

Programme Specification: Undergraduate

For Academic Year 2025/26

1. Course Summary

Names of programme and award title(s)	BSc (Hons) Biochemistry BSc (Hons) Biochemistry with International Year (see Annex for details) BSc (Hons) Biochemistry with Work Placement Year (see Annex for details) BSc (Hons) Studies in Biochemistry BSc (Hons) Studies in Biochemistry with International Year BSc (Hons) Studies in Biochemistry with Work Placement Year
Award type	Combined Honours
Mode of study	Full-time
Framework of Higher Education Qualification (FHEQ) level of final award	Level 6
Normal length of the programme	3 years; 4 years with either a Work Placement or International Year between years 2 and 3
Maximum period of registration	The normal length as specified above plus 3 years
Location of study	Keele Campus
Accreditation (if applicable)	All routes, excluding the 'Studies in' routes, are accredited by the Royal Society of Biology. For further details see the section on Accreditation.
Regulator	Office for Students (OfS)
Tuition Fees	UK students: Fee for 2024/25 is £9,250* International students: Fee for 2024/25 is £20,700** The fee for the international year abroad is calculated at 15% of the standard year fee The fee for the work placement year is calculated at 20% of the standard year fee

Please note this document applies to Level 5 and 6 (Year 2 and 3) students in 2025/26

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

* These fees are regulated by Government. We reserve the right to increase fees in subsequent years of study in response to changes in government policy and/or changes to the law. If permitted by such change in policy or

law, we may increase your fees by an inflationary amount or such other measure as required by government policy or the law. Please refer to the accompanying Student Terms & Conditions. Further information on fees can be found

at <http://www.keele.ac.uk/studentfunding/tuitionfees/>

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

2. What is a Combined Honours programme?

In a combined honours Biochemistry degree you will study two different, though complementary subjects, with both subjects appearing in your degree title as X and Y, for example Biochemistry and Biology. Across all levels you will study 60 credits of modules in each of your subjects. Alternatively, in your final year you can choose to specialise in just one subject, resulting in an X with Y degree title, for example Biochemistry with Biology. Specialising in Biochemistry will require you to take a minimum of 105 credits of Biochemistry modules, with the option to take a relevant module from your other subject, or to study a full 120 credits of Biochemistry modules.

3. Overview of the Programme

The Keele Biochemistry programme provides a broad and varied coverage of modern biochemistry, where you will investigate some of the most exciting areas of 21st century life science and medical research. Studying life at the molecular level, you will investigate contemporary topics in the biosciences, from unlocking the secrets of the human genome to the individually tailored molecular therapies of the future. You will develop a deeper understanding of important structure-function relationships of life's major building blocks including nucleic acids, carbohydrates and proteins, considering such topics as how knowledge of the three-dimensional structure of biological macromolecules gives us insight into the regulation of the activity of cells and their interactions within multicellular organisms. You will explore how this advances our understanding of diverse biological processes from the regulation of gene expression and the progress and control of major metabolic pathways to the structure and function of enzymes, antibodies, hormones and receptors. The programme places particular emphasis on human and mammalian biochemistry, where you will investigate how biochemical knowledge is applied in advancing our understanding of the molecular basis of conditions ranging from diabetes and cancer to the interactions of microorganisms and viruses with their hosts.

A comprehensive laboratory programmes runs throughout the course utilising our state-of-the-art David Attenborough laboratories, where you will develop key skills in diverse biochemical and molecular biology techniques. Here you will directly apply theoretical knowledge from across the programme and develop skills in experimental study design and optimisation through experiential, enquiry-based learning, culminating in your final year research project. You will also develop key transferable and employability skills related to the critical evaluation of scientific literature, data analysis and interpretation, including computational and bioinformatics tools, effective communication in a variety of formats, and teamwork. Options to include a work placement year, study abroad for a semester or an international year of study provide further experiential learning opportunities developing additional employability skills. Shorter optional placement modules provide added flexibility for experiential learning alongside your studies in a range of industries and employer settings, including an education-focused optional module for those interested in a career in teaching. A range of final year optional modules in areas of cutting-edge bioscience research gives you greater flexibility to tailor the structure and content of your programme to your own interests and career goals.

Distinctive features of the course include:

- A contemporary curriculum, with a focus on biochemistry and molecular biology and their applications to the study of health and disease, designed to meet requirements for Royal Society of Biology Accreditation;
- Innovative and relevant assessments, designed to foster creativity and develop a diverse range of key employability skills and attributes;
- A core laboratory programme delivered in our state-of-the-art David Attenborough and Central Science Laboratories where you develop hands-on practical skills in the design and conduct of authentic research studies, with a wide range of final year research project choices;
- A comprehensive programme of academic and professional development workshops supporting you in acquiring and reflecting on key employability skills aligned with your career goals;
- Our Undergraduate Student Research Conference, where you will present the outcomes of your final year research project in the context of a realistic research conference experience;
- The option to engage in deeper experiential learning opportunities through undertaking a Work Placement year between level 5 and level 6, or as shorter placement options alongside your studies, or to include study abroad either as a semester abroad at level 5 or an International Year between level 5 and level 6;
- The opportunity to study a language alongside your programme.

4. Aims of the programme

The broad aims of the programme are to:

- provide you with core knowledge, understanding and skills relevant to Biochemistry;
- produce skilled and motivated graduates who are suitably prepared for further study or for employment within the biosciences and beyond;
- cultivate interest in the biosciences, particularly at the cellular and molecular level, within a caring and intellectually stimulating environment;
- promote the development of a range of employability skills, for use in all areas where numeracy and an objective, scientific approach to problem-solving are valued;
- promote the development of independent research skills to enable you to undertake relevant postgraduate study and wider employment.

