40-credit module, will be delivered over 90 hours. For students using our laboratories this will be 26 weeks of 3-hour flexible laboratory sessions (in which students will have access to lab facilities as needed, but may spend some of this time researching and planning their project) plus 4 weeks of 3-hour assessment-only sessions (which can be used for analysing data and writing up). For those completing projects in the workplace, the 90 hours may be organised differently, depending on availability of work-place facilities.

All students will be offered a pastoral tutorial lasting no more than 1 hour each week

If a student begins at level 3, the complete set of modules would take 2 years to complete. In year 1, students would study modules that cover Chemistry, and Academic Skills. In year 2 they would cover Maths and Biology.

The complete set of level 4 modules would take 2 years to complete via this route. The modules offered in year 1 deliver the essential study and some mathematical skills (in STEM Toolkit), fundamental chemical and biological properties and functions of biomolecules (in Biomolecules and Cells) and key laboratory skills (in Integrated Practical Skills). The second year contains one core statistics module (Data Analysis) and two optional subject-specific modules.

The level 5 modules would be completed in a single year as two modules (Work Related Learning and Scientific Investigation, totalling 40 credits) would be delivered remotely. It is anticipated that this would take the form of project work conducted at the student's place of work with close monitoring and support from University Centre tutors. In the event that laboratory facilities were not available for such project work, paper-based research projects could be undertaken - again with close monitoring and support from University Centre tutors.

In the event of taking on a student part-time who cannot complete Work Related Learning and Scientific Investigation remotely, that student would be able to infill into the classes on the full-time programme to complete the work for those two modules in year 3.

The level 6 modules would take 2 years. In year 4, students would complete three taught optional modules. In year 5, all students would study Research Skills, which will help them to form appropriate research questions and to develop a realistic and achievable research project. The project will then be conducted (either in our laboratories or in the students' place of work) throughout year 5

Part time structure diagram - September start
Level 3 (Foundation Year 0 part 1)

Semester 1	Semester 2
Fundamentals of Chemistry (20 credits)	Further Chemistry (20 credits)
Academic Skills (20 credits)	

Level 3 (Foundation Year 0 part 2)

Semester 1	Semester 2
Fundamentals of Biology (20 credits)	Further Biology (20 credits)
Foundation Mathematics (20 credits)	

Level 4 (Year 1)

Semester 1	Semester 2
STEM Toolkit (20 credits)	Integrated Practical Skills (20 credits)
Biomolecules and Cells (20 credits)	

Level 4 (Year 2)

Semester 1	Semester 2
Anatomy and Physiology (option) (20 credits) OR Physical and Inorganic Chemistry (option) (20 credits)	Data Analysis (20 credits)
	Biochemistry (option) (20 credits) OR Organic Chemistry (option) (20 credits)

Level 5 (Year 3)

Semester 1	Semester 2
Microbiology and Biotechnology (option) (20 credits) OR Analytical Chemistry (option) (20 credits)	Immunology (option) (20 credits) OR Medicinal Chemistry (option) (20 credits)
Pharmacology and Therapeutics (20 credits)	Genetics (20 credits)
Work Related Learning (20 credits) (delivered as WBL or infill to F/T class)	Scientific Investigation (20 credits) (delivered as WBL or infill to F/T class)

	Level 6 (Year 4)	
	Semester 1	Semester 2
	Genetic Mechanisms of Disease (option) (20 credits) OR Natural Product Preparations (option) (20 credits)	Recombinant Technology (option) (20 credits) OR Drug Synthesis (option) (20 credits)
		Microbial Pathology (option) (20 credits) OR Pharmaceutical Analysis (option) (20 credits)
	Level 6 (Year 5)	
	Semester 1	Semester 2
	Research Skills (20 credits)	
	Undergraduate Research Project (40 credits)	
22	Apprenticeships	
	The programme can be used to support achievement of the Level 3 Laboratory Technician and Level 5 Technician Scientist, delivered in a day release model over a period of 2 and 3 years, respectively. The apprentices will complete 3 modules per year of study to achieve the Level 4 and Level 5 of the degree but allowing for the completion of work-based modules with their employer. The Level 3 and Level 5 apprentices will sit their respective Laboratory technician and Technician scientist standard specific end point assessments on completion of a portfolio of work derived from additional tutorial time with an assessor at the end of each academic year. The platform OneFile will be used to collate this. The Knowledge, Skills and Behaviours statements specific for these standards will be delivered in the taught modules. One level 4 module, Integrated Practical Skills, will allow apprentices to acquire a variety of laboratory skills. These will add to the practical skills they learn in their workplace. Technician Scientist apprentices will continue to learn new practical skills in most Level 5 modules. The modules that will allow these apprentices to develop further are Work-Related Learning and Scientific Investigation. These modules are part of the workplace training. The Technician scientist apprentices are supported in producing the assessed tasks for these modules by the module Lecturers. The BSc (Hons) Biomedical & Pharmaceutical Sciences programme has been mapped to the Laboratory Scientist Degree Apprenticeship standard. The academic award fits into the approved assessment plan within the “Gateway” of the apprenticeship standard. As per the apprenticeship standard assessment plan, achievement of the BSc (Hons) degree is a gateway requirement for starting the EPA along with English and Maths at level 2 (if appropriate), achieved either before or during the apprenticeship, the completion of a workplace synoptic	