5. What you will learn

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

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

Subject knowledge and understanding

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

- the chemistry that underlies biological process and their study, including chemical and thermodynamic principles applied to biochemical catalysis and the role of enzymes and other proteins in determining the function and fate of cells and organisms.
- the essential features of cell metabolism and its control, developing from a broad understanding of core processes related to cellular respiration and photosynthesis to the application of this in context to acquired and inherited disease
- the principles that determine the three-dimensional structure of biological macromolecules (including nucleic acids, proteins and carbohydrates) and be able to explain detailed examples of how structure enables function
- the molecular basis of genetics and gene expression, including the structure, arrangement, expression, and regulation of genes, and relevant experimental methods for their study and/or manipulation
- the structure, function and organisation of a wide range of cell types (both prokaryotic and eukaryotic) and tissues, including subcellular organelles and transport processes
- the signal transduction mechanisms of extra- and intra-cellular receptors in cell signalling pathways controlling cellular activities and how these can be investigated experimentally
- the innate and adaptive immune system, including the main cell types involved, the structural basis for pathogen recognition and key effector functions related to host defence, and experimental methods for their study or manipulation
- experimental methods for the investigation of relevant areas of biochemistry and molecular biology, including the scientific method, hypothesis-driven investigation and the critical nature of evidence and scientific debate
- current developments in biochemistry and molecular biology, including areas of ethical or public concern

Subject specific skills

Successful students will be able to:

- evaluate scientific literature with a full and critical understanding, while addressing such questions as content, context, aims, objectives, quality of information, and its interpretation and application
- demonstrate competence in a range of laboratory techniques and employ a variety of methods (including computational studies related to bioinformatics and the use of small molecule and macromolecular databases) in investigating, acquiring, recording and analysing information relevant to biochemistry and molecular biology
- design, conduct, analyse, report and evaluate biochemical experiments, acknowledging an awareness of the validity, accuracy, calibration, precision and reproducibility of results
- work safely and responsibly in the laboratory with awareness of standard procedures such as risk assessment, COSHH, and relevant health and safety regulations
- recognise philosophical and ethical issues relevant to the subject, including those relating to animal welfare and procedures for obtaining informed consent
- apply scientific method, planning and analytical skills to carry out a research project
- apply biochemical understanding to familiar and unfamiliar problems

Intellectual skills

Successful students will be able to:

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

Key Employability skills

Successful students will be able to:

- develop an adaptable, flexible, sustainable and effective approach to learning and study, including time management, creativity and intellectual integrity
- acquire, analyse, synthesise, summarise and present information and ideas from a wide range of sources: textual, numerical, verbal, graphical
- prepare, process, interpret and present data, using appropriate qualitative and quantitative techniques, statistical programmes, spreadsheets and programs for acquiring and presenting data visually
- use a range of digital resources effectively and critically as a means of communication and a source of information
- cite and reference work in an appropriate manner, ensuring academic integrity
- communicate effectively to a variety of audiences by written, spoken and graphical means using appropriate techniques and scientific language
- develop skills necessary for self-managed and lifelong learning, including working independently, organisational, enterprise and knowledge transfer skills
- work with others to identify and achieve collaborative goals and responsibilities and perform in a respectful manner that is accepting of the viewpoints and opinions of others
- motivate themselves and sustain that motivation over an extended period of time
- identify and work towards targets for personal, academic and career development

Keele Graduate Attributes

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

6. How is the programme taught?

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

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

Digital material: Traditional 'lectures' are often redesigned for online consumption, giving you more flexibility to decide how, when and where to study. This can include provision of short videos, directed reading, key learning outcomes and Forms that allow you to ask questions anonymously.

Campus-based tutorials and workshops. Often designed to support online lectures. Tutorials and workshops help promote social learning, develop a sense of community and give you an opportunity to deepen your understanding of core issues, ask questions, reflect on your own learning, and discuss content with other students and your tutors. Other workshops will also support data analysis and report writing, including IT literacy, as well as supporting you in developing skills in computational and bioinformatic analysis.

Laboratory practicals. A comprehensive laboratory programme covering a diverse range of modern biochemical and molecular techniques designed to train you in the skills needed for a career in biochemistry. The programme will also develop skills in experimental design through enquiry-based learning and will ensure you develop both independent and team-based skills.

Live, online tutorials, workshops and drop-in sessions. Often used to host plenary sessions. These plenary sessions are optional, added value and may cover topics common to all students such as: note taking and meet your alumni at Level 4; IT and data analysis at Level 5 and writing retreats and careers at Level 6.

Independent study. Based on directed reading from text books, research papers and research reviews to support your learning of the core material and deepen your understanding of the subject.

Your final year **Research Project** gives you the opportunity to undertake a piece of independent experimental research supervised and supported by a member of staff in a selected area of contemporary Biochemistry aligned with your interests.

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

7. Teaching Staff

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

We also invite speakers from the School of Pharmacy and Bioengineering, School of Medicine and the University Hospitals of North Midlands to enrich your learning.

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

Fellows of the HEA. Several Life Sciences' staff members have been awarded Keele's prestigious Excellence in Teaching and Learning awards and several were awarded a KeeleSU Education Award for Academic Mentoring.

The University will attempt to minimise changes to our core teaching teams, however, delivery of the programme depends on having a sufficient number of staff with the relevant expertise to ensure that the programme is taught to the appropriate academic standard. Staff turnover, for example where key members of staff leave, fall ill or go on research leave, may result in changes to the programme's content. The University will endeavour to ensure that any impact on students is limited if such changes occur.

8. What is the structure of the Programme?

The academic year is divided into two taught semesters. Each semester will generally have twelve weeks of teaching followed by three weeks of final assessments. Details of each semester can be found using the following link: <https://www.keele.ac.uk/students/academiclife/keydates/>. Our programme is organised into discrete modules. Each module is assessed independently and awarded a set number of credits (usually 15 or 30). A 15-credit module equates to 150 hours of student work. Some modules are compulsory and you are required to complete them. Others are optional, giving you some choice in what you want to study.

Language modules: You are able to take up to 60 credits across your degree programme as Faculty Funded additional Modern Language modules in order to graduate with the Enhanced Degree Title. [Please see [link](#) for more information on Enhanced degree titles.]

A summary of the total credit requirements per year is as follows, with a minimum of 90 subject credits (compulsory plus optional) required for each year across both of your combined honours subjects (minimum of 45 credits of subject-specific content for each subject). This document has information about *Biochemistry* modules only where you are required to study a full 60 credits of core Biochemistry modules at levels 4 and 5, with 60 credits of core and optional modules at level 6; please also see the programme specification for your other chosen subject.