	project and a vocational competence evaluation log. The employer must confirm that the apprentice has completed the gateway requirements and is ready for the EPA. We currently don't offer an integrated Biology Scientist and Chemistry Scientist apprenticeship. The KSBs statements mapped to this programme are those of the old Laboratory Scientist standard, as we still have apprentices enrolled in it. The Laboratory scientist apprentices develop their practical skills in all modules of our programme that have practical activities delivered as part of their formative assessment. They also develop practical skills in the Integrated Practical Skills (Level 4), Scientific Investigation and Work-Related Learning (Level 5) and Research Skills and Undergraduate Research Project (Level 6). Support for students begins at recruitment where the students complete initial tests. Induction contains an introduction to the structure and regulations of the course in addition to a skills scan and advice on academic skills and library support (with research and referencing). The apprentices receive individual support through tutorials and are assigned a pastoral tutor. All apprentices have access to welfare and may access specialist support through the learning support mentor. The VLE supports apprentices with further resources and extensions and is available 24/7 anywhere with internet access. The apprentices are also supported in the University Centre and their workplace by our Assessor and by their workplace mentor. The apprentices are taught in specialist laboratories using a mixture of lecture, practical and workshop activities with access to specialist tutorials and additional resources including the course textbook and VLE sites. Tutors on the programme are highly qualified and experienced subject specialists with industry experience. End point assessment (EPA) is performed by an external assessor appointed by the end point assessment organisation (currently Marshall). There are different EPA requirements for Laboratory Technician and Technician Scientists but they both must present a portfolio at the EPA. The portfolio contains evidence accumulated on OneFile and presented in a printed format to the external assessor. For the Laboratory Technician standard, EPA involves an online knowledge test, an observation in their workplace followed by questioning and a structured interview underpinned by a portfolio of evidence. For Technician Scientists standard, the EPA requires the solving of a workplace problem evidenced by a project report, a presentation with questioning and a professional discussion underpinned by a portfolio of evidence. Apprentices' work on OneFile can be verified by the External examiner, upon request, after the team contacts OneFile and requests for an External verifier profile to be created.
23	Support for Students and Their Learning A detailed induction programme has been designed to introduce students to the key features of the course and methods of working such as the use of the VLE and safe working practices in the laboratories. Activities give students hands-on experience of using University Centre IT systems, laboratory equipment and facilities whilst also being engaging and providing opportunities for students to interact socially and become comfortable with the environment. Important support services such as the library and members of the Student Support staff are introduced at this point.

All of the teaching and support staff are approachable, easily contactable and dedicated to assisting students in their studies.

Each student is allocated a personal tutor for regular tutorials, academic progress checking and personal development planning. The personal tutor will also provide pastoral care. The departmental Progress Coach will meet all students early in the course and will provide 1 to 1 support sessions for any student who is struggling with attendance or keeping up with work.

Tutorials will begin as whole-group sessions and will cover general topics such as academic regulations, the student representative scheme, the student ambassador scheme, and additional learning support, as well as sessions from the librarian covering topics such as referencing and plagiarism, academic search skills and basic IT skills.

Later, the tutorial session will be used for individual meetings between the tutor and students to conduct academic progress checks. Individual appointments with the departmental Progress Coach to support students with attendance, submission of work or to signpost specialist financial/welfare/mental health/etc. support will be available at any time if needed.

Support with specific learning difficulties, financial and welfare support and counselling services are provided by a dedicated University Centre Leeds disability support team including specialist study skills.

The Academic Skills module (for those starting the course via the Foundation Year) and the STEM Toolkit module (delivered in Year 1) assist students in developing the academic skills that will enable students to succeed in their studies in other modules. The STEM Toolkit module includes sessions on personal development planning and one covering skills requirements for a range of career progressions. In the second year of the course, the Work Related Learning module develops students' knowledge of the current state of the employment market and enhances students' employability skills through an assignment in which they are required to complete a job application and one in which they need to complete a short period of work experience and write a reflective account on what they have learned from doing this.

Part-time students will have access to support materials through the VLE and will be able to contact staff for support remotely using the VLE and other communication tools such as email and chat facilities.

International students will be supported to get used with the British educational system and culture by the pastoral team. While on the programme, they will have access to the course materials on the VLE, they will take part in workshops and tutorials and will have a personal tutor to check on their progress. Further support will include:

1. Practical support

- a. Information regarding Visa & Immigration is available on our University Centre Leeds website
- b. Finding accommodation – the international students will be supported by the Student Accommodation Adviser
- c. Finances - guidance regarding opening bank accounts, budgeting and managing finances – Funding and Welfare Adviser
- d. Information regarding healthcare options, including how to access medical services – Wellbeing Adviser

2. Academic support
 - a. Academic support - the Academic Coach
 - b. Counselling and mental health - Student Support team
3. Social and Cultural Support – Student Support Team and the Access and Participation Team, as well as a buddy system, where the international students will have a buddy to support them adjust to the new environment.
4. Culture Shock, Homesickness, mental health - Student Support Team and Access and Participation team

Academic support beyond the delivery of modules is provided by staff, aided by study skills support tutors. This will be tailored to the needs of each student - challenging the highest achieving to go even further whilst providing support for those struggling in any area. Staff holidays are managed, wherever possible, to ensure at least one person is available during vacations.

The library and librarians provide a range of services to help students in finding information and producing high-quality work that complies with set academic standards. Sessions can be delivered on simple academic online searching, understanding and avoiding plagiarism and correct referencing style.

Apprentices will receive additional support in the workplace through their mentors and line managers

Apprentices, who would be attending the University Centre one day per week, will have access to an increasing range of textbooks available remotely as e-books. A small number of vital texts that cannot be accessed remotely will be provided as hard copies for apprentices to use outside of the University Centre.

Support for preparation for the end-point assessment is built into the apprenticeship timetable. Guidance will be provided for those wishing to progress to the degree apprenticeship.

The training for the End Point Assessment will be provided by the assessor during the academic year, in some of the tutorial meetings in the timetable of these apprentices. Also, training will be provided by the assessor during the summer months, when the apprentices will not attend module-specific training. This training will be focussed on the statements specific for each apprenticeship standard. This training will be specific for each type of standard. Laboratory technician apprentices will receive training regarding the Knowledge test and the Observation with questioning tasks. The support for Observation with questioning will be provided as Mock Observation with questioning. All apprentices will benefit from assessor support regarding their portfolio for the EPA. The assessor will ensure that the documents submitted for the apprentices' portfolio meet the specific statements. Also, for the Technician scientist and Laboratory scientist apprentices, the assessor will provide support regarding their Laboratory report or Journal-type article and presentation. The assessor will work together with the apprentices and their line managers to support the preparation for EPA of each apprentice, irrespective of standard.

24 Distinctive Features

The programme places an emphasis on the balance between core scientific theory and skills, setting both into industry-relevant contexts. It aims to produce students who have the tools to succeed within employment with appropriate transferable skills, as specified by our industrial contacts. Our team works closely with a range of companies across Yorkshire, with a wide range of specialisms. The companies we are working with are involved in the Healthcare, Environmental and Chemical industries. There is an outstanding range of opportunities to develop practical scientific experience valued by sectors such as chemical industries (e.g. fine or bulk chemical production, analytical or environmental chemistry), healthcare, microbiology testing, bioscience and biotechnology industries (e.g. laboratory diagnostic information regarding products used in the treatment of various diseases, production and regulation of microbial processes including the production of pharmaceuticals and bio-products).

Most of our teaching is done in laboratories, with very little delivery in classrooms. We believe that the use of practical activity-led teaching in most of the modules sets this course apart from the majority (in which most teaching will be in lecture theatres and classrooms, supplemented by laboratory-based teaching in separate sessions).

Throughout the course, students will have many opportunities to develop a wide range of practical skills that are valued in a number of different industries. The employability skills of our graduates will be enhanced by developing their confidence in working in a laboratory environment and through their extensive practice of common standard procedures.

Our students acquire skills that are highly-valued in industry, such as: the ability to conduct practical investigation whilst being aware of health and safety regulations; the ability to conduct and follow risk assessments; to collect data accurately; to analyse the data collected and draw justified conclusions regarding the processes analysed; to communicate information using a variety of methods, such as reports, project proposals, scientific presentations, case studies, essays, and academic posters.

We have made a significant investment (just under £400k) in several new pieces of equipment which will be made available to students to use in taught sessions and, where relevant, in their own research projects.

We have consulted carefully with a range of employers to ensure that both the theoretical content and the practical experience that is delivered fit their requirements, ensuring that our graduates have the best chance of being well-equipped to compete for jobs in the science sector.

The range of modules offers an excellent opportunity to work across disciplines, providing an innovative and contemporary way of developing scientific skills. This is particularly well-evidenced in the Integrated Practical Skills core module, through which students gain experience in techniques specific to both bioscience and chemical laboratories.

The balance of bioscience and chemistry also sets this programme apart from many others, providing opportunities for students to progress into industries requiring significant chemical knowledge.

The provision of optional modules allows students to tailor their studies in an extremely flexible way so that a student can follow a programme that is either heavily dominated by biology-based modules, has a considerable amount of chemistry content, or is a balanced mix of both.

Innovative assessment methods that require the use of AI tools in order to complete tasks, will prepare our students for their future working life. By the time they have graduated, AI will undoubtedly be involved in almost all roles in scientific and related industries and having had experience of making effective and ethical use of these tools can only be an advantage.

The condensed timetable (requiring attendance on just two days of the week) will enable students who otherwise would struggle to commit to attendance spread over more days to study our degree.

Small group teaching may appeal to students who are looking for a more supportive academic environment or those who prefer a calm, friendly social environment over the often hectic conditions of a very busy lecture theatre, laboratory or seminar room. In particular, a number of neurodiverse students have told us that they are able to study more effectively on our course than one with much larger student numbers.

Almost all our lecturers are highly specialised in Inorganic Chemistry, Biochemistry and Biology/Pathology holding a PhD in their area of expertise. All our lecturers also hold an MSc degree in their specialism. Most lecturers are qualified teachers or qualified lecturers, holding the QTS or QTLS, respectively. Some lecturers are members of Royal Society of Chemistry, American Chemical Society or Royal Society of Biology, Biochemistry Society, or are Fellows of Higher Education Academy. Some lecturers are also external examiners for other Higher Education Institutions and also take part in validation of internal and external programmes. One of our lecturers took part in the Trailblazer group involved in the writing up of the new Level 6 Scientist Apprenticeship standard.

Our lecturers are also involved in scientific or educational research projects conducted with the contribution of the final year students and apprentices.