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

Year	Compulsory	Optional	
		Min	Max
Level 4	60	0	0
Level 5	60	0	0
Level 6	45	15	30

At level 6 there is the option to choose to specialise in one of your subjects, taking a minimum of 105 credits in Biochemistry (with up to one 15 credit module in your other subject) rather than taking modules from both subjects.

Module Lists

Level 4

Compulsory modules	Module Code	Credits	Period
Molecules of Life	LSC-10097	30	Semester 1
Practical and Academic Skills in Bioscience	LSC-10103	0	Semester 1-2
Molecular Cell Biology	LSC-10066	30	Semester 2

Level 4 Module Rules

LSC-10103: Practical and Academic Skills in Bioscience is a compulsory zero-credit module. All laboratory work across this level of study will be coordinated through this module and assessed within other credit-bearing modules across the year, where appropriate. This module will also develop wider academic skills and includes additional academic support and development material to enhance your overall student experience and develop key employability skills. The module will be passed via attendance to a minimum threshold of taught laboratory sessions and successful completion of a competency skills audit. Students who fail this module will transfer to *Studies in Biochemistry*. This is not accredited by the RSB.

Level 5

Compulsory modules	Module Code	Credits	Period
Molecular, Cellular and Structural Immunology	LSC-20015	15	Semester 1
Applications of Molecular Biology	LSC-20131	15	Semester 1
Practical and Professional Skills in Bioscience	LSC-20127	0	Semester 1-2
Metabolism in Health and Disease	LSC-20016	15	Semester 2
Cell Signalling	LSC-20085	15	Semester 2

Level 5 Module Rules

LSC-20127: Practical and Professional Skills in Bioscience is a compulsory zero-credit module. All laboratory work across this level of study will be coordinated through this module and assessed within other credit-bearing

modules across the year, where appropriate. This module will also develop advanced academic skills in literature searching and analysis and includes additional career development workshops, enhancing your overall student experience and developing key employability skills. The module will be passed via attendance to a minimum threshold of taught laboratory sessions. Students who fail this module will transfer to *Studies in Biochemistry*. This is not accredited by the RSB.

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

Level 6

Compulsory modules	Module Code	Credits	Period
Professional Development	LSC-30090	0	Semester 1-2
Research Project	LSC-30102	30	Semester 1-2
Employability and Communication Skills in Bioscience	LSC-30106	15	Semester 1-2

Optional modules	Module Code	Credits	Period
Human Parasitology	LSC-30036	15	Semester 1
Omics Technologies	LSC-30092	15	Semester 1
Structural Immunology	LSC-30110	15	Semester 1
Flexible Work Placement (Level 6)	NAT-30008	15	Semester 1-2
Professional Experience in Education	NAT-30012	15	Semester 1-2
Cancer Biology	LSC-30061	15	Semester 2
Medical Glycobiology (Level 6)	LSC-30065	15	Semester 2
Epidemiology	LSC-30084	15	Semester 2

If you choose to specialise in this subject in your final year you will study the following modules:

Compulsory modules	Module Code	Credits	Period
Professional Development in Bioscience	LSC-30090	0	Semester 1-2
Research Project	LSC-30102	30	Semester 1-2
Employability and Communication Skills in Bioscience	LSC-30106	15	Semester 1-2

Optional modules	Module Code	Credits	Period
Human Parasitology	LSC-30036	15	Semester 1
Case Studies in Biotechnology	LSC-30051	15	Semester 1
Tropical Biology Field Course	LSC-30066	15	Semester 1
Omics Technologies	LSC-30092	15	Semester 1
Structural Immunology	LSC-30110	15	Semester 1
Flexible Work Placement (Level 6)	NAT-30008	15	Semester 1-2
Professional Experience in Education	NAT-30012	15	Semester 1-2
Cancer Biology	LSC-30061	15	Semester 2
Medical Glycobiology (Level 6)	LSC-30065	15	Semester 2
Epidemiology	LSC-30084	15	Semester 2

Level 6 Module Rules

Students studying combined honours Biochemistry and Human Biology or Biochemistry and Neuroscience must take LSC-30102: Research Project as a requirement of RSB accreditation. This 30-credit module will contribute 15 credits of optional space for each programme, meaning you must select a minimum of 30 credits of optional modules from the list above and up to 45 credits from your other subject.

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

Students choosing to specialise in Biochemistry in the final year must take LSC-30102: Research Project. You will also have the option of taking up to a maximum of 15 credits of modules from your second subject, or choosing all 75 credits of optional modules from those listed above.

Achieving a pass mark in LSC-30102: Research Project is a requirement for RSB accreditation. Students not meeting this threshold will transfer to *Studies in Biochemistry*. This is not accredited by the RSB.

Learning Outcomes

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

Level 4

At level 4 and level 5 these learning outcomes are achieved in the compulsory Biochemistry modules which all students are required to take. Some of these outcomes may also be achieved or reinforced in modules taken as part of your other subject. The table below sets out what students learn in the programme and the modules in which that learning takes place. Details of how learning outcomes are assessed through these modules can be found in module specifications.

Subject Knowledge and Understanding	
Learning Outcome	Module in which this is delivered
the chemistry that underlies biological process and their study, including chemical and thermodynamic principles applied to biochemical catalysis and the role of enzymes and other proteins in determining the function and fate of cells and organisms.	Molecular Cell Biology - LSC-10066 Molecules of Life - LSC-10097
the essential features of cell metabolism and its control, developing from a broad understanding of core processes related to cellular respiration and photosynthesis to the application of this in context to acquired and inherited disease	Molecules of Life - LSC-10097
the principles that determine the three-dimensional structure of biological macromolecules (including nucleic acids, proteins and carbohydrates) and be able to explain detailed examples of how structure enables function	Molecules of Life - LSC-10097
the molecular basis of genetics and gene expression, including the structure, arrangement, expression, and regulation of genes, and relevant experimental methods for their study and/or manipulation	Molecular Cell Biology - LSC-10066
the structure, function and organisation of a wide range of cell types (both prokaryotic and eukaryotic), including subcellular organelles and transport processes	Molecular Cell Biology - LSC-10066
the signal transduction mechanisms of extra- and intra-cellular receptors in cell signalling pathways controlling cellular activities and how these can be investigated experimentally	Molecular Cell Biology - LSC-10066
experimental methods for the investigation of relevant areas of biochemistry and molecular biology, including the scientific method, hypothesis-driven investigation and the critical nature of evidence and scientific debate	Molecules of Life - LSC-10097 Practical and Academic Skills in Bioscience - LSC-10103
current developments in biochemistry and molecular biology, including areas of ethical or public concern	All modules