Appendix 1

Stage Outcomes (Undergraduate Awards only)				
Key: K = Knowledge and Understanding C = Cognitive and Intellectual P = Practical Professional T = Key Transferable [see Section 16 programme specification]				
No.	Programme Outcome	Stage/Level 5(2)	Stage/Level 4(1)	Stage/Level 3(0)
K1	Apply a deep, comprehensive and detailed knowledge of areas of science to solve problems of relevance to Biomedical, Bioscience, Chemical or Pharmaceutical industries	Demonstrate comprehensive knowledge of areas of science and their application in the Biomedical, Bioscience, Chemical or Pharmaceutical industries	Describe activities within relevant industries using scientific knowledge	Recognise activities as 'scientific'
K2	Evaluate standard scientific procedures in order to justify the choice of technique for a range of applications, considering ethical aspects where appropriate.	Appraise standard scientific procedures and describe aspects of good practice including ethical considerations.	Describe and identify good practice in relevant industry procedures, including ethical aspects	Demonstrate knowledge of some standard scientific procedures
K3	Formulate a hypothesis and evaluate procedures in terms of their effectiveness at testing a hypothesis	Explain how hypotheses may be tested using standard procedures	List individual actions required to perform a practical activity in order to test a hypothesis	Describe simple laboratory activities that contribute to the testing of a hypothesis
K4	Critically appraise theories and concepts relevant to the current body of scientific understanding within the Biomedical, Bioscience, Chemical or Pharmaceutical industries	Discuss modern theories and concepts relevant to the current body of scientific understanding within the Biomedical, Bioscience, Chemical or Pharmaceutical industries	Describe, explain and use key elements of the foundation knowledge of theories and concepts	Recall some of the theories and concepts from key areas of Bioscience or Chemical Science
No.	Programme Outcome	Stage/Level 5(2)	Stage/Level 4(1)	Stage/Level 3(0)
C1	Plan and execute a project with minimal supervision, evaluating all aspects against relevant standards of safety and ethics	Plan, undertake and evaluate a self-managed project in which evidence is synthesised and appraised	Identify a topic and appropriate research methods to gather information and justify conclusions	Select an appropriate technique or piece of equipment for given laboratory exercises.
C2	Synthesise information from different sources in order to solve problems	Evaluate sources of information and employ to effectively solve problems	Gather, record and describe with guidance detailed information from a range of sources	Find information from appropriate sources that is relevant to defined problems
C3	Analyse and solve complex problems in a scientific context, justifying the methods employed, with reference to ethical and safety considerations where appropriate	Analyse and solve complex problems in a scientific context using appropriate methods	Identify problems, apply given method accurately and carefully to solve problems creatively	Solve simple problems using provided information

C4	Critically evaluate, analyse and interpret information from literature sources or laboratory measurements	Draw concise and accurate scientific conclusions through the analysis of data including evaluation of the quality and reliability of the data	Gather, record and process data, including some graphical or mathematical analysis, in order to reach conclusions.	Draw conclusions from simple sets of data using any suitable techniques.
No.	Programme Outcome	Stage/Level 5(2)	Stage/Level 4(1)	Stage/Level 3(0)
P1	Respond to changing situations within the industrial environment of a relevant sector, showing detailed, up to date knowledge of good practice and current regulations	Demonstrate knowledge of practices and regulations in a scientific industry and be able to follow procedures and regulations in own work.	Act with limited autonomy within defined guidelines, demonstrating ability to follow standard procedures and regulations.	Demonstrate awareness of standard practices and regulations in a scientific industry
P2	Plan and execute laboratory work with minimal supervision, meeting expected safety and ethical standards	Work safely within a laboratory environment and show knowledge of hazards, risks and ethical issues with appropriate responses for relevant industries	Safely use a specified range of standard techniques and demonstrate awareness of common hazards, issues and their resolution	State the necessary precautions to be taken to minimise the risk associated with a specified hazard
No.	Programme Outcome	Stage/Level 5(2)	Stage/Level 4(1)	Stage/Level 3(0)
T1	Design a bespoke strategy for academic, personal and future professional development, working independently to achieve goals within specified timescales.	Plan and manage the acquisition of new knowledge and skills and evaluate their importance in enhancing employability	Identify own learning strengths and articulate personal skills, abilities, interests and motivations and relate these to career opportunities.	Explain own strategy for maximising success in academic and career progression
T2	Communicate complex information clearly, fluently and effectively in a range of styles using technical and specialist language in a professional manner.	Communicate complex information using technical and specialist language confidently.	Communicate appropriately using scientific language verbally and in writing.	Distinguish between language that is appropriate for scientific writing and other styles of English
T3	Select appropriate examples of computer software to generate, store, process and display data	Use standard and specialist computer software that is relevant to scientific industries.	Use IT tools for specific scientific purposes	Use basic IT tools
T4	Critically evaluate their own performance in individual tasks or as part of a team	Reflect on their own individual or collaborative activities to analyse their performance.	Discuss own role in team activities	Engage in team activities

Appendix 2

Map of Outcomes to Modules

For Undergraduate programmes please provide a map for each Stage, e.g., Stages 1 and 2 and programme outcomes for Honours degrees, and Stage 1 and programme outcomes for Foundation Degrees.