Subject Specific Skills	
Learning Outcome	Module in which this is delivered
evaluate scientific literature with a full and critical understanding, while addressing such questions as content, context, aims, objectives, quality of information, and its interpretation and application	Molecular Cell Biology - LSC-10066 Molecules of Life - LSC-10097
demonstrate competence in a range of laboratory techniques and employ a variety of methods (including computational studies related to bioinformatics and the use of small molecule and macromolecular databases) in investigating, acquiring, recording and analysing information relevant to biochemistry and molecular biology	Molecular Cell Biology - LSC-10066 All modules, particularly the practical component of LSC-10103: Practical and Academic Skills in Bioscience
design, conduct, analyse, report and evaluate biochemical experiments, acknowledging an awareness of the validity, accuracy, calibration, precision and reproducibility of results	Practical and Academic Skills in Bioscience - LSC-10103 Molecules of Life - LSC-10097
work safely and responsibly in the laboratory with awareness of standard procedures such as risk assessment, COSHH, relevant health and safety regulations	Practical and Academic Skills in Bioscience - LSC-10103
recognise philosophical and ethical issues relevant to the subject, including those relating to animal welfare and procedures for obtaining informed consent	Molecules of Life - LSC-10097 Practical and Academic Skills in Bioscience - LSC-10103 Molecular Cell Biology - LSC-10066
apply scientific method, planning an analytical skills to carry out a research project	Practical and Academic Skills in Bioscience - LSC-10103 Molecules of Life - LSC-10097 Particularly the practical components of LSC-10087
apply biochemical understanding to familiar and unfamiliar problems	Molecular Cell Biology - LSC-10066 Practical and Academic Skills in Bioscience - LSC-10103 Molecules of Life - LSC-10097

Intellectual skills	
Learning Outcome	Module in which this is delivered
assess the merits of contrasting theories, paradigms, concepts or principles and develop reasoned arguments	Molecular Cell Biology - LSC-10066 Molecules of Life - LSC-10097 Practical and Academic Skills in Bioscience - LSC-10103
identify, analyse and solve problems by a variety of methods, either individually and/or cooperatively	Practical and Academic Skills in Bioscience - LSC-10103 Molecules of Life - LSC-10097 Molecular Cell Biology - LSC-10066
make critical interpretations, evaluations and judgements of data	Practical and Academic Skills in Bioscience - LSC-10103 Molecular Cell Biology - LSC-10066 Molecules of Life - LSC-10097
obtain, analyse and summarise several lines of subject-specific evidence to formulate and test hypotheses, with critical interpretation of quantitative and qualitative research findings	Molecules of Life - LSC-10097 Practical and Academic Skills in Bioscience - LSC-10103 Molecular Cell Biology - LSC-10066
take responsibility for their own learning and reflect upon that learning	Practical and Academic Skills in Bioscience - LSC-10103 Molecules of Life - LSC-10097 Molecular Cell Biology - LSC-10066
report on the outcomes of research and other scholarly activity in an appropriate academic style using and referencing relevant ideas and evidence, with an awareness of the importance of academic and research integrity	Molecular Cell Biology - LSC-10066 Molecules of Life - LSC-10097 Practical and Academic Skills in Bioscience - LSC-10103

Key or Transferable Skills (graduate attributes)	
Learning Outcome	Module in which this is delivered
develop an adaptable, flexible, sustainable and effective approach to learning and study, including time management, creativity and intellectual integrity	Molecules of Life - LSC-10097 Practical and Academic Skills in Bioscience - LSC-10103 Molecular Cell Biology - LSC-10066
acquire, analyse, synthesise, summarise and present information and ideas from a wide range of sources: textual, numerical, verbal, graphical	Practical and Academic Skills in Bioscience - LSC-10103 Molecular Cell Biology - LSC-10066 Molecules of Life - LSC-10097
prepare, process, interpret and present data, using appropriate qualitative and quantitative techniques, statistical programmes, spreadsheets and programs for presenting data visually	Molecules of Life - LSC-10097 Molecular Cell Biology - LSC-10066 Practical and Academic Skills in Bioscience - LSC-10103
use a range of digital resources effectively and critically as a means of communication and a source of information	Molecular Cell Biology - LSC-10066 Molecules of Life - LSC-10097
cite and reference work in an appropriate manner, ensuring academic integrity and the avoidance of plagiarism whether intentional or not	Molecules of Life - LSC-10097 Molecular Cell Biology - LSC-10066
communicate effectively to a variety of audiences by written, spoken and graphical means using appropriate techniques and scientific language	Molecules of Life - LSC-10097 Molecular Cell Biology - LSC-10066 Practical and Academic Skills in Bioscience - LSC-10103
develop skills necessary for self-managed and lifelong learning, including working independently, organisational, enterprise and knowledge transfer skills	Molecules of Life - LSC-10097 Practical and Academic Skills in Bioscience - LSC-10103 Molecular Cell Biology - LSC-10066
work with others to identify and achieve collaborative goals and responsibilities and perform in a respectful manner that is accepting of the viewpoints and opinions of others	Practical and Academic Skills in Bioscience - LSC-10103 Molecules of Life - LSC-10097 Molecular Cell Biology - LSC-10066
motivate themselves and sustain that motivation over an extended period of time	Molecular Cell Biology - LSC-10066 Molecules of Life - LSC-10097 Practical and Academic Skills in Bioscience - LSC-10103
identify and work towards targets for personal, academic and career development	Molecules of Life - LSC-10097 Molecular Cell Biology - LSC-10066 Practical and Academic Skills in Bioscience - LSC-10103 and via academic mentors

Level 5

Subject Knowledge and Understanding	
Learning Outcome	Module in which this is delivered
the chemistry that underlies biological process and their study, including chemical and thermodynamic principles applied to biochemical catalysis and the role of enzymes and other proteins in determining the function and fate of cells and organisms.	Cell Signalling - LSC-20085 Metabolism in Health and Disease - LSC-20016
the essential features of cell metabolism and its control, developing from a broad understanding of core processes related to cellular respiration and photosynthesis to the application of this in context to acquired and inherited disease	Metabolism in Health and Disease - LSC-20016
the principles that determine the three-dimensional structure of biological macromolecules (including nucleic acids, proteins and carbohydrates) and be able to explain detailed examples of how structure enables function,	Applications of Molecular Biology - LSC-20131 Molecular, Cellular and Structural Immunology - LSC-20015
the molecular basis of genetics and gene expression, including the structure, arrangement, expression, and regulation of genes, and relevant experimental methods for their study and/or manipulation	Applications of Molecular Biology - LSC-20131
the structure, function and organisation of a wide range of cell types (both prokaryotic and eukaryotic), including subcellular organelles and transport processes	Metabolism in Health and Disease - LSC-20016 Molecular, Cellular and Structural Immunology - LSC-20015
the signal transduction mechanisms of extra- and intra-cellular receptors in cell signalling pathways controlling cellular activities and how these can be investigated experimentally	Metabolism in Health and Disease - LSC-20016 Cell Signalling - LSC-20085 Molecular, Cellular and Structural Immunology - LSC-20015
the innate and adaptive immune system, including the main cell types involved, the structural basis for pathogen recognition and key effector functions related to host defence and experimental methods for their study or manipulation	Molecular, Cellular and Structural Immunology - LSC-20015
experimental methods for the investigation of relevant areas of biochemistry and molecular biology, including the scientific method, hypothesisdriven investigation and the critical nature of evidence and scientific debate	All modules, particularly the practical component of LSC-20127: Practical and Professional Skills in Bioscience
current developments in biochemistry and molecular biology, including areas of ethical or public concern	All modules

Subject Specific Skills	
Learning Outcome	Module in which this is delivered
evaluate scientific literature with a full and critical understanding, while addressing such questions as content, context, aims, objectives, quality of information, and its interpretation and application	All modules
demonstrate competence in a range of laboratory techniques and employ a variety of methods (including computational studies related to bioinformatics and the use of small molecule and macromolecular databases) in investigating, acquiring, recording and analysing information relevant to biochemistry and molecular biology	Practical and Professional Skills in Bioscience - LSC-20127 Applications of Molecular Biology - LSC-20131
design, conduct, analyse, report and evaluate biochemical experiments, acknowledging an awareness of the validity, accuracy, calibration, precision and reproducibility of results	Practical and Professional Skills in Bioscience - LSC-20127 Metabolism in Health and Disease - LSC-20016 Molecular, Cellular and Structural Immunology - LSC-20015
work safely and responsibly in the laboratory with awareness of standard procedures such as risk assessment, COSHH, relevant health and safety regulations	Practical and Professional Skills in Bioscience - LSC-20127
recognise philosophical and ethical issues relevant to the subject, including those relating to animal welfare and procedures for obtaining informed consent	All modules
apply biochemical understanding to familiar and unfamiliar problems	All modules
apply scientific method, planning an analytical skills to carry out a research project	Metabolism in Health and Disease - LSC-20016 Molecular, Cellular and Structural Immunology - LSC-20015 Practical and Professional Skills in Bioscience - LSC-20127
apply biochemical understanding to familiar and unfamiliar problems	All modules

Intellectual skills	
Learning Outcome	Module in which this is delivered
assess the merits of contrasting theories, paradigms, concepts or principles and develop reasoned arguments	All modules
identify, analyse and solve problems by a variety of methods, either individually and/or cooperatively	All modules
make critical interpretations, evaluations and judgements of data	All modules
obtain, analyse and summarise several lines of subject-specific evidence to formulate and test hypotheses, with critical interpretation of quantitative and qualitative research findings	All modules
take responsibility for their own learning and reflect upon that learning	All modules
report on the outcomes of research and other scholarly activity in an appropriate academic style using and referencing relevant ideas and evidence, with an awareness of the importance of academic and research integrity	All modules

Key or Transferable Skills (graduate attributes)	
Learning Outcome	Module in which this is delivered
develop an adaptable, flexible, sustainable and effective approach to learning and study, including time management, creativity and intellectual integrity	All modules
acquire, analyse, synthesise, summarise and present information and ideas from a wide range of sources: textual, numerical, verbal, graphical	All modules
prepare, process, interpret and present data, using appropriate qualitative and quantitative techniques, statistical programmes, spreadsheets and programs for presenting data visually	Metabolism in Health and Disease - LSC-20016 Molecular, Cellular and Structural Immunology - LSC-20015
use the internet and other electronic sources effectively and critically as a means of communication and a source of information	All modules
cite and reference work in an appropriate manner, ensuring academic integrity and the avoidance of plagiarism whether intentional or not	All modules
communicate effectively to a variety of audiences by written, spoken and graphical means using appropriate techniques and scientific language	All modules
develop skills necessary for self-managed and lifelong learning, including working independently, organisational, enterprise and knowledge transfer skills	All modules
work with others to identify and achieve collaborative goals and responsibilities and perform in a respectful manner that is accepting of the viewpoints and opinions of others	All modules, particularly LSC-20127: Practical and Professional Skills in Bioscience
motivate themselves and sustain that motivation over an extended period of time	All modules
identify and work towards targets for personal, academic and career development	All modules and via academic mentors