Stage 3 Outcome Key														
Module Titles	K1	K2	K3	K4	C1	C2	C3	C4	P1	P2	T1	T2	T3	T4
Fundamentals of Biology	X		X	X				X	X					X
Further Biology		X		X	X		X			X	X	X		
Fundamentals of Chemistry		X		X		X	X			X		X		
Further Chemistry			X	X	X			X					X	
Foundation Mathematics		X			X		X	X					X	
Academic Skills	X					X			X		X			X

Stage 4 Outcome Key														
Module Titles	K1	K2	K3	K4	C1	C2	C3	C4	P1	P2	T1	T2	T3	T4
STEM Toolkit				X			X		X		X		X	X
Biomolecules and cells	X			X		X	X		X			X		
Anatomy and Physiology (option)		X		X		X		X			X			X
Physical and Inorganic Chemistry (option)		X		X		X					X			X
Integrated Practical Skills		X	X		X			X		X		X		
Data Analysis	X				X			X					X	
Biochemistry (option)	X	X	X			X				X				
Organic Chemistry (option)	X		X			X				X			X	

Stage 5 Outcome Key														
Module Titles	K1	K2	K3	K4	C1	C2	C3	C4	P1	P2	T1	T2	T3	T4
Pharmacology and Therapeutics		X		X			X		X	X				
Microbiology and Biotechnology (option)	X		X		X			X	X	X				
Analytical Chemistry (option)	X		X		X				X	X	X			
Work Related Learning	X						X				X	X		X
Scientific Investigation		X			X	X					X		X	X
Immunology (option)				X			X	X					X	
Medicinal Chemistry (option)	X			X		X		X					X	
Genetics			X			X		X		X		X		

Programme Outcome Key														
Module Titles	K1	K2	K3	K4	C1	C2	C3	C4	P1	P2	T1	T2	T3	T4
Undergraduate Research Project			X		X	X				X	X		X	X
Research Skills		X		X	X					X	X			
Genetic Mechanisms of Disease (option)	X		X				X	X				X		
Natural Product Preparation (option)	X		X				X	X				X		
Recombinant Technology (option)	X			X			X	X				X		
Drug Synthesis (option)	X			X			X	X				X		
Microbial Pathology (option)		X		X		X	X		X					
Pharmaceutical Analysis (option)		X		X		X	X		X					

Appendix 3

Map of Teaching and Learning Methods									
Level 3		Methods							
Module Titles	Lecture s	Student led/ interactive/ shared learning seminars	Case Studies	Skills workshop s	Practicals (laboratory sessions)	Group activities	Independent / E Learning/ On-line forums	Demonstrations	
Fundamentals of Biology	✓			✓	✓		✓	✓	
Further Biology	✓			✓	✓	✓	✓	✓	
Fundamentals of Chemistry	✓			✓	✓		✓	✓	
Further Chemistry	✓			✓	✓	✓	✓	✓	
Foundation Mathematics	✓						✓		
Academic Skills	✓	✓	✓	✓		✓	✓		

Level 4		Methods							
Module Titles	Lecture s	Student led/ interactive/ shared learning seminars	Case Studie s	Skills workshop s	Practicals (laboratory sessions)	Group activities	Guest speaker s	Independen t / E Learning/ On-line forums	Demonstration s
STEM Toolkit	✓	✓	✓	✓		✓	✓	✓	
Biomolecules and Cells	✓			✓	✓	✓		✓	✓
<i>Anatomy and Physiology</i> (option)	✓		✓	✓	✓	✓		✓	✓
<i>Physical and Inorganic Chemistry</i> (opt)	✓		✓	✓	✓	✓		✓	✓
Integrated Practical Skills				✓	✓	✓		✓	✓
Data Analysis	✓	✓		✓		✓		✓	
<i>Biochemistry</i> (option)	✓			✓	✓	✓		✓	✓
<i>Organic Chemistry</i> (option)	✓			✓	✓	✓		✓	✓

Level 5	Methods								
Module Titles	Lectures	Student led/ interactive/ shared learning seminars	Case Studies	Skills workshop s	Practicals	Group activitie s	Guest speakers	Independent / E Learning/ On-line forums	Demonstrations
Pharmacology and Therapeutics	✓		✓		✓	✓		✓	✓
<i>Microbiology and Biotechnology</i> (option)	✓		✓		✓	✓		✓	✓
<i>Analytical Chemistry</i> (option)	✓	✓		✓	✓	✓		✓	✓
Work Related Learning	✓	✓	✓	✓		✓	✓	✓	
Scientific Investigation				✓	✓		✓		✓
<i>Immunology</i> (option)	✓				✓	✓		✓	✓
<i>Medicinal Chemistry</i> (option)	✓		✓		✓	✓		✓	✓
<i>Genetics</i>	✓		✓		✓	✓		✓	✓

Level 6		Methods							
Module Titles	Lectures	Student led/ interactive/ shared learning seminars	Case Studies	Skills workshop s	Practicals	Group activitie s	Guest speakers	Independent / E Learning/ On-line forums	Demonstrations
Undergraduate Research Project				✓	✓		✓		✓
Research Skills	✓		✓	✓	✓				✓
Genetic Mechanisms of Disease (option)	✓		✓		✓	✓		✓	✓
Drug Synthesis (option)	✓		✓		✓	✓		✓	✓
Recombinant Technology (option)	✓	✓		✓	✓	✓			✓
Natural Product Preparation (option)	✓	✓		✓	✓	✓		✓	✓
Microbial Pathology (option)	✓	✓		✓	✓	✓		✓	✓
Pharmaceutical Analysis (option)	✓	✓	✓	✓	✓	✓		✓	✓