Level 6

Subject Knowledge and Understanding	
Learning Outcome	Module in which this is delivered
the chemistry that underlies biological process and their study, including chemical and thermodynamic principles applied to biochemical catalysis and the role of enzymes and other proteins in determining the function and fate of cells and organisms.	Medical Glycobiology (Level 6) - LSC-30065 Structural Immunology - LSC-30110 LSC-30051: Case Studies in Biotechnology
the essential features of cell metabolism and its control, developing from a broad understanding of core processes related to cellular respiration and photosynthesis to the application of this in context to acquired and inherited disease	Cancer Biology - LSC-30061 Medical Glycobiology (Level 6) - LSC-30065
the principles that determine the three-dimensional structure of biological macromolecules (including nucleic acids, proteins and carbohydrates) and be able to explain detailed examples of how structure enables function	Medical Glycobiology (Level 6) - LSC-30065 Professional Development - LSC-30090 Employability and Communication Skills in Bioscience - LSC-30106 Professional Development in Bioscience - LSC-30090 Structural Immunology - LSC-30110
the molecular basis of genetics and gene expression, including the structure, arrangement, expression, and regulation of genes, and relevant experimental methods for their study and/or manipulation	Omics Technologies - LSC-30092 Cancer Biology - LSC-30061 Epidemiology - LSC-30084 LSC-30051: Case Studies in Biotechnology
the structure, function and organisation of a wide range of cell types (both prokaryotic and eukaryotic), including subcellular organelles and transport processes	Cancer Biology - LSC-30061 Human Parasitology - LSC-30036 Medical Glycobiology (Level 6) - LSC-30065
the signal transduction mechanisms of extra- and intra-cellular receptors in cell signalling pathways controlling cellular activities and how these can be investigated experimentally	Human Parasitology - LSC-30036 Cancer Biology - LSC-30061 Structural Immunology - LSC-30110 Medical Glycobiology (Level 6) - LSC-30065
the innate and adaptive immune system, including the main cell types involved, the structural basis for pathogen recognition and key effector functions related to host defence and experimental methods for their study or manipulation	Omics Technologies - LSC-30092 Structural Immunology - LSC-30110 Cancer Biology - LSC-30061 Human Parasitology - LSC-30036 Research Project - LSC-30102
experimental methods for the investigation of relevant areas of biochemistry and molecular biology, including the scientific method, hypothesisdriven investigation and the critical nature of evidence and scientific debate	Research Project - LSC-30102 Flexible Work Placement (Level 6) - NAT-30008 Employability and Communication Skills in Bioscience - LSC-30106 LSC-30066: Tropical Biology Field Course
current developments in biochemistry and molecular biology, including areas of ethical or public concern	All modules

Subject Specific Skills	
Learning Outcome	Module in which this is delivered
evaluate scientific literature with a full and critical understanding, while addressing such questions as content, context, aims, objectives, quality of information, and its interpretation and application	All modules
demonstrate competence in a range of laboratory techniques and employ a variety of methods (including computational studies related to bioinformatics and the use of small molecule and macromolecular databases) in investigating, acquiring, recording and analysing information relevant to biochemistry and molecular biology	Research Project - LSC-30102 Flexible Work Placement (Level 6) - NAT-30008 Omics Technologies - LSC-30092
design, conduct, analyse, report and evaluate biochemical experiments, acknowledging an awareness of the validity, accuracy, calibration, precision and reproducibility of results	Research Project - LSC-30102 Flexible Work Placement (Level 6) - NAT-30008
work safely and responsibly in the laboratory with awareness of standard procedures such as risk assessment, COSHH, relevant health and safety regulations	Research Project - LSC-30102 Flexible Work Placement (Level 6) - NAT-30008
recognise philosophical and ethical issues relevant to the subject, including those relating to animal welfare and procedures for obtaining informed consent	Flexible Work Placement (Level 6) - NAT-30008 Research Project - LSC-30102
apply scientific method, planning an analytical skills to carry out a research project	Research Project - LSC-30102 Flexible Work Placement (Level 6) - NAT-30008
apply biochemical understanding to familiar and unfamiliar problems	All modules

Intellectual skills	
Learning Outcome	Module in which this is delivered
assess the merits of contrasting theories, paradigms, concepts or principles and develop reasoned arguments	All modules
identify, analyse and solve problems by a variety of methods, either individually and/or cooperatively	All modules, particularly LSC-30102: Research Project
make critical interpretations, evaluations and judgements of data	All modules
obtain, analyse and summarise several lines of subject-specific evidence to formulate and test hypotheses, with critical interpretation of quantitative and qualitative research findings	All modules, particularly LSC-30102: Research Project
take responsibility for their own learning and reflect upon that learning	All modules
report on the outcomes of research and other scholarly activity in an appropriate academic style using and referencing relevant ideas and evidence, with an awareness of the importance of academic and research integrity	All modules

Key or Transferable Skills (graduate attributes)	
Learning Outcome	Module in which this is delivered
develop an adaptable, flexible, sustainable and effective approach to learning and study, including time management, creativity and intellectual integrity	All modules
acquire, analyse, synthesise, summarise and present information and ideas from a wide range of sources: textual, numerical, verbal, graphical	All modules
prepare, process, interpret and present data, using appropriate qualitative and quantitative techniques, statistical programmes, spreadsheets and programs for presenting data visually	All modules, particularly LSC-30102: Research Project, LSC-30084: Epidemiology, LSC-30092: Omics Technologies
use the internet and other electronic sources effectively and critically as a means of communication and a source of information	All modules
cite and reference work in an appropriate manner, ensuring academic integrity and the avoidance of plagiarism whether intentional or not	All modules
communicate effectively to a variety of audiences by written, spoken and graphical means using appropriate techniques and scientific language	All modules
develop skills necessary for self-managed and lifelong learning, including working independently, organisational, enterprise and knowledge transfer skills	All modules
work with others to identify and achieve collaborative goals and responsibilities and perform in a respectful manner that is accepting of the viewpoints and opinions of others	All modules will have some elements of group work/discussion/debate, in particular LSC-30051: Case Studies in Biotechnology
motivate themselves and sustain that motivation over an extended period of time	All modules
identify and work towards targets for personal, academic and career development	All modules and via academic mentors

9. Final and intermediate awards

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

Honours Degree BSc (Hons) Biochemistry	360 credits	You will require at least 120 credits at levels 4, 5 and 6 You must accumulate a minimum of 135 credits in each subject (270 credits in total), with at least 45 credits at each level of study (Levels 4, 5 and 6) in each of your two subjects (90 credits per year). Your degree title will be 'subject X and subject Y'. If you choose to study one subject in your final year of study a minimum of 90 credits in that subject is required. Your degree title will be 'subject X with subject Y'. N.B. The award will be 'Studies in Biochemistry' if a pass standard is not achieved in the Level 4 Practical and Academic Skills in Bioscience, Level 5 Practical and Professional Skills in Bioscience, or in your Level 6 Research Project module (see the section on Regulations). A 'Studies in Biochemistry' degree is not accredited by the Royal Society of Biology.
Diploma in Higher Education	240 credits	You will require at least 120 credits at level 4 or higher and at least 120 credits at level 5 or higher
Certificate in Higher Education	120 credits	You will require at least 120 credits at level 4 or higher

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

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

10. How is the Programme Assessed?

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

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

Provide evidence-based solutions to current scientific problems. Most often this is assessed through a range of essays, portfolios and literature reviews.