Appendix 4
Map of Assessment Methods
Level 3

Methods									
Module Titles	Lab Report	Laboratory Notebook Scrutiny	Reflective E-Journal	Data analysis	Problem-based project	Take-home test	Group Presentation	Open book timed assessment	Timed assessment
Fundamentals of Biology	60% (1200 words, wk10)							40% (60 mins, wk15)	
Further Biology	60% (1200 words, wk25)								40% (60 mins, wk30)
Fundamentals of Chemistry		50% (1000 words, wk7)				50% (48 hours, wk15)			
Further Chemistry				50% (1000 words, wk23)	50% (1000 words, wk30)				
Foundation Mathematics				50% (eq. to 1000 words, wk29)	50% (1000 words, wk17)				
Academic Skills			50% (1000 words, wk 13)				50% (15 mins, wk 27)		

Level 4

Module Titles	Methods									
	Lab Report	Data collection & analysis	Reflective E-Journal	Production & analysis of a substance	Take-home test	E-Portfolio	Timed assessment	Online timed assessment	Case study	Oral Presentation
STEM Toolkit			50% (1500 words, wk14)			50% (1500 words, wk8)				
Biomolecules and Cells	50% (1500 words, wk 13)									50% (15 mins, wk 6)
<i>Anatomy and Physiology</i> (option)		50% (1500 words, wk11)					50% (90 mins, wk15)			
<i>Physical and Inorganic Chemistry</i> (option)		50% (1500 words, wk11)						50% (90 mins, wk15)		
Integrated Practical Skills						50% (1500 words, wk29)				50% (15 mins, wk21)
Data Analysis							50% (90 mins, wk 19)		50% (1500 words, wk 28)	
<i>Biochemistry</i> (option)						50% (1500 words, wk23)	50% (90 mins, wk30)			
<i>Organic Chemistry</i> (option)				50% (1 substance & data eq. to 1500 words, wk23)	50% (24 hours, wk30)					

Level 5

Module Titles	Project Report	Competencies Portfolio	Improve AI-generated work	Essay	Reflective account, negotiated format	Open Book Timed Assessment	Job application	Project proposal	Reflective E-Journal	Timed Assessment	Academic - style poster	Concept maps (Infographics)	Case study
Pharmacology and Therapeutics				40% (1600 wds, wk10)		60% (2 hrs, wk 15)							
<i>Microbiology and Biotechnology</i> (option)		40% (1600 wds, wk9)						60% (2400 wds, wk14)					
<i>Analytical Chemistry</i> (option)					50% (2000 wds or eq. wk14)			50% (2000 words, wk9)					
Work Related Learning							50% (2000 words, wk6)		50% (2000 wds, wk 25)				
Scientific Investigation	100% (4000 wds, wk28)												
<i>Immunology</i> (option)			40% (1600 words, wk23)							60% (2 hours, wk 30)			
<i>Medicinal Chemistry</i> (option)												50% (graphic eq. to 2000 wds, wk 23)	50% (2000 words, wk30)

Genetics										60% (2 hours, wk 30)	40% (15 min, wk 21)		
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Level 6 (Option) = module is optional

Module Titles	Project Report	Academic Poster	Improve AI-generated work	Literature survey	Drug design report	Open Book Test	Review article	Research project proposal presentation	Data analysis	Group project	Pilot study proposal	Scientific journal-style paper	Pilot study report	Case study
Undergraduate Research Project								30%, 10min pres. wk10				70%, 5000wds wk28		
Research Skills											50%, 2500wds wk 8		50%, 2500wds wk15	
Genetic Mechanisms of Disease (option)		40%, A1 poster wk5						60%, 3000wds wk14						
Natural Product Preparation (option)	50%, 2500wds wk5													50%, 2500wds wk14
Recombinant Technology (option)					40%, 2000wds wk20		60%, 3000wds wk29							
Drug Synthesis (option)			50%, 2500wds wk20		50%, 2500wds wk29									
Microbial Pathology (option)						40%, wk30, 2-hours			60%, 3000wds wk22					
Pharmaceutical Analysis (option)				40%, 2000wds wk22						60%, 3000wds wk30				

Appendix 5

Map to Apprenticeship Standard

This table indicates which study units assume responsibility for delivering (shaded) and assessing (x) particular knowledge, skills and behaviours.

Laboratory Technician apprenticeship standard

Stage 3 - KSBs Map Key for the Laboratory Technician standard																					
	Knowledge (K)							Skills (S)										Behaviours (B)			
Module Titles	3	4	7	14	16	19	21	1	5	6	7	10	12	13	14	17	19	1	2	3	5
Fundamentals of Biology			X				X	X		X		X		X	X	X				X	
Further Biology		X		X	X	X			X		X				X			X			
Fundamentals of Chemistry			X				X	X		X		X	X				X			X	X
Further Chemistry	X	X		X	X	X			X		X			X		X					
Foundation Mathematics	X												X				X				
Academic Skills																		X	X		X

Stage 4 - KSBs Map Key for the Laboratory Technician Standard																					
	Knowledge (K)								Skills (S)										Behaviours (B)		
Module Titles	3	4	7	11	14	16	19	21	1	5	6	7	10	12	13	14	17	19	1	3	5
STEM Toolkit																	X				X
Biomolecules and cells		X		X	X		X		X	X			X		X		X			X	
Anatomy and Physiology	X		X	X		X		X			X	X		X		X					
Physical and Inorganic Chemistry	X		X	X		X		X			X	X		X				X			
Integrated Practical Skills		X	X	X	X				X	X	X	X	X			X				X	X
Data Analysis	X						X							X	X			X			
Biochemistry		X	X	X		X		X	X	X	X		X		X	X		X			X
Organic Chemistry		X	X	X		X		X	X	X	X		X		X	X		X			X

Technician Scientist apprenticeship standard

Stage 4 - KSBs Map Key for the Technician Scientist Standard																					
	Knowledge (K)									Skills (S)								Behaviours (B)			
Module Titles	1	2	4	5	6	7	13	14	16	1	2	4	5	6	8	10	15	1	3	4	6
STEM Toolkit	X				X			X	X		X		X				X	X	X	X	X
Biomolecules and cells				X			X		X							X					
Anatomy and Physiology				X	X		X														
Physical and Inorganic Chemistry				X	X		X														
Integrated Practical Skills	X	X	X			X		X	X	X	X	X	X	X	X	X	X	X	X	X	
Data Analysis			X		X	X				X					X						X
Organic Chemistry	X			X	X		X	X		X		X	X	X	X	X		X	X	X	X
Biochemistry	X			X	X		X	X		X		X	X	X	X	X		X	X	X	X

Stage 5 - KSBs Map Key for the Technician Scientist Standard																					
	Knowledge (K)									Skills (S)								Behaviours (B)			
Module Titles	1	2	4	5	6	7	13	14	16	1	2	4	5	6	8	10	15	1	3	4	6
Pharmacology and Therapeutics	X			X																	X
Microbiology and Biotechnology					X		X			X			X								
Analytical Chemistry					X		X			X			X								
Work Related Learning		X	X				X	X	X		X						X	X	X	X	
Scientific Investigation		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Immunology						X					X		X	X	X						
Medicinal Chemistry						X					X		X	X	X						
Genetics	X			X						X			X	X	X						X

Laboratory Scientist apprenticeship standard

Stage 4 - KSBs Map Key for the Laboratory Scientist Standard																				
	Knowledge (K)								Skills (S)								Behaviours (B)			
Module Titles	1	2	3	4	5	6	7	8	11	12	13	14	16	17	18	22	23	26	28	
STEM Toolkit						X	X	X					X	X			X	X	X	
Biomolecules and cells	X	X	X				X	X	X	X						X				
Anatomy and Physiology	X	X	X					X	X		X								X	
Physical and Inorganic Chemistry	X	X	X					X	X		X								X	
Integrated Practical Skills				X		X	X	X	X	X	X	X	X		X		X	X		
Data Analysis	X	X			X						X	X		X						
Biochemistry				X	X															
Organic Chemistry				X	X															

Stage 5 - KSBs Map Key for the Laboratory Scientist Standard																				
	Knowledge (K)								Skills (S)								Behaviours (B)			
Module Titles	1	2	3	4	5	6	7	8	11	12	13	14	16	17	18	22	23	26	28	
Pharmacology and Therapeutics	X	X	X					X									X			
Microbiology and Biotechnology			X			X	X	X		X		X		X						
Analytical Chemistry			X			X	X	X		X		X		X						
Work Related Learning													X			X	X	X	X	
Scientific Investigation				X	X		X	X	X	X	X	X	X		X			X	X	
Immunology	X	X	X																	
Medicinal Chemistry			X			X	X													
Genetics			X					X						X						

Stage 6 - KSBs Map Key for the Laboratory Scientist Standard																			
	Knowledge (K)								Skills (S)							Behaviours (B)			
Module Titles	1	2	3	4	5	6	7	8	11	12	13	14	16	17	18	22	23	26	28
Undergraduate Research Project	X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Research Skills	X			X	X		X	X	X				X	X	X		X	X	X
Genetic Mechanisms of Disease	X		X			X		X	X	X		X						X	X
Natural Product Preparation	X		X			X		X	X	X	X	X						X	X
Recombinant Technology	X		X			X		X										X	
Drug Synthesis	X		X			X												X	
Microbial Pathology	X		X			X		X										X	
Pharmaceutical Analysis	X		X			X		X										X	