Present scientific findings. Often these are lab reports or experimental projects that test your ability to pose scientific hypotheses, design experiments, understand methodologies, present findings, analyse data and situate your work in the current literature. Other assessments will also develop your skills in accessing, manipulating and presenting the outcomes of computational investigations, including in bioinformatics and the use of small molecule and macromolecular databases.

Communicate effectively with a range of audiences. These can include scientific posters, patient

information leaflets, wikis, blogs or oral presentations, as well as more standard laboratory reports, proformas and literature reviews.

Work professionally. Your final year, independent research project will give you an opportunity to demonstrate a range of professional skills such as leadership, innovation, time keeping, communication and the ability to work safely and ethically.

Work effectively in a team. Most often this is assessed through group presentations but can also include competencies such as working together in the lab or other group assignments, such as the optimisation and product of commercial laboratory assay kit for metabolite quantification.

Solve problems in a time-limited fashion. Often in the work environment we are asked to solve problems in a relatively short amount of time. Our online tests and end-of-semester, online, open-book examinations will help you to evidence these skills.

Marks are awarded for summative assessments designed to assess your achievement of learning outcomes. You will also be assessed formatively to enable you to monitor your own progress and to assist staff in identifying and addressing any specific learning needs. Feedback, including guidance on how you can improve the quality of your work, is also provided on all summative assessments, which we aim to provide within three working weeks of submission. This is often phrased in terms of strengths, weaknesses and ways to improve to help you focus on key areas that can improve the quality of your work in the future.

11. Contact Time and Expected Workload

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

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

Activity

	Scheduled learning and teaching activities	Guided independent Study	Placements
Year 1 (Level 4)	43%	57%	0%
Year 2 (Level 5)	40.5%	59.5%	0%
Year 3 (Level 6)	27.3%	72.7%	0%

12. Accreditation

The programme is accredited by the Royal Society of Biology for students who specialise in Biochemistry at level 6 or combine with Human Biology or Neuroscience.

To be awarded Royal Society of Biology accreditation you must achieve a minimum standard of 40% in the final year Research Project modules. Students that condone this module may still be eligible for the award Studies in Biochemistry. Students are also required to obtain a pass mark for the Level 4 Practical and Academic Skills in Bioscience and Level 5 Practical and Professional Skills in Bioscience modules in order to remain on the accredited routes, else the award title will be Studies in Biochemistry.

13. University Regulations

The University Regulations form the framework for learning, teaching and assessment and other aspects of the student experience. Further information about the University Regulations can be found at:

<http://www.keele.ac.uk/student-agreement/>

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

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

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

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

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

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

English for Academic Purposes

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

English Language Modules at Level 4:

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

English Language Modules at Level 5:

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

English Language Modules at Level 6:

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

Recognition of Prior Learning (RPL) is considered on a case-by-case basis and those interested should contact the Programme Director. The University's guidelines on this can be found here:
<https://www.keele.ac.uk/qa/programmesandmodules/recognitionofpriorlearning/>

15. How are students supported on the programme?

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

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

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

Student Services also offer a comprehensive range of specialist services that help you at any time from

enrolment to graduation. The following link will provide more information:

<https://www.keele.ac.uk/students/student-services/>

16. Learning Resources

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

Practical sessions are held in dedicated teaching laboratories within the School of Life Sciences over recent years these have been completely refitted, providing modern and well-equipped facilities supporting delivery of a diverse practical programmes (including the David Attenborough laboratories, opened in person by Sir David in 2019).

The learning resources available to you on the Programme include:

- An extensive collection of books and journals held in the University Library on campus, or the health library situated at the University Hospital of North Staffordshire.
- Access to a comprehensive range of ebooks, journals and published papers all available online
- The Keele Learning Environment (KLE) which provides easy access to a wide range of learning resources including learning materials and other guidance/supporting resources, this includes a range of digital resources (bitesize lecture recordings, directed reading, interactive content (e.g. quizzes) and review questions. These support active learning campus-based teaching sessions focused on application and discussion of core learning materials.
- Microsoft Teams for further content development and to facilitate live and interactive discussions, Q&A etc

17. Other Learning Opportunities

We are committed to offering a rich and diverse student experience that goes far beyond your degree.

Most years, we are able to offer range of different opportunities to enrich your student experience. These can include:

Study abroad. You could apply to spend one semester at Level 5 studying in one of our international partner universities. This not only gives you valuable international experience, but can also allow you to study a complimentary subject - such as epidemiology or molecular biology - in greater detail, whilst remaining complementary to the your programme of study at Keele. The marks that you achieve whilst studying abroad will count to your overall attainment across Level 5.

International year. Is similar to study abroad, but here you choose to take an additional year in between Levels 5 and 6 studying in one of our international partner universities. More information can be found at: <http://www.keele.ac.uk/studyabroad/partneruniversities/>

Work placements. You could apply to a range of national and international employers for an work placement. These take place in between Level 5 and 6 and usually last 9-12 months. They provide excellent work experience and an opportunity to collect data for your Level 6 independent research student project.

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

Tropical field trip. You could apply for our School tropical field course that takes place in Malaysia. These are often more conservational in nature, but again provide fantastic international experience and of course, will complement and broaden your programme of study in Biochemistry.

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

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

Other opportunities

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

talk to, a range of guest speakers and presenters including researchers from around the world. Some of these activities are timetabled as part of taught modules, others are organised separately as part of a school-wide seminar programme, but are widely advertised and undergraduate students are always welcome to attend.