Map Subject Benchmarks to Programme and Module Learning Outcomes

Threshold Level	Module & Learning Outcomes	Excellent Level	Module & Learning Outcomes
Recall basic knowledge of key concepts in Biomedical Science and/or Biomedical Sciences and phenomena relevant to the course and explain these using appropriate terminology	Biomolecules & Cells LO2 Genetics LO5	Apply a comprehensive knowledge of concepts in Biomedical Science and/or Biomedical Sciences and phenomena to discuss and explain essential aspects of the course and show evidence of enquiry beyond this	Genetic Mechanisms of Disease LO3
Demonstrate an understanding of basic experimental design and application of methods to solve routine problems relevant to the course, with some awareness of appropriate controls, possible bias, ethics and sustainability.	Biomolecules & Cells LO1 Genetics LO3 Scientific Investigation LO1	Devise and evaluate solutions to solve both routine and unfamiliar problems using a range of methods, including awareness of appropriate controls, possible bias, ethics and sustainability	Undergraduate research project LO2
Produce and follow risk assessments for completing practical work in a safe and reliable manner with support.	Integrated Practical Skills LO5 Genetics LO4	Independently produce and apply risk assessments for completing practical work in a safe and reliable manner	Undergraduate Research Project LO4
Suggest and demonstrate competence in a broad range of appropriate qualitative and quantitative practical techniques relevant to the course.	Biomolecules & Cells LO5 Integrated Practical Skills LO1, 2, 4, 5	Design, optimise and demonstrate competence in a broad range of appropriate qualitative and quantitative practical techniques relevant to the course, with a high degree of autonomy and efficiency.	Undergraduate Research Project LO4
Apply computational techniques and tools to investigate familiar Biomedical Science and/or Biomedical Sciences concepts covered in course content and report outcomes using appropriate terminology	Data Analysis LO4 STEM Toolkit LO5 Scientific Investigation LO6	Select and apply appropriate computational techniques and tools to investigate complex Biomedical Science and/or Biomedical Sciences concepts and evaluate and report outcomes using appropriate terminology	Drug Synthesis LO2 Undergraduate Research Project

			LO5
Assess the evidence base for scientific claims, by accessing primary literature and commenting on the adequacy of the methods, data and interpretation therein	Biomolecules & Cells LO4 Pharmacology & Therapeutics LO4 Scientific Investigation LO2	Identify and select appropriate sources of biological information, including primary literature, and appraise and evaluate the adequacy of methods, data and their interpretation with a high degree of independence	Recombinant Technology LO4 Research Skills LO2
Demonstrate planning, execution and presentation of a piece of independently produced work which includes analysis or evaluation of data within a supported framework, demonstrating some evidence of time management, problem solving and independence.	Data Analysis LO2 and 3 Scientific Investigation LO4, 5	Demonstrate highly independent and competent planning, execution and presentation of a piece of independently produced work which includes the analysis and critical evaluation of data, demonstrating high levels of time management, problem solving and independence	Natural Product Preparation LO1 Undergraduate Research Project LO6
Identify and discuss application of Biomedical Science and/or Biomedical Sciences in solving current and future challenges in the world and demonstrate some understanding of the role of Biomedical Scientists and research scientists in this	STEM Toolkit LO2 Genetics LO3 Work Related Learning LO2 Scientific Investigation LO2	Explain, suggest and critique ways in which Biomedical Science and/or Biomedical Sciences and Biomedical Scientists can contribute to solving current and future world challenges	Drug Synthesis LO3 Research Skills LO1
Identify and explain relationships between Biomedical Science and/or Biomedical Sciences and other subjects relevant to the course content	STEM Toolkit LO3 Work Related Learning LO1	Explain and evaluate the contribution of Biomedical Science and/or Biomedical Sciences to solving interdisciplinary challenges and the role of interdisciplinary thinking in solving scientific problems	Undergraduate Research Project LO1
Use mathematical and statistical concepts, processes and tools to solve familiar problems or evaluate data	Data Analysis LO1 and 2 Integrated Practical Skills LO4	Select, use and evaluate appropriate mathematical and statistical concepts, processes and tools to solve problems or evaluate data	Undergraduate Research project LO3

	Pharmacology & Therapeutics LO4		
Demonstrate accurate data collection, including selection of appropriate methods for analysis, interpretation of findings to test hypotheses, consideration of further lines of investigation and manipulation of data for effective presentation.	Data Analysis LO3 Genetics LO2	Demonstrate independent and accurate data collection, including selection of appropriate methods for analysis, interpretation of findings to test hypotheses, consideration of further lines of investigation and manipulation of data for effective presentation, with a thorough understanding of the context of the investigation within the field.	Undergraduate Research project LO2
Effectively participate in group and teamwork, demonstrating clear contributions to the work.	STEM Toolkit LO5 Work Related Learning LO3 Scientific Investigation LO4	Identify and apply effective strategies for working in a group environment and provide clear and valuable contributions to team outputs, demonstrating good teamwork and/or leadership skills	Work Related Learning LO3
Communicate information, ideas, problems and solutions verbally and/or non-verbally, with clear expression and style	Biomolecules & Cells LO6 Integrated Practical Skills LO6 Genetics LO5 Work Related Learning LO5	Communicate information, ideas, problems and solutions to an accomplished level verbally and non-verbally, in an accurate, fluent and sophisticated style, at a level consistently appropriate for the audience	Drug Synthesis LO5 Research Skills LO5 Recombinant Technology LO5
Describe some of the ethical issues and societal impacts of advances in Biomedical Science and/or Biomedical Sciences, with some	Integrated Practical Skills LO2 Genetics LO4	Understand and evaluate ethical issues and the societal impact of advances in Biomedical Science and/or Biomedical	Microbial Pathology LO3 Research Skills

acknowledgement of the historical context of the subject	Pharmacology & Therapeutics LO5, 6 Scientific Investigation LO1	Sciences, with some understanding of the historical context of the subject	LO4 Undergraduate Research project LO4
Awareness of how new findings may change current understandings of various topics in Biomedical Science and/or Biomedical Sciences, that many aspects of the subject are not fully understood and demonstrate some ability to stay up to date with new findings	Work Related Learning LO1, 2 Scientific Investigation LO2, 3	Clear appreciation of the fluid nature of knowledge in Biomedical Science and/or Biomedical Sciences, including an ability to incorporate new findings into previous understanding of various topics.	Research Skills LO1