18. Additional Costs

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

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

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

19. Quality management and enhancement

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

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

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

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

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

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

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

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

20. The principles of programme design

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

a. UK Quality Code for Higher Education, Quality Assurance Agency for Higher Education:

<http://www.qaa.ac.uk/quality-code>

b. QAA Subject Benchmark Statement: Biosciences (2023) <https://www.qaa.ac.uk/the-quality-code/subject-benchmark-statements/subject-benchmark-statement-biosciences>

c. Keele University Regulations and Guidance for Students and Staff: <http://www.keele.ac.uk/regulations>

d. Royal Society of Biology Degree Accreditation Handbook:

https://www.rsb.org.uk/images/Degree_Accreditation_Handbook_July16.pdf

21. Annex - International Year

Biochemistry with International Year

Please note: in order to be eligible to take the International Year option your other subject must also offer this option. Please refer to the information published in the course document for your other subject.

International Year Programme

At Level 5 you can apply to transfer onto our International Year pathway. If successful, you will have an additional year of study at one of our international partner Universities once you have completed Level 5 here at Keele.

Students who successfully complete both the second year (Level 5) and the International Year will be permitted to progress to Level 6. Students who fail to satisfy the examiners in respect of the International Year will normally revert to the Combined Honours programme without the International Year and progress to Level 6 on that basis. The failure will be recorded on the student's final transcript.

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

International Year Programme Aims

In addition to the programme aims for Biochemistry, we also aim to:

1. Enhance your personal development to give you an insight into the international dimension of Biochemistry
2. Give you an experience of a different culture, academically, professionally and socially

Entry Requirements for the International Year

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

The criteria to be applied are:

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

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

Student Support

We have a dedicated Study Abroad tutor within Life Sciences that will stay in touch with you throughout your International Year, effectively acting as an additional Academic Mentor. There is also support available for Keele's Global Opportunities Team (<https://www.keele.ac.uk/study/studyabroad/>)

Learning Outcomes

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

1. Describe, discuss and reflect upon the cultural and international differences and similarities of different learning environments
2. Discuss the benefits and challenges of global citizenship and internationalisation
3. Explain how their perspective on their academic discipline has been influenced by locating it within an international setting.
4. Use independent research skills to identify relevant information resources on a range of subjects related, or complementary, to Biochemistry.
5. Demonstrate the use of critical thinking skills, augmented by creativity and curiosity, in discussing the application of their International Year studies to Biochemistry.

Please note that students on Combined Honours programmes with International Year must meet the subject-specific learning outcomes for BOTH their subjects.

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

Regulations

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

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

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

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

Additional costs for the International Year

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

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

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

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

22. Annex - Work Placement Year

Biochemistry with Work Placement Year

Work Placement Year summary

Students registered for this programme may apply to transfer during level 4 or 5 to the 'with Work Placement Year' option. Students accepted onto this programme will have an extra year of study (the Work Placement Year) with a relevant placement provider after they have completed Level 5 at Keele.

Students who successfully complete both the second year (Level 5) and the Work Placement Year will be permitted to progress to Level 6. Students who fail to satisfactorily complete the Work Placement Year will normally revert to the 4-year programme and progress to Level 6 on that basis. The failure will be recorded on the student's final transcript.

Study at Level 4, Level 5, Level 6 and Level 7 will be as per the main body of this document. The additional detail contained in this annex will pertain solely to students taking MSci Biochemistry the Work Placement Year

(NB: for Combined Honours students the rules relating to the work placement year in the subject where the placement is organised are to be followed).

Work Placement Year Programme Aims

In addition to the programme aims for Biochemistry, we also aim to:

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

Entry Requirements for the Work Placement Year

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

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

The criteria to be applied are:

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

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

Student Support

We have a dedicated Industrial Placement tutor within Life Sciences that can act as a point of contact for you before, during or after your placement year. You will also be assigned a Placement Supervisor. This will be an academic member of the School who will maintain regular contact with you throughout your placement and will become your project supervisor at Level 6. The School Director of Education will also act as an important contact throughout the process, that you can contact them in strict confidence at any point during your placement if you have any concerns about your placement provider or overall experience.

Learning Outcomes

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

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

These learning outcomes will be assessed through the Work Placement Year module

Regulations

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

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

Students will be expected to behave professionally in terms of:

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

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

Additional costs for the Work Placement Year

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

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

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

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

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

Programme Regulations: Biochemistry

Final Award and Award Titles	BSc (Hons) Biochemistry BSc (Hons) Studies in Biochemistry
Intermediate Award(s)	Diploma in Higher Education Certificate in Higher Education
Last modified	November 2022
Programme Specification	https://www.keele.ac.uk/qa/programmespecifications

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

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

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

A) EXEMPTIONS

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

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

- **No exemptions apply.**

B) VARIATIONS

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

Variation 1: No variations apply

Additional Requirements

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

Additional requirement 1: Laboratory, lecture and tutorial classes

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

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

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

1.4 Students who display serious misconduct in any class may, at the discretion of the member of staff in

charge, be excluded from the class and recorded as being absent without good cause. Serious misconduct involves wilful damage to property, injury or threat to persons, or persistent disruption of teaching.

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

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

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

Additional requirement 2: Study Abroad and Field Course

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

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

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

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

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

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

Version History

This document

Date Approved: 22 September 2025

What's Changed

Correction to LSC-30016 Structural Biology to rename as LSC-30110 Structural Immunology

Previous documents

Version No	Year	Owner	Date Approved	Summary of and rationale for changes
1	2025/26	DAVID WATSON	05 March 2025	
1	2024/25	DAVID WATSON	14 June 2024	
1	2023/24	DAVID WATSON	08 February 2023	
1	2022/23	DAVID WATSON	01 February 2022	
1	2021/22	DAVID WATSON	08 February 2021	
1.1	2020/21	DAVID WATSON	12 November 2020	Minor change to LSC-30065 (Medical Glycobiology) to move to SEM2
1	2020/21	DAVID WATSON	18 December 2019	
1.2	2019/20	DAVID WATSON	12 November 2020	Minor change - LSC-30015 now a SEM 1-2 module and LSC-30065 moved to SEM2
1.1	2019/20	DAVID WATSON	20 January 2020	Additional optional module added to Level 6 (Major route only) - LSC-30066: Tropical Biology Field Course
1	2019/20	EDWARD MCCAULEY	17 September 2019	